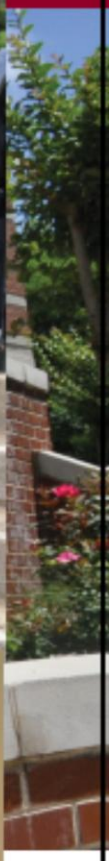
GRADUATE CATALOG

2011-2012









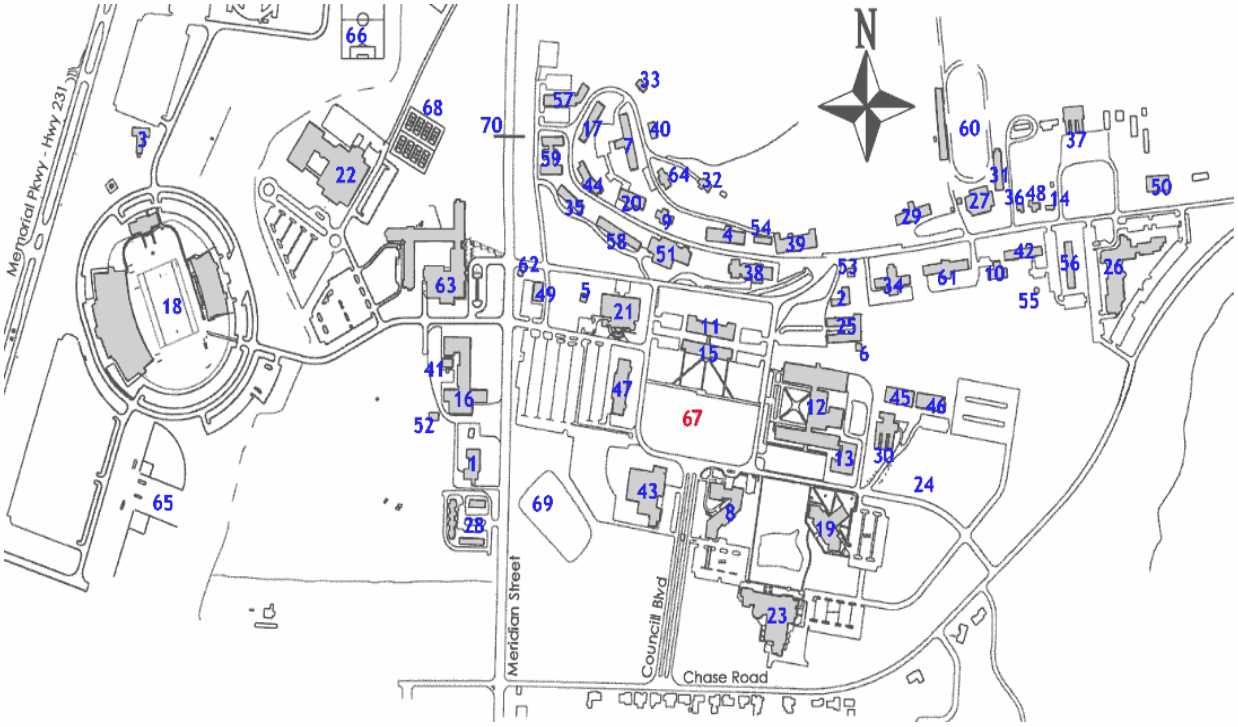


Alabama A&M University

School of Graduate Studies

Alabama A&M University

CAMPUS MAP



1	Crump Agricultural Mechanics Bldg.	26	Foster Living and Learning Center	51	Prentice Dining Hall
2	Old Band and Drafting Building	27	Frank Lewis Gym	52	ROTC Skills Center
3	Old Barn and Silo	28	Gravitt Apartments	53	Campus Police Office
4	Bibb Graves Hall	29	Grayson Hall	54	Old Security Office
5	Boiler #1	30	Greenhouses	55	Old Silo
6	Boiler #2	31	Gym Annex	56	Stephens Hall
7	Buchanan Hall	32	Hillcrest (President's Home)	57	Terry Hall
8	School of Business	33	Honors Building	58	Thigpen Hall
9	Carnegie Hall	34	Hopkins Hall	59	Thomas Hall
10	Carpentry Building	35	Hurt Hall	60	Old University Stadium
11	Carter Science Hall	36	Infirmary	61	Walker Wood Hall
12	Carver Complex	37	Kendrick Maintenance Facility	62	Water Pump House
13	Carver Annex	38	Ralph H. Lee University Center	63	West Campus Living and Learning
14	Councill Credit Union	39	McCalep Vocational Building	64	State Black Archives
15	Chambers Science Building	40	McCormick Building	65	Baseball and Softball Fields
16	Councill Training Center	41	Mechanical Engineering Annex	66	Soccer Field
17	W.H. Councill Hall	42	Morris Hall	67	The Quad
18	Louis Crews Stadium	43	Morrison Building	68	Tennis Courts
19	Dawson Building	44	Palmer Hall	69	The Duck Pond
20	Drake Dining Hall	45	T.R. Parker Building	70	Covered Footbridge
21	Learning Resources Center	46	T.R. Parker Annex		
22	T.M. Elmore Gym	47	Patton Hall		
23	School of Engineering	48	Polk Cottage		
24	Forestry and Plant Science	49	Post Office		
25	Foster Irradiation Center	50	Poultry Science Building		

ALABAMA AGRICULTURAL & MECHANICAL UNIVERSITY

PROFILE

Location:	Normal, Alabama Northeast sector of Alabama 89 miles south of Nashville, TN
Faculty	276 faculty (full-time)
Students:	5814 (Fall 2010) 15 percent graduate 874 graduate students
Academic Year:	Two semesters Optional summer terms
Office Hours:	8:00 a.m. to 5:00 p.m. M-F
Telephone:	256-372-5266 main number 256-372-5267
Fax:	256-372-5269
Internet:	grad.schools@aamu.edu
Web:	http://www.aamu.edu/gradstudies/
Address:	900 Meridian Street, Normal, AL 35762

ACCREDITATION

Alabama Agricultural and Mechanical University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools (1866 Southern Lane, Decatur, Georgia 30033-4097; telephone number: 404-679-4501) to award the baccalaureate, master's, specialist in education, and doctoral degrees.

PURPOSE OF CATALOG

Alabama Agricultural and Mechanical University Graduate Catalog is the primary general information publication for the University. It is intended to provide information for students and other persons interested in academic programs and organizations of Alabama Agricultural and Mechanical University. The information and educational requirements represent a flexible program that may be altered where such alterations are thought to be in the mutual interest of the university and its students.

The provisions of the catalog do not constitute a contract which may be accepted by students through registration and enrollment in the university. The University reserves the right to add or drop programs and courses, to institute new requirements when such changes are desirable and to change the calendar that has been published. Unless otherwise indicated, such changes will be applicable to all students enrolled at the time the change is adopted as well as to all students who re-enroll after a period of absence. Every effort will be made to minimize the inconvenience such changes might create for students.

Alabama Agricultural & Mechanical University offers equal opportunity in its employment, admissions and educational activities.

TABLE OF CONTENTS

Campus Map …… 1

Institutional Profile …….. 2

General Information …… 7

Academic Support …… 9

Student Services ……... 10

Admissions Requirement ……... 12

Registration, Federal Regulations …… 16

Fees and Expenses …… 16

Residency Status …….. 17

Refund Polices ……. 18

Financial Aid …… 19

Academic Policies …… 20

Thesis/Dissertation Requirements …… 25

Degree Program Requirements …… 27

Course Descriptions …… 98

Directory of Administrative Officials ……. 175

Directory of Graduate Faculty …… 176

ALABAMA AGRICULTURAL AND MECHANICAL UNIVERSITY CALENDAR 2011-2012

Fall Semester 2011

August 13, Saturday	New Students Arrive
August 15, Monday 4:00 PM – 6:30 PM (First Session) and 6:30 PM (Second Session)	Graduate School Orientation, Clyde Foster Multipurpose Room, School of Business
August 15, Monday	Continuing students arrive
August 15-16, Monday-Wednesday	Registration, academic advisement and schedule adjustment period
August 16, Tuesday 10:00 AM	Graduate international student orientation, Clyde Foster Multipurpose Room, School of Business
August 17, Wednesday	Fall 2011 classes begin
August 18, Thursday	Last day to complete financial arrangement before purging of fall schedule
August 18, Thursday	Late registration and drop/add begins
August 18, Saturday	Oral Thesis/Dissertation examinations begin
August 26, Friday	Last day to register or add courses
September 5, Monday	Labor Day
September 23, Friday	Last day for graduate students to submit application for December without paying late fee
September 23, Friday	Last day to submit application to take the comprehensive exam in the fall of 2011
October 3, Monday	Last day to remove incomplete grades for December graduates
October 3, Friday	Oral Thesis/Dissertation examinations end
October 24-26, Monday – Friday	Comprehensive exams for graduate students
November 1-22	Academic advisement period and registration for Spring 2012
November 11, Friday	Last day to drop classes or to withdraw from the University
November 11, Friday	Final Thesis/Dissertation and Thesis/Dissertation Proposals due in the Office of Graduate Studies
November 23-25, Wednesday-Friday	Thanksgiving Recess
November 28, Monday	Classes resume
November 28, Monday	Last day to submit application for May 2012 graduation.
November 28, Monday	Last day to submit applications for spring 2012 comprehensive exams.
December 2-8, Friday-Thursday	Final examinations
December 9, Friday	Commencement
December 22-26, Thursday-Monday	Offices closes for holiday recess

Spring 2012

January 4, Wednesday	New students Arrive
January 4, Wednesday 4:00 PM – 6:00 PM	Graduate School orientation
January 4, Wednesday, 1:00 PM – 5:00 PM	Continuing students arrive
January 4-5, Wednesday –Thursday	Registration, academic advisement and schedule Adjustment period.
January 5, Thursday	Last day to complete financial arrangements before purging of spring schedule
January 6, Friday	Late registration and drop/add begins
January 7, Saturday	Saturday classes begin
January 7, Saturday	Oral thesis examinations begin
January 9, Monday	Classes begin
January 13, Friday	Last day to register or add a class
January 16, Monday	Martin Luther King, Jr. Holiday
January 20, Friday	Graduate students: deadline for submitting application for May 2012 Graduation
January 20, Friday	Graduate Students: Deadline for submitting application for Spring 2012 Comprehensive Exams
February 20-24, Monday – Friday	Registration for summer session 2012
March 3-9, Saturday-Friday	Mid-term examinations
March 5-10, Monday-Saturday	Comprehensive Exams for graduate students
March 12-17, Monday-Saturday	Spring recess
March 19, Monday	Last day to submit application for July 2012 graduation
March 19, Monday	Last day to submit application for summer 2012 comprehensive exam
April 5, Thursday	Oral thesis examinations end
April 9, Monday	Last day to drop classes and/or withdraw from the university
April 9, Monday	Final thesis/dissertation due in the Office of Graduate Studies
May 2-5, Wednesday-Saturday	Final exams for graduating students
May 4, Friday, 9:00 AM	Founder's Day
May 4-10, Friday-Thursday	Final exams
May 7, Monday	Grades for graduating seniors due in Graduate Studies office
May 11, Friday	Commencement

Summer Session 2012

May 22-23, Tuesday-Wednesday	Registration, academic advisement and schedule adjustment period
May 23, Wednesday	Last day to complete financial arrangements
May 24, Thursday	Late registration and drop/add period begins
May 26, Saturday	Classes begin
May 26, Saturday	Oral thesis examinations begin
June 1, Friday	Last day to register or add a course
June, 18-22, Monday-Friday	Comprehensive examinations (graduate students)
July 2, Monday	Last day to complete oral thesis examinations
July 3, Tuesday	Final thesis/dissertation due in Office of Graduate Studies
July 4, Wednesday	July 4th holiday
July 5, Thursday, 8:00 AM	Classes resume
July 6, Friday	Last day to drop classes and withdraw from the University
July 19-21, Thursday-Saturday	Final exams

GENERAL INFORMATION



ABOUT THE UNIVERSITY

Alabama Agricultural and Mechanical University (AAMU) was organized in 1875 through the untiring efforts of its founder and first President, William Hooper Council, an ex-slave. The school doors opened on May 1, 1875, as the Huntsville Normal School. Industrial education was added in 1878, generating widespread attention, which helped to garner financial support from the Slater and Peabody Funds and private contributors. Under the second Morrill Act of 1890, AAMU became a land grant institution and moved to its present location on "the Hill" in 1891. The University has undergone four name changes during its 130 years of existence. Upon earning junior college status in 1919, the name was changed to the State Agricultural and Mechanical Institution for Negroes. Senior college level courses were added in 1939; the first graduating class received the bachelor's degree in 1941, and the name was changed to Alabama A&M College in 1949. The college became a fully accredited member of the Southern Association of Colleges and Secondary Schools in 1963. In 1969, the name was changed to Alabama Agricultural and Mechanical University.

THE CAMPUS

Alabama Agricultural & Mechanical University is a dynamic, public comprehensive liberal arts institution located in Normal, just minutes from Huntsville, Alabama. The University comprises 70 buildings on 2,000 acres. A large agricultural research farm is situated about 10 miles off-campus in Hazel Green, Alabama, and the University's Agribition Center is also located about one mile east of the main campus. Affiliated offices, such as the North Alabama Center for Educational Excellence, are also located several miles from campus.

MISSION STATEMENT

Alabama Agricultural and Mechanical University reflects the uniqueness of the traditional land-grant institution, combining teaching, research service, liberal arts, and vocational fields. The University offers baccalaureate, master's, and doctoral degrees that are current with the times to all qualified and capable individuals who are interested in further developing their technical, scientific, professional, and scholastic skills and competencies. The university operates in the three-fold function of teaching, research, and extension and other public services. Alabama A&M University, a center of excellence, provides an educational environment for the emergence of scholars, scientists, leaders, critical thinkers, and other contributors to a global society. In cooperation with business, industry, governmental agencies, and other private and community-based institutions, Alabama A&M University provides a laboratory where theory is put into practice globally. Alabama A&M University is committed to:

1. Excellence in education and the creation of a scholarly environment in which inquiring and discriminating minds will be nourished.
2. Education of students for effective participation in local, state, regional, national, and international societies.
3. Search for new knowledge through research and its applications.
4. Provision of a comprehensive outreach program designed to meet the changing needs of the larger community outside the campus.
5. Programs necessary to adequately address the major needs and problems of capable students who have experienced limited access to education.
6. Integration of state-of-the art technology into all aspects of University functions.

THE SCHOOL OF GRADUATE STUDIES

The basic purpose of the Graduate School is to offer college graduates an opportunity to extend their general and technical knowledge in specific fields; to increase their professional skills; and to become acquainted with the tools and practices of research. All students in the School of Graduate Studies work under the direction of the Graduate Council. No major deviations from published graduate regulations are permissible unless they are approved by the Council.

STUDENT LIFE

Alabama A&M University's mission is to provide "excellence in education and a scholarly environment in which inquiring and discriminating minds may be nourished." But this mission extends beyond the classroom walls into student and campus life. To aid in the overall educational experience, the A&M Office of Residential Life and Housing works diligently to provide quality and comfortable living accommodations with a plethora of amenities to make your stay convenient. During your stay at A&M, enjoy your residential life experience and take full advantage of this educational opportunity. Extra-curricular clubs and activities help build the relationships that are part of the college experience. Other services enrich the classroom experience, or provide for your health, well-being, and safety while you are a student at Alabama A&M University.

ALUMNI

Among an extensive list of distinguished alumni are: John Stallworth, former Pittsburgh Steelers and Pro Football Hall of Famer, William E. Cox, publisher of *Diverse Issues in Higher Education*, and Ruben Studdard, former "American Idol."

ACADEMIC SUPPORT AND FACILITIES

ACADEMIC COMPUTING

AAMU has six computer laboratories which offer the latest in technology and access to the Internet. The computer labs are open to all registered students and are free of charge. Typical applications include desktop publishing, database management, spreadsheet analysis, graphics, word processing, statistical analysis, and mathematical computation. Some labs support additional software such as AutoCAD and other design applications. All main campus buildings and residence halls are connected to the campus network and Internet through fiber optic cable. Students are provided with consolidated computing services, including web based email.

J.F. DRAKE MEMORIAL LEARNING RESOURCES CENTER (LIBRARY)

The Joseph F. Drake Memorial Learning Resources Center/Library, named in recognition of Alabama A&M University's fourth president, 1927 to 1962, was dedicated in 1968. The Joseph F. Drake Memorial Learning Resources Center (LRC) became the Learning Resources Center in September of 1973 with the merger of the traditional library and the media center. The LRC makes available media materials such as videotapes, films, filmstrips, audio recordings, slides, and transparencies as well as manuscripts, books, journals, government documents, the Internet, e-mail access, and newspapers within a central location. A computer lab, online information retrieval, EDU 104 Bibliographic Instruction course, library orientation and tours, as well as Online Public Access Catalog (OPAC) are among the state-of-the-art services and resources offered by the LRC. The LRC supports the curricular and research needs of the AAMU community through the development of pertinent collections and the provision of services designed to facilitate access to information. The principal research collections number more than 400,000 volumes and more than 1,800 journal titles as well as videocassettes, audio cassettes, and compact discs which are housed in a centrally located facility. The interior arrangement allows easy access to all resources and services and seats approximately 1,000 patrons.

INTERNATIONAL PROGRAMS

Alabama Agricultural and Mechanical University welcomes international students and the diverse backgrounds they bring to our campus, and encourages all students to study abroad. The International Student Center works with students, faculty and staff across campus to promote international and cross-cultural learning. The Office also assists international students by providing information and counseling to non-immigrant student visa regulations and processes, housing, financial and work issues, and adjustment to life in the U.S.

CAREER DEVELOPMENT SERVICES

Career Development Services is a centralized office with a mission to assist students and alumni in crystallizing career objectives and preparing for employment opportunities by providing planning services which will enable students to move confidently from the academic environment to the world of work. Some of the services provided by Career Development Services are:

1. On-campus interviews for sophomores, juniors, seniors, graduate students, and alumni with local, state, and national employers.
2. Annual mini-workshops and individual counseling sessions for seniors, alumni, and co-op/internship, applicants on resume and cover letter writing, interviewing skills, and job search strategies.
3. Job listing services which provide current information about specific employment opportunities.
4. Listings of part-time and summer employment for off-campus jobs.
5. Classroom presentations on employment trends, resume writing, job search techniques, and career planning.
6. Cooperative Education (undergraduate/graduate) and summer internships.
7. CDS Career Resource Library. Resources include company binders, videotapes, books, CD's, and journals.
8. Credential services for teacher education candidates.
9. Job referral service.

STUDENT SERVICES

DEPARTMENT OF PUBLIC SAFETY

The Department of Public Safety is responsible for protecting life, property and enforcing the laws of the State of Alabama and Alabama A&M University. The Department mandates the preservation of peace and public order, crime prevention and the apprehension and prosecution of violators of the law. The Department of Public Safety is committed to the philosophy of community-oriented law enforcement and pledges the highest professional standards while providing an environment conducive to academic excellence. In addition, the Department works cooperatively with other local law enforcement agencies to investigate violations of campus regulations and policies and state laws. The Department of Public Safety is committed to providing quality service 24 hours a day.

STUDENT HEALTH SERVICES (SHS)

Alabama A&M University's Student Health Services (SHS), located in the little white building across from Morris Hall Dormitory, serves to protect and maintain the health of all currently enrolled students. The Student Health Services is an outpatient center and provides both clinical and educational services for all students. Should tests, x-rays, and other services beyond the scope of the Center be recommended, the Student Health staff will assist students with a referral and insurance billing. Any ongoing medical condition such as, but not limited to, diabetes, hypertension, epilepsy or migraine is the responsibility of the student's primary care physician (PCP). Student Health Services will monitor the student's health in collaboration with the PCP. Student Health Services is staffed by physicians, medical assistants, nurses and a nurse practitioner. The Center's hours of operation are 8:00 a.m. to 5:00 p.m., Monday – Friday; it is closed on weekends and holidays. Lunch hours are 2:00 p.m. to 3:00 p.m. Any student needing medical attention should report to SHS during its hours of operation. If a student has an acute illness after hours he or she should seek treatment at University Walk-In Family Care located at 501 Wynn Drive. The telephone number is (256) 890-8700. The office hours are Monday thru Friday, 8 a.m. – 7 p.m. Saturday, Sunday, and holidays, 9 a.m. – 5 p.m. In the event of an emergency, the student should seek treatment at the Huntsville Hospital Emergency Room located at 101 Sivley Road. The student should return to the Student Health Center the next business day for a referral.

OFFICE OF VETERAN AFFAIRS

The Office for Veteran Affairs serves as a resource center and an advocate for veterans. General information, counseling and professional referrals are available for veterans. The Office of Veteran Affairs works closely with the U.S. Veteran's Administration Office in the disbursement and coordination of appropriate documents and benefits.

PARKING

All motor vehicles parked on the campus of Alabama Agricultural & Mechanical University must be registered with campus police. A Student Parking Permit Form is available during the annual registration process or at campus police.

STUDENT IDENTIFICATION CARD

The identification card is the student's official passport. It should be carried at all times. Loss of identification cards should be reported immediately to the Financial Services Office located on the first floor of Patton Hall. The replacement charge is $50.00 for boarding students and $25.00 for non-boarding students. The ID card is used for checking out books and other resources from the Learning Resources Center. It is also used for admission to many University events. Lending this card to anyone, or failure to present it when requested by authorized personnel, is a violation of University policy.

OTHER STUDENT LIFE FACILITIES AND SERVICES

CAFETERIA

The University requires all persons living in residence halls to purchase a meal card. The cost of the meal card is part of the overall package of room and board and is non-refundable**.** Meal Cards are non-transferrable and must be used during the period for which they are issued. A fee of $50.00 will be charged for replacing a lost or damaged Meal Card. In the University's continuing effort to meet students' needs, special consideration will be given to students who have a medically-related dietary problem. Special diets will be prepared upon presentation of a statement from the University physician or nurse practitioner. Students should see the Food Services Director during the first week of classes to arrange for special diets. Non-boarding students may purchase a Meal Card at the same rate as boarding students. A $50.00 replacement fee will be charged for a lost or damaged Meal Card.

THE UNIVERSITY BOOKSTORE

The University Bookstore is located on the second floor of the University Center. The bookstore is open Monday through Friday, 8:00 a.m. – 5:00 p.m. Textbooks may be purchased from the bookstore located in the Ralph H. Lee Student Center. The bookstore accepts the following method of payments: cash, cashier's check, traveler's check, personal checks, American Express, Discover, MasterCard, and VISA credit cards.

GRADUATE ADMISSIONS

ADMISSIONS POLICIES

Applicants for admission to graduate study at Alabama Agricultural & Mechanical University must hold a bachelor's degree from a regionally accredited college or university (or the equivalent of a four-year baccalaureate degree from another country). In many degree programs, the number of applications received from individuals qualified for graduate study regularly exceeds the number of students who can be accommodated. In such cases, only the most highly qualified are offered admission. The number of spaces available in various departments is limited according to the availability of faculty, special resources, and funds for students requiring financial assistance. The decision to admit an applicant is based primarily on a combination of the following criteria:

1. Quality of undergraduate and previous graduate work. The Graduate School requires as a minimum a "B" average (3.0 on a 4.0 scale in all undergraduate courses taken at a regionally accredited college or university).*
2. GRE/GMAT Scores.
3. Letters of Recommendation that speak to the applicant's potential for successful completion of the degree program to which the applicant is applying.
4. Supplemental evidence of potential success for graduate studies. Some programs require other evidence of potential for success in graduate study, such as a portfolio, personal interviews, examples of scholarly work, and or research.
5. Available space in the program, and competitive rating within the applicant pool for the given term of entry.

APPLICATION FOR ADMISSION MUST INCLUDE THE FOLLOWING:

1. Completed "official" Alabama Agricultural & Mechanical University Application for Admission to Graduate Studies and a non-refundable application fee.♦
2. Two official transcripts from each collegiate institution attended directly mailed to the School of Graduate Studies Office, P. O. Box 998, Normal, AL 35762.
3. Official test scores of the Graduate Record Examination (GRE) are required for all programs except for an MBA for which the Graduate Management Admission Test (GMAT) scores are required (University Code: 1003). Test scores over five years old or results brought by the applicant to the Office of Graduate Studies are not accepted.
4. Two letters of recommendation on official Alabama Agricultural & Mechanical University "Letter of Recommendation" forms. These recommendations should speak to the applicant's potential for successful completion of the graduate program to which he/she is applying. Usually, letters of recommendation are from the applicant's former professors who are able to give an in-depth evaluation of the applicant's strengths and weaknesses with respect to academic work. Additional recommendations may come from employers or supervisors who are familiar with the applicant's work experience.
5. Details on any professional work experience.
6. Applicants must demonstrate adequate academic preparation in their proposed area of study. Those with deficiencies in academic preparation may be required to take additional work to strengthen their backgrounds.
7. Other requirements specified by the particular degree program to which the applicant is applying.

*Adequate performance in prerequisite courses is also required (i.e. all grades in these courses must be a "B" or above).

♦Graduates of Normal Konnect Members do not have to pay the application fee.

APPLICANTS FOR ADMISSION MUST MEET THE FOLLOWING MINIMUM REQUIREMENTS:

Regular/Full Admission Status

To be admitted unconditionally, applicants must:

1. Have a minimum grade point average of 2.5 on a (4.0 GPA scale) at the undergraduate level from a regionally accredited college/university.
2. Submit a minimum score of 400 on the verbal and 400 on the quantitative portions of the GRE. Together the combined score must be a minimum of 800. Some programs may require higher GRE scores. MBA students are required to have a minimum GMAT score of 350.
3. Hold a baccalaureate degree or its equivalent from a regionally accredited college or university.
4. Meet all program-specific requirements.

NOTE: Individual departments may require higher GRE/GMAT scores or other specific requirements; see departmental sections for details.

Conditional Admission Status*

Students who do not meet one of the two main requirements (GPA or GRE/GMAT test scores) for regular admission may be admitted conditionally. Students admitted conditionally are allowed one semester to fulfill the Graduate Record Examination (GRE) or Graduate Management Analytical Test (GMAT) requirement. A student in conditional admission status will not be allowed to enroll in more than 12 credit hours specified by their program of study. Students are required to earn a minimum grade of "B" in these courses to progress to regular admission. Students failing to meet these standards can be at the discretion of the Dean of Graduate Studies dismissed from the Graduate program.

The Office of Graduate Studies updates the records of students, who were admitted conditionally, during the first two weeks of each semester and during the following periods:

- April 15-25
- July 15-25
- November 15-30

To be cleared, conditionally admitted students must have met all of the conditions stipulated in the original letter of admission from the Graduate School. The Office of Graduate Studies will not process any student seeking a change of status outside of the dates listed above.

Provisional/Special Admission Status*

Students admitted on a provisional enrollment basis fail to meet two of the main requirements (GPA and GRE test score) for regular admission. A student admitted provisionally will not be allowed to enroll in courses other than those specified by his/her advisor. Students granted provisional admission are limited to a maximum of 9 credit hours. Each school may establish specific course requirements for the provisional student's first term of enrollment. After completing a minimum of nine credits with a grade point average of 3.00 or better and meeting the course and admissions requirements set by the Graduate School (and the respective degree program) the provisional designation will be removed. Students entering Alabama A&M University on a provisional basis, who fail to achieve a 3.00 grade point average, for the first term of enrollment, are subject to immediate dismissal.

Non-Degree Status

This is a category for students who do not intend to seek an advanced degree from Alabama A&M University. Persons seeking to enroll as non-degree students must possess an undergraduate degree from a regionally or nationally accredited institution. They also must have a cumulative undergraduate GPA of 2.5 (on a 4.0 scale). Non-degree students usually include:

1. Those who intend to transfer graduate credit earned at Alabama A&M University to other institutions.
2. Those who intend to use graduate credits earned for professional certification.
3. Those that enroll for personal satisfaction.

A non-degree student who subsequently seeks full admission must satisfy requirements for admission to the specific program. Non-degree students are only allowed to transfer a maximum of 9 semester hours if they get approval to enter an AAMU graduate degree program.

*Deficiency or remedial courses do not count toward The completion of graduate degree requirements.

ADMISSION OF STUDENTS FROM OTHER COUNTRIES

Alabama A&M University welcomes applications from students from other countries. Applications should be sent three to six months before the registration date for each term. All applicants must meet Graduate School and departmental requirements as described in this catalog. In addition, international students must submit an official academic transcript accompanied by official/or notarized English translations. These documents must be sent directly from the institution(s) attended. Personal copies are not accepted. All non-English transcripts must be translated and evaluated by the World Education Services (WES). This review must provide conclusive evidence that the applicant is the recipient of a degree comparable to the American bachelor's degree, which normally terminates 16 years of full-time study, 4 years of which are at the post-high school level. The official transcripts must show all post-high school work attempted, including grades or marks in each course, examination grades and standing in examinations and classes, or whatever other credentials are available to give a clear description of the student's academic accomplishments. Other requirements for international students include:

1. Scores of the Graduate Record Examination (GRE) or Graduate Management Admission Test (GMAT). Test results must be sent directly to the School of Graduate Studies from the Educational Testing Services (Alabama A&M University Code: 1003).
2. A certified financial statement indicating the applicant's ability to pay for the cost of education. An original/official bank statement no more than six months old at the time of registration must be submitted to the Graduate School in order to obtain the I-20 for the F-1 student visa. In certain cases, advance payment of tuition and fees may be required.
3. The Test of English as a Foreign Language (TOEFL) or the International English Testing System (ELS) Certification Examination is required if the applicant's first language is not English; the minimum score for admission on the TOEFL internet-based version is 500 (paper-based test) or 61 (internet-based test), and the 5.5 on the ELS Certification Examination. The Alabama A&M University Code is 1003.

The Educational Testing Service, Princeton, New Jersey 08540, administers these tests in testing centers all over the world. Further information about the test and testing dates may be obtained at www.ets.org or from the nearest U.S. Embassy, Consulate or United States Information Service, United States Educational Commission and foundations abroad and bi-national centers.

Admission to graduate study does not carry any implication concerning the award of financial aid. Assistance for graduate students in the form of assistantships is available from some departmental programs and administrative units, but applicants from abroad are in competition with U.S. students for available awards. The University reserves the right, even after the arrival and enrollment of students from another country, to make individual curricular adjustments whenever particular deficiencies or needs are found. Students may be required to take such courses without credit and at their own expense. This could also apply to additional course work in English as a foreign language whenever necessary.

NOTE: All international students are required to maintain an international student health insurance once admitted to the University. Coverage for a spouse and/or dependents is available and must be purchased separately at the Student Health Center. A brochure explaining the coverage of the student health insurance program is available at the Student Health Center.

READMISSION

A student who has not registered for at least three credits during a twelve-month period will be transferred to inactive status and must file an application for readmission. Readmission is not automatic, nor does it necessarily reinstate the student in the status accorded prior to becoming inactive. Students not enrolled over a twelve-month period, who have not exceeded twenty-four months may apply directly to the Dean of Graduate Studies for readmission. Students not registered in more than twenty-four months must submit a new admission application (along with required fees and appropriate credentials) directly to the Office of Graduate Studies and have their credentials reviewed by their respective department before a decision on readmission can be rendered.

ADMISSION OF UNDERGRADUATES TO GRADUATE COURSES

Senior undergraduate AAMU students who have completed all required courses, and are within 6 hours of graduation may enroll for a maximum of six semester hours of graduate work. Students seeking to enroll in a Graduate course must have a 2.5 GPA (on a 4.0 scale) and a letter from their academic advisor granting permission to enroll a graduate course.

When graduate courses are taken for undergraduate credit, they may not be used as part of a future graduate program. Seniors who are completing their final semester at other institutions will be considered for admission when they present the following documents:

1. Official undergraduate transcript.
2. Letter from the institution's Registrar stating the student has applied for graduation and will graduate that semester if the courses enrolled in are successfully completed.

Admission, if granted, will be contingent upon the receipt of the diploma or a letter from the Registrar indicating that the student has completed the requirements for the degree and when the degree will be awarded. The student will also be required to provide the School of Graduate Studies, Office of the Dean with an official transcript within 30 days of registration.

REGISTRATION, FEDERAL REGULATIONS, FEES AND EXPENSES

DISPOSITION OF APPLICATION MATERIALS

Credential or supporting materials submitted for admission to Graduate School become the property of Alabama Agricultural & Mechanical University and are not returned. Copies will not be provided to the student or to a third party outside of the University even at the applicant's request. Copies may be provided to appropriate offices at the University in the interest of academic matters or financial awards relative to the applicant.

REGISTRATION

Once admission has been granted, students are required to complete registration within the set time period stipulated by the university calendar. It is imperative that students enter accurate and complete information on all registration cards/forms.

CROSS-REGISTRATION

Alabama Agricultural & Mechanical University and the University of Alabama at Huntsville offer graduate students in the Biological Sciences the opportunity to cross register. Each department retains the authority to establish the prerequisites for admission and the maximum enrollment in its home courses and to grant priority in registration to its own graduate students.

GENERAL GRADUATE DEGREE REGULATIONS

Every graduate student is expected to become familiar with the general university and School of Graduate Studies' regulations and with the specific regulations of the major department of graduate study and to accept responsibility for the completion of degree requirements as prescribed.

FEDERAL REGULATIONS

Alabama A&M University does not discriminate on the basis of race, color, religion, ethnicity, national origin, age, sex, marital, or handicapped status. This commitment is made by the University and required by federal, state, and local laws and regulations, including Title IX, 86.9.Each student at the University has the right to inspect his/her student records as per Federal Register, Vol. 40 Number 3, Part III, Privacy Rights of Parents and Students.

COURSE ENROLLMENT

A maximum of nine graduate credit hours are considered a full academic load during the regular academic semesters, Fall & Spring. However, to maintain a graduate assistantship (Teaching or

Research) a student must be enrolled in a minimum of 6 graduate hours offered by Alabama A&M University during the regular academic semester. During summer sessions students must enroll in 3 semester hours offered by Alabama A&M University to qualify for a graduate assistantship.

FEES AND EXPENSES

Tuition rates and fees are posted on the University's web site. The University reserves the right to change fees, charges, rules and regulations without prior notice.

RESIDENCY STATUS

REQUIREMENTS FOR RESIDENCY

For the purpose of assessing tuition and fees, AAMU classifies students as Alabama residents or non-residents. Residency, for this purpose, means domicile; domicile means living in the state of Alabama with the intent to make Alabama a fixed and permanent home. For example, students may have more than one home address but only one domicile. All out-of-state students must pay non-resident fees. A student who comes to Alabama for the purpose of attending an institution of higher education is considered a non-resident student. Registration for voting, obtaining an Alabama driver's license, purchasing of property, and employment in Alabama are considered necessary components of establishing residency. Students from outside of Alabama will be assumed to be non-resident students, unless they affirmatively fall within the criteria specified below.

RESIDENCY CLASSIFICATION FOR TUITION PURPOSES

In Alabama, as in all other states, tuition at publicly supported four-year universities is higher for non-resident students than for resident students. The rules used in determining residency seek to ensure that only legal Alabama residents are assessed the resident fee. Many of these rules appear below:

1. Residency is a person's true, fixed, and permanent home and place of habitation. It is the place where a person intends to remain and to which the person expects to return when the person leaves without intending to establish a new domicile elsewhere. In order to establish a domicile in Alabama, a person must maintain a predominant physical presence in Alabama for 12 consecutive months after moving to the state.

2. No emancipated minor or person 19 years of age or older shall be deemed to have gained or acquired Alabama residency status for tuition purposes while attending any educational institution in this state, unless the individual makes a clear demonstration that he/she has established residency in this state.

3. A financially dependent person who is claimed as a dependent by another person who has not established and maintained an Alabama residency shall be presumed to be a nonresident. This presumption may be overcome by evidence of the student's long-standing presence in Alabama and demonstration of other factors (For complete details, contact the Office of the Registrar)

4. A full-time employee of AAMU, his/her spouse, and dependent children under age 25, may register for the payment of resident fees, even though they have not been residents of Alabama for the preceding 12 months.

5. Military personnel and their dependents stationed in Alabama and on active military duty are entitled to Alabama residency classification for tuition purposes.

For full details about residency, contact the Office of the Registrar.

CHANGES IN RESIDENCE STATUS

Applicants who are classified by AAMU as non-residents but who later claim to qualify as legal bona fide residents of Alabama must file a Petition for Alabama Residency Classification for Tuition Purposes with the Office of Graduate Studies.
To receive consideration, petitions for change of status and all supporting documentation must be filed with the Office of Graduate Studies for the prospective session on or before:

Fall Semester ..... July 15
Spring Semester ..... Nov. 15
Summer Sessions ..... April 15

REFUND POLICIES

TUITION AND FEES

The tuition and fees are refundable in accord with the following schedule when a student withdraws from the University after completing the registration process:

Fall and Spring Semesters

From the first day of class through the seventh calendar day: 90%.

From the eighth calendar day through the fourteenth calendar day: 80%.

From the fifteenth calendar day to the twenty-first calendar day: 70%.

From the twenty-second calendar day through the thirtieth calendar day: 60%.

After the thirtieth calendar day, there are no refunds.

Summer Semester

Before classes start: 90%.

From the first day of class through the fifth day of class: 75%.
From the sixth day of class through the twelfth day of class: 50%.

After the thirteenth day of class, there are no refunds.

A full refund will be issued, if a course is cancelled by AAMU. Fees paid with credit card will be credited to the customer's card.

FINANCIAL AID

TYPES OF FINANCIAL AID

Alabama A&M University attempts to provide financial support for as many graduate students as possible. The University has a complete financial aid program composed of the following forms of aid:

1. Assistantships/Fellowships (research and teaching assistantships).
2. National Direct Student Loans.
3. Work-study jobs.
4. Guaranteed student loans.

Assistantships/Fellowships

A number of graduate fellowships and Assistantships are available in departments that offer graduate degree programs. Students interested in graduate fellowships should address inquiries to: The Dean, School of Graduate Studies, Alabama Agricultural and Mechanical University, P.O. Box 998, Normal, AL 35762 or inquire directly with the Department/Programs they desire to enter.

Loans and Part-Time Employment

Student part-time jobs are open to graduate students. Students interested in loans or part-time employment may obtain detailed information by writing to: Director of Financial Aid, Alabama Agricultural and Mechanical University, P.O. Box 907, Normal, Alabama 35762.

Graduate School Scholarship

The University has designated a limited number of scholarships for graduate students. These scholarships are awarded through an application process. Applications are available in the Graduate Office. In addition, many degree programs also have a limited number of scholarships available for graduate students. For information of departmental scholarships, please contact individual programs for details.

ACADEMIC POLICIES

QUALITY OF WORK

The candidate must do work of high quality and must earn a cumulative average of "B" (3.00 GPA) or better in courses for which credit is given towards the graduate degree. No grade below "C" is acceptable for graduate credit; the maximum number of C's that will be accepted for graduate credit is one.

PROBATION

Students enrolled in graduate degree programs offered by Alabama Agricultural & Mechanical University are expected to maintain a 3.00 cumulative grade-point average. Students whose cumulative grade-point average fall below 3.0 or who fail to make satisfactory progress may be placed on academic probation. Graduate students placed on academic probation are required to restore their overall grade-point average to 3.0 within 9 additional semester hours of graduate work, including repeated and dropped courses. Failure to do so may result in dismissal from graduate study.

DISMISSAL

Students wishing to be readmitted following a dismissal must wait at least one year before applying. (One year is defined as two semesters or one semester and one summer session.) During this period, they are ineligible for admission to any program at Alabama Agricultural & Mechanical University. However, a grade below B after readmission in any course will result in immediate dismissal.

STUDENT APPEAL PROCESS

Any graduate student may appeal for variations in university-wide graduate policies and regulations by submitting a written grievance to the Dean of Graduate Studies. Decisions on grievances are rendered by the Dean of Graduate Studies and by the Graduate Appeals Committee. Instructions for filing a grievance are available in the Office of Graduate Studies.

ACADEMIC INTERGRITY

The integrity of the academic enterprise of any institution of higher education requires honesty in all aspects of its endeavor. Maintaining academic integrity is therefore the responsibility of all faculty, staff, and students at Alabama Agricultural & Mechanical University. Academic dishonesty is prohibited in all programs of Alabama A&M University. Sanctions may be imposed on any student who has committed an act of academic dishonesty.

Definitions of Academic Dishonesty

Academic dishonesty includes but is not limited to:

1. *Cheating* - use, or attempted use, of trickery, artifice, deception, breach of confidence, fraud, or misrepresentation of one's academic work. Submission of the same work in its entirety for credit in two courses without obtaining the permission of the instructors constitutes cheating. Collaborating with others when not explicitly allowed by the instructor constitutes cheating.
2. *Fabrication* - falsification or invention of any information or citation in any academic exercise (including the graduate school application process).
3. *Plagiarism* - representing, whether intentionally or unintentionally, the words or ideas of another as one's own work in any academic exercise.
4. *Facilitating dishonesty* - helping or attempting to help another commit an act of academic dishonesty, including substituting for another in an examination, misrepresenting oneself, or allowing others to represent as their own one's papers, reports, or academic works.

STATUTE OF LIMITATIONS

There is a statute of limitation on all graduate degree program courses of six years, with the exception of Urban and Regional Planning, Communicative Sciences & Disorders, and Social Work, which have seven years. The statute of limitation for all Ph.D. programs is eight years. In extraordinary cases, students may apply for an extension of the statute of limitation. The request must be approved by the department and submitted to the Dean of Graduate Studies for final action. Requests for an extension of the statute of limitations must be accompanied by a written departmental assessment of the work and its relevance to the current curriculum mandates of the degree program.[♣]

CLASS ATTENDANCE

All students are expected to attend classes on a regular basis. No absences of any nature will be construed as relieving the student from responsibility for the completion of all work assigned by the instructor. A student registering late for a class will be responsible for all work assigned and material covered during the class sessions that were missed. The first class meeting of an evening class, which meets one night per week for15 weeks, represents about seven percent of the total class time; this first meeting is a regular class. If students wait until the second class meeting to enroll, the class could be cancelled due to inadequate enrollment at the first class meeting. During the first week of each course, the instructor shall inform students of the attendance policies for the course. Class attendance policies are determined by the instructor and should allow for a reasonable number of absences which are required due to documented official university-sponsored activities, health problems and other emergencies. It is the student's responsibility to make arrangements, which are acceptable to the instructor, to complete work missed during the student's absence from class.

[♣]Courses over 12 years will not be accepted for credit toward any degree program.

CREDIT HOUR REQUIREMENTS

Candidates for a Master of Science degree must earn a minimum of 30 or more semester credit hours (SCH), depending upon the specific degree requirements. Degree requirements are found in the graduate catalog currently in force at the time the student's degree plan was approved by the graduate dean. For most Master of Science degrees, 18 semester hours of the total 30 consist of core requirements and thesis.

Most M.Ed. degree programs are 30-36 semester hour programs. Students seeking licensure must meet all requirements as specified by the state, which may entail more than the minimum 30 credit hours. The specialist degree program is designed primarily to provide professional preparation for students involved in school-site administration and those individuals who have district-wide administrative responsibilities.

The specialist degree program requires completion of a minimum of 36 graduate semester hours with the number of actual credit hours a function of the previous educational background of each student and his or her goals.

The Doctor of Philosophy degree is the highest academic degree conferred by the university. The student who receives the Doctor of Philosophy must demonstrated proficiency in content matter of the chosen discipline. Students also must demonstrate the ability to critically evaluate work in the chosen field of study. The student must have shown ability to work independently in the field and must have made an original contribution to the advancement of knowledge. However, Ph.D. requirements vary among programs and change from time to time (For more details see specific requirements listed in this catalog under each degree program).

PROGRAMS OF STUDY

Each graduate student is required to prepare a program of study in consultation with his or her major advisor(s). Completed programs of studies must be received from each student by the start of the second semester of enrollment. Students who do not file a program of study within the specified deadline will not be allowed to register for the next term. Programs of study must include a detailed listing of the available options within each student's area of emphasis upon submission. Only under extreme

circumstances and with adequate justification should changes be made to programs of study. All changes to programs of studies must have the approval of the student advisor, Department Chairperson and the Dean of the respective School.

All changes in the planned degree program must be made at least one semester prior to the student's application for graduation. Under no circumstances should a change in the program of study be requested for failing a required course.

ENGLISH WRITING PROFICIENCY

Each graduate student must demonstrate a minimum level of competency in written communication. Students may meet this requirement by:

1. Scoring a minimum 400 in the verbal section of the Graduate Record Examination.
2. Scoring 24 or more on the verbal section of the Graduate Management Admission Test for students entering the MBA Program.

Students who fail to obtain requisite scores on the GRE or GMAT are required to enroll in ENG 500 and pass the course with a grade of B or A.* However, in every case, the English Writing Proficiency requirement must be fulfilled during the student's first semester of enrollment. Students who fail to complete this requirement within the specified deadline will not be allowed to register for the next term unless permission is granted by the Dean of Graduate Studies.

BASIC MATHEMATICS SKILLS

Each graduate student must demonstrate a minimum level of competency in mathematics. Students may meet this requirement by:

1. Scoring a minimum combined (verbal and quantitative) score of 800 or a minimum 400 in the quantitative section of the Graduate Record Examination.
2. Scoring a combined score of 350 in the Graduate Management Admission Test for students entering the MBA Program.

Students who fail to obtain requisite scores on the GRE of GMAT are required to enroll in MTH 500 and pass the course with a grade of B or A.* However, in every case, the Mathematics Skills Proficiency requirement must be fulfilled during the student's first semester of enrollment in an Alabama Agricultural & Mechanical graduate degree program.

Students who fail to complete this requirement within the specified deadline will not be allowed to register for the next term unless permission is granted by the Dean of Graduate Studies.

GRADING

Letter Grades: One of two types of grading systems is assigned to each course: (I) the Letter Grade System, and (II) the P-No Quality Point System. Each department has the responsibility for developing supplemental procedures that will enable the student and interested persons to learn about the faculty's judgment of the student's competence.

Type I	A	Superior
	B	Satisfactory
	C	Below Expectations
	D	Failure
	F	Failure
Type II	P	Satisfactory
	F	Failure

Type II (explanation and authorization for its use): The "P" grade is a critical and evaluative grade indicating at least satisfactory graduate attainment. Each department, in cooperation with the School of Graduate Studies, determines when Type II grading will be available for a graduate course. With respect to each of its graduate courses, each department may forbid or request the use of the Type II system.

In addition, the following non-evaluative letters are used, when appropriate:

W	Withdrawal
WM	Military Withdrawal
X	non-credit audit
I	Work incomplete
IP	In Progress: Projects (Thesis, Dissertation, Research)

*Enrollment in ENG 500, or MTH 500 is not a substitute for GRE Verbal or the GRE Mathematics Exam. Nor is enrollment in the courses a substitute for low GRE performance. Students who fail to obtain the requisite GRE scores are urged to take the GRE a second time. Failure to obtain requisite scores by the end of the first year of enrollment may lead to dismissal from Graduate Study.

Auditing

A student may register to audit a course only with the approval of the instructor. The letters "X" will be recorded on the transcript if the student satisfies the conditions agreed upon with the instructor. All students who audit courses are required to be registered as auditors.

Incomplete Work

The letter "IP" is recorded for incomplete work in programmatically designated research, thesis and fieldwork courses. The letter "I" may be given in other courses in which the scope of the student's project requires more time for its proper completion. An "I" grade given for courses other than thesis or dissertation research is to be removed within one semester after the end of the term of registration for the course. A course for which an "I" or "IP" is recorded is not included in the calculation of the GPA, and no credit is awarded until the course is completed with a quality grade. Removal of an "I" must be authorized by the instructor and approved by the School Dean on a Grade Change Authorization Form. A student may not graduate without removing "I" or "IP" grades from his/her record.

Credits and Quality Points

Each credit for which letter grades are recorded have the following quality value: A=4; B=3; C=2; D=1 and F=0.. The GPA is defined as the total number of quality points earned in courses divided by the total number of credits attempted. Each credit for which "P" is recorded carries no designated number of quality points but implies a performance in the range of 3 or 4. Courses for which "W", "I", or "AU" are recorded do not contribute either credits or quality points toward graduation. When a course is repeated, only the last grade received is counted in computing the GPA. Graduate students must achieve the minimum GPA established by their programs, in no case less than 3.00, in order to be eligible to take the comprehensive examination, to be admitted to candidacy or to be eligible for graduation.

Withdrawal

A student may withdraw from a course under the conditions listed below:

1. Classes dropped after the first week of the regular semester and through the end of the withdrawal period specified in the course schedule will carry a grade of "W."
2. Classes dropped after the withdrawal period will carry the actual grades obtained.

Repetition of Courses

In every case, all "D" and "F" grades must be repeated (graduate and undergraduate courses). Graduate students normally are not permitted to repeat courses for which they have received credit, but, under unusual circumstances, a department may authorize an exception to this policy. When a graduate student repeats a course in which the subject matter has not changed, only the last grade received is counted in computing the quality point average.

Grade Changes

A grade given by an instructor for completed work will not be changed unless an error has been made in reporting or recording the grade. Re-examination or extra work may not be used as a basis for a change of grade.

Independent Study

Students who are using University facilities to an extent greater than represented by their formal course load (and those required by a fellowship or other appointment to be full-time students) are required to register for an appropriate number of additional credits of Independent Study to reflect their correct status. All graduate study not under the direct supervision of a specific faculty member is, by definition, Independent Study. This includes study for comprehensive and overview examinations, the preparation of research proposals, etc. Before a student is permitted to take an independent study course, the student must have completed a minimum of 12 semester hours of graduate work.

Field Research

Registration for Directed Study is limited to students in good academic standing who wish to study or carry out a project in an area not normally available in a formal course. The work must be under the direct supervision of a faculty member who has approved the proposed work in advance of

registration. A detailed description of the work should be recorded by the directing faculty member in the student's file in both the department and the School of Graduate Studies, Office of the Dean

Transfer Credit

Transfer credit must be acceptable to the student's advisory committee and be pertinent to the student's planned degree program. A petition for transfer of graduate credit and one official transcript upon which the transfer courses are recorded must be submitted to the Dean of Graduate Studies. Only courses with grade "B" or better will be approved. Courses with a "P" grade are not acceptable. Alabama A&M University only accepts transfer credit from institutions of higher education that have been accredited by one of the regional accrediting commissions recognized by the Council for Higher Education Accreditation (CHEA). The University also accepts as transfer credits a limited number of courses from Drake State Technical College.*

Students seeking Master's degrees may, upon departmental approval, transfer *a maximum of twelve semester hours* of approved graduate credits from an accredited institution. Credits must have been earned within the past six years. A student who has completed course credits in a certification program at Alabama A&M University may transfer such credits into a master's degree program with the consent of the departmental program or school. Such credits may be transferred only if they fall within the past six years set for the master's degree.

For students admitted to the Educational Specialist program, previous and appropriate post- master's degree credit earned at the Alabama A&M University or any regionally accredited university before a student applies for admission to the Ed.S. Program can be applied toward the Ed.S. degree provided 1) it meets the time limitation test, 2) the student meets residency requirements, and 3) the Graduate Dean of Alabama A&M University approves such credit for acceptance.

Because the purpose of the Ed.S. degree may differ from that of the AA-Certificate, credit earned in an AA program at Alabama A&M is not automatically applicable to an Ed.S. program. Instead, if a holder of an AA-Certificate enters an Ed.S. program at a later date the Ed.S. Advisory Committee will recommend to the School of Graduate Studies, Office of the Dean, how much of the credit earned in the AA certificate should be credited toward the Ed.S. program. The Ed.S. Committee and the School of Graduate Studies, Office of the Dean, in light of the objectives of the department, will decide to accept toward an Ed.S., as much as all, or as little as none, of the credit earned in an AA-Certificate program. The only exception is the residency requirement.

Students seeking a Ph.D. may transfer credits subject to the following conditions:

1. All credits submitted for transfer must be evaluated by the department and approved by the Dean of the School of Graduate Studies.
2. Only such courses, which are the same or similar in content as the courses listed for the particular specialization, will be approved for transfer.
3. A student who has earned the Master's degree can transfer up to a maximum of 24 semester hours of credit, whereas a student who does not have a master's degree can transfer up to a maximum of 12 semester hours of graduate credit.

Graduate Credit For National Board Certified Teachers

There is a possibility for a National Board Certified Teacher (NBCT) to receive up to 3 semester hours of graduate credit to apply to an elective course in a program of study at Alabama Agricultural & Mechanical University. To pursue this possibility a graduate student must be admitted into one of the College of Education's graduate programs and must have completed the NBPTS process and awarded National Board Certification. To pursue this possibility, the graduate student must do the following:

1. Confer with his/her graduate advisor and the Dean of the School of Education to determine if National Board Certification can be applied to his/her specific program of study. If approved, credits for National Board Certification can only be used as elective credits. All persons receiving approval to use National Board Certification must complete the *National Board Certification Credit Acceptance form* and receive approval from his/her graduate advisor, the program Department Chair, the Dean of the School of Education, and the Dean of Graduate Studies. In addition, persons receiving approval to use National Board Certification must submit a new

* For a listing of courses available for transfer from Drake Community College please contact the Office of Graduate Studies.

program of study to reflect the elective course(s) in which the credits would replace. In all cases, credits for National Board Certification must be submitted by the start of the second semester of enrollment (The University will not accept National Board Certification credits submitted after the second semester of enrollment).

2. The NBCT must contact ACE and request two transcripts. To do this, he/she can go to the NBPTS website and click on "click here to apply for graduate credit" in the top right corner. That link takes them to the ACE web site. ACE verifies that they are a NBCT and issues them a transcript showing between six and nine academic credits (Alabama A&M University will only accept a maximum of 3 semester hours of National Board Certification credits). There is a $100 application fee for each transcript that the student will pay to ACE for this service. Transcripts must be mailed to Alabama A&M University, Office of Graduate Studies, P.O. Box 998, Normal, Alabama 35762. The transcript that is issued means that NBPTS recommends the NBCT for graduate credit for consideration by the NBCT's university. As stated, it is up to the university to decide if it will recognize those credits.

Foreign Transfer Credits

Transfer of foreign graduate credit hours must be in accordance with regulations set forth above.

COMPREHENSIVE EXAM REQUIRMENTS

Students eligible for take the Comprehensive Examination must formally apply for the test on the prescribed form in the office of Graduate Studies.

If a student fails the Comprehensive Examination, at least one semester must intervene before the second examination is given. If the student fails this examination two times, referral will be made to a departmental committee, which will determine the appropriate action; this action should not eliminate the student from retaking the comprehensive examination for a third and final time.

Comprehensive exams are designed to evaluate the candidate's proficiency in the theory and practice in both the major and minor fields of the designated area of study. Before sitting for the Comprehensive Exam, student must:

1. Obtain Regular/Full admission status.
2. Maintain a GPA of 3.00 or above.
3. Complete all required deficiency courses for the degree.
4. Complete all required courses for the degree.
5. Remove all I's, except thesis grades.
6. Remove all grades of "D" and "F" in the student's current program of study.

MS/MEd

All non-thesis Master's students, with the exception of students enrolled in the degree programs in Business Administration and Materiel Engineering, are required to pass a written comprehensive examination.

Ed.S

All Ed.S. students are required to pass a written comprehensive examination and write a thesis or complete an Action Research paper.

Ph.D

All Ph.D. students are required to write a dissertation and defend it successfully. They are also required to pass qualifying and /or candidacy examination(s) as required by the department. Eligibility requirements for these tests are defined in the departmental section of this bulletin.

THESIS/DISERTATION REQUIREMENTS

Students who choose the option of writing a thesis must adhere to the following:

1. Each student is responsible for identifying a major professor, choosing a research topic, and writing and editing the thesis or dissertation. The major professor serves as the chairperson of the student's advisory committee. The student and the major professor select the members to serve on the research advisory committee. The committee usually consists of four to five members; at least one comes from outside of the student's major area of emphasis. Once the advisory committee has been selected and approved, they will serve as advisors for the candidate in the development of the research

proposal. Before the end of the second semester of enrollment, the student must complete (1) a Planned Degree Program, (2) attend the thesis/dissertation preparation workshop, and (3) prepare and acceptable thesis or dissertation proposal.

2. The subject of the thesis/dissertation should be chosen from the candidate's field of major interest and must be approved by the departmental advisory committee. The thesis/dissertation should reveal a capacity to carry on independent study or research.
3. The student is advised to consult the School of Graduate Studies and the publication "Thesis and Dissertation Guidelines for Graduate Students" for general information regarding the preparation of a thesis/dissertation.
4. Each student is required to enroll in at least one semester hour of thesis/dissertation writing during the semester he/she expects to defend his/her thesis/dissertation. The student must also submit a committee-approved final draft to the Dean of Graduate Studies two weeks prior to the scheduling of the oral defense.
5. Immediately following the candidate's oral defense examination, the student should consult either the advisor or the Graduate Office for specific directions concerning binding, labeling and other routine procedures. At least one month prior to graduation, the student must submit four unbound copies of the thesis/dissertation to the Graduate Office.

CHANGING FROM THESIS TO NON-THESIS OPTION

Students are allowed one change from thesis to non-option for all degree programs. Thesis courses will not be counted toward the requirements of the non-thesis option. Students seeking to change from the thesis option to the non-thesis option must:

a. Officially withdraw from all thesis courses;
b. Complete a new program of study which shows the additional courses the student will need to complete to finish the non-thesis option;
c. Reapply for graduation and admission to candidacy;
d. Complete all of the identified requirements (including curriculum) of the new-degree program curriculum.

APPLICATION FOR GRADUATION

Students must apply for graduation before the deadline dates given below. However, if they fail to meet requirements for the semester applied, they must reapply.

Deadline Dates:

December Graduation.....September 30
May Graduation.....January 31
July Degree Completion .....May 31

CLEARANCE FOR DEGREE

Each candidate for a degree will receive a letter from the Graduate Office verifying clearance after final grades are submitted.

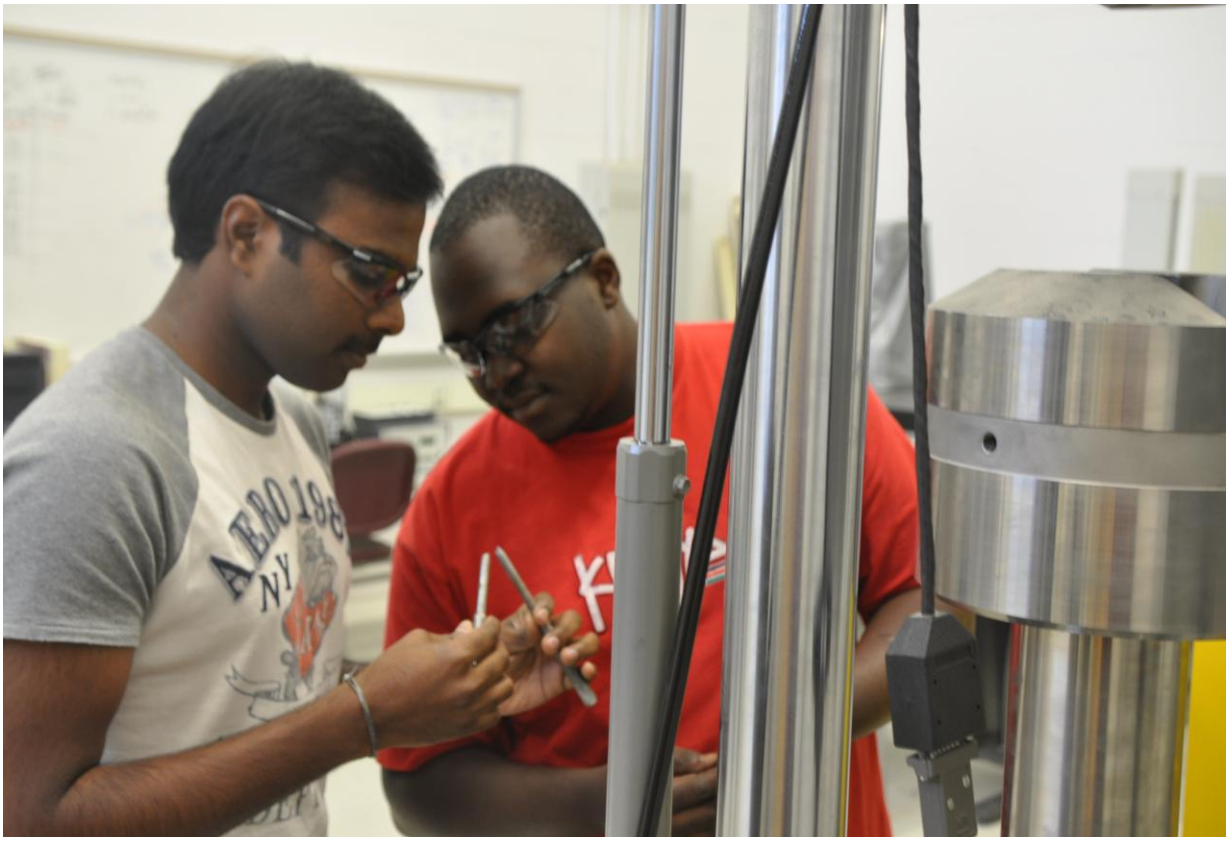
CONFERRING OF DEGREE

Advanced degrees are conferred at the close of the summer, fall, and spring semesters. A student completing requirements during a fall semester receives a diploma at the Spring Commencement. Attendance at the commencement exercise is strongly encouraged.

SECOND MASTER'S DEGREE

With the approval of the appropriate department and the Graduate Dean, a graduate student who has completed a master's degree from Alabama A&M University may transfer up to ten appropriate credits from the first program to the second. All requirements for the master's degree in the second program must be met.

GRADUATE DEGREE PROGRAMS



AGRIBUSINESS

MASTER OF SCIENCE IN AGRIBUSINESS

PROGRAM DIRECTOR
James O. Bukenya
256-372-5729
james.bukenya@aamu.edu

Graduate Faculty

Professors
Joseph Befecadu
Willie Cheatham, Department Chairperson
Duncan Chembezi
James O. Bukenya

Assistant Professors
Swagata Banerjee

Research Assistant Professors
Buddhi Gyawali

ABOUT THE PROGRAMS

The graduate program leading to the M.S. degree in Agribusiness is designed to meet the needs of candidates who wish to pursue careers in agribusiness or related industries. Its flexibility provides candidates the opportunity to concentrate in areas of their individual interests. Each candidate in the program will be required to take an eight-course core program. There is a thesis option and a non-thesis option. Candidates electing the thesis option must take 6-hours of Agribusiness thesis to bring the total number of credits to 30 hours and write an acceptable thesis after meeting the course requirement. Those electing the non-thesis option must take two additional courses to bring the total number of credits to 36 hours and write an acceptable research paper. All candidates must pass a comprehensive examination.

Program Requirements with the Thesis option		**Sem. Hours**
AGB532	Advanced Farm Management	3
AGB 533	Advanced Agricultural Marketing	3
AGB590	Research Methods in Agribusiness	3
AGB623	Advanced Agribusiness Management	3
AGB 624	Advanced Agricultural Financial Analysis	3
AGB 625	Advanced Agricultural Policy	3
MBA 515	Management Information Systems	3
	Elective	
AGB 599	Agribusiness Thesis	6
Total		30

Program Requirement with the Non-Thesis Option		**Sem. Hours**
AGB 531	Agricultural Economics	3
AGB 533	Advanced Agricultural Marketing	3
AGB 532	Advanced Farm Management	3
AGB 623	Advanced Agribusiness Management	3
AGB 624	Advanced Agricultural Financial Analysis	3
AGB 625	Advanced Agricultural Policy	3
MBA 515	Management Information Systems	3
MKT 538	International Marketing & Logistics	3
MBA 505	Managerial Economics	3
ECO 505	Applied Economics Statistics	
Elective		6
Total		**36**

Available Electives		**Sem. Hours**
AGB 509	Advanced Studies	3
AGB 531	Agricultural Economics*	3
AGB 606	Rural Development	3
ECO 502	Microeconomics Thesis	3
MBA 504	Macroeconomics	3
MBA 505	Managerial Economics	3
MGT 564	Personnel Administration	3
MBA 515	Management Information System	3
FIN 543	International Finance	3
MBA 505	Managerial Economics	3
ABG 626	Agricultural modeling and Forecasting	3

* Required course for the non-thesis option.

ART EDUCATION

MASTER OF EDUCATION IN ART EDUCATION

PROGRAM DIRECTOR
Fran Church
256/372-4074
frances.church@aamu.edu

Graduate Faculty

Associate Professors
Robert Bean
Scott Smith
Joe Washington

Assistant Professors
Fran Church
Jennie Couch

ABOUT THE PROGRAM

The Department of Fine Arts offers coursework and field experiences leading to the Master of Science with teacher certification (Class A and A – "Alternative") in Art Education and Music Education.

ADMISSION REQUIREMENTS

Applicants to the Art Education program must in addition to the requirements of the Graduate School:

1. Submit an art portfolio of twenty (20) current images in a JPEG format.
2. Produce documentation of a teaching certificate in Art Education. (If applicable).
3. Persons who do not hold a bachelor's degree in art and are interested in pursuing a master's degree in art education may also apply; however, a consultation visit with the Art Program coordinator prior to the application is required.

DEGREE REQUIREMENTS

Program Requirements with the Non-Thesis Option for Master of Science in Education Class A "Single Teaching"

Required Program			Sem. Hours
ART	500	level or above	3
ART	500	level or above	3
ART	500	level or above	3
ART	500	level or above	3
ART	500	History & Philosophy of Art Education	3
ART	532	Supervision of Art in Public School	3
FED	500	Professional Seminar	3
			J
FED	501	Professional Seminar	3
FED	501	Foundation of Education	3
		or	
FED	521	Multicultural Education	
FED	503	Introduction to Education Research	3
FED	504	Evaluation of Teaching/Learning	3
FED	529	Computer-Based Instructional Technology	3
SPE	501	Introduction to Study of Exceptional Individual*	0-3
Total			**33-36**

Program Requirements with the Non-Thesis Option for Master of Science in Education Class A "Alternative 5th Year"

Required Program			Sem. Hours
ART	500	History/Philosophy of Art Education	3
ART	500	Advisor Approved 500 level Art Courses	12
ART	532	Supervision of Art in Public Schools	3
ART	595	Internship	6
FED	500	Professional Seminar	
FED	501	Foundation of Education	3
		or	
FED	521	Multicultural Education	
FED	503	Introduction to Education Research	3
FED	504	Evaluation of Teaching/Learning	3
FED	529	Computer-Based Instructional Technology	3
SPE	501	Introduction to Study of Exceptional Individual*	0-3
SED	515	Reading in the Content Area	3
Total			**42-45**

*Required if not previously completed.

BIOLOGY

MASTER OF SCIENCE IN BIOLOGY

PROGRAM DIRECTOR
Jeanettte Jones
256-372-4924
jeanette.jones@aamu.edu

Graduate Faculty

Professors
Jeanette Jones
Purushottam Kale

Associate Professors
Florence Okafor
Sampson Hopkinson

Assistant Professors
Zulfiqar Ahmad
Jacob Savage
Toure Thompson
Conwin Vanterpool

PROGRAM MISSION

The Master of Science program in Biology offers students opportunity for advanced learning in their chosen area of Biology. Our purpose is to train students broadly in modern biological principles so that they acquire the strong foundation needed to become highly skilled and intellectually independent scientists. The program is committed to excellence in education, research and service.

ADMISSION REQUIREMENTS

An applicant who has received a baccalaureate degree from an accredited college or university may apply for admission to the Biology Graduate Program in accordance with the admission criteria of the University. Additional requirements for this program include:

1. Clear evidence of scholastic competence to meet the requirements for an advanced degree.
2. A minimum GPA of 2.50 (based on a 4.00 system) in the major area.
3. One year of chemistry, including one term of organic chemistry and or biochemistry.

Applicants who do not meet these requirements may apply for conditional or provisional admission.

Policy Statement

1. The degree is a cooperative degree awarded by AAMU or UA Huntsville.
2. Initial registration may be at either institution.
3. As a requirement for a degree, each graduate teaching assistant must conduct one or more laboratory or lecture sections, as decided by his/her graduate advisory committee, in an area related to his/her field of concentration.
4. An advisory committee for an individual enrolled at one of the two schools shall have at least one representative from the other school.
5. Students will be admitted in accordance with admission criteria of the respective institutions.
   a) Except for the purpose of taking courses, conducting research and other strictly academic matters, students will not be encouraged to transfer back and forth between schools (see 'b" below).
   b) Students will need to declare the school of intent (from which they wish to receive a degree) by the end of nine semester hours taken or by the end of their first academic term.
   c) Thereafter, a student may not transfer between schools and must remain in the same area of emphasis.
   d) Equipment and facilities at the two respective departments shall be available to all graduate students in the program without regard to the institution at which the students are enrolled.

ABOUT THE PROGRAM

Students may choose a thesis (Plan I), or non-thesis option (Plan II), or Master of Education in Secondary Education (Plan III). Students interested in Plan III are however required to consult with their major advisor for more details about the plan.

Master of Science (Thesis Option), Plan I

All Master of Science degree candidates must satisfactorily complete a minimum of 24 semester hours of course work and submit an acceptable thesis, which shows creative thinking and independent

judgment in developing a problem from primary sources.

Master of Science (Non-Thesis), Plan II
Students completing the non-thesis degree option are required to write a Master's report. The focus of the report is determined jointly by the student and the student's academic advisory committee. The nature of the report can be a library search, survey, or experimentation as determined by the student's advisory committee. For the Master of Science degree, a student must complete a minimum of 33 semester hours of course work.

Master of Education in Secondary Education, Plan III *Students interested in Plan III are required to consult their major advisor for more details about the program.*

The Biology Master of Science (MS) degree is a 30/36 semester hour program, organized into four major components.

1. A core of required courses (9credit hours).
2. An area of specialization (15 – 18credit hours).
3. A master's thesis (6 credit hours) or a terminal research report component and credit hour of elective courses.
4. A comprehensive examination (non-thesis option) or thesis and oral defense without the comprehensive examination.

Core Course Requirements
The Biology graduate program aims to provide students with the concepts and skills needed to enter PhD programs or professional programs and function effectively as biologists. All students enrolled in the Biology program must complete the Biology core. The core requirements consist of **9 credit hours** in general Biology. These courses focus on the basic concepts of biological research, instrumentation and ethics. Listed below are the core courses of the Biology program:

Core Courses			**Sem. Hours**
BIO	512	Instrumentation in the Biological Sciences	3
BIO	513	Research Ethics and Professional Integrity	1
BIO	500	Current Concepts in Biology	3
BIO	690	Seminar	1
BIO	692	Research	1

Comprehensive Examination

A written comprehensive examination composed jointly by the faculties of both institutions will be administered to each non-thesis student. This examination will normally be taken after the student has completed the required course work.

DEGREE REQUIREMENTS

Program Requirements with the Thesis Option*

Required Program			**Sem. Hours**
BIO	512	Instrumentation in the Biological Sciences	3
BIO	513	Research Ethics and Professional Integrity	1
BIO	500	Current Concepts in Biology	3
BIO	690	Seminar	1
BIO	692	Research	1
		Specialty/Concentration♣	15
BIO	699	Thesis	6
Total			**30**

Program Requirements with the Non-Thesis Option*

Required Program			**Sem. Hours**
BIO	512	Instrumentation in the Biological Sciences	3
BIO	513	Research Ethics and Professional Integrity	1
BIO	500	Current Concepts in Biology	3
BIO	690	Seminar	1
BIO	692	Research	1
		Specialty/Concentration♣	18
		Other Electives	9
Total			**36**

CONCENTRATIONS

Microbiology Concentration			**Sem. Hours**
BIO	522	Microbial Physiology	3
BIO	523	Principles of Virology	3
BIO	524	Mycology	3

*Students must select 15- 18 credits of courses from a specific concentration area to qualify for an MS degree. Concentrations currently offered include: Microbiology, Physiology, Genetics and Molecular Biology, Ecology and Systematics, and Entomology.

♣Must choose at least 3 credits from each specialization area.

BIO	525	Parasitology	3
BIO	526	Microbial Ecology	3
BIO	621	Pathogenic Bacteriology	3
BIO	622	Applied and Industrial Microbiology	3
BIO	623	Advanced Virology	3
BIO	624	Immunology	3
BIO	625	Medical Mycology	3

Physiology Concentration			**Sem. Hours**
BIO	531	Plant Physiology	3
BIO	532	Animal Physiology	3
BIO	533	Advanced Physiology I	3
BIO	534	Advanced Physiology II	3
BIO	535	Endocrinology	
BIO	541	Cell Physiology	3
BIO	544	Cell & Development Biology (UAH)	4
BIO	631	Pharmacology	3
BIO	632	Cardiovascular Physiology	3
BIO	633	Endocrinology II	3

Genetics and Molecular Biology Concentration			**Sem. Hours**
BIO	540	Molecular Biology	3
BIO	542	Analytical Biochemistry (L)	3
BIO	546	Cytogenetics	3
BIO	641	Advanced Cell Biology	3
BIO	642	Advanced Cell Physiology	3
BIO	643	Microscopy (UAH)	4
BIO	645	Human Cytogenetics and Its Clinical Application	3
BIO	646	Molecular Genetics	
BIO	647	Enzymology (UAH)	3
BIO	648	Enzymology Laboratory (UAH)	2
BIO	649	Advanced Genetics I	3
BIO	650	Advanced Genetics II	3

Ecology and Systematics Concentration			**Sem. Hours**
BIO	560	Environmental Biology	3
BIO	561	Physiological Ecology	4
BIO	562	Community Ecology (UAH)	4
BIO	564	Limnology (UAH)	4
BIO	565	Phycology	4
BIO	570	Plant Pathology	4
BIO	571	Plant Taxonomy	4
BIO	580	Advanced Invertebrate Zoology	4
BIO	660	Ecosystem Dynamics (UAH)	4

Entomology			**Sem. Hours**
BIO	551	Insect Physiology	4
BIO	552	Insect Pest Management	4
BIO	553	Insect Taxonomy and Morphology	4
BIO	651	Medical Entomology (UAH)	4
BIO	652	Advanced Applied Entomology	4
BIO	653	Taxonomy of Immature Insects	4

General Course Electives			**Sem. Hours**
BIO	510	Radiation Biology	4
BIO	511	Biological Control	4
BIO	590	Problems in Biological Science	3
Graduate Level			3
Biostatistics/Biometrics course			
Graduate Level Bioinformatics Course			3
BIO	691	Special Topics	1-4
BIO	699	Master's Thesis	1-3

BUSINESS MANAGEMENT & ADMINISTRATION

MASTER OF BUSINESS MANAGEMENT ADMINISTRATION

PROGRAM DIRECTOR:
Uchenna Elike
256-372-8487
uchenna.elike@aamu.edu

Graduate Faculty

Professors
James Alexander
Emeka Dunu
Sandra Durham
Uchenna Elike
Chris Enyinda
Marsha Griffin
Hossien Jamshidi
Barbara A.P. Jones
Mohammad Robbani
Amir Sarkar, Dean of the School of Business

Associate Professors
Nareatha Studdard
Ata Yesilyaprak

Assistant Professors
Andrea Hawkins
Geana Mitchell
Jifeng Mu
Guy Posey

MISSION STATEMENT

The MBA program prepares men and women for administrative positions in industry and the public sector. The program which utilizes a traditional classroom model maintains a strict student to faculty ratio of 1:6. This provides the program flexibility to respond to emerging issues on the local, national, and global scale. Each class combines business theory with practical applications, ensuring that students grasp the context in which they will practice their new skills.

ADMISSIONS REQUIREMENTS

Applicants for admission to the MBA program must show high promise of success for graduate study. Key barometers used by faculty in the MBA program in evaluating student promise of success include undergraduate grades, scores on the Graduate Management Admissions Test (GMAT) and other relevant criteria. Applicants for regular admission to the Master of Business Administration must meet all the requirements for admission to the Graduate School as well as the following:

Regular Admission

GMAT Score of at least 350 or have at least three years of documented managerial experience.*

Conditional

1. Minimum of 2.7 GPA and GMAT score of at least 325.
2. Minimum of 2.7 GPA and minimum of three years of managerial experience.*

In addition, all applicants are required to submit:

1. Academic records
2. Two letters of recommendation
3. Resume
4. 200-250 word essay (statement of purpose)

DEGREE REQUIREMENTS

A minimum of 33 graduate-level credit hours beyond the basic core is required to complete the MBA Program (36 hours are needed to complete the program with a concentration in Logistics). The program is divided into three sections: the basic core, the professional core, and electives. The basic core of 12 credit hours is designed to serve as a leveling mechanism for students whose previous programs are not in business or do not provide adequate preparation. Depending upon their previous academic records, students may be exempted from part or all of the basic core courses by the Director of the MBA Program. The professional core is 27 credit hours of mandatory courses, which focus on the internal and organizational business environments, the functional areas, quantitative techniques, and managerial communications. Students also choose 6 credit hours of electives. To complete the MBA degree, students must have a 3.0 GPA or higher for all courses taken at Alabama A&M University as part of the MBA program. They must also have a 3.0 GPA or higher

*Managerial experience indicates that the applicant has been involved in an enterprise that is a significant concern.

for all courses taken at Alabama A&M University in the MBA Program beyond the basic core requirements. Transfer credit is not considered in the GPA for the MBA program. In addition, only students who have full admission and appropriate prerequisites will be admitted into courses in the Professional Core.

Basic Core*			**Sem. Hours**
ECO	500	Survey of Economic Analysis	3
MBA	503	Quantitative Methods for Business	3
MBA	506	Foundations of Accounting and Finance	3
MBA	507	Basics of Management and Marketing	3
Total			**12**

Program Requirements Traditional Non-Thesis Option MBA*

Professional Core (Required)			**Sem. Hours**
ACC	512	Accounting Analysis for Management	3
ECO	514	Managerial Economics	3
FIN	511	Financial Management and Policy	3
MBA	517	Global Issues in Business	3
MBA	519	Managerial Communications	3
MGT	510	Operations Management	3
MGT	515	Organizational Theory and Behavior	3
MGT	516	Strategic Management	3
MKT	514	Management of Marketing Activities	3

Electives (Any Two)

ACC	571	Tax Issues in Business	3
ECO	503	Macroeconomics	3
FIN	541	Security Analysis and Portfolio Management	3
MGT	564	Human Resources Management	3
MGT	565	Entrepreneurship/Small Business Management	3
MGT	580	Emerging Information Technology	3
MKT	532	Consumer Behavior	3
Total			**33**

Program Requirements with Concentration in Logistics and Supply Chain Management*

Professional Core (Required)			**Sem. Hours**
ACC	512	Accounting Analysis for Management	3
ECO	514	Managerial Economics	3
FIN	511	Financial Management and Policy	3
MBA	517	Global Issues in Business	3
MBA	519	Managerial Communications	3
MGT	510	Operations Management	3
MGT	515	Organizational Theory and Behavior	3
MGT	516	Strategic Management	3
MKT	514	Management of Marketing Activities	3

Electives (Any Three)

LSM	536	Logistics and Supply Chain Management	3
LSM	571	Adaptive Supply Chain Management	3
LSM	572	Logistics and Supply Chain Risk Management	3
LSM	599	Strategic Supply Chain Planning	3
Total			**36**

*Depending upon their previous academic records, students may be exempted from part or all of the basic core courses to complete the Degree program by the Director of the MBA Program.

CLINICAL PSYCHOLOGY

MASTER OF SCIENCE IN CLINICAL PSYCHOLOGY

PROGRAM DIRECTOR
Annie M. Wells
256-372-8128
Annie.wells@aamu.edu

Graduate Faculty

Professors
Annie Wells

Associate Professors
Calvin Matthews

Assistant Professors
Rhonda Sherrod

ABOUT THE PROGRAM

The Master of Science program in Clinical Psychology offers students the educational background to prepare for work as mental health specialists in a variety of settings. The program provides broad-based instruction in practical clinical psychology which provides the framework necessary for graduates to apply for master's level licensure as a professional counselor in the state of Alabama. The M.S. program requires 48 credits of course work in thesis and non-thesis options. Currently, the program is intended for both part-time and full-time students, with classes designed to accommodate working students.

DEGREE REQUIREMENTS

Program Requirements with the Thesis Option

Required Program			**Sem. Hours**
PSY	502	Descriptive & Inferential Behavioral Statistics	3
PSY	530	Individual & Family Therapy	3
PSY	555	Personality Theory	3
PSY	556	Group Dynamics	3
PSY	559	Counseling Techniques	3
PSY	561	Individual Testing	3
PSY	585	Research in Psychology	3
PSY	590	Personality Assessment	3
PSY	592	Professional Orientation/Issues	3
PSY	597	Counseling Practicum	3
PSY	605	Psychopharmacology	3
PSY	610	Psychopathology	3
PSY	622	Clinical Internship I	3
PSY	623	Clinical Internship II	3
PSY	599	Thesis	6
Total			**48**

Program Requirements with the Non-Thesis Option

Required Program			**Sem. Hours**
PSY	502	Descriptive & Inferential Behavioral Statistics	3
PSY	530	Individual & Family Therapy	3
PSY	555	Personality Theory	3
PSY	556	Group Dynamics	3
PSY	559	Counseling Techniques	3
PSY	561	Individual Testing	3
PSY	585	Research in Psychology	3
PSY	590	Personality Assessment	3
PSY	592	Professional Orientation/Issues	3
PSY	597	Counseling Practicum	3
PSY	605	Psychopharmacology	3
PSY	610	Psychopathology	3
PSY	622	Clinical Internship I	3
PSY	623	Clinical Internship II	3
		Electives (500-600 Level)	6
Note Comprehensive Exam is Required			
Total			**48**

COMMUNICATIVE SCIENCES & DISORDERS

MASTER OF SCIENCE IN COMMUNICATIVE SCIENCES AND DISORDERS

PROGRAM DIRECTOR
Jennifer Vinson
256-372-4035
jennifer.vinson@aamu.edu

Graduate Faculty

Professors
Barbara Cady
Jennifer Vinson

Associate Professor
Barbara Bush
Carol Deakin
Hope Reed

Assistant Professors
Esther Phillips-Ross
Cynthia Lewis

MISSION STATEMENT

The Communicative Sciences and Disorders (CSD) program offers an education and scholarly environment in which undergraduate and graduate students receive quality academic training and professional experience in the field of Speech-Language Pathology. The program functions within a student-centered environment devoted to learning, research, scholarship, creativity, professional expertise and personal development designed to ensure that students are ethical, knowledgeable, skillful and capable of working independently and in collaboration with clients, families and other professionals. The commitment of the CSD program to the University's mission is reflected in the undergraduate and graduate academic course work in normal and abnormal development and behavior across the human life span; in course work that engenders awareness of issues in culturally diverse populations, in human communication disorders, in diagnostic and treatment methodologies; in clinical practica requirements and in technology-integrated course work teaching independent research skills that support lifelong learning.

PROGRAM DESCRIPTION

The program offers the Master of Science degree in Communicative Sciences and Disorders, and is nationally accredited by the Council on Academic Accreditation (CAA) of the American Speech-Language-Hearing Association (ASHA). AAMU is one of only eight Historically Black Institutions which offer a nationally accredited program in speech-language pathology.

The field of Speech-Language Pathology involves the identification, assessment and treatment of a wide variety of communication disorders (congenital, developmental, and acquired) in both children and adults. Such disorders may include phonological (articulation), language, voice, fluency (stuttering) and hearing problems. Speech-language pathologists also participate in the assessment and management of clients with swallowing difficulties. They work in a variety of locations including hospitals, schools, rehabilitation centers, community health centers, universities, skilled care facilities, and in private practice.

The wide varieties of disorders and treatment approaches pertinent to the field require a working knowledge of neuroanatomy, behavioral science, speech/language development, effective teaching strategies, methods for motivating people, and excellent communication skills. Therapists with a bachelor's degree can perform important duties in some settings, but a master's degree is essential for achieving professional independence, and some duties demand a doctoral degree.

This degree program contains both academic and clinical components. It is a two year program if students have an undergraduate degree in CSD, and a three year program if the undergraduate degree is in another area.

Our graduate students and senior level undergraduate students gain experiences providing speech and hearing services in the campus-based AAMU Speech and Hearing Clinic and in externship sites across the state. The AAMU Clinic is a teaching clinic and has been serving the public since the late 1960s. Students complete a minimum of 400 clinical clock hours supervised by ASHA certified, Alabama licensed faculty members and external supervisors. The clinic serves clients of all ages from within the community as well as the University campus

OBJECTIVES

Alabama A&M University's master's degree program in Communicative Sciences and Disorders has as its primary objective the education of highly competent speech-language pathologists who are capable of interacting in a variety of employment settings such as hospitals, clinics, public schools, rehabilitation centers, private practice, nursing facilities, or special centers/schools. The second objective is to provide training which allows persons with varying backgrounds to become fully qualified to apply for national certification through the American Speech-Language-Hearing Association (ASHA), for state licensure through the Alabama Board of Examiners in Speech-Language Pathology and Audiology (ABESPA) and for the alternative teaching certificate through the Alabama State Department of Education (ASDE). Individuals applying for teaching certification must take and pass the Alabama Prospective Teacher Test (APTT) Basic Skills Assessment. The third objective of the program is to increase the representation of ASHA certified minority speech-language pathologists.

ADMISSION REQUIREMENTS

Selected applicants are admitted to the Program in the fall and spring semesters of the academic year for which they apply.

Application Deadlines

Fall..... April 15
Spring .....October 15

Because enrollment into the CSD Program is competitive applications are reviewed carefully to assign priority to the most qualified students. It should be noted that not every student whose credentials meet stated quantitative standards will be admitted.

Students must first meet all requirements for admission to the School of Graduate Studies plus the following criteria:

1. An undergraduate grade point average (GPA) of 3.0 or better (on a 4.0 grading scale).
2. Graduate Records Examination (GRE) minimum score of 400 on the Verbal portion and 400 on the Quantitative portion is required.
3. Transcripts of all undergraduate work attempted, including junior colleges and community colleges
4. Three letters of recommendation (on departmental or institutional letterhead, preferably from the student's undergraduate professors)
5. A letter, written by the applicant, expressing a Statement of professional goals and objectives (No specific format required at this time)
6. Applicants whose first language is not English require a minimum score on the Test of English as a Foreign Language (TOEFL) of 600 (paper-based), 250 (computer-based), or 100 (Internet-based) within two years prior to application. The TOEFL scores must be on file in the Graduate School prior to receipt of the application for graduate study.

Note: CSD application deadlines are different from the Office of Graduate Studies. Only completed packages will be reviewed.

DEGREE REQUIREMENTS

The Communicative Sciences and Disorders degree is a 57-63 semester hour program for students holding a bachelor level degree in speech-language pathology, and an 87-93 semester hour program for students holding a bachelor level degree in an area other than speech-language pathology.[*] In order to meet the current ASHA certification requirements students are required to enroll in CSD 516 Advanced Clinical Practicum every semester of enrollment until all required clinical clock hours are completed. Students will not be permitted to graduate until all clinical clock hours are completed.

Each student's program is planned with the guidance of, and in consultation with, a departmental advisor in the area of Communicative Sciences and Disorders. The program does not take responsibility for courses taken without program advisement and approval. A copy of the program of study can be obtained from the program office or on the CSD website.

All candidates must pass the ETS PRAXIS (National Examination in Speech-Language Pathology) with a score of 600 or above in lieu of the comprehensive examination. The University must receive evidence of a passing test score by the official date of the

[*] Students who do not hold a bachelor's degree in speech pathology may be required to take additional courses. Depending upon their previous academic records, students may be required to take prerequisite courses to complete the Degree program.

comprehensive exam of final semester of registered enrollment.

OTHER REQUIREMENTS

Speech, Language and Hearing Screening

1. CSD students must take and pass a speech-language-hearing screening examination during their first semester. The purpose of this screening is to identify any speech, language or hearing problem that may interfere with a students' academic or clinical progression in the program.
2. Students must demonstrate the ability to speak Standard American English intelligibly, including modeling of all English phonemes.
3. Students will be enrolled in the AAMU Speech and Hearing Clinic free of charge if test results deem intervention necessary.

Fingerprinting/Background Check

Graduate students enrolled in the CSD Program will, in their first semester, undergo a criminal background check which includes fingerprinting and a check of national and state criminal databases. Fingerprint/background check is a requirement for all individuals in the School of Education, including CSD students.

Program Requirements for the Non-Thesis Option

(57-63 semester hours, with CSD 516 repeated as needed to complete clinical clock hours)

Required Program			**Sem. Hours**
CSD	504	Advanced Evaluation & Assessment of Communicative Disorders	3
CSD	510	Stuttering and Other Disorders of Speech Flow	3
CSD	513	Language Disorders in Adults	3
CSD	515	Language Development in Communication Disorders	3
CSD	516	Advanced Clinical Practicum	3
CSD	520	Language Disorders in Children	3
CSD	522	Voice Disorders	3
CSD	525	Case Management in SLP	3
CSD	534	Articulation and Developmental Phonological Disorders	3
CSD	538	Neuroanatomy	3
CSD	539	Craniofacial Anomalies	3
CSD	544	Motor Speech Disorders	3
CSD	545	Swallowing Disorders	3
CSD	550	Seminar in CSD	3
CSD	598	Research Methodologies in Communication Disorders	3
PSY	502	Descriptive & Inferential Behavioral Statistics	3
			48

COMPUTER SCIENCE

MASTER OF SCIENCE IN COMPUTER SCIENCE

PROGRAM DIRECTOR

Yujian Fu
256-372-8461
yujian.fu@aamu.edu

Graduate Faculty

Professors
Jian Fu

Associate Professors
Venkata Atluri
Alak Bandyopadhyay
Xingzhong Shi
Xiang Zhao

Assistant Professors
Yujian Fu
Muhammad Ghanbari

ABOUT THE PROGRAM

The graduate program is designed to equip students with advanced knowledge in both computer science theory and application. This includes opportunities through funded research, seminars, lab-work, and field trips to acquire hands-on experience on a wide variety of state-of-the-art computer hardware and software systems.

The department offers a rigorous Master of Science degree in Computer Science, providing basic competence in the principal areas of computer science. On this foundation, the student has the opportunity to build expertise in one of a number of practical and theoretical subjects, working toward a deeper understanding under the guidance of a faculty member.

ADMISSION REQUIREMENTS

Prospective students must have substantial background in computing, mathematics and science. The required computing background typically includes: competence in programming using C++/Java, discrete structures, data structures and algorithms, computer organization and architecture, programming language theory and operating systems. The required mathematics and science background include two courses in college calculus, a linear algebra course, and exposure to mathematical logic. A student must have a GPA of 3.00 in these, as well as an overall undergraduate GPA of 3.00 otherwise the student must take required undergraduate background courses as specified by the graduate advisory committee at the time of admission.

To be admitted to the master's program, the applicant must have the equivalent of an undergraduate degree in computer science from a regionally accredited college or university. The candidate must have a minimum score of 500 on the quantitative portion of the GRE.

GENERAL REQUIREMENTS

The program provides for thesis and non-thesis options.

Master's Degree with the Non-Thesis Option

Student who chooses the non-thesis option must complete 36 hours of course work. The coursework consists of 18 hours of core courses and 18 hours of computer science (CMP) electives. With this option, the student must pass the comprehensive exam within three attempts. The comprehensive examination will consist of questions from the knowledge units from each of the six core courses. A score of 75 or better is required to pass the comprehensive examination. Students also must complete all core courses prior to taking the comprehensive examination.

Master's Degree with the Thesis Option

Students who choose to take the thesis option must complete 30 semester hours of course work plus 6 hours of thesis. The course work consists of 18 hours of core courses and 6 hours of computer science (CMP) electives. The master's research and thesis must be an original work that (l) offers a theoretical contribution to the field or (2) provides a new methodology or techniques for solving practical problems in the area of computer science.

Core Courses

Every student must take all of the core courses to fulfill the breadth-first requirement. A minimum GPA of 3.00 must be earned in the core courses.

Elective Courses

A number of elective courses are provided for the student to master in interested field(s) of specialization.

Program Requirements with the Thesis Option

Professional Core (Required)		**Sem. Hours**
CMP 511	Design and Analysis of Algorithms	3
CMP 521	Object Oriented Programming and Design	3
CMP 531	Computer Architecture	3
CMP 541	Operating Systems Principles	3
CMP 551	Database Management Systems	3
CMP 561	Software Engineering Methodology	3
CMP Electives		6
CMP Thesis		6
Total		**30**

Program Requirements with the Non-Thesis Option

Professional Core (Required		**Sem. Hours**
CMP 511	Design and Analysis of Algorithms	3
CMP 521	Object Oriented Programming and Design	3
CMP 531	Computer Architecture	3
CMP 541	Operating Systems Principles	3
CMP 551	Database Management Systems	3
CMP 561	Software Engineering Methodology	3
CMP Electives		18
Total		**36**

Electives

CMP 513	Management Information Systems	3
CMP 515	Numerical Analysis	3
CMP 517	Applications of Statistical Methods	3
CMP 523	Compiler Design	3
CMP 525	Advanced Data Structures	3
CMP 535	Information to Bioinformatics	3
CMP 543	Computer Communications	3
CMP 550	Artificial Intelligence	3
CMP 554	Neural Networks	3
CMP 555	Advanced Database Systems	3
CMP 562	Multimedia Systems and Applications	3
CMP 570	Computer Graphics and Animation	3
CMP 577	Fuzzy and Expert Systems	3
CMP 591	Cooperative Educational Work Experience	3
CMP 593	Advanced Topics in Computer Science	3
CMP 597	Independent Study	3

COUNSELING & GUIDANCE

MASTER OF SCIENCE IN COUNSELING & GUIDANCE

PROGRAM DIRECTOR
James H. Stewart
256-372-8128
james.stewart@aamu.edu

Graduate Faculty

Professors
James H. Stewart
Annie Wells

Associate Professors
Calvin Matthews
Joan Fobbs-Wilson

Assistant Professors
Rhonda Sherrod
George Mamboleo

ABOUT THE PROGRAM

The Master of Science program in Counseling and Guidance offers students the educational background to prepare for work as school counselors. The M.S. program requires 48 credits of course work in thesis and non-thesis options. Currently, the program is intended for both part-time and full-time students, with classes designed to accommodate working students.

DEGREE REQUIREMENTS

Program Requirements with the Thesis Option

Required Program			**Sem. Hours**
SPE	501	Intro. To Study Exceptional Children	3
PSY	502	Descriptive & Inferential Behavioral Statistics	3
PSY	514	Advanced Developmental Psychology	3
PSY	555	Personality Theory	3
PSY	556	Group Dynamics	3
PSY	557	Organization and Administration of Guidance	3
PSY	558	Use & Interpretation of Tests	3
PSY	559	Counseling Techniques	3
PSY	585	Research in Psychology	3
PSY	592	Professional Orientation/Issues	3
PSY	595	Counseling Diverse Populations	3
PSY	597	Counseling Practicum	3
PSY	612	School Counseling Internship	3
PSY	660	Consultation	3
		500-600 Level Electives	6
PSY	599	Thesis	6
Total			**45-48**

Program Requirements with the Non-Thesis Option

Required Program			**Sem. Hours**
SPE	501	Intro. To Study Exceptional Children	3
PSY	502	Descriptive & Inferential Behavioral Statistics	3
PSY	514	Advanced Developmental Psychology	3
PSY	555	Personality Theory	3
PSY	556	Group Dynamics	3
PSY	557	Organization and Administration of Guidance	3
PSY	558	Use & Interpretation of Tests	3
PSY	559	Counseling Techniques	3
PSY	560	Occupational Psychology	3
PSY	585	Research in Psychology	3
PSY	592	Professional Orientation/Issues	3
PSY	597	Counseling Practicum	3
PSY	612	School Counseling Internship	3
PSY	660	Consultation	3
		500-600 Level Electives	6
Note: Comprehensive Exam is required			
Total			**45-48**

COUNSELING PSYCHOLOGY

MASTER OF SCIENCE IN COUNSELING PSYCHOLOGY

PROGRAM DIRECTOR
Annie M. Wells
256-372-8128
Annie.wells@aamu.edu

Graduate Faculty

Professors
Annie Wells

Associate Professors
Calvin Matthews
Joan Fobbs-Wilson

Assistant Professors
Rhonda Sherrod
George Mamboleo

ABOUT THE PROGRAM

The Master of Science program in Counseling Psychology offers students the educational background to prepare for work as mental health specialists in a variety of settings. The program provides broad-based instruction in practical counseling psychology which provides the framework necessary for graduates to apply for master's level licensure as a professional counselor in the state of Alabama. The M.S. program requires 48 credits of course work in thesis and non-thesis options. Currently, the program is intended for both part-time and full-time students, with classes designed to accommodate working students.

DEGREE REQUIREMENTS

Program Requirements for the Non-Thesis Option for MS Degree in Counseling Psychology♣

Required Program			Sem. Hours
PSY	502	Desc & Inter. Behavioral Statistics	3
PSY	514	Adv. Developmental Psychology	3
PSY	555	Personality Theory	3
PSY	556	Group Dynamics	3
PSY	558	Use & Interpretation of Tests	3
PSY	559	Counseling Techniques	3
PSY	560	Occupational Psychology	3
PSY	585	Research in Psychology	3
PSY	592	Professional Orientation/Issues	3
PSY	595	Counseling Diverse Populations	3
PSY	597	Counseling Practicum	3
PSY	620	Counseling Internship I	3
PSY	621	Counseling Internship II	3
		Electives	9
Total			**48**

Program Requirements with the Non-Thesis Option with a Concentration in Rehabilitation Counseling
Track I – Blindness Track♣

Required Program			Sem. Hours
Core Courses			
PSY	502	Descriptive & Inferential Behavioral Statistics	3
PSY	585	Research in Psychology	3
PSY	556	Group Dynamics	3
Concentration			
PSY	507	Introduction to Rehabilitation Counseling	3
PSY	508	Job Development and Placement	3
PSY	509	Vocational Assessment	3
PSY	553	Case Management	3
PSY	554	Medical Aspects and Adjustment in Rehabilitation	3
PSY	559	Counseling Techniques	3
PSY	560	Occupational Psychology	3
PSY	591	Psychosocial Aspects of Disabilities	3
PSY	597	Counseling Practicum	3
		UT – Orientation to Deafness	12
PSY	616	Internship in Vocational Counseling	3
PSY	617	Internship in Rehabilitation Counseling	3
Total			**48**

♣Candidates must take and pass the Comprehensive Examination

Program Requirements with the Non-Thesis Option with a Concentration in Rehabilitation Counseling
Track II – Deafness Track♣

Required Program			**Sem. Hours**
Core Courses			
PSY	502	Descriptive & Inferential Behavioral Statistics	3
PSY	585	Research in Psychology	3
PSY	556	Group Dynamics	3
Concentration			
PSY	507	Introduction to Rehabilitation Counseling	3
PSY	508	Job Development and Placement	3
PSY	509	Vocational Assessment	3
PSY	524	Sign Language	3
PSY	553	Case Management	3
PSY	554	Medical Aspects and Adjustment in Rehabilitation	3
PSY	559	Counseling Techniques	3
PSY	560	Occupational Psychology	3
PSY	591	Psychosocial Aspects of Disabilities	3
PSY	597	Counseling Practicum	3
		UT Orientation to Deafness. This training will fulfill two of the 6 credit hours of the elective requirements	3
PSY	616	Internship in Vocational Counseling	3
PSY	617	Internship in Rehabilitation Counseling	3
Total			**48**

Program Requirements with the Non-Thesis Option with a Concentration in Rehabilitation Counseling
Track III – General Track♠

Required Program			**Sem. Hours**
Core Courses			
PSY	502	Descriptive & Inferential Behavioral Statistics	3
PSY	585	Research in Psychology	3
PSY	556	Group Dynamics	3
Concentration			
PSY	507	Introduction to Rehabilitation Counseling	3
PSY	508	Job Development and Placement	3
PSY	509	Vocational Assessment	3
PSY	510	Rehabilitation High and Low Technology	3
PSY	553	Case Management	3
PSY	554	Medical Aspects and Adjustment in Rehabilitation	3
PSY	559	Counseling Techniques	3
PSY	560	Occupational Psychology	3
PSY	591	Psychosocial Aspects of Disabilities	3
PSY	597	Counseling Practicum	3
		Elective	3
PSY	616	Internship in Vocational Counseling	3
PSY	617	Internship in Rehabilitation Counseling	3
Total			**48**

♣Candidates must take and pass the Comprehensive Examination

ELEMENTARY EDUCATION

PROGRAM DIRECTOR
Rena Lott
256-372-5504
Rena.lott@aamu.edu

Professor
Mary Spor

Associate Professor
Rena N. Lott
Fred Bigenho

Assistant Professors
Angela R. Williams
Rhonda Moore-Jackson
Marjorie Battle
Freddie Stewart
Norma Bowe

Instructor
Adele L. Humphrey

ABOUT THE PROGRAM

The Department of Elementary and Early Childhood Education offers coursework and field experiences leading to the Master in Education with Teacher Certification (Class A and Class A Alternative) in Early Childhood Education (P-3) and Elementary Education (K-6). The Department also offers coursework and research opportunities for the Educational Specialist (Ed.S.) degree in Early Childhood Education and Elementary Education with Class AA teacher certification.

DEGREE COMPLETION REQUIREMENTS

Candidates for the Master's in Elementary Education (regardless of Track) must successfully:

1. Complete all undergraduate deficiency courses.
2. Complete the prescribed courses listed in the approved plan of study.
3. Obtain an overall grade-point average of 3.00 (based on a 4.00 system).
4. Pass a written comprehensive examination that covers the content of the program, complete an internship.*
5. Pass all parts of the Alabama Prospective Teacher Test (9) passing of the Praxis II in the appropriate area.

ELIGIBILITY CRITERIA FOR GRADUATE STUDENTS FOR THE INTERNSHIP (ALTERNATIVE MASTER'S 5TH YEAR)

Graduate students who expect to participate in internship shall meet all the Teacher Education program admission criteria described in the Alabama Administrative Code and be admitted to a Teacher Education program after the completion of FED 501 or FED 521, SPE 501 and EDU 529. Only students who have a minimum of 3.00 grade point average (GPA) in the teaching field (all work used), in professional studies (all work used) and overall will be eligible for internship. Graduate students must obtain and maintain a minimum overall of 3.00 grade point average (GPA) throughout their program.
An application for internship must be completed and filed in the Office of Field Experiences at least one year prior to the internship date. The deadline for the spring is March 15 of the previous year, and for the fall semester, September 15 of the previous year.
Before a graduate student can participate in internship, the following prerequisites must be met:

1. The student must have on file an application to a Teacher Education program.
2. The student must meet all requirements for admission to a Teacher Education program.
3. GRE scores must be on file with the Teacher Service Center
4. The student must meet general studies requirements.
5. The student must have obtained and maintained a minimum of 3.00 grade point average in

*All students enrolled in the Alternative Master's (5th year program) must also complete 205 hours of diverse field experiences prior to enrolling in the fall semester of internship. Fifty hours of field experiences are completed at Level I of the program. Twenty hours, three full days, are completed while enrolled in FED 501 Foundations of Education and/or FED 521 Multicultural Education courses. The three days of field experiences for these courses are completed in Title I, high poverty schools. Thirty hours, four full days, are completed while enrolled in SPE 501 Introduction to Individuals With Disabilities. Field experiences are completed in special education settings, with students with exceptionalities. One hundred fifty-five hours of field experiences are completed during Level II of the program while enrolled in teaching field courses. Students alternate experiences between urban and rural school settings. Fifty-five of the 155 hours may be completed in service learning settings.

professional studies, the teaching field and overall.
6. All undergraduate deficiencies must be completed.
7. The student must have completed all course work (excluding internship) from the State approved checklist.
8. The student must have removed all grades of "Incomplete."
9. The student must not have any grades of "C" or lower in any course.
10. Program of study must be on file with the Teacher Service Center and the Graduate Office.
11. Official transcripts from other universities and colleges attended must be on file with the Teacher Service Center.
12. The student must obtain requisite score on the Praxis II exam in appropriate area of concentration.
13. The student must clear the fingerprint/background check with the State Department of Education.

CERTIFICATION

All teacher education majors that have met the requirements must apply for Alabama Certification. A candidate who files an application must complete the curriculum approved by the State of Alabama. The completion of the curriculum approved for certification and all other requirements for graduation will qualify the student to apply for a professional educator's certificate. The levels of Alabama Professional Educator Certificates for students in the graduate program are: Class A: Master's degree and Class AA: Ed.S. degree.

MASTER IN EDUCATION WITH TEACHER CERTIFICATION – ALTERNATIVE FIFTH YEAR CLASS A P-3 IN EARLY CHILDHOOD EDUCATION*

ADMISSION REQUIREMENTS

The alternative 5th year program is for applicants who do not hold a baccalaureate degree in a teaching field but wishes to obtain teacher certification. The program enables qualified candidates to acquire the knowledge and skills of an entry-level teacher while at the same time earn a Master's degree. In addition to specific course requirements found on pages 43-44 applicants seeking admission to the alternative 5th year program, program must be admitted to the School of Graduate Studies and to Teacher Education. Admission to Teacher Education requires the applicant to:

1. Present evidence of having completed a baccalaureate degree from a regionally accredited institution.
2. A grade point average of 2.50 or better (4.00 point system) on all course work previously completed.
3. Complete all undergraduate deficiencies.
4. Pass a speech, language and hearing screening.
5. Provide results of a negative tuberculosis skin test.

Required Program			**Sem. Hours**
ECE	514	Basic Skills	3
ECE	520	Foundation of Teaching Reading	3
ECE	521	Research in Elementary & Early Childhood	3
ECH	506	Curriculum Design	3
ECH	516	Multi-Sensory Approaches to Learning	3
ECH	595	Internship in ECH	6
FED	502	Foundations of Education	3
		or	
FED	521	Multicultural Education	
FED	503	Educational Research	3
FED	504	Evaluation of Teaching & Learning	3
FED	529	Computer-Based Instructional Technology	3
SPE	501	Introduction to Study of Exceptional Children	3
SPE	530	Classroom Behavior Management	3
		Elective Courses	6
Total*			**45**

Elective Courses

ART	534	Art in Childhood Education	3
ECE	505	Problems in Improving Math	3
ECE	507	Children's Literature	3
ECE	509	Trends in Teaching Social	3

*In addition to other deficiencies, candidates seeking the alternative Master's in Early Childhood Education (p-3) must complete the following undergraduate teaching field courses: FCE 304 Teaching Reading to Young Children, ECE 305 M/M in Math, ECH 300 Programs in ECH, ECH 405 Organization/ Administration in ECH and PSY 403 Educational Psychology. Early childhood Education Alternative Master's candidates seeking the additional endorsement in Elementary Education (K-6) must complete the following graduate courses: ELE 509 Evaluation in Elementary Schools and ELE 519 Elementary School Curriculum. A Passing score on a comprehensive written examination covering the content of the program areas is required.

		Studies	
ECE	510	Problems in Improving Science	3
ECE	512	Investigation of Language Arts	3
ECE	518	Environmental Education Across the Curriculum	3
ECE	506	Curriculum Design	3
ECH	517	Theory, Methods & in ECH	3

EARLY CHILDHOOD (PRE-ELEMENTARY) EDUCATION ALTERNATIVE FIFTH-YEAR MASTER'S PROGRAM-CLASS A P-3

ADMISSIONS REQUIREMENTS

In addition to specific course requirements found on pages 47-48 applicants seeking admission to the program must (1) present evidence of having completed a baccalaureate degree program in the same teaching field from an accredited school, (2) present a copy of a Class B Professional Educator's Certificate, and (3) present transcript(s) showing a baccalaureate degree grade point average of 2.50 or better (4.00 system).

DEGREE REQUIRMENTS[♣]

Program Requirements with the Non-Thesis Option	**Sem. Hours**
ECE 514 Basic Skills	3
ECE520Foundations of Teaching Reading	3
ECE 521 Research in Elementary & Early Childhood	3
ECH 506Curriculum Design	3
ECH 516Multi-Sensory Approaches to Learning	3
ECH 595Internship in ECH	6
FED 501Foundations of Education or	
FED 521Multicultural Education	3
FED 503 Educational Research	3
FED 504Evaluation of Teaching & Learning	3
FED 529Computer-Based Instructional Technology	3
SPE 501Introduction to Study of Exceptional Children	3
SPE 530Classroom Behavior Mgmt	3
Electives*	6
Total	**45**

[♣]In addition to other deficiencies, candidates seeking the alternative Master's in Early Childhood Education (p-3) must complete the following undergraduate teaching field courses: FCE 304 Teaching Reading to Young Children, ECE 305 M/M in Math, ECH 300 Programs in ECH, ECH 405 Organization/ Administration in ECH and PSY 403 Educational Psychology. Early childhood Education Alternative Master's candidates seeking the additional endorsement in Elementary Education (K-6) must complete the following graduate courses: ELE 509 Evaluation in Elementary Schools and ELE 519 Elementary School Curriculum. A Passing score on a comprehensive written examination covering the content of the program areas is required.

EARLY CHILDHOOD (PRE-ELEMENTARY) EDUCATION TRADITIONAL MASTER'S PROGRAM CLASS A P-3

ADMISSION REQUIRMENTS

In addition to specific course requirements found on pages 43-44 applicants seeking admission to the program must (1) present evidence of having completed a baccalaureate degree program in the same teaching field from an accredited school, (2) present a copy of a Class B Professional Educator's Certificate, and (3) present transcript(s) showing a baccalaureate degree grade point average of 2.50 or better (4.00 system).

DEGREE REQUIRMENTS

Program Requirements with the Non-Thesis Option	**Sem. Hours**
ECE521Research in Elementary & Early Childhood	3
ECH 506Curriculum Design	3
ECH 516Multi-Sensory Approaches to Learning	3
ECH 517Theory, Methods & Materials in ECH Education	3
FED 500 Professional Seminar	3
FED 501Foundations of Education or	3
FED 521Multicultural Education	
FED 503Educational Research	3
FED 504Evaluation of Teaching & Learning	3
FED 529Computer-Based Instructional Technology	3
SPE 501Introduction to Study of Exceptional Children	3
Electives	6
Total	**36**

Partial Listing of Electives Open To This Track*

ECH	502	Workshop in Early Childhood Education	3
ECE	503	Learning Styles	3
ECE	504	Problems in Improving Reading	3
ELE	509	Evaluation in Elementary Schools	3

ELEMENTARY EDUCATION ALTERNATIVE FIFTH-YEAR MASTER'S PROGRAM – CLASS AP-3ABOUT THE PROGRAM

DEGREE REQUIRMENTS*

Program Requirements with the Non-Thesis Option			**Sem. Hours**
ECE	514	Basic Skills	3
ECE	520	Foundations of Teaching Reading	3
ECE	521	Research in Elementary & Early Childhood	3
ELE	509	Evaluation in Elementary Schools	3
ELE	519	Elementary School Curriculum	3
ELE	595	Internship	6
FED	501	Foundations of Education	3
		OR	
FED	521	Multicultural Education	
FED	503	Educational Research	3
FED	504	Evaluation of Teaching & Learning	3
FED	529	Computer-Based Instructional Technology	3
SPE	501	Introduction to Study of Exceptional Children	3
SPE	530	Classroom Behavior Management	3
		Electives	6

*In addition to other deficiencies, candidates seeking the Alternative Master's in Elementary Education (K-6) must complete the following undergraduate teaching field courses: ECE 304 Teaching Reading to Young Children, ECE 305 M/M in Math, ECE 407 Teaching Intermediate Readers, ELE 300 Elementary School Organization and PSY 403 Educational Psychology. Elementary Education Alternative Master's candidates seeking the additional endorsement in Early Childhood Education (P-3) must complete the following graduate courses: ECH 506 Curriculum Design and ECH 516 Multi-Sensory Approaches to Learning. A passing score on a comprehensive written examination covering the content of the program areas is required.

Total			**45**
Available Electives			
ART	534	Art in Childhood Education	3
ECE	505	Problems in Improving Math	3
ECE	507	Children's Literature	3
ECE	509	Trends in Teaching Social Studies	3
ECE	510	Problems in Improving Science	3
ECE	512	Invest. of Language Arts	3

ELEMENTARY EDUCATION TRADITIONAL MASTER'S PROGRAM – CLASS K-6

ADDITIONAL REQUIREMENTS

In addition to specific course requirements found on pages 43-44 applicants seeking admission to the program must (1) present evidence of having completed a baccalaureate degree program in the same teaching field from an accredited school, (2) present a copy of a Class B Professional Educator's Certificate, and (3) present transcript(s) showing a baccalaureate degree grade point average of 2.50 or better (4.00 system).

DEGREE REQUIRMENTS∂

Program Requirements with the Non-Thesis Option			**Sem. Hours**
ECE	520	Foundations of Teaching Reading	3
ECE	521	Research in Elementary & Early Childhood	3
ELE	509	Evaluation in Elementary Schools	3
ELE	519	Elementary School Curriculum	3
FED	500	Professional Seminar	3
FED	501	Foundations of Education	
FED	521	Multicultural Education	3
FED	503	Educational Research	3
FED	504	Evaluation of Teaching & Learning	3
FED	529	Computer-Based Instructional Technology	3
SPE	501	Introduction to Study of Exceptional Children	3
		Electives	6
Total			**36**

∂A Passing Score on a comprehensive written examination covering the content of the program areas is required.

Available Electives

ECE	503	Learning Styles	3
ECE	504	Problems in Improving Reading	3
ECE	505	Problems in Improving Math	3
ECE	512	Investigation of Language Arts	3
ECE	518	Environmental Education Across Curriculum	3
ECH	506	Curriculum Design	3
ECH	516	Multi-Sensory Approaches to Learning	3

EDUCATIONAL SPECIALIST DEGREE IN EARLY CHILDHOOD PRE-ELEMENTARY EDUCATION PROGRAM – CLASS AA P-3

ADDITIONAL REQUIREMENTS

In addition to specific course requirements found on pages 43-44 applicants seeking admission to the program must (1) present evidence of having completed a baccalaureate degree program in the same teaching field from an accredited school, (2) present a copy of a Class B Professional Educator's Certificate, and (3) present transcript(s) showing a baccalaureate degree grade point average of 2.50 or better (4.00 system).

DEGREE REQUIRMENTS*

Program Requirements with the Non-Thesis Option			**Sem. Hours**
ECE	602	Theoretical Foundations	3
ECE	671	Advanced Research in ELE/ECH	3
ECH	602	Strategies of Parent Involvement	3
ECH	698	Action Research I	3
ECH	699	Action Research II	3
FED	600	Advanced Curriculum Development	3
FED	603	Advanced Educational Research	3
FED	604	Advanced Evaluation of Teaching & Learning	3
FED	605	Qualitative Methods of	3
ECE	507	Children's Literature	3
ECE	509	Trends in Teaching Social Studies	3
ECE	510	Problems in Improving Science	3
		Educational Research	
SPE	501	Introduction to Study of Exceptional Children	3
SPE	667	Professional Writing	3
		Electives	3
Total			**36**

Available Electives

ECE	603	Field Research	3
ECE	625	Trends in Teaching Social Studies	3
ECH	502	Workshop in Early Childhood Education	3
ELE	614	Teaching Strategies Affecting Dimension of Reading	3
FED	531	Current & Emerging Instructional Technologies	3
FED	532	Curriculum Integrating Technology	3

EDUCATIONAL SPECIALIST DEGREE IN ELEMENTARY EDUCATION PROGRAM CLASS AA P-3

ADDITIONAL REQUIREMENTS

In addition to specific course requirements found on pages 43-44 applicants seeking admission to the program must(1) present evidence of having completed a Master's degree from an accredited school with Class A Certification in the same teaching field(s) in which the Ed.S. degree is sought and (2) present transcript(s) showing a Master's degree grade point average of 3.00 or better (4.00 system).

DEGREE REQUIRMENTS*

Program Requirements with the Non-Thesis Option			**Sem. Hours**
ECE	602	Theoretical Foundations	3
ECE	671	Advanced Research in ELE/ECH	3
ELE	614	Teaching Strategies Affecting Dimension of Reading	3
ECH	698	Action Research I	3
ECH	699	Action Research II	3
FED	600	Advanced Curriculum Development	3
FED	603	Advanced Educational	3

*Candidates who have not taken statistics at the master level must enroll in FED 502 Educational Statistics prior to enrolling in teaching field courses and before completing the Ed.S. program. A passing score on a comprehensive written examination covering the content of the program areas is required.

		Research	
FED	604	Advanced Evaluation of Teaching & Learning	3
FED	605	Qualitative Methods of Educational Research	3
SPE	501	Introduction to Study of Exceptional Children	3
SPE	667	Professional Writing	3
Total			**36**

Available Electives

ECE	603	Field Research	3
ECE	625	Trends in Teaching Social Studies	3
ECH	602	Strategies of Parent Involvement	3
ELE	511	Workshop in Elementary Education	3
FED	531	Current & Emerging Instructional Technologies	3
FED	532	Curriculum Integrating Technology	3

FAMILY AND CONSUMER SCIENCES

MASTER OF SCIENE IN FAMILY AND CONSUMER SCIENCES

PROGRAM DIRECTOR
Cynthia M. Smith
256-372-4172
Cynthia.smith@aamu.edu

Graduate Faculty

Professors
Virginia Caples
Ola Sanders
Nahid Sistani
Cynthia Smith

Associate Professors
Dorothy Brandon
Linda Gardner
Johnson Kamalu

Assistant Professors
Allison Young

ABOUT THE PROGRAM

The Master of Science program in Family and Consumer Sciences is dedicated to preparing researchers and academicians to engage in a diverse range of intellectual issues critical for the well-being of individuals and families. The flexibility of the Master's degree program in Family and Consumer Sciences allows students the opportunity to achieve professional and personal goals. In addition to flexibility, a thesis or non-thesis option is offered. A total of 34 semester hours of course work, 13 of which are common core courses, is required for completion of the program. The remaining hours (15 – 21 hours) may be taken through one of the Area Concentrations:

1. Apparel, Merchandising and Design.
2. Human Development and Family Studies.
3. Nutrition and Hospitality Management.

ADMISSION TO THE PROGRAM

In addition to the general requirements for admission to graduate study at Alabama A&M University, applicants must hold a bachelor's degree in a Family and Consumer Sciences program from an accredited AAFCS program. Academic records of applicants with a bachelor's degree in a related or unrelated field will be assessed for the necessary prerequisites. Any prerequisite not met will require additional undergraduate or graduate courses.

Program Requirements for the Thesis Option for concentration in Apparel, Merchandising and Design

			Sem. Hours
Core (Required)			
FCS	508	Trends & Issues in the Profession	3
FCS	511	Leadership and Administration in FCS	3
FCS	514	Seminar	1
PSY	502	Descriptive Statistics*	3
NRE	529	Inferential Behavioral Statistics*	3
Sub-Total			**13**
Concentration (Select 5 courses min. 15 credit hours)			
AMD	527	Consumer Textiles	3
AMD	528	Social Psychological & Economic Aspect of Clothing	3
AMD	530	Special Problems	3
FCS	530	Special Problems	1-3
AMD	533	Historic Costume	3
AMD	534	Advanced Costume Design	3
ADM	535	Advanced Tailoring	3
AMD	537	Fashion Merchandising Study Tour	1-3
AM	540	Clothing for the Elderly	3
FCS	512	Technology Advances & Application in the Profession	3
AMD	618	Textile Economics	3
FCS	600	Program Planning & Evaluation	3
AMD	650	New Director in Clothing & Textiles	3
Sub-Total			**15**
FCS	599	Master's Thesis	6
Total			**34**

Program Requirements with the Thesis Option for concentration in Human Development and Family Studies

Core (Required)			Sem. Hours
FCS	508	Trends & Issues in the Profession	3
FCS	511	Leadership and Administration in FCS	3
FCS	514	Seminar	1
PSY	502	Descriptive Statistics*	3
NRE	529	Inferential Behavioral Statistics*	3
Sub-Total			**13**
Concentration (Select 5 courses min. 15 credit hours)			
HDF	500	Family Development & Culture	3
FCS	512	Technological Advances & Application in the Profession	3
HDF	515	Social & Emotional Development of Children	3
HDF	517	Consumer Behavior	3
HDF	518	Parenting Perspectives	3
HDF	519	Child Development Programs	3
HDF	520	Family Resource Management	3
HDF	521	Youth Programs	3
HDF	524	Adults & Their Relationships	3
HDF	526	Multi-Sensory Approaches to Learning	3
HDF	530	Special Problems	3
FCS	530	Special Problems	1-3
HDF	544	Support Systems for the Elderly	3
HDF	604	Reading in Child Development and Early Childhood Education	3
FCS	600	Program Planning & Evaluation	3
HDF	610	Strategies of Parent Involvement	3
Sub-Total			**15**
FCS	599	Master's Thesis	6
Total			**34**

Program Requirements with the Thesis Option for concentration in Nutrition and Hospitality Management

Core (Required)			Sem. Hours
FCS	508	Trends & Issues in the Profession	3
FCS	511	Leadership and Administration in FCS	3
FCS	514	Seminar	1
PSY	502	Descriptive Statistics*	3
NRE	529	Inferential Behavioral Statistics*	3
Sub-Total			**13**
Concentration (Select 5 courses min. 15 credit hours)			
NHM	501	Advanced Maternal and Child Nutrition	3
NHM	502	Advanced Quantity Food Production	3
NHM	503	Experimental Foods	3
NHM	504	Breastfeeding and Human Lactation	3
NHM	505	Contemporary Problems in the Hospitality Industry	3
NHM	511	Nutrition Education Program Planning and Implementation	3
NHM	530	Special Problems	3
FCS	512	Technological Advances & Application in the Profession	3
FCS	53	Special Problems	1-3
NHM	548	Workshop	3
FCS	600	Program Planning & Evaluation	3
NHM	612	Adolescent and Geriatric Nutrition	3
MGT	564	Human Resource Management	3
FIN	511	Financial Management & Policy	3
MGT	515	Organizational Theory and Behavior	3
Sub-Total			**15**
FCS	599	Master's Thesis	6
Total			**34**

*PSY 502 and NRE 529 are recommended statistics courses. However with advisor's approval students can complete this option with other approved statistics courses.

Program Requirements with the Non-Thesis Option for concentration in Apparel, Merchandising and Design

Core (Required)			**Sem. Hours**
FCS	508	Trends & Issues in the Profession	3
FCS	511	Leadership and Administration in FCS	3
FCS	514	Seminar	1
PSY	502	Descriptive Statistics*	3
NRE	529	Inferential Behavioral Statistics*	3
Sub-Total			**13**

Concentration (Select 7 courses min. 21 credit hours)

AMD	527	Consumer Textiles	3
AMD	528	Social Psychological & Economic Aspect of Clothing	3
AMD	530	Special Problems	3
FCS	530	Special Problems	1-3
AMD	533	Historic Costume	3
AMD	534	Advanced Costume Design	3
ADM	535	Advanced Tailoring	3
AMD	537	Fashion Merchandising Study Tour	1-3
AMD	540	Clothing for the Elderly	3
FCS	512	Technology Advances & Application in the Profession	3
AMD	618	Textile Economics	3
FCS	600	Program Planning & Evaluation	3
AMD	650	New Director in Clothing & Textiles	3
Sub-Total			**21**
FCS	599	Master's Thesis	6
Total			**40**

Program Requirements with the Non-Thesis Option for concentration in Human Development and Family Studies

Core (Required)			**Sem. Hours**
FCS	508	Trends & Issues in the Profession	3
FCS	511	Leadership and Administration in FCS	3
FCS	514	Seminar	1
PSY	502	Descriptive Statistics*	3
NRE	529	Inferential Behavioral Statistics*	3
Sub-Total			**13**

Concentration (Select 5 courses min. 15 credit hours)

HDF	500	Family Development & Culture	3
FCS	512	Technological Advances & Application in the Profession	3
HDF	515	Social & Emotional Development of Children	3
HDF	517	Consumer Behavior	3
HDF	518	Parenting Perspectives	3
HDF	519	Child Development Programs	3
HDF	520	Family Resource Management	3
HDF	521	Youth Programs	3
HDF	524	Adults & Their Relationships	3
HDF	526	Multi-Sensory Approaches to Learning	3
HDF	530	Special Problems	3
FCS	530	Special Problems	1-3
HDF	544	Support Systems for the Elderly	3
HDF	604	Reading in Child Development and Early Childhood Education	3
FCS	600	Program Planning & Evaluation	3
HDF	610	Strategies of Parent Involvement	3
Sub-Total			**21**
FCS	599	Master's Thesis	6
Total			**40**

Program Requirements with the Non-Thesis Option for concentration in Nutrition and Hospitality Management

Core (Required)

FCS	508	Trends & Issues in the Profession	3
FCS	511	Leadership and Administration in FCS	3
FCS	514	Seminar	1
PSY	502	Descriptive Statistics*	3
NRE	529	Inferential Behavioral Statistics*	3
Sub-Total			**13**

Concentration (Select 5 courses min. 15 credit hours)

* PSY 502 and NRE 529 are recommended statistics courses. However, with advisor's approval students can complete this option with other approved, statistics courses.

NHM	501	Advanced Maternal and Child Nutrition	3
NHM	502	Advanced Quantity Food Production	3
NHM	503	Experimental Foods	3
NHM	504	Breastfeeding and Human Lactation	3
NHM	505	Contemporary Problems in the Hospitality Industry	3
NHM	511	Nutrition Education Program Planning and Implementation	3
NHM	530	Special Problems	3
FCS	512	Technological Advances & Application in the Profession	3
FCS	530	Special Problems	1-3
NH	548	Workshop	3
FCS	600	Program Planning & Evaluation	3
NHM	612	Adolescent and Geriatric Nutrition	3
MGT	564	Human Resource Management	3
FIN	511	Financial Management & Policy	3
MGT	515	Organizational Theory and Behavior	3
Sub-Total			**21**
FCS	599	Master's Thesis	6
Total			**40**

FOOD SCIENCE

MASTER OF SCIENCE IN FOOD SCIENCE
DOCTOR OF PHILOSOPHY IN FOOD SCIENCE

PROGRAM DIRECTOR
Martha Verghese
256-372-4175
Martha.verghese@aamu.edu

Graduate Faculty

Program Professors
Ola Sanders
Martha Verghese
Lloyd Walker
Jacqueline Johnson

Research Associate Professors
Koffi Konan
Josh Herring

Assistant Professors
Pratik Banerjee
Judith Boateng
amin Kassam

Associate Professors
Gamal Abd-rahim
Julio Correa
Jorge Vizcarra

REQUIREMENTS FOR MASTER OF SCIENCE

ADMISSION REQUIREMENTS

For admission, into the program a student must have a Bachelor of Science degree in an area of agricultural or other sciences, nutrition, engineering or mathematics. Students holding degrees in other fields may be required to take additional courses to satisfy any deficiencies of core courses considered vital for food science undergraduate majors.* Candidates must satisfy the general admission requirements of the School of Graduate Studies, which include a minimum GPA of 2.75 in their undergraduate degree program for regular admission. Graduate Record Examination scores must be submitted. Students seeking to enter the M.S. degree program will be admitted under the following conditions:

1. Regular Admissions – At least a 2.75 grade point average (on a 4.0 point scale), or a 3.00 GPA in the student's major area of concentration. A composite GRE score of at least 800 (400 verbal and 400 math).
2. Conditional Admissions – At least a 2.50 – 2.74 GPA (on a 4.0 point scale). A composite score less than 800 or a verbal or mathematics sub-score less than 400.

Thesis Option

A minimum of 30 semester hours to include 24 hours of coursework including at least one hour of graduate seminar and 6 semester hours of thesis research are required for graduation. Of these, at least 12 hours of coursework should be at 600 level, with a minimum of 9 hours at 600 level in the major area of emphasis. Students without an undergraduate degree in the major will be guided by their graduate student advisory committee to take additional courses that will generally extend the hours in the program beyond 30 semester hours. The students are expected to complete the degree within a period of two calendar years. During the course of graduate study, the student will be required to maintain a minimum GPA of 3.0. A successful defense of the thesis and a completed thesis document prepared according to the Guidelines of the School of Graduate Studies will complete the degree requirements.

Non-Thesis Option

A minimum of 36 semester hours to include 32 hours of coursework and 4 hours of master's report as determined by the student's advisory committee are required. Eighteen (18) hours must be in the student's major area and, of these, 9 hours must be at the 600 level or higher. An additional 3 credits required at the 600 level or higher may be in supporting areas. The master's report is prepared in the form and style of the thesis document but limited in scope as guided by the student's advisory committee. Passing a comprehensive examination administered by the student's advisory committee is required to complete the degree requirements.

* Students without a undergraduate degree in Food Science are also required to complete FAS503 – Food Microbiology, FAS 507 – Food Chemistry, and FAS 561 – Food Engineering.

Program Requirements with the Thesis Option

Required Program*			Sem. Hours
NRE	530	Principles of Experimentation	3
FAS	697	Seminar	1
FAS	699	Research for M.S Master's Thesis	6
		Area Content Courses (At least 9 hours must be at the 600 level)	20
Total			**30**

Program Requirements for the Non-Thesis Option

Required Program*			Sem. Hours
NRE	530	Principles of Experimentation	3
FAS	697	Seminar	1
FAS	698	Masters Report	4
		Area Content Courses (At least 9 hours must be at the 600 level)	28
Total			**36**

Thesis option students must take 20 hours of area content courses. Non-thesis option students must take 28 hours of area content courses

Area Content Courses

FAS	505	Meat Science	3
FAS	508	Food Analysis	3
FAS	521	Poultry Products Technology	3
FAS	538	Fruits, Vegetables and Cereal Products Technology	3
FAS	550	Regulation of Food Safety and Quality	3
FAS	551	Food Quality Assurance	3
FAS	553	Agricultural Biochemistry	4
FAS	572	Food Processing	4
FAS	605	Special Problems	2-3
FAS	611	Food Toxicology	3
FAS	615	Food Enzymes	3
FAS	617	Food Flavors and Pigments	3
FAS	632	Monogastric Nutrition and Metabolism	3
FAS	640	Product Development and esearch	3
FAS	642	Minerals and Vitamins in Foods and Nutrition	3
FAS	644	Proteins in Foods and Nutrition	3
FAS	646	Carbohydrates and Lipids in Foods and Nutrition	3
FAS	654	Food Microbiological Techniques	3
FAS	657	Analytical Techniques and Instrumentation	3
FAS	658	Food Microstructure	3
FAS	672	Food Rheology	3
FAS	671	Introduction to Biotechnology	3
FAS	676	Food Processing and Nutrients	3
FAS	701	Advanced Food Microbiology	3
FAS	707	Advanced Chemistry	3
FAS	711	Advanced Food Toxicology	3
FAS	736	Advanced Sensory Evaluation	3
FAS	741	Advances in Nutrition	3
FAS	761	Advanced Food Engineering	3
FAS	771	Advanced Food Biotechnology	3
FAS	772	Advanced Food Processing	3
FAS	796	Advanced Topics in Food Science	1-3

*Students without an undergraduate degree in Food Science are also required to complete FAS 503 Food Microbiology, FAS 507 Food Chemistry, and FAS 561 Food Engineering.

REQUIREMENTS FOR THE PH.D.OF PHILOSOPHY IN FOOD SCIENCE

ADMISSION REQUIREMENTS

Candidates seeking admission in the Doctor of Philosophy degree program must have:

1. A M.S. degree in Food Science, Nutrition, Animal Science, Agronomy, Horticulture, Plant Science, Biology, Chemistry or a closely related area from a regionally accredited institution.
2. Provide evidence of a cumulative GPA of 3.00 in all baccalaureate coursework and a 3.25 cumulative GPA in all M.S. coursework.
3. A minimum combined score of 1200 on the verbal, quantitative and analytical sections of the GRE.
4. Three letters of reference that provide information about the applicant's academic background and ability to pursue the Ph.D. program.
5. A personal statement on a career objective and research interest.

DEGREE REQUIREMENTS FOR THE DOCTOR OF PHILOSOPHY

All students accepted into the Ph.D. program are granted a provisional admission until they pass the qualifying examination. Candidates who have some deficiencies in their background but who meet the general requirements of the department and the Graduate School for admission must complete additional coursework recommended by the Departmental Graduate Studies Committee with a minimum GPA of 3.00, at which time they shall be allowed to take the qualifying exam. Deficiency coursework does not count toward the degree requirements. Upon the successful completion of all deficiency coursework and the qualifying exam, regular admission will be granted. A comprehensive examination must be completed within five years of the student's initial enrollment and after completing at least 80 percent of the coursework and completion of language requirements. A dissertation proposal will be completed with the guidance of the advisory committee. Admission to candidacy is an indication of completion of all coursework, successful passing of written and oral comprehensive examinations, and having filed an approved dissertation proposal with the Dean of the School of Graduate Studies. Candidacy marks the achievement in which the student's major attention is to focus on the dissertation efforts. Each Ph.D. student must complete the following program requirements:

1. A total of 28 credit hours (minimum GPA of 3.00) beyond the Master's level at the 600 level or above, including 9 semester hours or more at the 700 level, are required. An additional two credit hours of FAS 797 Seminar are required of all doctoral students.
2. A reading knowledge of at least one foreign language in which there exists a significant body of literature relevant to the major field of study or at least 3 semester hours of a scientific computer programming language. The foreign language requirement is satisfied by a grade of "B" or better in a 200-level or higher language course.
3. A meaningful teaching experience in which the Ph.D. student works under the supervision of a faculty member in the regular conduct of the organization, delivery and evaluation of a course is required.
4. Successful completion of written and oral comprehensive examinations after completing at least 80 percent of the prescribed course work.
5. Completion of a doctoral dissertation involving a minimum of 12 semester hours of dissertation research on a topic determined through the collaborative efforts of the major advisor and the graduate student advisory committee. The effort must be scholarly and make a significant contribution to the field of study.
6. A final oral examination is required and must be taken at least two weeks prior to graduation. The examination will be concerned primarily with the candidate's dissertation but may include other aspects of the student's graduate work.

Program Requirements for the Ph.D. Degree*

Required Program*			**Sem. Hours**
NRE	530	Principles of Experimentation	3
FAS	657	Analytical Techniques &Instrumentation	3
FAS	797	Seminar	2
FAS	799	Research for Ph.D.	12
		Area Concentration Hours	23
Total			**43**

PH.D. students must take at least 23 credit hours from this section, including 9 hours or more at the 700 level

Area Content Courses

FAS	605	Special Problems	2-3
FAS	611	Food Toxicology	3
FAS	615	Food Enzymes	3
FAS	617	Food Flavors and Pigments	3
FAS	632	Monogastric Nutrition and Metabolism	3
FAS	640	Product Development and Research	3
FAS	642	Minerals and Vitamins in Foods and Nutrition	3
FAS	644	Proteins in Foods and Nutrition	3
FAS	646	Carbohydrates and Lipids in Foods and Nutrition	3
FAS	654	Food Microbiological Techniques	3
FAS	657	Analytical Techniques and Instrumentation	3

* Foreign language or computer programming language requirement (200 level or higher), and NRE 502 Scientific Writing (3 hrs) on recommendation of graduate advisor also required.

FAS	658	Food Microstructure	3
FAS	672	Food Rheology	3
FAS	671	Introduction to Biotechnology	3
FAS	676	Food Processing and Nutrients	3
FAS	701	Advanced Food Microbiology	3
FAS	707	Advanced Chemistry	3
FAS	711	Advanced Food Toxicology	3
FAS	736	Advanced Sensory Evaluation	3
FAS	741	Advances in Nutrition	3
FAS	761	Advanced Food Engineering	3
FAS	771	Advanced Food Biotechnology	3
FAS	772	Advanced Food Processing	3
FAS	796	Advanced Topics in Food Science	1-3

GUIDANCE AND PSYCHOLOGY

MASTER OF SCIENCE IN GUIDANCE AND PSYCHOLOGY

PROGRAM DIRECTOR
Calvin O. Matthews
256-372-8128
Calvin.matthews@aamu.edu

Graduate Faculty

Professors

Associate Professors
Calvin O. Matthews

ABOUT THE PROGRAM

The Master of Science Degree in Counseling Psychology at Alabama Agricultural & mechanical University is a rigorous and comprehensive program that prepares students for professional careers in counseling psychology. The program is 48 semester hours in length and focuses on emotional, social, vocational, educational, health-related, developmental, and organizational concerns.
The program culminates in an original research paper or thesis and an internship in a setting that matches students' career interests. The program can be used to prepare for careers in a variety of settings in the fields of mental health and higher education, including mental health centers, hospitals and clinics, private practice, university counseling centers, student affairs and career services. The program can also be used to prepare for further training in doctoral programs in clinical and counseling psychology. The program can be completed in about 2 years by full-time students taking approximately 9 credits (3 courses) each semester and by taking some courses over the summer months. Students can also complete the program more gradually, taking fewer classes each term.

DEGREE REQUIREMENTS

Program Requirements with the Non Thesis Option

Required Program			**Sem. Hours**
SPE	501	Introduction to Study of Exceptional Children	3
PSY	502	Descriptive & Inferential Behavioral Statistics	3
PSY	514	Advanced Developmental Psychology	3
PSY	555	Personality Theory	3
PSY	556	Group Dynamics	3
PSY	557	Organization and Administration Guidance	3
PSY	558	Use & Interpretation of Tests	3
PSY	559	Counseling Techniques	3
PSY	560	Occupational Psychology	3
PSY	585	Research in Psychology	3
PSY	592	Professional Orientation/Issues	3
PSY	597	Counseling Practicum	3
PSY	612	School Counseling Internship	3
PSY	660	Consultation	3
		Electives (500-600 Level)	6
Note: Comprehensive Exam Required			
Total			**45-48**

INDUSTRIAL TECHNOLOGY

MASTER OF SCIENCE IN INDUSTRIAL TECHNOLOGY

PROGRAM DIRECTOR
F. Michael Ayokanmbi
256/372-4312

Graduate Faculty

Professors
Peter Romine

Associate Professors
F. Michael Ayokanmbi
Theodore Dixie
Stephen Egarievwe
Chris Odionu

Assistant Professors
Wing Chan
Aschalew Kassu

ABOUT THE PROGRAM

The Master of Science degree in Industrial Technology provides students with an opportunity to develop higher levels of technical-management, leadership, and instruction competencies needed to broaden their career potential for positions in business, industry, education, and government. The programs objectives are achieved through a curriculum that emphasizes:

1. Project planning and implementation;
2. Tools and strategies for process improvement;
3. The safe, effective, efficient, and creative use of technological resources and materials in performing technological processes;
4. The application of mathematics, natural/physical sciences, social sciences and technological concepts in solving practical technology problems and extending human capabilities;
5. Principles, practices, and standards used in performing tasks associated with technology-based systems;
6. Supervision of personnel and the management of technological systems in the production and delivery of consumer goods and services;
7. Design and delivery of instruction in a career or technical education program at the post-secondary levels or corporate training programs.

REQUIREMENTS FOR MASTER OF SCIENCE

ADMISSION REQUIREMENTS

The master's degree program in Industrial Technology is open to students who have earned a Bachelor of Science Degree in Industrial Technology, business, computer science, or science, technology, engineering, and mathematics (STEM) related disciplines. Program faculty consider the following factors in making admission decisions:

1. A minimum GRE score of 400 in verbal and quantitative sections, respectively. Applicants who already have a master's degree in any discipline will be exempt from this requirement.
2. Undergraduate GPA of 2.50 or above. Applicants with baccalaureate degrees in other disciplines, or with a GPA of less than 2.50 and a minimum of 3 years of work experience in one of the previously mentioned disciplines will be considered for admission.
3. Three letters of reference, including one from the applicant's current or most recent employer or instructor.
4. Letter of intent. A brief statement explaining the reason for pursuing a master's degree in Industrial Technology and how this degree is expected to help in achieving his or her career goals.

Applicants without undergraduate degrees in business, computer science, or STEM-related disciplines will be required to take INT 107 Industrial Materials and Processes I and INT 334 Production Planning and Control in their first semester of enrollment, and earn a minimum grade of "B" in each course.

PROGRAM REQUIREMENTS

THESIS OPTION (30 SEMESTER HOURS)

The thesis option requires a minimum of 30 semester hours, which include fifteen (15) semester hours of core courses, nine (9) semester-hours of electives in the area of specialization, and six (6) semester-hours of thesis. The electives should be chosen in any area that strengthens a student's goal and is approved by the advisor.

Program Requirements with the Thesis Option

Required Program			Sem. Hours
INT	512	Statistical Methods in Applied Engineering, Technology & Mgt.	3
INT	530	Industrial Management	3
INT	550	Research Techniques for Applied Engineering & Technology Mgt.	3
INT	560	Project Management	3
INT	575	Engineering Cost Analysis	3
INT	699	Master's Thesis	6
Technical Electives			9
Total			**30**

NON-THESIS OPTION (36 SEMESTER HOURS)[♦]

Students who select the non-thesis option must complete a minimum of 36 semester hours, which include fifteen (15) semester-hours of core courses, eighteen (18) semester-hours of courses in the area of specialization, and three (3) semester-hours of INT 610/EET 610/MET 610 (Applied Engineering, Technology, and Management Project). Electives may be selected from business, mathematics, engineering/technology, computer science, or any other area that strengthens the student's goal and is approved by the advisor.

Required Curriculum			Sem. Hours
INT	512	Statistical Methods in Applied Engineering, Technology & Mgt.	3
INT	530	Industrial Management	3
INT	550	Research Techniques for Applied Engineering &Technology Mgt.	3
INT	560	Project Management	3
INT	575	Engineering Cost Analysis	3
INT	610	Applied Engineering, Technology, and Management Project	3
Technical Electives			18
Total			**36**

APPROVED ELECTIVES[♦]

Industrial Management

INT	515	Advanced Statistical Quality Control	3
INT	525	Management of Technology & Operations	3
INT	534	Quality Management	3
INT	535	Leadership & Supervision in Technology Management	3
INT	537	Industrial Safety Standards	3
INT	541	Design of Experiments	3
INT	543	Lean Six Sigma	3
INT	570	Internship/Co-Operative Education	3
INT	612	Special Problems in Applied Engineering, Technology, & Management	3
LSM	536	Logistics & Supply Chain Management	3
LSM	571	Adaptive Supply Chain Management	3
LSM	572	Logistics/Supply Chain Risk Management	3
MBA	510	Operations Management	3
MBA	517	Global Issues in Business	3

Manufacturing Management

INT	500	Manufacturing and Design Problems	3
INT	510	Computer-Integrated Manufacturing	3
INT	515	Advanced Statistical Quality Control	3
INT	534	Quality Management	3
INT	535	Leadership & Supervision in Technology Management	3
INT	541	Design of Experiments	3
INT	53	Lean Six Sigma	3
INT	540	Industrial Automation	3
INT	570	Internship/Co-Operative Education	3

[*] All candidates for the Master of Science degree in Industrial Technology with the non-thesis option must pass a comprehensive examination administered by the Department.

[♦] Specializations are available in Industrial Management, Manufacturing Systems Management, Quality Assurance, Electrical Engineering Technology, or any selection of courses that meet a student's career goals.

INT	612	Special Problems in Applied Engineering, Technology, & Management	3
LSM	536	Logistics & Supply Chain Management	3
LSM	571	Adaptive Supply Chain Management	3
LSM	572	Logistics/Supply Chin Risk Management	3
MBA	510	Operations Management	3
MBA	517	Global Issues in Business	3

Quality Assurance

INT	515	Advanced Statistical Quality Control	3
INT	534	Quality Management	3
INT	535	Leadership & Supervision in Technology Management	3
INT	541	Design of Experiments	3
INT	543	Lean Six Sigma	3
INT	570	Internship/Co-Operative Education	3
INT	612	Special Problems in Applied Engineering, Technology, & Management	3
LSM	536	Logistics & Supply Chain Management	3
LSM	571	Adaptive Supply Chain Management	3
LSM	572	Logistics/Supply Chain Risk Management	3
MBA	510	Operations Management	3
MBA	517	Global Issues in Business	3

Electrical Engineering Technology

EET	501	Telecommunications and Network Technology	3
EET	505	Computer Telephony Integration	3
EET	516	Automatic Control Systems I	3
EET	517	Automatic Control Systems II	3
EET	518	Robotics	3
INT	540	Industrial Automation	3
INT	570	Internship/Co-Operative Education	3
INT	612	Special Problems in Applied Engineering, Technology, & Management	3

INSTRUCTIONAL LEADERSHIP PROGRAM

MASTER OF EDUCATION IN INSTRUCTIONAL LEADERSHIP

PROGRAM DIRECTOR
Derrick Davis
256-372-4047
derrick.davis@aamu.edu

Graduate Faculty

Associate Professors
Delores Price
Phillip Redrick

ABOUT THE PROGRAM

The Master of Education in Instructional Leadership is a unique degree program that prepares teachers for leadership roles in schools and school system environments. The curriculum fuses theory with practice, drawing on an array of knowledge from Alabama A&M University's School of Education faculty as well as notable local experts. The program's flexible schedule usually allows students to complete the degree program in approximately two years.

ADMISSION REQUIREMENTS*

In addition to an earned baccalaureate-level professional Educator Certificate in a teaching field or earned master's-level Professional Educator Certificate in a teaching field or instructional support area, the applicant shall:

1. Have a minimum of three (3) years of successful teaching experience.
2. Submit an admission portfolio before an interview. The portfolio will contain the following:
   a. Three (3) letters of recommendation (These must include letters from the applicant's principal or supervisor). Each local superintendent will establish requirements for recommendations from the principal and/or supervisor.
   b. Completed copy (all forms) of the most recent performance appraisal to include the professional development component, if available.
   c. Evidence of ability to improve student achievement (give 2 examples).
   d. Evidence of leadership and management potential, including proof of most recent accomplishments in the area of educational leadership (give 2 examples).
3. Summary of candidate's reasons for pursuing instructional leadership certification.
4. Summary of what the candidate expects from the preparation program.
5. Qualify for program admission by successfully completing an interview conducted by a program admission committee that includes both P-12 instructional leaders and higher education faculty.
6. The candidate will also be required to take and pass a writing assessment.

GENERAL REQUIREMENTS

1. A Master's degree in Instructional Leadership from an accredited college or university, or a Master's degree in any field and professional certification in Education Administration from an accredited college or university;
2. Minimum GPA of 3.0 (on a 4.0 scale);
3. Two official copies of transcripts of all undergraduate/graduate work attempted including junior/community colleges.
4. A GRE minimum combined score of 400 on Verbal and 400 on Quantitative OR 800 on the Verbal/Quantitative sections.

Degree Offerings in the Instructional Leadership Program

Certification Programs

1. The Master of Education (M.Ed.) degree in Instructional Leadership. This degree is designed for individuals who hold current teaching certification. With the completion of this degree, candidates are eligible for Class A Certification in Instructional Leadership.
2. The Educational Specialist (Ed.S.) degree in Education with a concentration in Instructional Leadership. This degree is designed for

*An applicant will not be considered for admission unless all application requirements are met by the specified deadline. The decision from the Graduate Admissions Committee is communicated in writing to the applicant.

individuals who seek greater preparation for leadership in P – 12 schools and/or those who aspire towards pursuing doctoral level studies in educational administration.

Non-certification Programs

The Educational Specialist (Ed.S.) degree in Education with a concentration in Instructional Leadership and option in Higher Education. This program is designed for individuals seeking to enhance their skills in leadership positions in postsecondary institutions. The program is also designed for those individuals who aspire towards pursuing doctoral level studies in educational administration. This degree program does not lead to Class AA certification in Instructional Leadership.

Graduate programs in the area of Instructional Leadership consist of the Class A Endorsement in Instructional Leadership; the Master of Education (M.Ed.) degree with Class A Certification and the Educational Specialist (Ed.S.) degree with Class AA Certification and a non-certification option in Higher Education. The M.Ed. degree program leading to Class A Certification requires 33 – 36 semester hours, including 12 – 15 semester hours of foundation courses, 18 semester hours of instructional support courses, and 3 semester hours of internship. The Ed.S degree program leading to Class AA Certification requires 36 – 39 semester hours, including 18 – 21 semester hours in foundation courses, 15 semester hours in instructional support courses, and 3 semester hours of mentoring.
The Instructional Leadership program also offers the Ed.S. degree in Education with a concentration in Instructional Leadership and an option in Higher Education not leading to Class AA certification. The non-certification program at the Ed.S. level is particularly designed for individuals whose primary interests are in teaching at the two-year college level and/or those who aspire towards pursuing doctoral level studies in curriculum & instruction in the teaching field. The Ed.S. program requires 36 – 39 semester hours, including 12 – 15 semester hours of foundation courses, 6 semester hours of thesis research, 12 semester hours of teaching field courses, and 6 semester hours of additional courses.

Program Requirements

Professional Core (Required)			**Sem. Hours**
EDL	530	Data Driven Instruction	3
EDL	543	Legal and Ethical Aspects of School Operations	3
EDL	547	Education Finance	3
EDL	563	Curriculum Development, Improvement and Assessment	3
EDL	564	School Community Relations	3
EDL	566	Management of School Operations	3
EDL	567	Instructional Leadership	3
EDL	569	Collaboration, Mentoring and Human Resource Development	3
EDL	595-01	Internship in Educational Leadership	1
EDL	595-02	Internship in Educational Leadership	1
EDL	596	Residency/Internship in Instructional Leadership	3
SPE	501	Introduction to the Study of Exceptional Children	0-3
FED	501	Foundations of Education	3
		OR	
FED	521	Multicultural Education	(3)
FED	503	Educational Research	3
Total			**35-38**

MATERIEL ENGINEERING

MASTER OF ENGINEERING IN MATERIEL ENGINEERING

PROGRAM DIRECTOR

Showkat J. Chowdhury
256-372-8401
Showkat.chowdhury@aamu.edu

Graduate Faculty

Professors
Nesar U. Ahmed
Mohammad A. Alim
Showkat J. Chowdhury
Zhengtao Deng
Kaveh Heidary
Goang S. Liaw
Pabitra K Saha
Mohamed A. Seif
Vernell Trent Montgomery

Associate Professors
Venkata R. Goteti
Amir Mobasher
Xiaoqing Qian
Andrew R. Scott
Zhigang Xiao

Assistant Professors
Sudip Bhattacharjee
Mohamed Gadalla

ABOUT THE PROGRAM

The Departments of Civil, Electrical, and Mechanical Engineering collectively offer a graduate program leading to the Master of Engineering (M.Eng) degree in Materiel Engineering. Materiel is defined as the equipment, apparatus, and supplies used by an organization. Materiel engineering involves the design, production, test and evaluation, distribution, operation and support, and ultimate disposition of man-made equipment, apparatus, and supplies, and, as such, is highly interdisciplinary. This program is intended for individuals holding a bachelor's degree from a regionally accredited institution in any area of engineering or a closely related discipline. The collective program requires a minimum of 30 hours to complete the program.

ADMISSION REQUIREMENTS

Applicants for admission to the Graduate School of AAMU must provide transcripts from each post-secondary school attended, as well as a transcript of the Graduate Record Examination (GRE). Applicants must also provide two letters of recommendation and submit details of any professional work experience. Students from non-English speaking countries are required to have a minimum score of 500 on the Test of English as a Foreign Language (TOEFL).

Regular Admission

To be admitted with regular status to the Master of Engineering program, an applicant must:

1. Hold a bachelor's degree in an engineering program from an accredited ABET program.
2. Provide evidence of an overall Grade Point Average (GPA) of at least 3.00 on a scale of 4.00 (in most cases an official transcript of all previous academic work completed will be required), or have passed the National Council of Examiners for Engineering and Surveying (NCEES) Fundamentals of Engineering Examination.
3. Minimum of GRE scores of 600 on the quantitative portion and 1000 on the combined verbal and quantitative portions.

Conditional Admission

Applicants who do not meet one of above conditions may be admitted on a conditional basis under the following conditions:

1. GPA or GRE Deficiency. Persons with a bachelor's degree in engineering may receive conditional admission provided their GPA is at least 2.5 on all undergraduate engineering courses attempted. This condition also holds for individuals with a GRE deficiency, including those who have not taken the GRE.
2. Degrees in Other Fields. Individuals with a bachelor's degree in physics, mathematics, computer science, chemistry, or other fields closely related to engineering may receive conditional admission provided they have completed prescribed deficiency courses identified by the programmatic faculty.

3. Students admitted conditionally are allowed a maximum of 15 semester hour recommended by the department advisor. All students admitted conditionally are required to earn a minimum grade of 'B' in each deficiency course to progress to regular admission. Students failing to meet this requirement will be dismissed from the School of Graduate Studies.

Non-Degree Graduate Status

To pursue graduate engineering courses using the non-degree graduate status, an application must first be submitted to the School of Engineering and Technology. This is to ensure that the applicant has the required background for the desired course(s). If approved, the application will then be passed on to the School of Graduate Studies for processing. Up to nine semester hours of graduate credit may be earned while in the non-degree status.

Program Requirements for the Non-Thesis Option♦

Required Program			**Sem. Hours**
GEN	601	Life-Cycle Design Engineering	3
GEN	602	Product Assurance Engineering	3
GEN	603	Analysis and Simulation Methods	3
GEN	604	Test and Evaluation Engineering	3
GEN	690	Material Engineering Project	3
		Discipline Specialization Courses	9
		Approved Electives	6
Total			**30**

Discipline Specialization Courses*

General Engineering

GEN	590	Special Topics	3
GEN	600	Special Topics	3

Civil Engineering

CE	501	Structural Steel Design	3
CE	502	Reinforced Concrete Design	3
CE	504	Hydraulic Engineering and Design	3
CE	506	Computer Analysis of Structures	3
CE	508	Foundation Design	3
CE	509	Public Health Engineering	3
CE	510	Transportation Engineering and Design	3
CE	511	Urban Transportation Planning	3
CE	512	Pavement Systems	3
CE	513	Construction Management	3
CE	514	Design of Timber Structures	3
CE	550	Hydraulics of Open Channel Flow	3
CE	555	Wastewater Treatment	3
CE	556	Solid Waste Disposal	3
CE	557	Hazardous Waste Management	3

Electrical Engineering

EE	502	Electrical Machines	3
EE	503	Feedback Systems Analysis and Design	3
EE	504	Communication Theory	3
EE	510	Microwave Engineering	3
EE	520	Power Systems I	3
EE	521	Power Systems II	3
EE	524	Advanced Digital Systems	3
EE	525	High Performance Computing and Networks	3
EE	531	Advanced Semiconductor Engineering	3
EE	541	Digital Signal Processing	3
EE	545	Advanced Electromagnetic Theory	3
EE	551	Integrated Circuit Fabrication	3
EE	552	Semiconductor Instrumentation	3
EE	555	Optimal Control Theory	3
EE	556	Nonlinear Control Systems	3

Mechanical Engineering♦

ME	511	Power Plant Performance	3
ME	512	Analysis and Synthesis of Gas Turbines and Components	3

*All students will select at least three courses from Civil, Electrical or Mechanical Engineering, or General Engineering for their area of specialization, with the approval of their advisor.

♦Elective courses may be taken with the approval of advisor.

ME	513	Rocket Propulsion	3
ME	514	Gas Turbine Engine Design and Manufacture	3
ME	515	Heating, Ventilating, Air Conditioning, Refrigeration	3
ME	516	Gas Dynamics	3
ME	532	Design for Manufacture and Reliability.	3
ME	571	Systems Engineering	3
ME	572	Economic Evaluation of Design	3
ME	573	Logistics	3
ME	581	Quality and Reliability Assurance	3
ME	582	Operations Planning and Scheduling.	3

PHYSICAL EDUCATION

MASTER OF EDUCATION/MASTER OF SCIENCE

PROGRAM DIRECTOR:
Rodney C. Whittle
256-372-8260
rodney.whittle@aamu.edu

Graduate Faculty

Professors
Rodney C. Whittle

Associate Professors
Harriet Hamilton
Kay Hamilton

Assistant Professors
Jerolyn Golightly

MISSION STATEMENT

The Department of Health, Physical Education, and Recreation offer coursework and field experiences leading to the Master of Science in Education with teacher certification (Class A and AD Alternative) in Physical Education. Faculty in the department provide candidates with research, and theory techniques that will prepare professionals to broaden their pedagogical experiences. In addition to teaching concepts, theories, methods, and materials the faculty places emphasis on strategies and techniques of integrating technology into the teaching of physical education.

PROGRAM REQUIREMENTS

Program Requirements with the Non-Thesis Option Class A Program for Single Teaching Field			**Sem. Hours**
PED	503	Advanced Exercise Physiology	3
PED	504	Curriculum Instruction in PE	3
PED	506	Evaluation in PE and Sport	3
PED	507	Management in PE and Athletics	3
PED	597	Research in Physical Education	3
PED		Advisor Approved Electives	3
ECE	503	Learning Styles	3
FED	501	Foundations of Education	3
		or	
FED	521	Multicultural Education	
FED	504	Evaluation of Teaching/Learning	3
FED	529	Computer-Based Instruction	3
FED	542	Theory of Curriculum Development	6
Total			**36**

Program Requirements with the Non-Thesis Option Master of Education Alternative Fifth Year Program			**Sem. Hours**
PED	503	Advanced Exercise Physiology	3
PED	504	Curriculum & Instruction in PE	3
PED	506	Evaluation in PE & Sport	3
PED	507	Management in PE & Athletics	3
PED	597	Research in Physical Education	3
PED		Advisor Approved Elective	3
ECE	503	Learning Styles	3
FED	501	Psy., Soc., Cult. Foundations of Education	3
FED	504	Evaluation of Teaching/Learning	3
FED	529	Computer-Based Instruction	3
PED	542	Theory of Curriculum Development	3
SED	515	Reading in the Content Area	3
SPE	501	Intro to Study of Exceptional Children	3
PED	595	Internship	6
PED			
Total			**42-45**

Program Requirements with the Non-Thesis Option Master of Science with Physical Education Concentration			**Sem. Hours**
FED	501	Psy., Soc., Cult. Foundations of Education	3
FED	502	Introduction to Educational Statistics	3
FED	503	Introduction to Educational	3

		Research	
FED	504	Evaluation of Teaching/Learning	3
FED	529	Computer-Based Instructional Technology	3
FED	531	Current and Emerging Instructional Technologies	3
FED	532	Curriculum Integration of Technology	3
SED	515	Reading in the Content Area	3
SED	527	Guiding Learning in the Secondary School	3
SPE	501	Introduction to the Study of Exceptional Individuals	3
Total			**30**

PHYSICS

Program Director
Anup Sharma
256/372-8102

Master of Science

Graduate Faculty

Professors
Mohan D. Aggarwal (Chair of Physics)
Mostafa Dokhanian
Matthew E. Edwards
Bommareddi Rami Reddy
Daryush Ila
Barry Johnson (Adjunct)
Ravi B. Lal (Emeritus)
Paul Ruffin (Adjunct)
Anup Sharma
Arjun Tan (Emeritus)
Jai-Ching Wang

Associate Professors
Tianxi Zhang
Ashok Batra

Assistant Professors
Ashok Batra
Vernessa M. Edwards
Padmaja Guggilla
Marius P. Schamschula

ABOUT THE PROGRAM

Alabama Agricultural & Mechanical University's Physics Department provides students with a rich educational environment in which to study physics and discover high technology research in optics, materials science, and space science programs. The program is ranked among the top ten nationally in the awarding of graduate degrees to African-Americans.

ADMISSION REQUIREMENTS

Admission Requirements for the Master of Science (M.S.) Program in Physics/ Applied Physics

For admission to the Master of Science program in applied physics, applicants must:

(a.) Have a bachelor's degree from a regionally accredited university with a major in physics, chemistry, physical science, astronomy or engineering;
(b.) Have an overall GPA of 3.00 (based on a 4.00 system);
(c.) A Graduate Record Examination (GRE) score of at least 600 in the quantitative section of the general area is required;
(d.) Students from non-English speaking countries are required to have a minimum score of 61 (internet-based test) on the Test for English as a Foreign Language (TOEFL).*

PROGRAM REQUIREMENTS

Program Requirements with the Thesis Options: Master of Science with Space Science concentration

Student must complete at least 24 semester hours of course work with a minimum of 12 hours in the area of Space Science concentration plus 6 semester hours of Master's Thesis hours. The student must write a thesis on an approved topic under the supervision of a thesis advisor, and satisfactorily defend the thesis before an advisory committee appointed by the department and approved by the Dean of the School of Graduate Studies.

Required Program			**Sem. Hours**
PHY	500	Analytical Mechanics	3
PHY	505	Electromagnetic Theory I	3
PHY	521	Quantum Mechanics I	3
PHY	610	Introduction to Solar-Terrestrial Physics	3
PHY	699	Master's Thesis (In two or more semesters)	6
Approved Concentration (Electives)♣			12
Total			**30**

*Students with bachelor's degrees in optical, materials, or space sciences will be eligible for admission into the graduate program with optics/lasers and materials science and space science concentrations (Students with a degree in an area other than physics may be required to take prerequisite undergraduate physics courses).

♣Must select 9 hours from approved Space Science electives and 3 credit hours from approved General Physics, Optics, or Material Science Electives.

Program Requirements with the Thesis Options: Master of Science with Optics concentration

Student must complete at least 24 semester hours of course work with a minimum of 11 hours in the area of Optics concentration plus 6 semester hours of Master's Thesis hours. The student must write a thesis on an approved topic under the supervision of a thesis advisor, and satisfactorily defend the thesis before an advisory committee appointed by the department and approved by the Dean of the School of Graduate Studies.

Required Program			**Sem. Hours**
PHY	500	Analytical Mechanics	3
PHY	505	Electromagnetic Theory I	3
PHY	521	Quantum Mechanics I	3
PHY	649	Geometrical Optics	3
PHY	657	Physical Optics and Interferometry	4
PHY	671	Laser Physics I	4
PHY	699	Master's Thesis (In two or more semesters)	6
Approved Electives[*]			4
Total			**30**

Program Requirements with the Thesis Options: Master of Science with Materials Science concentration

Student must complete at least 24 semester hours of course work with a minimum of 12 hours in the area of Materials Science concentration plus 6 semester hours of Master's Thesis hours. The student must write a thesis on an approved topic under the supervision of a thesis advisor, and satisfactorily defend the thesis before an advisory committee appointed by the department and approved by the Dean of the School of Graduate Studies.

Required Program			**Sem. Hours**
PHY	500	Analytical Mechanics	3
PHY	505	Electromagnetic Theory I	3
PHY	521	Quantum Mechanics I	3
PHY	632	Elements of Materials Science	3
PHY	634	Crystal Physics and Crystal Growth	3
PHY	635	Magnetic and Optical Properties of Materials	3
PHY	699	Master's Thesis (In two or more semesters)	6
Approved Electives[♣]			6
Total			**30**

[*] Must select at least four hours from the list of Space Science, General Physics, Optics, Materials Science electives or approved graduate Computer Science courses.

Program Requirements with the Non-Thesis Options: Master of Science with Space Science concentration

Student must complete at least 30 semester hours of course work with a minimum of 18 hours in the area of Space Science concentration. The student must pass a comprehensive examination given by the department.

Required Program			**Sem. Hours**
PHY	500	Analytical Mechanics	3
PHY	505	Electromagnetic Theory I	3
PHY	521	Quantum Mechanics I	3
PHY	610	Introduction to Solar-Terrestrial Physics	3
PHY	612	Physics of the Sun and the Solar Wind	3
PHY	614	Physics of the Magnetosphere	3
PHY	617	Physics of the Ionosphere and Thermosphere	3
PHY	620	Radio Wave Propagation in the Ionosphere	3
PHY	625	Planetary Atmospheres and Ionospheres	3
Approved Electives[♦]			3
Total			**30**

Program Requirements with the Non-Thesis Options: Master of Science with Optics concentration

Student must complete at least 30 semester hours of course work with a minimum of 18 hours in the

[♣] Must select at least three hours from the list of Materials Science electives and three hours from the list of list of Space Science, General Physics, or Optics electives.

[♦] Must select at least three hours from the list of General Physics, Optics, Materials Science electives or approved graduate Computer Science courses.

area of Optics concentration. The student must pass a comprehensive examination given by the department.

Required Program			Sem. Hours
PHY	500	Analytical Mechanics	3
PHY	505	Electromagnetic Theory I	3
PHY	521	Quantum Mechanics I	3
PHY	649	Geometrical Optics	3
PHY	657	Physical Optics and Interferometry	4
PHY	671	Laser Physics I	4
Approved Electives[*]			10
Total			**30**

Program Requirements with the Non-Thesis Options: Master of Science with Materials Science concentration

Student must complete at least 30 semester hours of course work with a minimum of 18 hours in the area of Materials Science concentration. The student must pass a comprehensive examination given by the department.

Required Program			Sem. Hours
PHY	500	Analytical Mechanics	3
PHY	505	Electromagnetic Theory I	3
PHY	521	Quantum Mechanics I	3
PHY	632	Elements of Materials Science	3
PHY	634	Crystal Physics and Crystal Growth	3
PHY	635	Magnetic and Optical Properties of Materials	3
Approved Electives[&]			12
Total			**30**

Program Requirements with the Non-Thesis Options: Master of Science with Physics

Education concentration

Student must complete at least 36 semester hours of course work with a minimum of 12 hours of advisor-approved graduate Physics courses.

Required Program			Sem. Hours
Select at least twenty-four hours of advisor-approved courses from list below plus 12 hour of approved electives.			24
SPE	501	Introduction to the Study of Exceptional Individuals	3
FED	501	Foundations of Education	3
FED	502	Introduction to Educational Statistics	3
FED	503	Introduction to Educational Research	3
FED	504	Evaluation of Teaching-Learning	3
FED	529	Computer-Based Instructional Technologies	3
FED	531	Current and Emerging Instructional Technologies	3
FED	532	Curriculum Integration of Technology	3
SED	515	Reaching in the Content Area	3
SED	527	Guiding Learning in the Secondary School	3
SED	530	Secondary School Curriculum	3
Approved Electives[♦]			12
Total			**36**

ADMISSIONS REQUIREMENTS FOR THE DOCTOR OF PHILOSOPHY (PH.D.) PROGRAM IN PHYSICS/ APPLIED PHYSICS:

Admission to the doctoral program requires a Master's degree in physics, chemistry, physical science, astronomy, or engineering. Applicants must have a GPA of 3.05 on a scale of 4.0. A Graduate Record Examination (GRE) score of at least 600 in the quantitative section of the general area is also required (The GRE Advanced in Physics is strongly urged). Students from non-English speaking countries are required to have a

[*]Must Select at least seven hours from the list of Optics electives and three credit hours from the list of Space Science, General Physics, Optics, Materials Science elective or approved graduate Computer Science courses.

[&]Must select nine hours from the list of approved Material Science electives and three hours from the list of Space Science, General Physics, Optics, Materials Science electives or approved graduate Computer Science courses.

[♦]Must select nine hours from the list of approved list of Space Science, General Physics, Optics, Materials Science electives or approved graduate Computer Science courses.

minimum score of 61 (internet-based test) on the Test for English as a Foreign Language (TOEFL).

Program Requirements for the Doctor of Philosophy

Persons seeking the Ph.D. in physics must complete a total of at least 48 semester hours of credit including 15 semester hours in the area of general physics. In addition to this requirement students must pass the departmental qualifying examination (A person who has been admitted on the basis of a master's degree may take the qualifying examination after the first semester in the program). Students also must pass the candidacy examination.* Candidacy examinations must be passed at least nine months before the expected graduation date (Students are not considered Ph.D. candidates until they pass the departmental candidacy examination). Student also must prepare an acceptable dissertation with a minimum of 12 semester hours. No student is allowed to register for more than six hours of dissertation credits in any given semester. There is no foreign language requirement for the degree.

Ph.D. candidates must make an oral presentation on the dissertation and must defend the findings before a committee of examiners as stated earlier. The presentation of the dissertation must be completed at least six weeks before the intended graduation date.

Program Requirements for Doctor of Philosophy in Applied Physics with Space Science concentration

Required Program			**Sem. Hours**
PHY	500	Analytical Mechanics	3
PHY	503	Methods of Mathematical Physics	3
PHY	505	Electromagnetic Theory I	3
PHY	518	Thermodynamics and Statistical Mechanics	3
PHY	521	Quantum Mechanics I	3
PHY	610	Introduction to Solar-Terrestrial Physics	
Approved		Gen Physics, Optics, Material Science, or approved Computer Science Electives	18
Approved Space Science Electives			12
PHY	799	Dissertation (In two or more semesters)	12
Total			**60**

*The departmental qualifying exam must be taken after the completion of 18 credit hours but not before the completion of the 24th credit hour. Students who fail to take the exam during the specified window are not allowed to continue in the program.

Program Requirements for Doctor of Philosophy in Applied Physics with Optics concentration

Required Program			**Sem. Hours**
PHY	500	Analytical Mechanics	3
PHY	503	Methods of Mathematical Physics	3
PHY	505	Electromagnetic Theory I	3
PHY	518	Thermodynamics and Statistical Mechanics	3
PHY	521	Quantum Mechanics I	3
PHY	649	Geometrical Optics	3
PHY	651	Spectroscopy	4
PHY	657	Physical Optics and Interferometry	4
PHY	671	Laser Physics I	4
Approved		Gen Physics, Optics, Material Science, or approved Computer Science Electives	18
PHY	799	Dissertation (In two or more semesters)	12
Total			**60**

Program Requirements for Doctor of Philosophy in Applied Physics with Materials Science concentration

Required Program			**Sem. Hours**
PHY	500	Analytical Mechanics	3
PHY	503	Methods of Mathematical Physics	3
PHY	505	Electromagnetic Theory I	3
PHY	518	Thermodynamics and Statistical Mechanics	3
PHY	521	Quantum Mechanics I	3
PHY	632	Elements of Materials Science	3
PHY	634	Crystal Physics and Crystal Growth	3
PHY	635	Magnetic and Optical Properties of Materials	3

PHY	636	Semiconductor Physics	3
PHY	799	Dissertation (In two or more semesters)	12
Approved		Space Science, Gen Physics, Optics, Material Science, or approved Computer Science Electives	21
Total			**60**

APPROVED PHYSICS ELECTIVES

Space Science Courses

PHY 610 Introduction to Solar-Terrestrial Physics
PHY 612 Physics of the Sun and the Solar Wind
PHY 614 Physics of the Magnetosphere
PHY 617 Physics of the Ionosphere and Thermosphere
PHY 620 Radio Wave Propagation in the Ionosphere
PHY 625 Planetary Atmospheres and Ionospheres

General Physics Courses

PHY 503 Methods of Mathematical Physics
PHY 504 Physics in Modern Technology
PHY 506 Electromagnetic Theory II
PHY 518 Thermodynamics and Statistical Mechanics
PHY 519 Advanced Statistical Mechanics
PHY 522 Quantum Mechanics II
PHY 525 Solid State Physics I
PHY 531 Mathematical Methods in Applied Physics I
PHY 532 Mathematical Methods in Applied Physics II
PHY 537 Advanced Laboratory
PHY 600 Solid State Physics II
PHY 601 Seminar/Colloquium
PHY 701 Applied Solid State Electronics I
PHY 791 Applied Solid State Electronics II
PHY 792-94 Selected Topics

Optics Courses

PHY 649 Geometrical Optics
PHY 650 Instrumental Optics
PHY 651 Spectroscopy
PHY 655 Optics Laboratory
PHY 657 Physical Optics and Interferometry
PHY 660 Quantum Optics
PHY 663 Electro-Optical Systems
PHY 665 Lens Design
PHY 670 Non-Linear Optics
PHY 671 Laser Physics I
PHY 672 Laser Physics II
PHY 675 Thin Films & Integrated Optics I
PHY 680 Holography
PHY 690 Introduction to Biophotonics
PHY 692 Nanophotonics
PHY 703 Laser Systems
PHY 712 Optical Phase Conjugation I
PHY 714 Optical Phase Conjugation II
PHY 715 Fiber Optics
PHY 725 Optical Fiber Communications
PHY 750 Laser Spectroscopy
PHY 755 Optics Laboratory II
PHY 771 Signal Processing
PHY 775 Thin Films & Integrated Optics II

Materials Science Courses

PHY 632 Elements of Materials Science
PHY 634 Crystal Physics and Crystal Growth
PHY 635 Magnetic and Optical Properties of Materials
PHY 636 Semiconductor Physics
PHY 637 Special Topics in Materials Science
PHY 638 Imperfections in Solids
PHY 639 Electron Spectroscopy and Electron Diffraction
PHY 640 Mechanical Behavior of Solids
PHY 642 Materials for Energy Production Devices
PHY 644 Modern Composite Materials
PHY 648 Advanced Materials Science Laboratory
PHY 705 Solid State Diffusion
PHY 710 Thermodynamics of Materials
PHY 720 Radiation Effects in Crystalline Solids
PHY 730 Solidification Process
PHY 735 Materials for Radiation Detector
PHY 796-97 Advanced Topics in Materials Science

PLANT AND SOIL SCIENCE

MASTER OF SCIENCE/DOCTOR OF PHILOSOPY IN PLANT AND SOIL SICENCE

PROGRAM DIRECTOR
Teferi Tsegaye
256-372-4219

Graduate Faculty

Professors
Udai Bishnoi
Tommy Coleman
Rory Fraser
David Mays
Srinivasa Mentreddy
Govind Sharma
Khairy Soliman
Yong Wang

Associate Professors
George Brown
Ernest Cebert
Ramesh Kantety
Monday Mbila
Kozma Naka
Ermson Nyakatawa
Wubishet Tadesse

Assistant Professor
Colmore Christian
Xiongwen Chen
Karnita-Golson Garner
Luben Dimov
Regine Mankolo
Elicia Moss
Leopold Nyochembeng
Rodulfo Pacumbaba, Jr.
Thilini Ranatunga
Irenus Tazisong
Mezemir Wagaw

REQUIREMENTS FOR THE MASTER OF SCIENCE IN PLANT AND SOIL SCIENCE

A minimum of 30 hours at graduate level is required for the Master of Science degree. Only 6 thesis credits can be applied toward the minimum 30 credit. All candidates are required to pass a qualifying exam within the first semester of enrollment. Students must successfully present an oral/written proposal of their thesis research by the end of their first semester Students also must pass a graduate seminar course and the final oral thesis examination after completion of their thesis and approval by their committee.

ADMISSION

For admission to the Master of Science program, the candidate must have a minimum GPA of 2.75 (based on a 4.00 point system), or a 3.00 in the student's major area of concentration. Students may be admitted conditionally if they have a GPA of 2.50 to 2.75, or 2.75 to 3.00 in the major area of concentration.

Program Requirements with the Thesis Option

Required Program			**Sem. Hours**
NRE	502	Scientific Writing in Biological Sciences	2
NRE	529	Statistic	3
NRE	591	Graduate Seminar	1
NRE	599	Thesis	6
		Approved area Concentration Courses	18
Total			**30**

Program Requirements with the Non-Thesis Option

Required Program			**Sem. Hours**
NRE	529	Statistics	3
NRE	598	Master's Report	4
		Approved area Concentration Courses	25
Total			**32**

Area Concentration Courses/Electives

NRE	500	Techniques for Teaching Horticulture in K-12	3
NRE	501	Commercial Nursery and Greenhouse Management	3
NRE	502	Scientific Writing in Biological Sciences	2
NRE	503	Techniques for Land Judging	3
NRE	505	Instrumental Techniques for Plant and Soil Science	3
NRE	506	Soil Microbiology	4

NRE	510	Forage Management	3
NRE	511	Weed Science and Herbicide Technology	3
NRE	512	Field Research Techniques in Agronomy	2
NRE	515	Seed Biology	4
NRE	517	Sustainable Crop Production	3
NRE	520	Vegetable Crop Production	3
NRE	521	Plant Propagation	3
NRE	522	Landscape Design and Construction	4
NRE	523	Tropical Food Crop Production	3
NRE	524	Horticulture Marketing and Management	3
NRE	525	Postharvest Physiology of Crops	3
NRE	527	Ornamentals II – Flowers and Foliage Plants	3
NRE	528	Fruit Crops Production	3
NRE	529	Statistics	3
NRE	530	Principles of Experimentation	3
NRE	531	Principles of Plant Breeding	3
NRE	532	Plant Disease Diagnosis	4
NRE	533	Introduction to Molecular Genetics	4
NRE	534	Cytogenetics	4
NRE	535	Plant Genetics	2
NRE	536	Regression Analysis	3
NRE	537	Plant Tissue Culture Methods and Application	3
NRE	538	Plant Genetics	3
NRE	539	SAS Programming	2
NRE	540	Seed Production Practices	4
NRE	541	Phytophysiology	4
NRE	545	Bioinformatics Applications	3
NRE	550	Earth Science	3
NRE	550	Soil Genesis and Survey	
NRE	551	Chemistry of Toxic Substances	3
NRE	552	Soil Fertility and Fertilizers	3
NRE	553	Hazardous Waste Management	3
NRE	554	Tropical Soils	3
NRE	555	Micronutrients in Plant Soil Systems	3
NRE	556	Soil Clay Mineralogy	3
NRE	560	Soil Chemistry	3
NRE	561	Soil Physics	4
NRE	562	Plant Pathology Techniques	4
NRE	563	Mineral Nutrition of Plants	3
NRE	564	Plant Growth and Development	3
NRE	565	Applications of Geostatistics	3
NRE	567	Plant Virology	3
NRE	568	Allelopathy	3
NRE	570	Soil, Plant and Water Analysis	4
NRE	571	Aerial Photo Interpretation	3
NRE	572	Soil and Water Pollution	3
NRE	573	Air Pollution: Theory and Techniques	3
NRE	574	Quantitative Approaches in Remote Sensing	3
NRE	575	Principles of Wetlands	3
NRE	576	Remote Sensing of Earth Surface Features	3
NRE	577	Insect Biology and Pest Management	3
NRE	578	GIS, Spatial Analysis, and Modeling	4
NRE	580	Natural Resource Policy	3
NRE	581	Forest Hydrology and Watershed Management	3
NRE	583	Forest Resources Economics	3
NRE	584	Ecological Processes	3
NRE	587	Landscape Ecology	3
NRE	588	Wildlife Techniques	3
NRE	589	Forest Ecological Management	1-3
NRE	590	Advanced Topics in Soil and Plant Science	3

REQUIREMENTS FOR THE PH.D. IN PLANT AND SOIL SCIENCE

ADMISSIONS*

Applicants seeking admission to the Ph.D. program must satisfy the general admission requirements of the Graduate School. In addition, prospective candidates must have:

1. A M.S. degree in agronomy, horticulture, plant science, soil science, forestry, wildlife biology, ecology, natural resource/forest economics or related area.
2. A minimum cumulative GPA of 2.75 in baccalaureate course work and a 3.00 cumulative GPA in master's courses(based on a 4.00 point system).*
3. A minimum combined score of 1200 on the verbal and quantitative sections of the GRE.*

*Candidates who have some deficiencies in their background but meet most of the requirements for admission may be granted provisional admission into the program. Upon completing preliminary work with a minimum GPA of 3.00, regular admission will be granted.

4. Three letters of reference indicating the student's academic background and ability to pursue the Ph.D. program.
5. A letter of application which includes a personal statement on career objectives and research interest.

DEGREE REQUIREMENTS FOR THE DOCTOR OF PHILOSOPHY

To fulfill the Doctor of Philosophy requirements, at least 50 percent of the credit hours required for graduation must be earned, within a period of two consecutive calendar years, at Alabama A&M University. The Department's Graduate Committee and the School of Graduate Studies must approve deviations from this. Additionally, each candidate must complete the following program requirements:

1. Complete all core courses recommended by the Department's Graduate Committee.
2. Complete a minimum of 48 semester hours of graduate course work beyond the master's level of which a minimum of 30 credit hours must be at the 500 level or above. Nine credit hours, excluding doctoral dissertation, must be completed at the 700 level. All courses must be from the approved course listing.
3. Complete an acceptable written dissertation which constitutes a significant contribution to current knowledge in the area of Plan and Soil Science.
4. Ph.D. candidates must demonstrate proficiency in two languages or comprehensive command in a single language. Normally, this requirement is fulfilled through the satisfactory completion of advanced reading courses administered by the foreign language department (with a grade of B or above) or through the completion of six semester hours of computer science languages (with a grade of B or above). Language requirements must be fulfilled before a student takes the Ph.D. project examinations described below.
5. Must pass a teaching experience course after the completion of 75% of the required coursework.
6. Successfully complete both a written and oral comprehensive examination after the completion of at least 80 percent of the prescribed course work. The comprehensive examination covers a broad aspect of the course work taken by the student as well as the subject matter within the student's area of concentration. The comprehensive is used as a means of judging whether the individual has a mature and substantive grasp of the discipline as a whole.

PROGRAM REQUIREMENTS

Required Program			**Sem. Hours**
NRE	502	Scientific Writing in Biological Sciences	2
NRE	529	Statistics	3
NRE	591	Graduate Seminar	1
NRE	798	Teaching Experience for Doctoral Students	2
		Approved area Concentration Courses*	28
NRE	799	Doctoral Dissertation	12
Total			**48**

*See pages 74-75 for the list of concentration courses.

READING

DOCTOR OF PHILOSOPHY IN READING

PROGRAM DIRECTOR
Rena Lott
256-372-5504
rena.lott@aamu.edu

Graduate Faculty

Professor
Mary Spor

Associate Professors
Frederick Bigenho
Rena Lott

Assistant Professors
Angela R. Williams
Rhonda Moore-Jackson
Marjorie Battle
Freddie Stewart
Norma Bowe

Instructor
Adele L. Humphrey
Katrina Walton

ABOUT THE PROGRAM

The doctoral program in Reading provides high quality instruction and research in the area of reading and literacy. As the only program of its kind in Alabama, the program utilizes a rigorous course of study, combined with mentorship experiences led by top-rated faculty.

ADMISSION REQUIREMENTS

Applicants for a Doctor of Philosophy Degree in Reading/Literacy must have completed three years of P-12 teaching; must have an overall GPA of 3.0 on a 4.0 scale.
Also required are the following: (1) three letters of recommendation that address the applicant's academic and professional work; (2) a philosophy paper relative to the advanced degree and its relationship to the applicant's goals for personal and professional growth; (3) a sample of the applicant's professional writing in the form of a thesis, article, term paper, or other type of writing that demonstrates the candidate's writing ability; (4) an interview with the faculty admissions committee; and (5) a score of not less than 850 (verbal and quantitative) with not less than 450 on verbal and 420 on quantitative on the Graduate Record Examination (GRE).

To be considered for admission, the applicant must ensure that his or her file is complete. No action will be taken on incomplete files. Applicants wishing to check on the status of their files should contact The Graduate School in the L.R. Patton Building, Room 300, or call 256-372-4996.

Using the specific admission criteria outlined above, the Director of the Ph.D. program compiles a composite applicant profile for review and discussion by the Reading and Literacy graduate faculty. After applications are reviewed and if the above criteria are met, applicants will be called for an interview with members of the Reading and Literacy faculty.

Applicants Not Meeting the Admission Criteria

Applicants who have a Graduate Record Examination aptitude score of 800 or more but less than 850, with not less than 400 on the verbal and 400 on the quantitative subscales (but who fulfill all other program entrance criteria), may be granted conditional admission status leading to the doctoral qualifying examination pending inclusion and acceptance of a Letter of Petition (see below) submitted with the application.

Letter of Petition: Applicants who do not meet doctoral program entrance requirements for full admission may apply for conditional admittance. Students seeking conditional admissions status must accompany their applications with a Letter of Petition (see admissions categories published on page 11-12). Students who neither meet full nor conditional acceptance criteria leading to the doctoral qualifying examination, but who request further consideration for acceptance to the Doctoral Program in Reading and Literacy, must accompany their applications with a Letter of Petition. The Letter of Petition should present alternative evidence of qualification for success in a doctoral program. Alternative evidence should not be a restatement of evidence that has

already been taken into consideration on the admission form.*

PROGRAM REQUIREMENTS

Professional Core (Required)			**Sem. Hours**
FED	603	Advanced Evaluation of Teaching/Learning	3
FED	605	Qualitative Methods of Educational Research	3
PSY	502	Descriptive and Inferential Behavioral Statistics	3
RDG	700	Trends and Issues in Reading/Literacy	3
RDG	701	Assessment in Reading/Literacy	3
RDG	702	Quantitative Research Methods in Reading/Literacy	3
RDG	703	Qualitative Research Methods in Reading/Literacy	3
RDG	704	Curriculum in Reading/Literacy	3
RDG	705	Seminar in Reading—Special Topics	3
RDG	706	Advanced Seminar in Reading/Literacy	3
RDG	708	Leadership in School Program Development	3
RDG	709	Advanced Study in Content Area Reading	3
		Foreign Language Requirement	3
RDG	710	Dissertation	18
Electives			6
Total			**63**

*Alternative evidence may include, but is not limited to the following: (1) high scores on alternative standardized examinations (e.g., PRAXIS) that measure ability in the domain in question; (2) passing scores on program alternative examinations that measure ability in the domain in question as rated by at least two independent reviewers. For example, an on-site writing examination could provide alternative evidence regarding verbal skills.(3)Disaggregated data from the applicant's transcript described in context, such as: (a) high grades in specific courses that contradict low test scores in that area (e.g., high grades in mathematics that contradict low quantitative GRE scores); (b) type and accreditation status of the institution(s) at which courses were taken or degrees obtained; (c) GPA – degree of difficulty of major; (d) explanation of transcript such as improvement over time or specific circumstances for semesters of poor performance; (e) clarification of the match between applicants' qualifications and the demands of the degree; (f) evidence that the applicant does not score well on standardized tests, but it is still likely to be academically successful (e.g., low SAT scores and undergraduate success).

SECONDARY EDUCATION

PROGRAM DIRECTOR
Delores Price
256-372-5459
Delores.price@aamu.edu

Graduate Faculty

Associate Professors
Frederick Bigenho
Sha Li
Delores Price
Phillip Redrick

Assistant Professors
Derrick Davis

ADMISSION REQUIREMENTS

Applicants to the Educational Specialist Degree must be admitted to the School of Graduate Studies and to Teacher Education. Admission to Teacher Education requires the applicant to (1) present evidence of having completed a Master's degree with class A Certification in the same teaching field(s) in which the Ed.S. degree is sought (except in Special Education), (2) present transcript(s) showing a Master's degree grade point average of 3.00 or better (on a 4.00 system).

Educational Specialist Degree in Administration and Supervision Class AA 6-12

DEGREE REQUIREMENTS

Program Requirements with the Non-Thesis Option			**Sem. Hours**
ECE	602	Theoretical Foundations	3
EAS	630	Mgt. of Instructional Programs	3
EAS	630	School Org. for Per. Development	3
EAS	632	Fed., St., Loc. Leg. Policy Dev.	3
EAS	633	Mgt. Ed. Support Services	3
EAS	634	Org. Leadership for Operations	3
EAS	635	Mentoring for Educational Leaders	3
EAS	698	Thesis I	3
EAS	699	Thesis II	3
FED	600	Adv. Curriculum Development	3
FED	603	Adv. Educational Research	3
FED	604	Adv. Eval. Teaching & Learning	
FED	605	Qualitative Methods Ed. Research	3
SPE	501	Intro to Study of Exceptional Children (Required if not previously)	3
Total			**36**

Secondary Education, Biology (Alternative-Fifth Year Program)
(6-12)

DEGREE REQUIRMENTS

Program Requirements with the Non-Thesis Option			**Sem. Hours**
FED	500	Professional Seminar	3
FED	501	Foundations of Education	3
		or	3
FED	521	Multicultural Education	3
FED	503	Intro to Education Research	3
FED	504	Evaluation to Teaching & Learning	3
FED	529	Computer-Based Instruc. Tech	3
SED	524	Science in the Secondary School	3
SED	515	Reading in the Content Area	3
SED	595	Internship	6
SPE	501	Intro to Study of Exceptional Children (Required if not previously completed)	0-3
500 level advisor-approved courses in Biology			15
Total			**42-45**

SECONDARY EDUCATION
BUSINESS/MARKETING EDUCATION
(CLASS A) (6-12)

ADMISSION REQUIREMENTS

Applicants for Master's degree certification programs must be admitted to the School of Graduate Studies and to Teacher Education. Admission to Teacher Education requires the applicant to (1) present evidence of having completed a Baccalaureate degree program in a teaching field, (2) present a copy of a Class B professional educator's Certificate (Regular Masters program), and (3) present transcript(s) showing a Baccalaureate degree grade point average of 2.50 or better (4.00 system).

Applicants for the Master's degree in Instructional Leadership must have a minimum of three full years of full-time experience in a P-12 setting.

Applicants for the P-12 Reading Specialists Certification must have completed two years of teaching experience and present a copy of a Class B Professional Educator's Certificate in Elementary Education, Early Childhood Education, or Collaborative Teacher. Applicants may also hold a Class B professional Educator's Certificate in Secondary Education, but must complete tow courses in reading, including an introduction to reading.

Program Requirements with the Non-Thesis Option			**Sem. Hours**
BED	501	Prin. Teaching Business Subj.	3
BED	515	Mgt. of Computer Info System	3
BED	595	Internship	6
FED	500	Professional Seminar	3
FED	501	Foundations of Education	3
		or	
FED	521	Multicultural Education	3
FED	504	Evaluation to Teaching & Learning	3
SED	515	Reading in the Content Area (Required if not previously completed)	0-3
500 level advisor-approved courses in Business Education and related areas			15
Total			**39-42**

SECONDARY EDUCATION,
BUSINESS/MARKETING EDUCATION
(ATERNATIVE-FIFTH YEAR PROGRAM)
(6-12)

ADMISSION REQUIREMENTS

The Alternative 5th Year program is for one who does not hold a baccalaureate degree in a teaching field but wishes to obtain teacher certification. The program enables one to acquire the knowledge and skills of an entry-level teacher while at the same time earning a Master's degree. Applicants for the Alternative Master's (5th year) degree program must be admitted to the School Graduate Studies and to Teacher Education. In addition the requirements of the Graduate School, admission to Teacher Education requires the applicant to (1) complete all undergraduate deficiencies, (2) pass speech, language and hearing screening, (3) have the TB skin test, (4) pass all parts of the Alabama Prospective Teacher Test, and (5) pass the Praxis II in the appropriate area.

DEGREE REQUIREMENTS

Program Requirements with the Non-Thesis Option			**Sem. Hours**
BED	501	Prin. Teaching Business Subj.	3
BED	515	Mgt. of Computer Info Systems	3
BED	595	Internship	6
FED	500	Professional Seminar	3
FED	501	Foundations of Education	
		or	
FED	521	Multicultural Education	3
FED	504	Evaluation to Reaching & Learning	3
SPE	501	Intro to Study of Exceptional Children (required if not previously completed)	0-3
500 level advisor-approved courses in Biology			15
Total			**39 - 42**

SECONDARY EDUCATION, CAREER TECHNOLOGIES (CLASS A) (6-12)

ADMISSION REQUIREMENTS

Applicants for the Master's degree certification programs must be admitted to the School of Graduate Studies and to Teacher Education. Admission to Teacher Education requires the applicant to (1) present evidence of having completed a Baccalaureate degree program in a teaching field, (2) present a copy of a Class B professional educator's Certificate (regular Master's program); and (3) present transcript(s) showing a baccalaureate degree grade point average of 2.50 or better (on a 4.00 point system).

Applicants for the Master's degree in Instructional Leadership must have a minimum of three full years of full-time experience in a P-12 setting.

Applicants for the P-12 Reading Specialists Certification must have completed two years of teaching experience and present a copy of a Class B Professional Educator's Certificate in Elementary Education, Early Childhood Education, or Collaborative Teacher. Applicants may also hold a Class B professional Educator's Certificate in Secondary Education, but must complete two courses in reading, including an Introduction to Reading.

DEGREE REQUIREMENTS

Program Requirements with the Non-Thesis Option			**Sem. Hours**
FED	500	Professional Seminar	3
FED	501	Foundations of Education	3
		or	
FED	521	Multicultural Education	3
FED	503	Intro to Education Research	3
FED	504	Evaluation to Teaching & Learning	3
FED	529	Computer-Based Instruc. Tech	3
FED	542	Theories of Curriculum Development	3
SED	527	Guiding Learning in Secondary Schools	3
SPE	501	Intro to Study of Exceptional Children	0-3
(Required if not previously completed)			
TTE	503	Career Information &Guidance	3
TYE	502	Teaching Sub. In Career Tech.	3
Choose six semester hours from the following list:			6
TTE	510	Found. & Prin. Of C/TE	3
TTE	560	C/TE Student Organizations	3
TYE	599	Thesis Research in Technology Ed	6
TYE	603	Workshop: Teaching Lab Sub Dis Tech	3
TYE	604	Workshop: Teaching Lab Sub Exp Tech	3
Total			33-36

SECONDARY EDUCATION, CAREER TECHNOLOGIES (CLASS AA) (6-12)

DEGREE REQUIRMENTS

Program Requirements with the Non-Thesis Option			**Sem. Hours**
EAS	563	Instruc. Super. & Curr. Development	3
FED	600	Adv. Curriculum Development	3
FED	601	Adv. Philosophy of Education	3
FED	603	Adv. Educational Research	3
FED	604	Adv. Eval. Teaching & learning	3
FED	605	Qualitative Methods Ed. Research	3
TLE	602	Technology Ed. 21st Century	3
TYE	601	Appropriate Technology	3
TYE	698	Thesis l	3
TYE	699	Thesis II	3
SPE	501	Intro to Study of Exceptional Children*	0-3
Choose six semester hours from the following list:			6
TTE	510	Found. & Prin. Of C/TE	3
TTE	560	C/TE Student Organizations	3
TYE	599	Thesis Research in Technology Ed	6
TYE	603	Workshop: Teaching Lab Sub Dis Tech	3
TYE	604	Workshop: Teaching Lab Sub Exp Tech	3
Total			33-36

*Required if not previously completed

SECONDARY EDUCATION, CAREER TECHNOLOGIES (CLASS AA) (6-12)

ADMISSION REQUIREMENTS

Applicants to the Educational Specialist Degree must be admitted to the School of Graduate Studies and to Teacher Education. Admission to Teacher Education requires the applicant to (1) present evidence of having completed a Master's with degree Class A Certificate in the same teaching field(s) in which the Ed.S. degree is sought, (except in Special Education), (2) present transcript(s) showing a Master's degree grade point average of 3.00 or better (4.00 system).

DEGREE REQUIREMENTS

Program Requirements with the Non-Thesis Option			**Sem. Hours**
EAS	563	Instruc. Super. & Curr. Development	3
FED	600	Adv. Curriculum Development	3
FED	601	Adv. Philosophy of Education	3
FED	603	Adv. Educational Research	3
FED	604	Adv. Eval. Teaching & learning	3
FED	605	Qualitative Methods Ed. Research	3
TLE	602	Technology Ed. 21st Century	3
TYE	601	Appropriate Technology	3
TYE	698	Thesis l	3
TYE	699	Thesis II	3
SPE	501	Intro to Study of Exceptional Children♣	0-3
Choose six semester hours from the following list:			6
TTE	510	Found. & Prin. Of C/TE	3
TTE	560	C/TE Student Organizations	3
TYE	599	Thesis Research in Technology Ed	6
TYE	603	Workshop: Teaching Lab Sub Dis Tech	3
TYE	604	Workshop: Teaching Lab Sub Exp Tech	3
Total			33-36

♣Required if not previously completed

SECONDARY EDUCATION, CAREER TECHNOLOGIES (ALTERNATIVE-FIFTH YEAR PROGRAM (6-12)

ADMISSION REQUIREMENTS

The Alternative 5th Year program is for one who does not hold a baccalaureate degree in a teaching field but wishes to obtain teacher certification. The program enables one to acquire the knowledge and skills of an entry-level teacher while at the same time earning a Master's degree. Applicants for the Alternative Master's (5th year) degree program must be admitted to the School Graduate Studies and to Teacher Education. In addition to the requirements of the Graduate School, admission to Teacher Education requires the applicant to (1) complete all undergraduate deficiencies, (2) pass speech, language and hearing screening, (3) have a TB skin test, (4) pass parts of the Alabama Prospective Teacher Test, and (5) passing of the Praxis II in the appropriate area.

DEGREE REQUIREMENTS

Program Requirements with the Non-Thesis Option			**Sem. Hours**
FED	500	Professional Seminar	3
FED	501	Foundations of Education	3
		or	**3**
FED	521	Multicultural Education	3
FED	503	Intro to Education Research	3
FED	504	Evaluation to Teaching & Learning	3
FED	529	Computer-Based Instruc. Tech	3
SED	515	Reading in the Content Area	3
SPE	501	Intro to Study of Exceptional Children♣	0-3
TTE	503	Career Information & Guidance	3
TTE	562	CR Lab Management in C/TE	3
TYE	502	Teaching Sub. In Career Tech.	3
TYE	504	Plan/Org. Tech Ed. Programs	3
TYE	595	Internship	6
Choose six semester hours from the following list:			6
TTE	510	Found. & Prin. Of C/TE	3
TTE	560	C/TE Student Organizations	3
TYE	599	Thesis Research in Technology Ed	6
TYE	603	Workshop: Teaching Lab Sub Dis Tech	3

TYE	604	Workshop: Teaching Lab Sub Exp Tech	3
Total			**33-36**

SECONDARY EDUCATION, ENGLISH LANGUAGE ARTS (CLASS A) (6-12)

ADMISSIONS REQUIRMENTS

Applicants for the Master's degree certification programs must be admitted to the School of Graduate Studies and to Teacher Education. Admission to Teacher Education requires the applicant to (1) present evidence of having completed a baccalaureate degree program in a teaching field, (2) present a copy of a Class B professional educator's Certificate (regular master's program), and (3) present transcript(s) showing a Baccalaureate degree grade point average of 2.50 or better (on a 4.00 point system).

Applicants for the Master's degree in Instructional Leadership must have a minimum of three full years of full-time experience in a P-12 setting.

Applicants for the P-12 Reading Specialist Certification must have completed two years of teaching experience and present a copy of a Class B Professional Educator's Certificate in Elementary Education, Early Childhood Education, or Collaborative Teacher. Applicants may also hold a Class B professional Educator's Certificate in Secondary Education, but must complete two courses in reading, including an introduction to reading.

DEGREE REQUIRMENTS

Program Requirements Non-Thesis Option			**Sem. Hours**
FED	500	Professional Seminar	3
FED	501	Foundations of Education	
		or	
FED	521	Multicultural Education	3
FED	503	Intro to Education Research	3
FED	504	Evaluation to Teaching & Learning	3
FED	529	Computer-Based Instruc. Tech	3
FED	542	Theories of curriculum Development	3
SED	527	Guiding Learning in Secondary Schools	3
SPE	501	Intro to Study of Exceptional Children*	0-3
500 level advisor-approved courses in English Language Arts.			15
Total			**36-39**

SECONDARY EDUCATION, ENGLISH LANGUAGE ARTS (ALTERNATIVE-FIFTH YEAR PROGRAM (6-12)

ADMISSION REQUIREMENTS

The Alternative 5th Year program is for one who does not hold a Baccalaureate degree in a teaching field but wishes to obtain teacher certification. The Program enables one to acquire the knowledge and skills of an entry-level teacher while at the same time earning a Master's degree. Applicants for the Alternative Master's (5th year) degree program must be admitted to the School Graduate Studies and to Teacher Education. In addition the requirements of the Graduate School, admission to Teacher Education requires the applicant to (1) complete all undergraduate deficiencies, (2) pass the speech, language and hearing screening, (3) have a TB skin test, (4) pass all parts of the Alabama Prospective Teacher Test, and (5) pass the Praxis II in the appropriate area.

DEGREE REQUIREMENTS

Program Requirements with the Non-Thesis Option			**Sem. Hours**
FED	500	Professional Seminar	3
FED	501	Foundations of Education	
		or	
FED	521	Multicultural Education	3
FED	503	Intro to Education Research	3
FED	504	Evaluation to Teaching & Learning	3
FED	529	Computer-Based Instruc. Tech	3
FED	515	Reading in the Content Area	3
SED	512	E.L.A. in the Secondary School	3
SED	595	Internship	6
SPE	501	Intro to Study of Exceptional Children*	0-3
500 level advisor-approved courses in English Language Arts.			15
Total			**42-45**

*Required if not previously completed

SECONDARY EDUCATION, GENERAL SCIENCES (CLASS A) (6-12)

ADMISSION REQUIREMENTS

Admission to Teacher Education requires the applicants to (1) present evidence of having completed a baccalaureate degree program in a teaching field, (2) present a copy of a Class B Professional Educator's Certificate (Regular Master's program), and (3) present transcript(s) showing a Baccalaureate degree grade point average of 2.50 or better (4.00 system).

Applicants for the Master's degree in Instructional Leadership must have a minimum of three full years of full-time experience in a P-12 setting.

Applicants for the P-12 Reading Specialists Certification must have completed two years of teaching experience and present a copy of a Class B Professional Educator's Certificate in Elementary Education, Early Childhood Education, or Collaborative Teacher. Applicants may also hold a Class B professional Educator's Certificate in Secondary Education, but must complete two courses in reading, including an introduction to reading.

DEGREE REQUIRMENTS

Program Requirements with the Non-Thesis Option			**Sem. Hours**
FED	500	Professional Seminar	3
FED	501	Foundations of Education	3
		or	3
FED	521	Multicultural Education	3
FED	503	Intro to Education Research	3
FED	504	Evaluation to Teaching & Learning	3
FED	529	Computer-Based Instruc. Tech	3
FED	542	Theories of Curriculum Develop.	3
SED	527	Guiding Learning in Secondary Schools	3
SPE	501	Intro to Study of Exceptional Children*	0-3
500 level advisor-approved courses in Biology, Chemistry, Earth & Space Sciences, and/or Physics			12
Total			**33-36**

SECONDARY EDUCATION, GENERAL SCIENCES (ALTERNATIVE-FIFTH YEAR PROGRAM (6-12)

ADMISSION REQUIREMENTS

The Alternative 5th Year program is for one who does not hold a baccalaureate degree in a teaching field but wishes to obtain teacher certification. The program enables one to acquire the knowledge and skills of an entry-level teacher while at the same time earning a Master's degree. Applicants for the Alternative Master's (5th year) degree program must be admitted to the School of Graduate Studies and to Teacher Education. In addition to the requirements of the Graduate School, admission to Teacher Education requires the applicant to (1) complete all undergraduate deficiencies, (2) pass speech, language and hearing screening, (3) have a TB skin test, (4) pass all parts of the Alabama Prospective Teacher Test, and (5) pass the Praxis II in the appropriate area.

DEGREE REQUIRMENTS

Program Requirements with the Non-Thesis Option			**Sem. Hours**
FED	500	Professional Seminar	3
FED	501	Foundations of Education	3
		or	3
FED	521	Multicultural Education	3
FED	503	Intro to Education Research	3
FED	504	Evaluation to Teaching & Learning	3
FED	529	Computer-Based Instruc. Tech	3
SED	515	Reading in the Content Area	3
SED	524	Science in the Secondary School	3
SED	595	Internship	3
SPE	501	Intro to Study of Exceptional Children*	0-3
500 level advisor-approved courses in Biology, Chemistry, Earth & Space Sciences, and/or Physics			15
Total			**42-45**

*Required if not previously completed

SECONDARY EDUCATION, MATHEMATICS (CLASS A) (6-12)

ADMISSION REQUIREMENTS

Admission to Teacher Education requires the applicant to (1) present evidence of having completed a baccalaureate degree program in a teaching field; (2) present a copy of a Class B professional educator's Certificate (regular Master's program); and (3) present transcript(s) showing a Baccalaureate degree grade point average of 2.50 or better (on a 4.00 point system).

Applicants for the Master's degree in Instructional Leadership must have a minimum of three full years of full-time experience in a P-12 setting.

Applicants for the P-12 Reading Specialist Certification must have completed two years of teaching experience and present a copy of a Class B Professional Educator's Certificate in Elementary Education, Early Childhood Education, or Collaborative Teacher. Applicants may also hold a Class B professional Educator's Certificate in Secondary Education, but must complete two courses in reading, including an Introduction to Reading.

DEGREE REQUIREMENTS

Program Requirements with the Non-Thesis Option			**Sem. Hours**
FED	500	Professional Seminar	3
FED	501	Foundations of Education	3
		or	
FED	521	Multicultural Education	3
FED	503	Intro to Educational Research	3
FED	504	Evaluation to Teaching & Learning	3
FED	529	Computer-Based Instruc. Tech	3
FED	542	Theories of Curriculum Develop.	3
SED	527	Guiding Learning in Secondary Schools	3
SPE	501	Intro to Study of Exceptional Children*	0-3
500 level advisor-approved courses in Mathematics			12
Total			**33 -36**

SECONDARY EDUCATION, MATHEMATICS (CLASS AA) (6-12)

ADMISSION REQUIREMENTS

Applicants to the Educational Specialist degree program must be admitted to the School of Graduate Studies and to Teacher Education. Admission to Teacher Education requires the applicant to (1) present evidence of having completed a Master's with degree Class A Certificate in the same teaching field(s) in which the Ed.S. degree is sought (except in Special Education); (2) present transcript(s) showing a Master's degree grade point average of 3.00 or better (on a 4.00 point system).

DEGREE REQUIREMENTS

Program Requirements with the Non-Thesis Option			**Sem. Hours**
EAS	563	Instruc. Super. & Curr. Development	3
FED	600	Adv. Curriculum Development	3
FED	601	Adv. Philosophy of Education	3
FED	603	Adv. Educational Research	3
FED	604	Adv. Eval. Teaching & learning	3
FED	605	Qualitative Methods Ed. Research	3
SED	698	Thesis l	3
SED	699	Thesis II	3
SPE	501	Intro to Study of Exceptional Children*	0-3
500 level advisor-approved courses in Mathematics			12
Total			**36-39**

SECONDARY EDUCATION, PHYSICS (CLASS A) (6-12)

ADMISSION REQUIREMENTS

Admission to Teacher Education requires applicants to (1) present evidence of having completed a baccalaureate degree program in a teaching field, (2) present a copy of a Class B Professional Educator's Certificate (regular Master's program), and (3) present transcript(s) showing a baccalaureate degree grade point average of 2.50 or better (on a 4.00 point system).

*Required if not previously completed

Applicants for the Master's degree in Instructional Leadership must have a minimum of three full years of full-time experience in a P-12 setting.

Applicants for the P-12 Reading Specialist Certification must have completed two years of teaching experience and present a copy of a Class B Professional Educator's Certificate in Elementary Education, Early Childhood Education, or Collaborative Teacher. Applicants may also hold a Class B professional Educator's Certificate in Secondary Education, but must complete two courses in reading, including an introduction to Reading.

DEGREE REQUIRMENTS

Program Requirements with the Non-Thesis Option			**Sem. Hours**
FED	500	Professional Seminar	3
FED	501	Foundations of Education	3
		or	
FED	521	Multicultural Education	3
FED	503	Intro to Education Research	3
FED	504	Evaluation to Teaching & Learning	3
FED	529	Computer-Based Instruc. Tech	3
FED	542	Theories of Curriculum Development	3
SED	527	Guiding Learning in Secondary Schools	3
SPE	501	Intro to Study of Exceptional Children*	0-3
500 level advisor-approval courses in Physic			12
Total			**33-36**

Secondary Education, Technical Education (Class A) (6-12)

ADMISSION REQUIREMENTS

Admission to Teacher Education requires applicants the applicant to (1) present evidence of having completed a baccalaureate degree program in a teaching field, (2) present a copy of a Class B professional educator's Certificate (Regular Master's program), and (3) present transcript(s) showing a Baccalaureate degree grade point average of 2.50 or better (on a 4.00 point system).

Applicants for the Master's degree in Instructional Leadership must have a minimum of three full years of full-time experience in a P-12 setting.

Applicants for the P-12 Reading Specialist Certification must have completed two years of teaching experience and present a copy of a Class B Professional Educator's Certificate in Elementary Education, Early Childhood Education, or Collaborative Teacher. Applicants may also hold a Class B professional Educator's Certificate in Secondary Education, but must complete two courses in reading, including an introduction to Reading.

DEGREE REQUIRMENTS

Program Requirements with the Non-Thesis Option			**Sem. Hours**
FED	500	Professional Seminar	3
FED	501	Foundations of Education	3
		or	
FED	521	Multicultural Education	3
FED	503	Intro to Education Research	3
FED	504	Evaluation to Teaching & Learning	3
FED	529	Computer-Based Instruc. Tech	3
FED	542	Theories of Curriculum Development	3
SED	527	Guiding Learning in Secondary Schools	3
SPE	501	Intro to Study of Exceptional Children*	0-3
TLE	506	Prog., Plan., Dev., Eval. C/TE	3
TLE	507	Instruc., Plan, Exe., Eval. C/TE	3
Choose six semester hours from the following list:			6
TTE	510	Found. & Prin. Of C/TE	3
TTE	560	C/TE Student Organizations	3
TYE	599	Thesis Research in Technology Ed	6
TYE	603	Workshop: Teaching Lab Sub Dis Tech	3
TYE	604	Workshop: Teaching Lab Sub Exp Tech	3
Total			**33-36**

*Required if not previously completed

SECONDARY EDUCATION, TECHNICAL EDUCATION (ALTERNATIVE-FIFTH-YEAR PROGRAM) (6-12)

ADMISSION REQUIREMENTS

The Alternative 5th Year program is for one who does not hold a baccalaureate degree in a teaching field but wishes to obtain teacher certification. The program enables one to acquire the knowledge and skills of an entry-level teacher while at the same time earning a Master's degree. Applicants for the Alternative Master's (5th year) degree program must be admitted to the School of Graduate Studies and to Teacher Education. In addition the requirements of the Graduate School, admission to Teacher Education requires the applicant to (1) complete all undergraduate deficiencies, (2) pass the speech, language and hearing screening, (3) have a TB skin test, (4) pass all parts of the Alabama Prospective Teacher Test, and (5) pass the Praxis II in the appropriate area.

DEGREE REQUIREMENTS

Program Requirements with the Non-Thesis Option			**Sem. Hours**
FED	500	Professional Seminar	3
FED	501	Foundations of Education	3
		or	
FED	521	Multicultural Education	3
FED	503	Intro to Education Research	3
FED	504	Evaluation to Teaching & Learning	3
FED	529	Computer-Based Instruc. Tech	3
SED	515	Reading in the Content Area	3
SPE	501	Intro to Study of Exceptional Children*	0-3
TLE	506	Prog., Plan., Dev., Eval. C/TE	3
TLE	507	Instruc., Plan, Exe., Eval. C/TE	3
TLE	595	Internship	6
TTE	501	Teaching Rel. Instruct. C/TE	
TTE	508	Coord. COOP C/TE	
		or	
500 Level advisor-approved course in INT or TTE elective			
Choose six semester hours from the following list:			6
TTE	510	Found. & Prin. Of C/TE	3
TTE	560	C/TE Student Organizations	3
TYE	599	Thesis Research in Technology Ed	6
TYE	603	Workshop: Teaching Lab Sub Dis Tech	3
TYE	604	Workshop: Teaching Lab Sub Exp Tech	3
Total			**42-45**

*Required if not previously completed

SOCIAL WORK

MASTER OF SOCIAL WORK

DEPARTMENT CHAIR
Edith Fraser
256-372-8776
Edith.Fraser@aamu.edu

Program Professors
Edith Fraser
Tonya Perry

Associate Professors
Jitendra Kapoor

Assistant Professors
Donna Harris
JoAnne McLinn
Jeongah Kim
Rachel Robinson
Pamela Plummer

Dennis Weiss (MSW Program Coordinator)

MISSION STATEMENT

The Graduate Social Work program prepares students to become competent, ethical and advanced professional social work practitioners capable of assuming a wide range of roles and functions in working with vulnerable individuals, families, groups, public and private organizations and institutions in rural and urban communities. The Graduate Social Work Program is accredited by the Council on Social Work Education.

ADMISSION REQUIREMENTS

Students seeking admission to the Social Work program must:

1. Hold a Bachelor's degree from a regionally accredited college or university.
2. Have a cumulative undergraduate grade point average of at least 2.5 (on a 4.0 scale) and meet the general requirements for admission to the School of Graduate Studies at Alabama A&M University.
3. Provide evidence of the successful completion of undergraduate courses in Human Biology and Statistics.
4. Submit two essays. Each essay should not exceed 500 words. Essays must focus on the following:
   a. Why applicants wish to pursue the MSW degree;
   b. A major contemporary social problem that is of concern to the profession of social work; (state why, in your opinion, it is a problem for the profession), and how you would intervene to ameliorate and/or eradicate this problem.
5. Submit three letters of reference that reflect the applicant's academic and professional potential and ethical and values orientation. Preferably letter of recommendations should be written by former professors or others who are, or who have been in a position to evaluate aspects of the candidates' academic, personal and intellectual capabilities.
6. Complete a personal interview with the Social Work Admission's Committee or a designated MSW faculty member.

While there is no requirement for a specific undergraduate major to qualify for graduate study in social work, applicants are expected to have had preparation in the liberal arts, usually through undergraduate coursework in the social and behavioral sciences, humanities and life sciences. At least 24 credits are required in these areas.

Advanced Standing

Applicants with a BSW degree from a CSWE accredited program and a cumulative GPA of 3.00 including upper division social work courses may apply for advanced standing. Qualified applicants must complete 39 semester hours, of which 8 semester hours are in field instruction, to finish the degree program. Students obtaining Advanced Standing must complete the degree program in three (3) consecutive semesters. For more information on Advanced Standing, contact Dr. Edith Fraser, Director of the Social Work program, at 256-372-8776.

Note: Admission to the Graduate program will occur twice annually in the summer and in the fall. <u>There will be no spring admission.</u>

Annual Application Deadline

Summer Admission .....February 15
Fall Admission..... March 1

Program Requirements for the Non-Thesis Option – (Advanced Standing Program)

Required Program - Foundation		**Sem. Hours**
SWK 522	Race, Ethnicity, Gender & Diversity	3
SWK 523	Rural Urban	2
SWK 587	Social Work Empowerment	3
	Concentration Area Courses	31
Total		**39**

Areas of Concentration

Family & Child Welfare

SWK 600	Social Work Intervention	3
SWK 610	Family & Child Welfare	3
SWK 621	Family Theories & Processes	3
SWK 660	Assessment of Individuals	3
SWK 680	Field Practicum & Seminar II	4
SWK 601	Social Work Practice – Groups	3
SWK 630	Needs Assessment & Prg Evaluation	3
SWK 681	Field Practicum& Seminar III	4
SWK 689	Integrative Seminar	3
SWK	Elective	2
		31

Community Mental Health

SWK 602	SWK Practice Intervention in Mental Health	3
SWK 616	Issues & Policies in CMH	3
SWK 621	Family Theories & Processes	3
SWK 660	Assessment of Individuals	3
SWK 680	Field Practicum & Seminar II	4
SWK 601	Social Work Practice – Groups	3
SWK 630	Needs Assessment & Program Evaluation	3
SWK 681	Field Practicum & Seminar III	4
SWK 689	Integrative Seminar	3
SWK	Elective	2
		31

Program Requirements for the Non-Thesis Option – (Two-Year Program)

Required Program -1st Year Foundation		**Sem Hours**
SWK 500	Social Work Practice	3
SWK 510	Social Work Policy I	3
SWK 520	HBSE I	3
SWK 522	Race, Ethnicity, Gender & Diversity	3
SWK 530	Applied Social Work Research	3
SWK 501	Social Work Practice II	3
SWK 511	Social Work Policy II	2
SWK 521	HBSE II	3
SWK 523	Rural/Urban Social Work	2
SWK 581	Field Practicum & Seminar I	4
		29

Required Program–1st Year Foundation (Sat) Classes*

SWK 500	Social Work Practice	3
SWK 520	HBSE I	3
SWK 501	SWK Practice II	3
SWK 521	HBSE II	3
SWK 530	Applied Social Work Research	3
SWK 510	Social Work Policy I	3
SWK 522	Race, Ethnicity & Gender & Diversity	3
SWK 581	Field Practicum & Seminar	4
SWK 511	SWK Policy II	2
SWK 523	Rural Urban Social Work	2
		29

Concentration Areas: 2nd Year
Family & Child Welfare (Fall/Spring)

SWK 600	Social Work Intervention	3
SWK 610	Family & Child Welfare	3
SWK 621	Family Theories & Processes	3
SWK 660	Assessment of Individuals	3
SW 680	Field Practicum & Seminar II	4
SWK 601	Social Work Practice – Groups	3
SWK 630	Needs Assessment & Prg Evaluation	3
SWK 681	Field Practicum & Seminar III	4
SWK 689	Integrative Seminar	3
SWK	Elective	2
		31

*Required for students in the Saturday program

Community Mental Health (Fall/Spring)

SWK 602	SWK Practice Intervention in Mental Health	3
SWK 616	Issues & Policies in CMH	3
SW 621	Family Theories & Processes	3
SWK 660	Assessment of Individuals	3
SWK 680	Field Practicum & Seminar II	4
SWK 601	Social Work Practice – Groups	3
SWK 630	Needs Assessment & Program Evaluation	3
SWK 681	Field Practicum & Seminar III	4
SWK 689	Integrative Seminar	3
SWK	Elective	2
		31

Total

Program Requirements for the Non-Thesis Option – (Three-Year Program)

Required Program - Foundation		**Sem. Hours**
SWK 500	Social Work Practice	3
SWK 510	Social Work Policy I	3
SWK 520	HBSE I	3
SWK 522	Race, Ethnicity, Gender & Diversity	3
SWK 501	Social Work Practice II	3
SWK 511	Social Work Policy II	2
SWK 521	HBSE II	3
SWK 523	Rural/Urban Social Work	2
SWK 530	Applied Social Work Research	3
SWK 581	Field Practicum& Seminar I	4
		29

Areas of Concentration

Family & Child Welfare 2nd Year

SWK 600	Social Work Intervention	3
SWK 610	Family & Child Welfare	3
SWK 660	Assessment of Individuals	3
SWK 601	Social Work Practice – Groups	3
SWK 630	Needs Assessment & Prg Evaluation	3
SWK	Elective	2

3rd Year

SWK 621	Family Theories & Processes	3
SWK 680	Field Practicum & Seminar II	4
SWK 681	Field Practicum & Seminar III	4
SWK 689	Integrative Seminar	3
		31

Community Mental Health - 2nd Year

SWK 602	SWK Practice Intervention in Mental Health	3
SWK 616	Issues & Policies in CMH	3
SWK 660	Assessment of Individuals	3
SWK 601	Social Work Practice – Groups	3
SWK 630	Needs Assessment & Program Evaluation	3
SWK	Elective	2

3rd Year

SWK 621	Family Theories & Processes	3
SWK 680	Field Practicum& Seminar II	4
SWK 681	Field Practicum & Seminar III	4
SWK 689	Integrative Seminar	3
		31

Total

Program Requirements for the Non-Thesis Option – (Four-Year Program)

Required Program - Foundation		**Sem. Hours**
SWK 500	Social Work Practice	3
SWK 510	Social Work Policy I	3
SWK 501	Social Work Practice II	3
SWK 511	Social Work Policy II	2
SWK 523	Rural/Urban Social Work	2
SWK 522	Race, Ethnicity, Gender & Diversity	3
		16

Required Program -2nd Year Foundation

SWK 520	HBSE I	3
SWK 530	Applied Social Work Research	3
SWK 521	HBSE II	3
SWK 581	Field Practicum,& Seminar I	4
		13

Concentration Areas

Family & Child Welfare – 3rd Year Concentration

SWK 621	Family Theories & Processes	3
SWK 600	Social Work Intervention	3
SWK 610	Family & Child Welfare	3
SWK 601	Social Work Practice – Groups	3
SWK 630	Needs Assessment & Prg Evaluation	3
SWK 680	Field Practicum & Seminar II	4
		19

Family & Child Welfare – 4th Year Concentration

SWK 660	Assessment of Individuals	3
SWK 681	Field Practicum& Seminar III	4
SWK	Elective	2
SWK 689	Integrative Seminar	3
SWK 615	Grants writing	2
		14

Community Mental Health – 3rd Year Concentration

SWK 621	Family Theories & Processes	3
SWK 602	SWK Practice Intervention in Mental Health	3
SWK 616	Issues & Policies in CMH	3
SWK 601	Social Work Practice – Groups	3
SWK 630	Needs Assessment & Program Evaluation	3
SWK 680	Field Practicum& Seminar II	4
		19

Community Mental Health – 4th Year Concentration

SWK 660	Assessment of Individuals	3
SWK 681	Field Practicum & Seminar III	4
SWK 689	Integrative Seminar	3
SWK	Elective	2
		12

Program Requirements With Thesis Option
Required Program

SWK 631	Thesis Research Project	1-3
SWK 632	Thesis Option	1-3
		6

Total (w/o Thesis)	**60**
Total (With Thesis)	**62-66**

SPECIAL EDUCATION

MASTER OF EDUCATION IN SPECIAL EDUCATION (COLLABORATIVE TEACHER K-6)

PROGRAM DIRECTOR
Shirley King
256-372-5522
Associate Professors
Dr. Shirley King

Assistant Professors
Dr. Freddie Stewart

ABOUT THE PROGRAM
The Masters of Education program in Special Education prepares teachers to educate students with intellectual and learning disabilities, and students with emotional/behavioral disorders. Persons graduating from the program satisfy the proficiencies needed for advanced licensure and are eligible for employment in a range of settings to include public schools and other educational settings.

ADMISSION REQUIREMENTS

Applicants for Master's degree certification programs must be admitted to the school of graduates Studies and to Teacher Education. Admission to teacher Education requires the applicant to (1) present evidence of having completed a baccalaureate degree program in a teaching field, (2) present a copy of a Class B Professional Educator's Certificate (Regular Master's program), (3) present transcript(s) showing a baccalaureate degree grade point average of 2.50 or better (4.00 system), (4) Teacher Effectiveness Validation form (Regular Master's program) and, (5) The Graduate record Examination (GRE).

Program Requirements with the Non-Thesis Option

Required Program			**Sem. Hours**
SPE	516	Collaborative Consultation	3
SPE	522	Learning Strategies for Elementary Education	3
SPE	530	Behavior Management	3
SPE	540	Teaching Elementary Students w/ Disabilities	3
SPE	541	Teaching ECSE w/Disabilities	3
SPE	595	Internship in ECSE	6
ECE	520	Foundations of Teaching Reading	3
FED	501	Foundations of Education or	3
FED	521	Multicultural Education	
FED	503	Introduction to Educational Research	3
FED	504	Evaluation of Teaching/Learning	3
FED	529	Computer-Based Instructional Technology	
Total*			**36**

MASTER OF EDUCATION IN SPECIAL EDUCATION (COLLABORATIVE TEACHER 6-12)

ADMISSION REQUIREMENTS

Applicants for Master's degree certification programs must be admitted to the school of graduates Studies and to Teacher Education. Admission to teacher Education requires the applicant to (1) present evidence of having completed a baccalaureate degree program in a teaching field, (2) present a copy of a Class B Professional Educator's Certificate (Regular Master's program), (3) present transcript(s) showing a baccalaureate degree grade point average of 2.50 or better (4.00 system), (4) Teacher Effectiveness Validation form (Regular Master's program) and, (5) The Graduate record Examination (GRE).

Program Requirements with the Non Thesis Option*

Required Program			**Sem. Hours**
SPE	500	Teaching Secondary Students w/Disabilities	3
SPE	516	Collaborative Consultation	3
SPE	520	Learning Strategies for Adolescents	3
SPE	525	Transitioning Students w/ Disabilities	3
SPE	530	Behavior Management	3
SPE	595	Internship in ECSE	6
FED	501	Foundations of Education or	3

Special Education certified students must take six semester hours of course work in lieu of internship.

FED	521	Multicultural Education	
FED	503	Introduction to Educational Research	3
FED	504	Evaluation of Teaching/Learning	3
FED	529	Computer-Based Instructional Technology	

Take 3 Hours from the list below

SED	521	English in the Secondary Schools or	3
SED	523	Social Science in the Secondary Schools or	3
SED	524	Science in the Secondary Schools	3
Total			**36**

MASTER OF EDUCATION IN SPECIAL EDUCATION (ALTERNATIVE FIFTH YEAR COLLABORATIVE TEACHER K-6)

ADMISSION REQUIREMENTS

The Alternative 5th year program is for applicants who do not hold a baccalaureate degree in a teaching field but wishes to obtain teacher certification. The program enables qualified candidates to acquire the knowledge and skills of an entry-level teacher while at the same time earn a Master's degree. Applicant seeking admission to the Special Education Collaborative Teaching program (regardless of track) must be admitted to the School of Graduate Studies and to Teacher Education. Admission to teacher Education requires the applicant to:

1. Present evidence of having completed a baccalaureate degree from a regionally accredited institution.
2. A grade point average of 2.50 or better (4.00 system) on all course work previously completed.
3. Complete all undergraduate deficiencies.
4. Pass a speech, language and hearing screening.
5. Provide results of a background check and a negative tuberculosis skin test.
6. Pass all parts of the Alabama Prospective Teacher Test.

Program Requirements with the Non-Thesis Option♣

Required Program			**Sem. Hours**
SPE	501	Introduction to the Study of Exceptional Children	3
SPE	515	Language Development	3
SPE	516	Collaborative Consultation	3
SPE	518	Application of Child Development	3
SPE	522	Learning Strategies for Elementary Education	3
SPE	530	Behavior Management	3
SPE	540	Teaching Elementary Students w/ Disabilities	3
SPE	541	Teaching ECSE w/Disabilities	3
SPE	595	Internship in ECSE	6
FED	501	Foundations of Education or	3
FED	521	Multicultural Education	
FED	503	Introduction to Educational Research	3
FED	504	Evaluation of Teaching/Learning	3
FED	529	Computer-Based Instructional Technology	3
EDE	503	Introduction to Educational Research	3
ECE	512	Investigation of Language Arts	3
ECE	520	Foundations of Teaching Reading	3
Total♦			**51**

MASTER OF EDUCATION IN SPECIAL EDUCATION (ALTERNATIVE FIFTH YEAR COLLABORATIVE TEACHER 6-12)♣

ADMISSION REQUIREMENTS

Requirements are the same as those given on page 92 for the general admissions requirements for the M.ED program in Special Education.

Program Requirements with the Non-Thesis Option

Required Program			**Sem. Hours**

♦ Special Education certified students must take six semester hours of course work in lieu of internship.

♣ Undergraduate Prerequisites for Alternative 5th Year, Collaborative 6-12

SPE	205	Language Development	3
SPE	403	IEP Writing	3
SPE	402	Corrective Reading	3
EDU	305	Materials & Methods of Teaching Math in Elementary Schools	3

SPE	500	Teaching Secondary Students w/Disabilities	3
SPE	501	Introduction to the Study of Exceptional Children	3
SPE	516	Collaborative Consultation	3
SPE	518	Application of Child Development	3
SPE	520	Learning Strategies for Adolescents	3
SPE	525	Transitioning Students w/ Disabilities	3
SPE	530	Behavior Management	3
SPE	595	Internship in ECSE	6
FED	501	Foundations of Education or	3
FED	521	Multicultural Education	
FED	503	Introduction to Educational Research	3
FED	504	Evaluation of Teaching/Learning	3
FED	529	Computer-Based Instructional Technology	3
SED	515	Reading in the Content Area	3
SED	530	Secondary School Curriculum	3

Take 6 Hours from the list below

SED	521	English in the Secondary Schools or	3
SED	523	Social Science in the Secondary Schools or	3
SED	524	Science in the Secondary Schools	3
Total			**51**

MASTER OF EDUCATION IN SPECIAL EDUCATION (EARLY CHILDHOOD)

ADMISSION REQUIREMENTS

Requirements are the same as those given on page 92 for the general admissions requirements for the M.ED program in Special Education.

Program Requirements with the Non-Thesis Option

Required Program♠			**Sem. Hours**
SPE	515	Language Development	3
SPE	518	Application	3
SPE	541	Teaching ECSE w/Disabilities	3
SPE	545	Intro to Early Childhood Special Education	3
SPE	546	Parent Family Assessment	3
SPE	548	Assessment and Evaluation in ECSE	3
SPE	549	Adaptive Techniques in Methods in ECSE	3
SPE	550	Learning Strategies for Young Children	3
SPE	595	Internship in ECSE	6
FED	501	Foundations of Education or	3
FED	521	Multicultural Education	(3)
FED	503	Introduction to Educational Research	3
FED	504	Evaluation of Teaching/ Learning	3
FED	529	Computer-Based Instructional Tech.	3
Total♠			**42**

EDUCATIONAL SPECIALIST DEGREE IN SPECIAL EDUCATION (CLASS AA CERTIFICATION COLLABORATIVE TEACHER K-6

ADMISSION REQUIREMENTS

Applicants to the Educational Specialist Degree must be admitted to the School of Graduate Studies and to Teacher Education. Admission to Teacher Education requires the Applicant to (1) present evidence of having completed a Master's degree with Class A Certification in the same teaching field(s) in which the Ed.S. Degree is sought (*except Special Education), (2) present transcript(s) showing a Master's degree grade point average of 3.00 or better (4.00 system).

Program Requirements with the Thesis Option

Required Program			**Sem. Hours**
SPE	609	Seminar in Special Education	3
SPE	641	Evaluation Meth/Ma for Special Education	3
SPE	643	Curriculum Planning K-6	3

♠ Candidates holding a class "B" teaching certificate in a field other than special education may enter the traditional M.Ed. program but are required to take.

SPE	403	IEP	Writing	3
SPE	501	501	Introduction to the Study of Exceptional children	3

SPE	660	Advanced Collaborative Consultation	3
SPE	664	Supervising Collaborative K-6	3
SPE	667	Professional Writing	3
SPE	698	Action Research I	3
SPE	699	Action Research II	3
FED	600	Advanced Curriculum Development	3
FED	602	Advanced Educational Statistics	3
FED	603	Advanced Education Research	3
FED	604	Advanced Evaluation of Teaching/Learning	3
Total*			**36**

SPE	667	Professional Writing	3
SPE	698	Action Research I	3
SPE	699	Action Research II	3
FED	600	Advanced Curriculum Development	3
FED	602	Advanced Educational Statistics	3
FED	603	Advanced Education Research	3
FED	604	Advanced Evaluation of Teaching/Learning	3
Total			**36**

EDUCATION SPECIALIST DEGREE IN SPECIAL EDUCATION (CLASS AA CERTIFICATION COLLABORATIVE TEACHER 6-12

ADMISSION REQUIREMENTS

Requirements are the same as those given on Page 93.

Program Requirements with the Thesis Option*

Required Program			**Sem. Hours**
SPE	609	Seminar in Special Education	3
SPE	641	Evaluation Meth/Ma for Special Education	3
SPE	664	Supervising Collaborative K-6	3
SPE	660	Advanced Collaborative Consultation	3
SPE	665	Supervising Collaborative 6-12 Programs	3

URBAN & REGIONAL PLANNING

MASTER OF URBAN AND REGIONAL PLANNING

PROGRAM DIRECTOR
Chukudi V. Izeogu
256-372-4990

Graduate Faculty

Professors
Earl N.M. Gooding
Chukudi V. Izeogu
Jacob O. Oluwoye

Associate Professors
Donald Outland
Constance J. Wilson

Assistant Professors
Russell J. Fricano
Joseph A. Lee

MISSION STATEMENT

Alabama A & M University (AAMU) is a land grant institution that combines education, research and service in professional, vocational and liberal arts fields. The Department of Community Planning and Urban Studies (DCPUS) fulfills the mission of AAMU by providing a nationally accredited research and practice-oriented planning education for the training of students from diverse backgrounds for careers in the planning profession so that they can address pressing problems and issues of physical, environmental, economic and social change in urban and rural communities in this age of advancing technology.

ADMISSION REQUIREMENTS

Applicants for admission into the Master of Urban and Regional Planning (MURP) program must meet all requirements as prescribed by the Graduate School, and must have attained an undergraduate cumulative GPA of 2.80 (based on a 4.00 point system).

Applicants with an undergraduate GPA less than the minimum requirement may be considered for provisional admission. Provisionally admitted students must take recommended deficiency courses, and bring their GPAs to 3.0 within the first semester of enrollment in order to qualify for full graduate admission. Students who have been granted provisional admission status who subsequently raise their GPA to 2.8 or above cannot opt for the thesis option. Only students who met the admission requirement for regular admission initially (400 on verbal and 400 quantitative portions of the GRE and a 2.8 GPA) can select the thesis option.

Program Requirements with the Thesis Option

Required Program			**Sem. Hours**
URP	500	Fundamentals of Urban Planning	1
URP	510	Planning Theory and History	3
URP	511	Planning Research Methods 1	3
URP	520	Legal Basis of Planning	3
URP	521	Planning Research Methods ll	3
URP	525	Planning Studio I	3
URP	526	Computer Applications in Planning	3
URP	527	Planning Studio ll	3
URP	529	Professional Practice	3
URP	531	Population and Economic Analysis	3
URP	599	Thesis	6
Area Concentration Hours			12
Total			**46**

Program Requirements with the Non-Thesis Option

Required Program			**Sem. Hours**
URP	500	Fundamentals of Urban Planning	1
URP	510	Planning Theory and History	3
URP	511	Planning Research Methods 1	3
URP	520	Legal Basis of Planning	3
URP	521	Planning Research Methods ll	3
URP	525	Planning Studio I	3
URP	526	Computer Applications in Planning	3
URP	527	Planning Studio ll	3
URP	529	Professional Practice	3
URP	531	Population and Economic	3

		Analysis	
URB	555	Terminal Research Proposal	1
URB	557	Terminal Research OR	2
URP	559	Planning Project	2
URB		Elective Course	3
Area Concentration Hours			12
Total			**46**

Electives

Program Concentrations and Courses
(Students must take at least two courses denoted with asterisks and two others courses from a particular area concentration list below)

1 Environmental Planning			**Sem. Hours**
URP	542	Environmental Planning*	3
URP	545	Environmental Assessment*	3
URP	533	Land Use Planning	3
SPS	580	Natural Resource Management Policy	3
SPS	553	Hazardous Waste Management	3
URP	556	Independent Research	3
URP	523	Site Planning	3
SPS	775	Advanced Principles of GIS	3
Total			**12**

2. Housing and Community Development

US	506	Urban Economics*	3
URP	543	Housing Issues in Planning*	3
URP	544	Historic Preservation	3
URP	553	Community Development Process	3
URP	556	Independent Research	3
SWK	630	Needs Assessment and Program Evaluation	3
ECO	530	Economic Development	3
Total			**12**

3. Transportation Planning

URP	535	Transportation Planning*	3
URP	538	Transportation Modeling*	3
URP	539	Public Transportation Administration	3
SPS	775	Advanced Principles of Geographic Information	3
URP	556	Independent Research	3
Total			**12**

4. International Development Planning

URP	564	Urban Planning in Dev. Nations*	3
URP	566	Global Environment and Populations Issues*	3
AGB	606	Methods and Techniques of Rural Dev.	3
URP	561	Seminar on Economic Development Planning	3
URP	515	Regional Development Theory	3
URP	556	Independent Research	3
Total			**12**

ACRONYMS AND COURSE DESCRIPTIONS

ACCOUNTING	ACC
AGRIBUSINESS EDUCATION	AGB
APPAREL,MERCHANDISING AND DESIGN	AMD
ART	ART
BUSINESS EDUCATION	BED
BIOLOGY	BIO
BUSINESS ADMINISTRATION	BUS
CHEMISTRY	CHE
CIVIL ENGINEERING	CE
CIVIL ENGINEERING TECHNOLOGY	CET
COMMUNICATIVE SCIENCE AND DISORDERS	CSD
COMMUNITY PLANNING	CP
COMPUTER AND INFORMATION SCIENCES	CMP
CONSTRUCTION MANAGEMENT	CMG
CRIMINAL JUSTICE	CJ
EDUCATION ADMINISTRATION AND SUPERVISION	EAS
EARLY CHILDHOOD EDU. AND ELEMENTARY EDU.	ECE
EARLY CHILDHOOD EDUCATION	ECH
ECONOMICS	ECO
EDUCATION	EDU
ELECTRICAL ENGINEERING	EE
ELECTRICAL. ELECTRONICS ENGINEERTING TECHNOLOGY	EET
ELEMENTARY AND EARLY CHILDHOOD EDUCATION	ECE
ELEMENTARY EDUCATION	ELE
ENGLISH	ENG
FAMILY AND CONSUMER SCIENCES	FCS
FOUNDATIONS OF EDUCATION	FED
FINANCE	FIN
FOOD AND ANIMAL SCIENCE	FAS
HIGHER EDUCATION ADMINISTRATION	HEA
HEALTH EDUCATION	HED
HISTORY	HIS
HOME ECONOMICS	HEC
HUMAN DEV. AND FAMILY RESOURCES MANAGEMENT	HDF
INDUSTRIAL TECHNOLOGY	IT
LEARNING RESOURCE CENTER	LRC
LOGISTICS AND CHAIN SUPPLY MANAGEMENT	LSM
MANAGEMENT	MGT
MANAGEMENT INFORMATION SYSTEMS	MIS
MARKETING	MKT
MATHEMATICS	MTH
MECHANICAL DRAFTING AND DESIGN TECHNOLOGY	MDT
MECHANICAL ENGINEERING	ME
MUSIC	MUS
NATURAL RESOURCES AND ENVIRONMENTAL SCIENCES	NRE
NUTRITION AND HOSPITALITY MANAGEMENT	NHM
OFFICE SUPPLY MANAGEMENT	OSM
PHILOSOPHY	PHIL
PHYSICAL EDUCATION	PED
PHYSICS	PHY
POLITICAL SCIENCE	PSC
PSYCHOLOGY	PSY
SECONDARY EDUCATION	SED
SOCIAL WORK	SWK
SOCIOLOGY	SOC
SPECIAL EDUCATION	SPE
TECHNICAL AND TECHNOLOGY EDUCATION	TTE
TELECOMMUNICATIONS	TEL
URBAN PLANNING	UPL
URBAN AND REGIONAL PLANNING	URS

COURSE DESCRIPTIONS

ACCOUNTING

ACC 512 Accounting Analysis for Management - Three semester hours. This course deals with concepts, theory, and applications of managerial accounting. Stress is on planning, control, problem solving, and decision-making. (Prerequisite: MBA 506 or at least two undergraduate courses in principles of accounting)

ACC 571 Tax Issues in Decision-Making - Three semester hours. A study of federal tax structure, including legal, economic, and governmental implications, the central focus will be on business decisions, research methodology, and tax planning. (Prerequisites: Federal Tax Accounting I and II and ACC 512 or consent of instructor)

ACC 572 Accounting Information Systems - Three semester hours. A study of accounting information systems, including small to medium to large computer-based systems, the central focus will be on design and implementation of systems to meet all accounting informational needs for managers. This course carries a $10 lab fee. (Prerequisite: ACC 512 or consent of instructor).

AGRIBUSINESS

AGB 502 Advanced Rural Electrification - Three semester hours. Advanced wiring with emphasis on planning, designing the wiring system; building service entrance; wiring the home and utility buildings; appliance wiring and trouble shooting.

AGB 505 Teaching Vocational Education to the Disadvantaged and Handicapped - Three semester hours. Special methods and techniques of teaching vocational education to the disadvantaged with emphasis on the sociological, psychological and physiological factors that influence learning.

AGB 508 Planning, Organizing and Teaching Agribusiness Mechanics - Three semester hours. Selection of teaching materials, tools, training aids, methods, and techniques of teaching Agribusiness Mechanics.

AGB 509 Advanced Studies - One to three semester hours. Individual field study in partial fulfillment of needs for research experience.

AGB 510 Vocational Guidance - Three semester hours. Need for and the nature of vocational guidance; their duties and relations; programs and evaluation of results.

AGB 512 Small Gasoline Engines - Three semester hours. This course deals with the maintenance, overhauling and trouble shooting of 2 and 4 cycle gasoline engines.

AGB 515 Agricultural Surveying - Three semester hours. This course provides practical application in the use of the transit and land measuring devices. The student will gain experience in land measurement, profile and topographical mapping, and the use of the transit in soil and water conservation.

AGB 520 Advanced Welding and Metalwork Technology - Three semester hours. This course covers basic gas and arch welding principles, procedures, and application in maintenance and construction; selection of machines, equipment, materials for welding and safe operation of metal-joining machines.

AGB 521 Vocational Education Program Planning, Development and Evaluation - Three semester hours. Principles, theories and practices in planning, developing and evaluating state and local programs in vocational education.

AGB 522 Adult Vocational Education - Three semester hours. The characteristics of adults as learners and the history, philosophy and nature of adult education. Emphasis will be placed on planning, developing and implementing a comprehensive adult vocational education program.

AGB 523 Advance Farm Power and Field Machinery - Three semester hours. Advanced study of power units, designs, principles of operation, economic applications and adaptation of field machines.

AGB 524 Advanced Wood and Machine Technology - Three semester hours. This course is designed for those who have a need for knowing about the several related factors involved in the fabrication of wood and wood major power woodworking machines and hand tools as related to wood fabrication.

AGB 525 Advanced Wood Design and Assembly - Three semester hours. This course is designed specifically for teachers of specialized secondary and post-secondary woodworking programs. Attention

will be given to design and assembly of wood products that are used in the Agricultural industry.

AGB 531 Agricultural Economics - Three semester hours. This course is designed for graduate students who have had no previous training in agricultural economics. It emphasizes the application of basic economic concepts such as profit maximization, cost minimization, resource substitution, demand and supply to the production and distribution of agricultural commodities. The focus is on management and decision making but attention is also given to persistent policy issues and international trade.

AGB 532 Advanced Farm Management - Three semester hours. The analysis of farm business records and the application of economic concepts in decision making in farm planning, farm organization and farm management. Emphasis will be on enterpriser selection and combination; resource combination, substitution and valuation; the relationship between the production function and supply; cost minimization and profit maximization.

AGB 533 Advanced Agricultural Marketing - Three semester hours. A study of the marketing system and the market for farm products. Methods of reducing cost and improving marketing processes; a review of the activities of government agencies and their effects on the marketing system; the role and problems of cooperatives in agricultural marketing.

AGB 540 Vocational Education for Special Needs Students - Three semester hours. Analysis of educational procedures and practices appropriate for teaching individuals with special needs. Attention is focused on characteristics and learning styles, curriculum modification, evaluation, IEP and student placement.

AGB 550 Personal Financial Management - Three semester hours. This course deals with short term as well as long term planning and management of personal financial resources. It provides students with a working knowledge of personal finance from a managerial perspective with emphasis on the application of financial management to personal or family financial problems. Focus is on budgeting, purchasing, borrowing, saving and investing but attention is also given to other topics such as the financial aspects of weddings, divorce, retirement, funerals and insurance, as well as the effects of tax on investment decision.

AGB 590 Research Methods in Agribusiness - Three semester hours. Principles and techniques appropriate for planning, designing, conducting and reporting research in Agribusiness.

AGB 599 Research in Agribusiness Education - Six semester hours. Thesis credit only.

AGB 600 Computer Applications in Agribusiness - Two semester hours. Theory and practice in computer applications and equipment as it relates to the secondary and technical school level. Emphasis is placed on word processors and spreadsheets in the DOS and Windows environment.

AGB 601 Continuing Education in Agriculture - Three semester hours. Principles and practices involved in developing vocational and technical programs in agriculture for out-of-school youths and adults, with emphasis on the disadvantaged.

AGB 602 Occupational Experience in Vocational Education in Agriculture - Three semester hours. Approved principles and procedures used by the vocational agribusiness teachers in selecting, planning, conducting and evaluating occupational work experience programs for students in vocational agribusiness. Emphasis will be placed on the transition from school to work.

AGB 603 Organization and Implementation of Vocational Education Programs for Disadvantaged and Handicapped - Three semester hours. Methods and techniques of developing and implementing vocational job training programs for the disadvantaged and handicapped. Emphasis will be placed on locating and securing state and federal funds for educating and training the disadvantaged. This course will also stress writing proposals.

AGB 604 Seminar in Agricultural Education - Three semester hours. This course is designed to investigate and analyze the current problems, issues and developments in Agribusiness Education.

AGB 605 Supervision of Student-Teacher in Agribusiness Education - Three semester hours. Principles and techniques for directing the laboratory experience of student-teachers in Agribusiness Education.

AGB 606 Methods and Techniques of Rural Development - Three semester hours. This course will deal with approved methods of developing human and natural resources in rural areas, with emphasis on conducting feasibility studies to determine needs.

AGB 608 Vocational Youth Organizations - Three semester hours. Methods and techniques of developing, implementing and conducting vocational youth organizational youth organization activities will be examined in this course. Emphasis will be placed on how vocational youth organizations contribute to the total educational program.

AGB 609 Instructional Media in Vocational Education - Three semester hours. Theory and practice in developing and using instructional media and equipment at the secondary and technical school level is the focus of this course.

AGB 610 Advanced Teaching Methods in Agribusiness Education - Three semester hours. This course examines theory, principles and procedures associated with effective instruction in agriculture at secondary and technical levels. Emphasis is placed on what research says about effective teaching.

AGB 611 Internship in Agribusiness - Two to six semester hours. Guided participation in selected areas to further enhance professional and/or technical competency needed by Agribusiness teachers.

AGB 612 Farm Structure Planning and Construction - Two semester hours. This course is designed to keep Agribusiness and Cooperative Extension personnel abreast of new innovations in planning and construction of farm structures.

AGB 613 Modern Plumbing - Two semester hours. This course is designed to keep Agribusiness and Cooperative Extension Personnel abreast of new developments in planning and installing a rural plumbing and sanitation system.

AGB 614 Metrics in Agriculture - One semester hour. This course is designed to introduce students to basic metric units and show how these are applied to various phases of Agriculture. A deliberate effort will be made to get the students to use metric units so that they can apply them with ease and confidence.

AGB 617 Advanced Woodwork - Two semester hours. This course is designed to keep in-service agriculture personnel abreast of the latest developments in woodworking.

AGB 618 Small Gasoline Engine Theory and Practice - Two semester hours. Specific attention will be given to trouble shooting, adjusting and repairing new systems as they are installed on new four cycle models.

AGB 619 Applied Techniques in Electric Energy Utilization - Two semester hours. This course is designed to provide knowledge and technical skills in the operation, maintenance and efficient use of electrically operated agricultural machines and tools. Special emphasis will be placed on the safe and energy efficient operation of these items.

AGB 620 Advanced Electric Motors and Controls - Two semester hours. This course is designed to develop an appreciation and gain knowledge of the electrical machines used in our electrical industries; how to connect electrical machines into electrical circuits; develop and appreciation in planning circuits and procedures of jobs in electrical machine wiring problems; and to develop a safety-first attitude in the students.

AGB 621 Advanced Metal Fabrication - Two semester hours. This course covers advanced metal fabrication techniques. It includes advanced welding processes. Metallurgy of welding, strength of materials and design of weldments.

AGB 622 2 Cycle Engines - Two semester hours. Specific attention will be given to trouble shooting, adjusting and repairing new systems as they are installed on new 2 cycle models.

AGB 623 Advanced Agribusiness Management - Three semester hours. The application of managerial methodology in decision making in an agribusiness firm and computer application in management are emphasized. Financial strategies, capital budgeting, long range planning for growth and profit and the evaluation of the agribusiness industry will be covered.

AGB 624 Agricultural Financial Analysis - Three semester hours. An economic study of the acquisition and use of capital in agriculture with focus on the use of financial statements to analyze risks, returns and repayment capacity. Emphasis will also be given to risk management strategies, capital budgeting and capital allocation over time, financial markets and institutions serving agriculture.

AGB 625 Agricultural Policy - Three semester hours. A solid foundation in economic principles and theory is important and assumed. Agricultural policy is dynamic and constantly evolving, particularly at this time. The economic, scientific and political basis of the policy process is examined by reviewing the current methods and prescriptions of the contrasting positions and how they finally converge in new policy

that is both actionable and appropriate. Case studies of how this is achieved will be the subject of individual graduate student research papers.

APPAREL, MERCHANDISING AND DESIGN

AMD 527 Consumer Textiles - Three semester hours. The physical and chemical examination of fibers, yarns, structures, color and finishing techniques of textiles with major emphasis on the comparison and evaluation of fabrics for specific consumer uses. Theory and laboratory experience are provided which focus on decisions, processes and materials directly related to textile performance.

AMD 528 Social Psychological and Economic Aspects of Clothing - Three semester hours. The study of clothing as it relates to the behavior of individuals and groups with emphasis on the production, consumption and use of clothing and textiles as related to social science theories.

AMD 530 Special Problems - One to three semester hours. An investigation of problems in clothing, or issues and problems related to Apparel, Merchandising and Design and family well-being.

AMD 533 Historic Costume - Three semester hours. A comprehensive study of dress throughout periods of history, including the cultural and economic factors associated with the development, adoption and abandonment of styles.

AMD 534 Advanced Costume Design - Three semester hours. Creative problems in dress design tailored to individual needs; the application of flat pattern theory and Computer-Aided Design to garment design, incorporating the relationship of fabric geometry, hand, and surface ornamentation to garment design.

AMD 535 Advanced Tailoring - Three semester hours. The application of tailoring techniques to the construction of suits/coats for women and men. Traditional and contemporary tailoring techniques are explored.

AMD 537 Fashion Merchandising Study Tour - One to three semester hours. A study of the many facets of the fashion industry, including tours of primary and secondary suppliers, apparel manufacturers, designer showrooms, fashion press, accessory showrooms, buying offices, testing laboratories, pattern companies, merchandising centers, museums, etc. Pre- and post-tour seminars and written assignments are required.

AMD 540 Clothing for the Elderly - Three semester hours. A study of the social, psychological, and economic aspects of clothing for the elderly.

AMD 618 Textile Economics - Three semester hours. An in-depth study of the economics of the textile and apparel industry with emphasis on the production and distribution of goods. Focus is placed on current, national and international problems.

AMD 650 New Directions in Clothing and Textiles - Three semester hours. A comprehensive approach to the study of current instructional and research trends and issues in the area of clothing and textiles.

ART

ART 500 History and Philosophy of Art Education – Three semester hours. The historic and philosophical development of art education in public schools and the role of art in education is examined.

ART 501-511 Advanced Drawing – Three semester hours. Continued study in drawing for advanced students, students who have fulfilled basic drawing requirements. Prerequisite: One undergraduate course in drawing.

ART 502-512 Advanced Painting – Three semester hours. Continued study in painting for advanced students; advanced work in painting media will include traditional oil, tempera, acrylic, and mixed media techniques. Also, collage, assemblage, shaped canvasses, and more contemporary approaches. Exploration in multimedia and creative manipulation of imagery is investigated. Prerequisite: One undergraduate course in painting.

ART 503-513 Advanced Sculpture – Three semester hours. Continued study in sculpture for advanced students. Prerequisite: One undergraduate course in sculpture.

ART 504-514 Advanced Printmaking – Three semester hours. Continued study in lithography, intaglio, or relief printing. Prerequisite: One undergraduate course in desired area.

ART 505-515 Advanced Ceramics – Three semester hours. Continued study in ceramics for advanced students. Prerequisite: One undergraduate course in ceramics.

ART 506-516 Advanced Fibers – Three semester hours. The advanced course in fibers emphasizes personal development of skills and techniques, which exceed basic course requirements. The student may elect a loom or non-loom emphasis with concentration in one area or several related areas; macramé, basketry, batik, tie-dying, weaving.

ART 507-517 Advanced Photography – Three semester hours. Continued study in photography for advanced students. Prerequisite: One undergraduate course in photography.167

ART 508-518 Advanced Jewelry – Three semester hours. Continued study in jewelry for advanced students. Prerequisite: One undergraduate course in jewelry.

ART 520 Art Survey – Three semester hours. Examination of modern and contemporary art styles, movements, and techniques via trips to museums and galleries, visiting artists, lectures, and slide presentations.

ART 522 Origins of Modern Art – Three semester hours. A survey of the history of painting and sculpture from the mid-nineteenth century and its influence on twentieth century and contemporary art. Analysis will include the major artists, beginning with the Impressionists and continuing through contemporary conceptual installation art.

ART 524 African-American Art – Three semester hours. The study of major events, personalities, and influences germane to the creation of art by blacks in America, including visual slave themes. Pan-African Art, "Black Art", and blacks in mainstream art.

ART 526 Research in Art History – Three semester hours. Intensive study of selected periods, personalities, styles, and other characteristics considered important in world art history, as well as an examination of bibliographical, photographic, archival, and iconographical materials used in the study of art, and methodological approaches for historical analysis.

ART 528 Primitive Art - Three semester hours. An examination of the social and cultural qualities demonstrated in the art of various preliterate cultures throughout the world.

ART 532 Teaching and Supervision of Art in the Public Schools and Practicum – Three semester hours. Problems, issues, and procedures of art teaching and supervision in the elementary school and junior and senior high schools; art in life of school and community; development of programs and procedures; problems in selecting, organizing, teaching, and evaluating art activities; practicum.

ART 534 Art in Childhood Education – Three semester hours. Readings for and planning the analysis and development of art programs for children in preschools, elementary schools, and other community agencies.

ART 538 Workshop – Curriculum Development in Art Education – Three semester hours. Provides the art teacher an opportunity to explore innovative studio approaches and teaching strategies in a workshop setting with public school students. Reading, discussion, studio exploration, and actual teaching experience are facets explored. Prerequisite: One year teaching experience.

ART 552 Independent Study - Three semester hours. This course shall be available to all graduate art students who desire to continue work in any given area beyond the regular class offerings. Prior consent of the instructor is required.168

ART 595 Internship in Art Education - Six semester hours. This course consists of fourteen weeks of full-time teaching under the immediate direction of supervising teachers in an off-campus public or approved private school. Candidates share their experiences, discuss problems, and develop new techniques in a professional seminar for the duration of the teaching experience. The weekly seminar is required. Prerequisite: Art Program approval

BIOLOGY

BIO 510 Radiation Biology - Four semester hours. Characteristics of radioisotopes; detection and counting techniques and instrumentation; tracer techniques, health and safety system. (Prerequisite: consent of instructor)

BIO 511 Biological Control - Four semester hours. Designed to introduce components of resistance, use of parasites, predators and microorganisms' foreign

exploration, shipment, release and establishment of imported parasites and predators will be discussed.

BIO 512 Histotechniques - Three semester hours. Microscopic study of the various tissues and organs of the animal system.

BIO 522 Microbial Physiology (AAMU and UAH) - Three semester hours. The fundamentals and basic principles of microbial cell structure, growth and cellular responses to environmental changes. Topics include macromolecular synthesis of cell structures, metabolism, the genome, environmental effects, and regulation. The topics also cover the depth and range of physiological diversities found in microorganisms as well as their biotechnological exploitation. Lab Fee: level 4. (Prerequisites: Microbiology, Organic Chemistry, and Biochemistry)

BIO 523 Principles of Virology - Four semester hours (3 hours of lecture and 1 hour of lab). The course will give a broad introduction into the concepts and techniques of molecular virology, which are applicable to research on human, animal and plant viruses. Topics include the principles of viral infectivity, multiplication and chemical constitution; laboratory techniques for viral isolation, cultivation, identification, and enumeration. Fundamental principles related to the interaction of viruses with host cells will be emphasized. Fee: Level 4

BIO 524 Mycology - Four semester hours. Study of the various lines of the phycomycetes using representative species; the various series of the actinomycete, and representative pathogenic (crop and vegetable pathogens) and non-pathogenic heterobasidiomycetideae. Ontogenetic, cellular and structural study applied to all divisions, classes, series, orders, and families. Lab Fee: Level.

BIO 525 Parasitology - Five semester hours. The protozoa and helminthes parasitic for humans and their laboratory identification are discussed. Arthropods are studied in relation to their roles as vectors. Two three-hour labs per week. Lab fee: Level 4. (Prerequisite: BIO 221)

BIO 526 Microbial Ecology - Four semester hours. The relationship of soil and aquatic Microorganisms and their importance in ammonification, nitrification, and other biological processes. (Prerequisite: BIO 221)

BIO 531 Plant Physiology (AAMU and UAH) - Four semester hours. 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 three-hour lab per week. Lab Fee: Level 3. (Prerequisites: BIO 13, 371 or 372, CH 113 or 331)

BIO 532 Animal Physiology (UAH) - Four semester hours. Basic course in organism function. Lecture topics include membrane physiology with respect to transport phenomena, muscle, nerve synapse, and sensory receptor physiology. The physiology of respiration, heart, circulation, kidney, and gastrointestinal tract are treated as individual systems with emphasis on regulation. One laboratory session per week illustrating physiological principles discussed in lecture. Lab Fee: level 4.

BIO 533 Advanced Physiology I (Human Physiology) - Four semester hours. Study of nerve and muscle cell function, fluid and electrolyte environment of body tissues, blood, heart, circulatory, nervous systems and alternative healing methods for diseases. (Prerequisite: Organic Chemistry, preferably Biochemistry).

BIO 534 Advanced Physiology II (Human Physiology) - Four semester hours. Continuation of Advanced Physiology I with consideration of kidney function, human respiratory, digestive, reproductive, endocrine systems and disease alternative healing methods. (Prerequisite: Organic Chemistry, preferably Biochemistry)

BIO 535 Endocrinology - Four semester hours. Current developments in anatomy, physiology, chemistry, and regulation of major endocrine glands. Laboratory sessions in biological and chemical assays of hormones. (Prerequisite: BIO 409)

BIO 540 Molecular Biology - Four semester hours. Study of structure, behavior and function of the large biological molecules, including biological oxidations, metabolism of carbohydrates, lipids, amino acids, and the genetic aspects of metabolism. (Prerequisite: CHE 301)

BIO 541 Cell Physiology - Four semester hours. Study of the inter-conversions and functions of Biomolecules in cells, including the major metabolic pathways, bioenergetics, and interrelations of various pathways, and various mechanisms of metabolic regulation. One three-hour lab per week.

Lab Fee: level 4. (Prerequisites: BIO/CHE 361 and 362 or Consent of Instructor)

BIO 542 Analytical Biochemistry Laboratory - Two semester hours. Advanced laboratory course dealing with modern techniques of molecular biology and biochemistry.

BIO 543 Cellular and Development Biology (UAH) - Four semester hours. Broad and comprehensive integrated approach to cellular and development biology through lectures, discussions, and selected laboratory experiences. Aspects of cellular structure and function will be coupled with relevant aspects of developmental mechanisms. Lectures will include such topics as mitosis, gametogenesis, nuclear-cytoplasmic interactions, role of genes in cellular and developmental expressions, mechanisms of hormone action on cellular function in development, cell movements and affinities, and selected morphogenesis of germ layer derivatives. (Prerequisites: BIO 113, 114, 319, CH 101, 105, 113 or CH 123, 126 and 331) May be taken concomitantly.

BIO 544 Cellular and Developmental Biology (UAH) - Three semester hours. Continuation of BIO 543.

BIO 545 Cellular and Developmental Biology Lab (UAH) - Two semester hours. Should be taken after BIO 543 and concurrently with BIO 544. Lab Fee: Level 4.

BIO 546 Cytogenetics - Four semester hours. Detailed analysis of composition, morphology and behavior of genes, especially as they relate to function, development, and heredity. (Prerequisite: BIO 406)

BIO 551 Insect Physiology - Four semester hours. Metabolism and utilization of carbohydrates, lipids and nitrogen compounds; energy production, neuromuscular mechanics, hormones and morphogenesis; role of organs and organ systems in metabolism. (Prerequisites: General Entomology or equivalent and Advanced Biochemistry)

BIO 552 Insect-Pest Management - Four semester hours. Insect surveys, ecological basis for control, plant and animal resistance to insects, control by parasites, predators, microorganisms, and management by genetics principles, chemical attractants, chemical repellents, sterilization, insecticides, and integrated systems of pest management. (Prerequisite: General Entomology or Advanced Applied Entomology)

BIO 553 Insect Taxonomy and Morphology (AAMU and UAH) - Four semester hours. Classification of insects, external and internal anatomy of insects, with emphasis on the comparative and functional aspects. (Prerequisite: BIO 455)

BIO 560 Environmental Biology - Three semester hours. Principles of the interaction between living systems and their resources are considered. Particular emphasis will be given to current problems in the management of our natural resources including new approaches in the management of pest populations.

BIO 561 Physiological Ecology (UAH) - Four semester hours. Physiological and behavioral responses of organisms to natural changes in their chemical and physical environment. One three hour laboratory per week. Lab Fee: Level 3. (Prerequisite: BY 312 or Consent of Instructor. Recommended: BIO 361 or 532).

BIO 562 Community Ecology (UAH) - Four semester hours. Detailed consideration of ecological principles and concepts, as well as biotic and abiotic factors relative to the development of plant communities and ecosystems. One four-hour lab per week. Lab Fee: Level 3. Field trips required. (Prerequisites: BIO 312 and Taxonomy)

BIO 563 Population Ecology (UAH) - Four semester hours. Distribution, population dynamics, and behavior of animal population in relation to environmental factors. One four-hour lab per week. Lab Fee: Level 3. Field trips required. (Prerequisites: BIO 312 and Organic Chemistry)

BIO 564 Limnology (UAH) - Four semester hours. Fresh-water environments and organisms exemplified by lakes, ponds, and streams in North Alabama. Includes laboratory and required field trips. One four hour lab per week. Occasionally, Saturday field trips will be required in lieu of the week's laboratory session. Lab Fee: level 4: (Prerequisites: BIO 312, 315, 371 or 378, or Consent of Instructor)

BIO 565 Phycology - Four semester hours. Morphology of classes; growth requirements; physical and chemical stresses on growth and productivity. Succession and bioassay of pollutants. Systematic physiology and metabolism of ecology

and environmental stress factors. Productivity culturing methods and economics. Man's use of biotechnology and industry. Terrestrial monitoring.

BIO 570 Plant Pathology - Four semester hours. History of non-parasitic and parasitic diseases incited by bacteria, fungi, plasmodiophorales, nematodes, and viruses will be discussed. Disease control through exclusion, eradication, protection, and post-resistance mechanisms will be mentioned. (Prerequisite: BIO 344)

BIO 571 Plant Anatomy - Four semester hours. Ontogeny, differentiation, and maturation of the various tissues and organs of angiosperms. Investigate problems in the growth and development of an angiosperm using histological techniques. Two three-hour labs per week. (Prerequisite: BIO 372 or Consent of Instructor)

BIO 572 Plant Taxonomy - Four semester hours. Principles of classifying, naming, and identifying vascular plants with special emphasis on flowering plants, including a consideration of ecological factors influencing vegetation distribution.

BIO 580 Advanced Inveterate Zoology (UAH) - Four semester hours. Phylogenetic consideration of the invertebrate, including structural, functional, embryological, and physiological relationships, leading to an understanding of the complexity of animals. Includes laboratory and field trips. (Prerequisite: Invertebrate Zoology or Consent of Instructor)

BIO 590 Problems in Biological Sciences - Three semester hours. Considers the problems of elementary and secondary school teachers of science in all areas of biological sciences. Emphasis on relations of biological organisms to their environment, stressing climatic and soil factors which influence their distribution and adaptations. Provision is made for individual investigation in the biological science.

BIO 620 Applied Environmental Psychology (Toxicology) - Four semester hours. Detailed study of hazardous pollution in the environment: heavy metals, pesticides, radiation, ozone, hydrocarbons, their fate and impact on the ecosystem; assay of pollutants and their bioremediation. Risk assessment of pollutants in the environment and their management. (Prerequisites: Consent of Instructor)

BIO 621 Pathogenic Bacteriology (UAH) - Five semester hours. Detailed study of bacteria that cause infections in humans. Mechanisms of pathogenicity and host-parasite relationships are emphasized. Two three-hour labs per week. Lab Fee: Level 4. (Prerequisites: BIO 361, 421, and 430 or Consent of Instructor)

BIO 622 Applied and Industrial Microbiology - Four semester hours. Physiological studies and fermentation processes. Function of microorganisms of industrial importance in the biological production of antibiotics, vitamins, organic acids, alcohol, amino acids, waste treatment and their assay. (Prerequisite: Microbiology)

BIO 623 Advanced Virology - Four semester hours. Outline of field of virology stressing the molecular biology of virus replication. Topics include immunology, genetics, and epidemiology. Emphasis on bacteria and vertebrate viruses, although plant and insect viruses may be discussed. (Prerequisites: Microbiology and Principles of Virology)

BIO 624 Immunology - Four semester hours. Theoretical and practical aspects of immunology. Current areas of immunology that are controversial will be discussed in detail. One four-hour lab per week. Lab Fee: Level 4. (Prerequisites: BIO 361 and 430 or Consent of Instructor)

BIO 625 Medical Mycology (AAMU and UAH) - Four semester hours. Comprehensive study of fungi pathogenic to man with emphasis on their properties, pathogenesis, and laboratory diagnosis. Topics will include interrelationship between fungi, the environment and food. Two hour labs per week: level 4; (Prerequisites: BIO 421 and 430)

BIO 631 Pharmacology - Four semester hours. Lecture and laboratory course. Major topics include drug-receptor interaction, kinetics of drug absorption, distribution, and elimination, and a discussion of drugs affecting different systems. Also to be considered are topics such as pharmacogenetics, toxicity, mutagenesis, teratogenesis, carcinogenesis, and drug interactions. Emphasis is on mechanism of action of drugs in relation to their use as therapeutic agents in medicine. (Prerequisites: Advanced Physiology I and II).

BIO 632 Cardiovascular Physiology - Three semester hours. Mechanisms of cardiac muscle excitation and interaction. Analysis of peripheral circulation. Neural regulation of circulation. Angiography, Electrocardiography, and

Vectorcardiography as diagnostic tools. (Prerequisites: Medical Physiology I & II).

BIO 633 Endocrinology - Four semester hours. Anatomy, physiology and biochemistry of the endocrine glands. Discussion of the systemic effects of hormones, their regulation, integration, and mechanisms of action. Includes laboratory. Lab Fee: Level 4. (Prerequisites: BY 361 and 532 or Consent of Instructor).

BIO 641 Advanced Cell Biology (AAMU and UAH) - Four semester hours. Integrated approach to the fine structure and function of various cellular processes. Special attention to particular aspects of cellular process each term; e.g., motility in cells, cellular differentiation, etc. Laboratory included. Lab fee: Level 4. (Prerequisite: Cellular and Development Biology or Consent of Instructor).

BIO 642 Advanced Cell Physiology - Four semester hours. Biochemical and biophysical cytology. The cell as matter, life history of the cell, molecular basis of cellular activities, enzymes and energy conversions, functional localizations in subunits of the cell, mechanisms of motility, structure and function of cell membranes, effects of radiation on cells, biochemical control mechanisms, cellular differentiation and the interaction between cells, hypothesis of cellular origins. (Prerequisites: Molecular Biology, Physics, Cytology, and Biochemistry) Includes laboratory.

BIO 643 Microscopy (UAH) - Four semester hours. Introduction to the various methods of preparation for transmission electron microscopy and an analysis of electron micrographs. Attention will also be given to supporting techniques such as phase microscopy, autoradiography, scanning electron microscopy, negative staining, and cytochemistry. Lab Fee: Level 4. (Prerequisites: Graduate standing and Consent of Instructor)

BIO 644 Topics in Cell and Development Biology and Biological Fine Structure (UAH) – Two semester hours. Discussion of current topics in cell biology with emphasis on student participation. Both plant and animal cells will be emphasized. Depending on the number of students, some terms may be devoted to short research problems. (Prerequisites: BIO 543 and 643 or Consent of Instructor)

BIO 645 Human Cytogenetics and its Clinical Application - Three semester hours. Review of normal human chromosome structure and normal chromosome segregation and morphology with clinical considerations.

BIO 646 Molecular Genetics (AAMU and UAH) - Three semester hours. The molecular mechanisms underlying genetic principles. Structure of genes and chromosomes; primary; secondary and tertiary structure of DNA; DNA replication; genetic recombination; RNA transcription; translation and genetic code; regulation of gene function; evolution at the molecular level. (Prerequisites: BIO 319 and CHE 361)

BIO 647 Enzymology (UAH) - Three semester hours. Detailed study of enzymes including protein synthesis, primary, secondary, tertiary, and quaternary structure, nomenclature, physiological and catalytic functions, enzyme kinetics, and metabolic regulations of enzyme activity. (Prerequisites: BIO 542 or CHE 561 or Consent of Instructor)

BIO 648 Enzymology Lab - Two semester hours. Techniques of isolation, purification, and characterization of enzymes. Lab Fee: Level 4. (Prerequisite: BIO 647)

BIO 649 Advanced Genetics I - Four semester hours. Three hours lecture and one hour laboratory. This is the first of the two-course sequence and will provide instruction in genetics of viruses, bacteria and fungi. This instruction will emphasize a comparative approach of structure, function and expression of genetic material, genetic code, protein synthesis and transposable elements. Methods of cloning recombinant DNA in these groups will be discussed. (Prerequisites: Principles of Genetics, BIO 311: Microbiology, BIO 430; Biochemistry, BIO 407)

BIO 650 Advanced Genetics II - Four semester hours. Three hours of lecture and one hour of laboratory. This is the second of the two-course sequence and will include classical and molecular instruction in animal genetics, population genetics and evolutionary genetics. The emphasis will be on the use of modern molecular techniques, such as allozyme and restriction fragment length polymorphism, and DNA sequencing information in studying modern population and evolutionary genetics. (Prerequisites: BIO 591, BIO 430, BIO 407, and BIO 649)

BIO 651 Medical Entomology (UAH) - Four semester hours. Insects and other arthropods as parasites and disseminators of disease. Mechanisms

of life cycles, biology and control of insect parasites of humans. Lab Fee: Level 3. (Prerequisite: BIO 361 and 455 or Consent of Instructor)

BIO 652 Advanced Applied Entomology - Four semester hours. Economic thresholds, economic injury levels, population dynamics, residues in food crops, chemical control, insect transmission of plant and livestock diseases. (Prerequisite: General Entomology)

BIO 653 Taxonomy of the Immature Insect (AAMU and UAH) - Four semester hours. Studies of the literature, comparative morphology, and techniques of identification of the immature stages of the insect, methods of collecting and preserving the immature stages. (Prerequisite: BIO 455 or Consent of Instructor)

BIO 660 Ecosystem Dynamics (UAH) - Four semester hours. An analytical study of the functional energetics, interrelationships and adaptive interactions of living organisms in terrestrial aquatic and marine environments. Methodology includes simulations, modeling, field and laboratory experimentation, and other predictive and investigational procedures. One four-hour lab per week. Lab Fee: level 3. Field trips required. (Prerequisites: BIO 564 and 565)

BIO 661 Advanced Population Ecology (UAH) - Four semester hours. Interaction of population structure, genetic properties, and ecology factors in controlling the dynamics and evolutionary character of natural populations. One four-hour lab per week. Lab Fee: Level 3. (Prerequisites: BIO 312, 564, or 565 or approval of instructor)

BIO 690 Seminar (AAMU and UAH) - One semester hour. Students report on current journal articles and research.

BIO 691 Special Topics (AAMU and UAH) - One to four semester hours. Literature search relative to topics of special interest under direct supervision of an instructor. For graduate students.

BIO 692 Research (AAMU and UAH) - Two or four semester hours. Individual investigations at the graduate level into biological problems under the direct supervision of a member of the graduate faculty. A special problem may be carried out at the Marine Environmental Sciences Consortium, Dauphin Island, Alabama. Available to thesis students.

BIO 699 Master's Thesis (AAMU and UAH) - One to three semester hours. Individual research towards completing the thesis requirement for the M.S. degree in Biology. **Each Semester.**

BUSINESS EDUCATION

BED 501 Principles of Teaching Business Subjects - Three semester hours. Organization and presentation of appropriate content in instructional strategies for business subjects in secondary schools. Internship experience in a school setting is required.

BED 515 Management Information Systems - Three semester hours. An awareness of information and systems in the society. Introduces the student to concepts of system approaches to management and relates the management information system to operating systems of an organization.

BED 521 Foundations of Business Education - Three semester hours. Principles, philosophy, and objectives of business education and the relationship of these factors to curriculum developments, tests and measurements, and guidance.

BED 522 Functions of the Business/Marketing Coordinator - Three semester hours. An evaluation of the history, status, and philosophy of administration and supervision, and the role of coordination in business education at the state and local levels in high schools and colleges.

BED 523 Current Problems in Business Education - Three semester hours. A critical outlook on the administrative, curricular, evaluative, and instructional problems facing business educators at the high school and collegiate levels. The problems examined and evaluated in this course will be discerned from current research and literature in the field of business education.

BED 524 Business and Office Education Programs - Three semester hours. Program planning, organization, and implementation, curriculum construction, and evaluation in business and office education.

BED 526 Improvement of Instruction in General Business Subjects - Three semester hours. Objectives, teaching procedures, instructional materials, and curricular organization of basic business courses.

BED 527 Improvement of Instruction in Information Processing - Three semester hours. A course designed for experienced and prospective teachers of information processing. The course encompasses materials and methods basic to proficiency in information processing, availability of instructional materials, measurement of skills, standards, and achievement.

BED 528 Improvement of Instruction in Office Procedures - Three semester hours. Materials, methods, and organization or instructional materials used in the teaching of office procedures for today's office.

BED 529 Improvement of Instruction in Accounting - Three semester hours. A critical analysis of the instructional materials and methods, standards, research, and evaluative instruments in accounting. Emphasis is placed on computerized accounting.

BED 595 Internship – Six semester hours. This course entails one semester of full-time teaching under the immediate direction of supervising teachers in off-campus public (or approved private) schools. Upon return to campus students share their experiences, discuss problems, and develop new techniques in a professional seminar.

BED 601 Curriculum Construction in Business Education - Three semester hours. Advanced concepts and criteria to be considered in curriculum construction, the method of conducting a curriculum study, and the ongoing process of evaluating the curriculum in business education.

BED 603 Coordination of Business Education - Three semester hours. Designed to provide a study of problems, materials, methods, history, and current theory and philosophy related to the coordination of business education programs.

BED 604 Advance Applications in Information Processing - Three semester hours. This course is designed to develop advanced techniques in information technology pertaining to creating and designing distance learning courses and interactive web activities.

BED 606 Research Topics and Methods in Business/ Marketing Education – Three semester hours. This course deals with review, analysis, and application of research procedures and data analysis in business education. In addition, this course orients students to basic research procedures for research projects. Students will analyze research problems, synthesize research studies, and develop a proposal for a research study in their field of expertise in business education.

CHEMISTRY

CHE 508 Chemistry in the Secondary School - Three semester hours. Current methodology, research problems, and findings in chemistry as applicable to the secondary school. The student will become familiar with supplementary materials such as American Chemical Society publications (e.g. Chem. Comm., SPICE) as well as use of the Journal of Chemical Education for obtaining useful instructional materials.

CHE 509 Laboratory Methods for Chemistry Teachers - Three semester hours. Emphasis is placed on safety in the laboratory and the design and implementation of chemical experiments for the secondary school laboratory with limited facilities, as well as for the traditional high school chemistry laboratory.

CHE 510 Current Development in Chemistry - Three semester hours. New developments selected from significant advances in chemistry are presented. Course content will vary from year to year with growth and development of the science.

CHE 511 History of Chemical Theory - Three semester hours. History of chemistry from its ancient beginnings up to contemporary experimenters and philosophies. Evidence for selected theories is critically presented. Topics such as the periods of chemistry, the discovery of the elements, the role of chance in discoveries and historical aspects of fundamental laws are treated.

CHE 512 Energy From Chemistry - Three semester hours. Energy production from fossil fuel as well as nuclear energy and fuel cell technology. Other topics will include alternate energy sources, such as oil shale, battery research for electric vehicles, and other energy-producing facets of chemistry.

CHE 514 Analytical Chemistry For Teachers - Three semester hours. This course is designed for secondary school teachers who have not had a formal course in analytical chemistry. Emphasis will be placed on the basic fundamentals of analytical chemistry to include wet and dry methods as well as modern instrumental techniques.

CHE 515 Laboratory Design for Elementary Teachers - Three semester hours. This course is based on the use of the LESSON (Lawrence Livermore Laboratory Elementary Science Study of Nature) program. This program involves the use of specific inexpensive kit materials to allow experimentation with scientific principles on the elementary school level.

CHE 612 Theory of Nuclear and Radiochemical Techniques - Three semester hours. Introduction to the theory of nuclear and radiochemistry with practical experience with selected exercises, which illustrate fundamental properties of radio nuclides. Topics will include: atomic and nuclear structure, radioactive decay, interaction of radiation with matter and methods for detection of radiation.

CHE 613L Nuclear and Radiochemical Techniques Laboratory - One semester hour. Laboratory to accompany CHE 612. Radiation safety orientation, measurement of half-life, pulse height analyzers, and liquid scintillation counting techniques will be presented

CIVIL ENGINEERING

CE 501 Structural Steel Design– Three semester hours. Same as CE 401*. Introduction to the design of steel structures to include behavior of members and their connections. Theoretical and practical basis for proportioning members are addressed. **Prerequisite**: undergraduate course in structural analysis

CE 502 Reinforced Concrete Design– Three semester hours. Same as CE 402*. A study of the theory and design of reinforced concrete members. Design considerations for concrete bridges and buildings are included. **Prerequisite:** undergraduate course in structural analysis

CE 504 Hydraulic Engineering and Design - Three semester hours. Same as CE 404*. A study of the similitude, and flow measurement; open channel flow, pipe flow and their applications; and design of various elements of hydraulic structures. Prerequisites: undergraduate course in fluid mechanics

CE 506 Computer Analysis of Structures - Three semester hours. Same as CE 406. Focus on flexibility and stiffness methods of analysis. Development of matrix methods for both trusses and rigid frames and use of the computer in structural analysis, including finite element method are included. **Prerequisites**: undergraduate course in structures; good knowledge of computer programming

CE 508 Foundation Design - Three semester hours. Same as CE 408*. The study of shallow and deep foundation elements, determination of bearing capacity of spread footings, mat and pile foundations. This course also includes instruction on drilled caissons and piers as well as lateral earth pressure and the design of retaining structures. **Prerequisite**: undergraduate course or experience in soil mechanics

CE 509 Public Health Engineering - Three semester hours. Same as CE 409. A study of the engineering aspects involved in the control of the environment for the protection of health and the promotion of the comfort of man. Discussion will include communicable disease control, air pollution, refuse disposal, industrial hygiene, and radiological health hazards. **Prerequisite**: undergraduate course or experience in environment analysis

CE 510 Transportation Engineering and Design - Three semester hours. Same as CE 410*. A study of engineering and design basics for highway transportation; elements of highway transportation and their characteristics; drivers; vehicles, volume, density, speed, and travel time; design for safety, service, and economy; highway alignment, cross section and geometric design elements. **Prerequisite:** undergraduate course or experience in transportation systems

CE 511 Urban Transportation Planning - Three semester hours. Same as CE 411. A study of functions and elements of urban transportation including modeling trip generation, trip attraction, modal split and network assignment; integrated models, and computer applications. **Prerequisites:** undergraduate course or experience in transportation systems

CE 512 Pavement Systems - Three semester hours. Same as CE 412. A study of the design of highway and airport pavement systems; subgrades, sub-bases and bases; flexible and rigid pavements; drainage and earthwork; pavement evaluation and maintenance. **Prerequisites:** undergraduate course or experience in transportation systems

CE 513 Construction Management - Three semester hours. Same as CE 413 An introduction to construction project planning and scheduling by network diagrams. Estimating and project control fundamentals. Various equipment and productivity are included. **Prerequisite**: undergraduate studies or experience in construction

CE 514 Design of Timber Structures - Three semester hours. Same as CE 414. A study of wood as an engineering design material. Beams, columns, plywood design, and glued laminated structural members as used in actual design and construction are covered. **Prerequisite:** undergraduate course in structural analysis

CE 550 Hydraulics of Open Channel Flow - Three semester hours. Same as CE 450. A study of the mechanics of fluid flow in open channels, as an extension of basic engineering hydraulics and experimental concepts applied to the theory, design, and shape optimization of open channels. Classification of flow, channel cross section, hydraulic jump, stilling basins, specific energy, culvert hydraulics, and the use of design charts and tables are included. **Prerequisite**: undergraduate course in hydrogeology

CE 555 Wastewater Treatment - Three semester hours. Same as CE 455. An introduction to wastewater characteristics and treatment processes; biological mechanism, reactors, waste treatment, and kinetics. The engineering design of physical processes such as sedimentation, thickening, and filtration, as well as chemical processes, processing of sludge and advanced wastewater treatment processes are included. A field trip to wastewater treatment plant is required. **Prerequisites**: undergraduate course in hydrogeology

CE 556 Solid Waste Disposal - Three semester hours. Same as CE 456. An introduction to the problem of solid waste management, types and quantities of wastes, collection and transportation of wastes, composting, landfill and incineration, and recycling of wastes and resource recovery. **Prerequisite**: undergraduate course or experience in environmental analysis

CE 557 Hazardous Waste Management - Three semester hours. Same as CE 457. An introduction to the transportation, storage, and disposal of hazardous wastes. Legal aspects of hazardous materials, cleanup of hazardous material spills, and the impact of hazardous materials on the environment are all covered. **Prerequisite**: undergraduate course or experience in environmental analysis

COMPUTER SCIENCE

CMP 511 Design and Analysis of Algorithms - Three semester hours. Introduces and illustrates basic techniques for designing efficient algorithms and analyzing algorithm complexity. Topics will be chosen from graph algorithms, sorting and searching, NP-complete problems, pattern matching, parallel algorithms, and dynamic programming. (Prerequisite: CMP 215)

CMP 521 Object Oriented Programming and Design - Three semester hours**.** Object modeling, dynamic modeling, functional modeling, analysis, system design, and object design methodologies. Introduction to various object-oriented design methodologies, including the Unified Modeling Language. (Prerequisites: CMP 215, CMP 440)

CMP 531 Computer Architecture - Three semester hours. Introduces computer architecture and system organization including virtual memory supports, cache, pipeline, vector processing, multiprocessor, and RISC architecture. Study and compare typical architectures to the extent that time permits. (Prerequisites: CMP 380)

CMP 541 Operating System Principles - Three semester hours. Examines process synchronization, I/O techniques, buffering, file systems, processor scheduling, deadlocks, memory management, virtual memory, job scheduling, resource allocation, system modeling, operating system security, performance measurement and evaluation.
(Prerequisites: CMP 215, CMP 380)

CMP 551 Database Management Systems - Three semester hours**.** Provides a conceptual understanding of database management systems in terms of the hierarchical, network, and relational models. Data modeling, database design and administration. Includes a review of file structures and a discussion of database implementation techniques. (Prerequisite: CMP 103)

CMP 561 Software Engineering Methodology - Three semester hours**.** Explores the traditional approach to software construction, software crisis, and software characteristics. Covers various software engineering paradigms, and the fundamental concepts of analysis, design, coding,

testing and maintenance. Introduces various CASE tools. (Prerequisite: CMP 215)

Elective Courses:

CMP 513 Management Information Systems - Three semester hours**.** Analysis of information requirements, Design approaches, processing methods, data management, and the role of computers in management information systems. Topics include models of an integrated system, and organization and social implications of information technology. (Prerequisite: Consent of Instructor)

CMP 515 Numerical Analysis - Three semester hours**.** Presents mathematical approach and computer solution to a wide variety of numerical problems. Topics include interpolation and approximation of data, solution of differential equations, summation series, numerical integration, solution of linear and non-linear systems of equations, and study of errors. (Prerequisite: CMP 109 or CMP 204)

CMP 517 Applications of Statistical Methods - Three semester hours**.** Treats data, probability distributions, sampling techniques, normal distribution, hypothesis testing, linear and multiple regression, correlation, analysis of variance, time series, index numbers, and parametric tests. (Prerequisite: MTH 237)

CMP 523 Compiler Design - Three semester hours. Basic mathematical theory underlying the design of compilers and other language processors and provides instruction on how to use that theory in practical design situations. Topics include: lexical analysis, parsing, syntax-directed translation, code optimization, and code generation. (Prerequisite: CMP 215)

CMP 525 Advanced Data Structures - Three semester hours**.** Development of the efficient data structures used to produce more efficient solutions to classical problems, such as those based on the graph theoretical model, as well as to problems that arise in application areas of contemporary interest. (Prerequisite: CMP 215)

CMP 535 Introduction to Bioinformatics - Four semester hours. An interdisciplinary course melding information from computer/information sciences and molecular biology. Retrieval and interpretation of biomedical information, algorithms and software use for sequence alignment, similarity searching of macromolecular sequence databases, and exposure to Java or Perl. (Prerequisite: Consent of Instructor)

CMP 543 Computer Communications - Three semester hours**.** Analysis of computer network architecture including topologies, media, switching, routing, congestion, control, protocols, and specific case problems. Addresses hardware interfaces and carriers, network security, and performance evaluation. (Prerequisites: Consent of Instructor)

CMP 550 Artificial Intelligence - Three semester hours**.** Formal concepts of artificial intelligence. Heuristic versus algorithmic methods, cognitive processes and simulation, artificial application programming techniques, and surveying the areas of game playing, vision, learning and natural language understanding. Students are provided direction for research using Internet and open literature resources. (Prerequisites: CMP 103, CMP 109 or CMP 204)

CMP 554 Neural Networks - Three semester hours**.** Introduction to natural networks, supervised and unsupervised learning, neural network architectures, training algorithms, black board architecture, and other general concepts. (Prerequisite: CMP 109 or CMP204)

CMP 555 Advanced Database Systems - Three semester hours**.** Advanced database systems, including the areas of distributed and object-oriented database design, resource allocation, access plan selection, security measures, transition management, and query optimization. (Prerequisites: CMP 488)

CMP 562 Multimedia Systems and Applications - Three semester hours**.** Design and implementation of the technologies used to implement computer-based multimedia applications such as streaming video playback, video conferencing, interactive television, video editing, and hypermedia authoring. It acquaints the student with disciplines associated with multimedia, such as presentation software, the World Wide Web, HTML code, presentation design, and production. Other subjects that may be addressed as required for projects adopted for student productions: bitmap graphics, vector graphics, text design, digital photography, audio and sound design, and navigational element design. (Prerequisite: Consent of Instructor)

CMP 570 Computer Graphics and Animation - Three semester hours**.** Introduction to the basic concepts of computer science. Topics include: display device characteristics, system considerations, raster vs. vector technology, line patterns, line drawing algorithms, image rendering,

2-D and 3-D modeling, and symmetry groups. (Prerequisites: CMP 103, CMP 109 or CMP 204)

CMP 577 Fuzzy and Expert Systems - Three semester hours**.** Theoretical and applications of fuzzy systems. Topics may include: fuzzy set theory, approximate theory, fuzzy control, decision making under fuzzy environment, fuzzy operations research.
Prerequisite: CMP 103, CMP 109 or CMP 204)

CMP 591 Cooperative Educational Work Experience - Three semester hours**.** Provides students with applied, hands-on experience in an industry (computer-related) environment. The student should have the advisor's approval prior to taking this course and should submit a report and defend before a departmental committee. Submission of a copy of the three-credit-hour equivalent certificate to the graduate office upon completion of the course is required. (Prerequisite: Completion of all the core courses.)

CMP 593 Advanced Topics in Computer Science - Three semester hours**.** This course is based upon the topic to be addressed and the consent of instructor. Topics will be those of mutual interest to faculty and students and not currently available in the graduate program. (Prerequisites: Graduate standing and Consent of Instructor.)

CMP 597 Independent Study - Three semester hours. Provides opportunity for the students to participate in the ongoing research in the department. The student will work in close interaction with the professor of mutual research interest. The student is required to present at least one research paper at a reputable conference and should be evaluated by a departmental committee of three members formed by the chairperson. (Prerequisites: Completion of a minimum of 12 semester hours of graduate course work)

CMP 599 Graduate Thesis - One, two , or three semester hours**.** This course consists of individual research towards completing the thesis requirement for M.S. degree in Computer Science.

COMMUNICATIVE SCIENCES AND DISORDERS

CSD 500 Introduction to Communication Disorders - – Three semester hours. An overview of the various disorders and current research and trends in the field of speech-language pathology and audiology.

CSD 504 Advanced Evaluation and Assessment Communicative Disorders– Three semester hours. Emphasizes skills in the areas of measurement and evaluation, specification of goals and objectives, selection and development of measurement tools, delineation and execution of strategies for obtaining, analyzing, and interpreting test results for the speech-language pathologist.

CSD 509 Habilitation and Rehabilitation of the Hearing Impaired– Three semester hours. Provides an overview of speech-language development characteristics of the hearing impaired child. Alternate communications will be explored.

CSD 510 Stuttering and Other Disorders of Speech Flow– Three semester hours. Provides the information necessary to define and describe normal dysfluency, cluttering, and organic dysprosody and to distinguish them from stuttering.

CSD 513 Language Disorders in Adults – Three semester hours. Designed to give students knowledge and skills in language dysfunction, such as in the assessment and treatment of dysphasia, the evaluation and management of dysarthria; rationale and methodology associated with group and individual counseling procedures and communication problems of the aged.

CSD 514 Audiology– Three semester hours. Designed to give the student knowledge and skills in the complete auditory assessment of the peripheral mechanism, causes and characteristics of disorders of hearing, and types of remediation available.

CSD 515 Language Development – Communicative Disorders **–** Three semester hours. The study of normal language development with special emphasis on development of phonological, syntactic, and semantic systems in children.

CSD 516 Advanced Clinical Practicum– Three semester hours. Provides the student with clinical practice and experience under the direct supervision of faculty or supervisors who hold the CCC from the American Speech-Language-and-Hearing Association (ASHA).

CSD 520 Language Disorders in Children– Three semester hours. Exploration of the nature of language disorders and their effects on the total child.
\
CSD 522 Voice Disorders - 3 hours. Designed to promote understanding of the etiology, diagnosis, and intervention strategies/treatment of voice disorders.

CSD 525 Case Management in Speech-Language Pathology– Three semester hours. This course is designed as an extension of a student's experience at the graduate level into the speech clinic and/or real world job site. Students refine listening skills, counseling and psychotherapy techniques and examine the role of the SLP in assisting clients through grieving processes. Application techniques are taught to assist in programming for a variety of communication problems. Behavior therapy to modify speech behaviors of individuals with communication problems will be discussed.

CSD 534 Articulation and Developmental Phonological Disorders– Three semester hours. Provides the student with theoretical and practical knowledge in the nature and etiology of articulation and developmental phonological disorders, as well as current assessment instruments and intervention strategies.

CSD 538 Neuroanatomy– Three semester hours. Provides an overview of neuroanatomical structure, identification of the parts of the central nervous system, an understanding of brain circulation, composition of neurotissue, and anatomy and physiology of the spinal cord and nerves.

CSD 539 Craniofacial Anomalies– Three semester hours. The purpose of this course is to provide the student with an understanding of problems in speech and voice production which are associated with abnormalities of the oro-facial development; upper respiratory functions; their relation to speech and voice production; identification of abnormal function and its effect on speech pathology assessment and treatment. Observation of a qualified clinician in diagnosis and remediation will be required.

CSD 544 Motor Speech Disorders– Three semester hours. An advanced study of the symptoms and treatments associated with motor speech disorders. This course is designed to provide the student with a background in basic neuroanatomy and functional neurology so that the student will be able to utilize most effectively the therapeutic approaches that have been developed to provide appropriate intervention for individuals that have experienced neurologically related disorders. This course will also focus on the treatment and scope of practice associated with these disorders.

CSD 545 Swallowing and Swallowing Disorders– Three semester hours. An advanced study of the symptoms and treatments associated with Dysphagia (swallowing disorders). This course is designed to provide the student with a background in basic neuroanatomy and functional neurology so that they will be able to utilize most effectively the therapeutic approaches that have been developed to provide appropriate intervention for individuals that have experienced neurologically related disorders. This course will also focus on the treatment and scope or practice associated with swallowing disorders in children and adults. This course will include a survey of the research literature, current management trends and professional and health care industry standards utilized in the rehabilitation of patients within the medical setting.

CSD 550 Seminar in CSD - – Three semester hours. This course involves the discussion of current trends and topics in the field of communicative sciences and disorders. Topics will include, but are not limited to pharmacology, genetics, developmental coordination disorder (DCD), brain-based learning, and nonverbal learning disabilities (NLDs).

CSD 598 Research Methodology in Communication Disorders– Three semester hours. Designed to provide an introduction to the conceptual framework of research, and research designs. The primary objective is an understanding of research methods to facilitate interpretation, evaluation, and application of research information.

EARLY CHILDHOOD EDUCATION

ECH 502 Workshop in Early Childhood Education – Three semester hours. This course is designed to allow graduate candidates the opportunity to study or work on topics or projects of collective concern. Topics vary.

ECE 503 Learning Styles – Three semester hours. This course takes an in-depth look at the personal and behavioral characteristics of an individual which can be identified as learning styles.

ECE 504 Problems in Improving Reading – Three semester hours. Investigations of the practices and trends in the teaching of reading materials of instruction in reading, particularly remedial materials; techniques and materials for prevention of reading difficulties; and diagnosis and remediation of reading difficulties.

ECE 505 Problems in Improving Mathematics Skills – Three semester hours. This course presents materials, teaching, and teaching procedures for the improvement of learning in the new mathematics. The study of current problems affecting children's development of number concepts and skills will be addressed.

ECE 507 Children's Literature – Three semester hours. Consideration will be given to locating and evaluating children's books and to the method of organizing, teaching, and evaluating a literature program for children. The philosophy of the selection and study of literature, emphasizing appropriate content, good style, and suitability of various age groups are examined. Extensive reading and sharing of children's literature are required.

ECE 509 Trends and Issues in Social Studies – Three semester hours. A detailed consideration of problems concerned with selection of what to teach; the grade placement of content, methods, and materials of teaching; and means of evaluating achievements in social studies with particular attention given to recent trends.

ECE 510 Improving Science Teaching – Three semester hours. In this course, investigations and evaluations will be made of instructional methods designed to challenge pupils at each level of their elementary science and health program. The course will include such topics as the earth and universe, living things, matter and energy, magnetism and electricity, nutrition, hygiene, and other personal health components.

ECE 512 Investigation of Language Arts – Three semester hours. The course is a study of the total language arts program. Emphasis is on understanding the language processes, literacy development, and the interrelatedness of communication competencies—listening, speaking, reading/writing current research, goals, trends, issues, instructional strategies, programs, materials, and assessment/evaluation techniques are examined. Class sessions are designed to be interactive with class members giving demonstrations that involve fellow classmates in hands-on participation and active discussion.

ECE 514 Basic Skills – Three semester hours. This course is a critical evaluation of recent developments in the teaching of basic skills in the elementary school.

ECE 518 Environmental Education Across the Curriculum – Three semester hours. This course is designed to assist educators in improving their teaching of kindergarten through eighth grade levels, specifically as it relates to environmental education. Goals, objectives and teaching strategies associated with environmental education will be reviewed in keeping with the characteristic needs of learners at specific age levels. Emphasis will be placed on the interrelatedness of environmental education with traditional curriculum content areas, especially science. Participants also will explore practical applications of environmental education philosophies. The course incorporates "hands-on" habitat studies, inquiry-based learning, nationally acclaimed environmental education programs and a residential component stressing cooperative learning.

ECE 520 Foundations of Teaching Reading – Three semester hours. A fundamental course designed to establish a foundation of the essential reading skills that can be used effectively by pre-service teachers. This course focuses on teaching reading to a diverse population of elementary students using a variety of approaches.

ECE 521 Research in Elementary/Early Childhood Education – Three semester hours. This course is concerned with Reviewing the Literature around a topic of interest of the candidate, according to the latest APA Manual. This course makes it possible for a candidate to pursue an area of special interest and develop an understanding of how to study a topic in-depth. This research is done under the supervision of the instructor, and may culminate with an examination based on the content of the research.

ECE 602 Theoretical Foundations of Early Childhood Education – Three semester hours. This course traces the story of elementary and early childhood education. Candidates evaluate the theoretical basis for P-6 programs through research, readings, and class discussions.

ECE 603 Field Research – Three semester hours. This course is designed for Educational Specialist degree candidates in early childhood or elementary education for the purpose of developing research

skills. Projects will involve models that draw upon teachers' own questions, knowledge, and concerns as a basis for exploration and action. Candidates will develop an understanding of research that is designed to both inform and support teachers' engagement in classroom issues. Candidates will identify an area of interest and move from conception of a field-based research topic to an analytic framework for analyzing data. All candidates will submit a substantial written research report that includes a thorough review of the scientific literature. Presentation of an informal oral report is required. Permission of the Chair of the Reading Program is required for candidates to receive credit for reading/literacy research.

ECE 612 Advanced Instructional Strategies for Young Children – Three semester hours. This course presents and explores a scientific approach to classroom instruction. It is designed to foster the development of a personal philosophy of teaching which will serve as a guide for action in all phases of traditional and innovative instruction and will involve strategies for analysis of teaching, individualized instruction, and mode of evaluation of learning.

ECE 625 Trends in Teaching Social Studies in Elementary Schools – Three semester hours. This course is concerned with a detailed consideration of problems concerned with selection of what to teach, the grade placement of content, methods, and materials of teaching, current research, and means of evaluating achievements in social studies with particular attention given to recent trends.

ECE 671 Advanced Research in Elementary and Early Childhood – Three semester hours. This course is concerned with guiding the candidate in the development of the first three chapters in the thesis, according to the latest APA Manual. This course makes it possible for a candidate to pursue an area of special interest and develop the foundation of a thesis completing the first three chapters (a thesis is directed by a major advisor who may choose not to use the three chapters developed in this course in the completion of the candidate's actual thesis). This study is done under the supervision of the instructor, and may culminate with an examination based on the content.

EARLY CHILDHOOD

ECH 506 Curriculum Design – Three semester hours. Curriculum design in light of the latest understandings and needs in early childhood education with some experience in the implementation of certain aspects of the curriculum in laboratory school P-3.

ECH 516 Multi-Sensory Approaches – Three semester hours. The development of the sensory avenues and the concomitant processes in infancy and childhood, including concept information, development of these processes, and evaluating process are given consideration. Practical experiences identifying learning disabilities.

ECH 517 Theory, Methods and Materials in Early Childhood Education – Three semester hours. The philosophies and methods extant in early childhood education, their purposes and efficacy, including a look at special education and its involvement in the mainstream of education. It will include laboratory observation and participation.

ECH 595 Internship in Early Childhood Education – Six semester hours. This course is an intensive 14-week, full-time supervised internship in a public school. Weekly on-campus seminars are a required part of the course.

ECH 602 Strategies of Parent Involvement – Three semester hours. The importance and optimal role of parent involvement factors in the being and becoming of the child and adolescent through the various stages of the metamorphosis to maturity and beyond. The method will be competency-based and permit selection of a particular stage in the role of parent involvement for concentration at any given age and stage of human development by each of the class members, while at the same time pursuing a comprehensive knowledge of the role of parenting at all stages, with an emphasis on optimal strategies for involvement. The student will be required to demonstrate the ability to prescribe strategies for parent involvement at each stage of the child/adolescent development.

ECH 698 Thesis I – Three semester hours. Candidates will complete the proposed thesis.

ECH 699 Thesis II – Three semester hours. Candidates will complete the thesis.

ECH 602 Strategies of Parent Involvement – Three semester hours. The importance and optimal role of parent involvement factors in the being and becoming of the child and adolescent through the various stages to the maturity and beyond. The course will focus on parent involvement for

concentration at any given age and stage of human of the metamorphosis to maturity and beyond. The method will be competency-based and permit selection of a particular stage in the role of parent involvement for concentration at any given age and stage of human development by each of the class members, while at the same time pursuing a comprehensive knowledge of the role of parenting at all stages, with an emphasis on optimal strategies for involvement. The student will be required to demonstrate the ability to prescribe strategies for parent involvement at each stage of the child/adolescent development.

In addition to other deficiencies, candidates seeking the Alternative Master's in Early Childhood Education (P-3) must complete the following undergraduate teaching field courses: ECE 304, ECE 305, ECH 300, ECH 405 and PSY 403. A state-required practicum is offered all day on Wednesday when enrolled in undergraduate materials and methods courses ECE 304 and ECE 305 (Note: School of Education Policy prohibits the transferring in of materials and methods courses taken at other institutions). Early Childhood Education Alternative Master's candidates seeking the additional endorsement in Elementary Education must complete the following graduate courses: ELE 509 and ELE 519.

ECONOMICS

ECO 500 Survey of Economic Analysis - Three semester hours. This course is designed for students with limited or no background in economic theory at the undergraduate level.

ECO 503 Macroeconomic Theory - Three semester hours. Examination of the modern theory of income, employment, and the price level along with their principal determinants, interaction of the product and money markets and changes in the level of economic activity over time. (Prerequisite: ECO 500 or its equivalent).

ECO 509 International Economics - Three semester hours. An analysis of the forces that determine international specialization; balance of payments analysis; exchange rates systems; and evaluation of current international economic policies and programs.

ECO 514 Managerial Economics - Three semester hours. Managerial economics is designed to provide the student with a working knowledge of economic theories of consumer and producer behavior and their application to the decision-making process of firms in allocating their resources. Among the topics included are: the firm as an economic entity, consumer choice, demand, decision making under uncertainty, production, cost theory, pricing theory, and the effects of different competitive environments (with emphasis on market structure analysis). (Prerequisite: ECO 500 or an undergraduate two-course sequence in principles of economics).

EDUCATION ADMINISTRATION AND SUPERVISION

EAS 631 School Organization in Personnel Development – Three semester hours. The techniques and procedures for effective staff development are studied. Included are procedures for developing, implementing, monitoring and evaluating a program of staff development consistent with school and system needs. The dynamics of effective school and community relations are explored, considering community diversity and the socio-emotional political influences on school operations.

EAS 632 Federal, State, Local Legislation and Policy Development – Three semester hours. Federal and state statutes are studied related to the rights of students and employees. State board and local policies are reviewed in light of statutory and judicial mandates pertaining to student classifications, employment, and contractual rights of teachers and other staff. All major federal legislation, state statutes and policies, and relevant court decisions will be used to critique local school policies and operations.

EAS 633 Management of Educational Support Services – Three semester hours. All management operations of the school are explored. Attention is given to personnel matters, line and staff operating relationships, managing material resources, facility operations, transportation, fiscal management, conflict resolution, student records, security, and scheduling for instruction.

EAS 634 Cultural and Organizational Leadership for Operations – Three semester hours. Effective procedures for administering student services and leadership skills will be explored. Included will be means of monitoring student attendance, health and nutrition needs, plans

or monitoring discipline, providing guidance and counseling services, and providing library services. Also, leadership styles, planning strategies, accountability considerations, and accreditation standards are studied.

EAS 635 Mentoring for Educational Leaders – Three semester hours. On-site experiences will be provided at each school level and the Central Office supervised by University faculty and local practicing administrators. These experiences are designed to assist students in the skills and abilities needed by the effective administrator. A minimum of 300 clock hours is required.

EAS 698 Thesis – One to six semester hours. Open to Ed.S. degree-level students only, based on their reading in that area. The study is done under the supervision of the student's advisor, with departmental approval. It culminates with an oral defense based on content of the research paper.

EAS 699 Thesis – One to six semester hours. Open to Ed.S. degree-level students only, based on their reading in that area. The study is done under the supervision of the student's advisor, with departmental approval. It culminates with an oral defense based on content of the research paper.

EDUCATIONAL LEADERSHIP

EDL 530 Data Driven Instruction – three semester hours. This course is designed for and restricted to graduate students seeking a master's degree in Educational Administration and Supervision and/or Secondary Education. The content of the course is drawn from current research data. The student has an opportunity to identify and analyze areas of interest, study issues, trends, problems, procedures, implications, and innovative programs identified in research data.

EDL 543 Legal and Ethical Aspects of School Operations – Three semester hours. Designed to provide (a) interpretation and understanding of the state and federal laws that affect individual schools and school districts and (b) competency in fulfilling and administering provisions of school laws for the State of Alabama.

EDL 547 Education Finance – Three semester hours. A study of the relationship of finance and business management to the quality of education, with emphasis placed on theories and principles of school support, including responsibility of federal, state, and local agencies, state foundation programs; preparation and administration of salary schedules, budgeting, and business administration including purchasing, accounting, insurance, and bonding.

EDL 563 Curriculum Development, Improvement and Assessment – Three semester hours. This course will emphasize planning, implementing, managing, and evaluation of the school's curriculum and instructional programs.

EDL 564 School Community Relations – Three semester hours. A critical study of the social context of school organization and development. Attention is given to the development of the school's staff, including the planning, operation, and evaluation of the development programs. Public relations, and the influences of the community are considered.

EDL 566 Management of School Operations – Three semester hours. This course includes all the managerial problems, duties, and responsibilities of the school administrator, including personnel, facilities, fiscal management, transportation, food service, athletic operations, and scheduling.

EDL 567 Instructional Leadership – Three semester hours. The duties, responsibilities, and problems of the educational leader are studied. The methods for effective leadership are included, as well as techniques for implementation, operation, and evaluation. The planning, operation, and evaluation of student services are included.

EDL 595-01 Internship in Educational Leadership – Three semester hours. This is a field laboratory, supervised experience in which advanced graduate students will be involved in actual working situations to gain experience in the structural organization, administrative or supervisory behavior and practices, and related problems. The internship will include experiences at the elementary, middle, and high school levels and also at the Central Office.

EDL 595-02 Internship in Education Leadership

EDL 596 Residency/ Internship in Instructional Leadership

ELECTRICAL ENGINEER TECHNOLOGY

EET 501 Computer Telephony Integration – Three semester hours. Introduction to modern telecommunication and networking technologies. Including data traffic, queuing models, multi-access channels, switching and routing. Covers X.25, ISDN, Frame Relay, Asynchronous transfer mode, SONET, and wireless networks.

EET 505 Computer Telephony Integration – Three semester hours. Introduces Enterprise computer telephony integration (ECTI) applications and advanced intelligent network (AIN) services. Covers examples of advanced carrier delivered services including; Virtual call centers, applications for effective customer interactions, productivity applications for Centrex users, blending of formal and informal call centers, and extending the resource pool of call centers to professionals working at home. Also provides an introduction to Network Computer-Telephony Integration (NCTI). Prerequisite: EET 501.

EET 516 Automatic Control Systems I – Three semester hours. Methods and principles of automatic control. Pneumatic, hydraulic, and electrical systems. Representative applications of automatic control systems. Modeling and simulation of mechanical systems. Development of equation of motion and dynamic response characteristics. Fundamentals of classical control applications, including mathematical analysis and design of closed loop control systems. Introduction to computer interfacing for data acquisition and control.

EET 517 Automatic Control Systems II – Three semester hours. A continuation of EET 516 Automatic Controls I. This course studies the application of modern control design methods including optimal control, stochastic control and digital control. Includes Electrical and Mechanical design projects with electrical motors, hydraulics and pneumatics. Prerequisite: EET 516.

EET 518 Robotics – Three semester hours. Covers components of a Robot System, types, electronic system components, analog-digital conversion and error analysis. Also covers three-dimensional kinematics, dynamics and control of robot manipulators, hardware elements and sensors. Students will learn to analyze and design robot manipulators. Students will work in teams to develop a graphical simulation of a robotic system using a high-level language and graphics package. Prerequisite: graduate standing.

EET 612 Special Problems - Three semester hours. Individualized research and investigation into areas not covered in other classes.

EET 699 Master's Thesis (Same as INT 699) – Three semester hours. Required for a student working and receiving direction on a master's thesis. A thesis student must enroll for 3 hours each semester, for a minimum of 6 hours, while working and receiving direction on the master's thesis. Prerequisite: Completion of 15 semester hours.

ELECTRICAL ENGINEERING

EE 502 Electrical Machines -Three semester hours. Same as EE 402. A study of energy conversion; D.C. machines, motors, generators, principles of operation, characteristics, and applications; transformers and induction machines, principles of operation, characteristics, and applications; and synchronous machines, alternators, synchronous motors, principles of operation, characteristics, and applications. **Prerequisite:** undergraduate course in electromagnetic theory

EE 503 Feedback System Analysis and Design - Three semester hours. Same as EE 403*. A study of open and closed loop systems; time domain analysis; transfer functions, poles, and zeros; frequency response, Bode plots; root locus methods; system stability, Routh-Hurwitz criterion, Nyquist criterion; system compensation and design; state space methods, state equations, state transition matrix, and system response. **Prerequisite**: undergraduate course in electrical signal analysis

EE 504 Communication Theory -Three semester hours. Same as EE 404*. A study of communication signals and systems; AM and FM methods; pulse code modulation; multiplexing, and digital communications. Prerequisite: undergraduate course in electrical signal analysis

EE 510 Microwave Engineering - Three semester hours. Same as EE 410*. A review of electromagnetic theory, transmission lines and waveguides, circuit theory for waveguide systems, impedance matching and transformation, passive microwave devices, electromagnetic resonators, and periodic structures and filters. **Prerequisite**: undergraduate course in electromagnetic theory

EE 520 Power Systems I - Three semester hours. Same as EE 420. Fundamental concepts of power system analysis, transmission line parameters, basic system models, steady state performance, network calculations, power flow solutions, symmetrical components, fault studies, operating strategies and control. **Prerequisite:** undergraduate course or experience in energy conversion

EE 521 Power Systems II - Three semester hours. Same as EE 421. Generating station characteristics, transmission line calculations, load studies and economic operations, and stability. Prerequisite: EE 520 or extensive experience in power systems

EE 524 Advanced Digital Systems - Three semester hours. Same as EE 424. A course designed to provide digital system design experience using the Verilog hardware description language (Verilog HDL). The history of descriptive hardware design and features of hardware description languages are explained along with design and simulation examples. With the use of the industry standard simulation and synthesis tools, designs will be constructed, synthesized, and configured in Field Programmable Gate Arrays (FPGA) or other Programmable Logic Devices. **Prerequisite:** undergraduate course or experience with microprocessors

EE 531 Advanced Semiconductor Engineering – Three semester hours. Same as EE 431*. Principles of device electronics, physics of band models, Schottky barriers, bipolar and unipolar devices, conduction phenomena, SRH generation-recombination statistics, role of defects and noise. The course provides an introduction to wide-bandgap semiconductors and devices. **Prerequisite**: undergraduate course or experience in semiconductor engineering

EE 541 Digital Signal Processing - Three semester hours. Same as EE 441. A review of discrete time signals and systems; sampling of continuous time signals, sampling theorem; discrete time Fourier transforms; Z-transforms; region of convergence; applications; discrete Fourier transforms; fast Fourier transforms; design of digital filters, IIR filters, FIR filters, and computer-aided design**.** **Prerequisite**: undergraduate course or experience in signal processing

EE 545 Advanced Electromagnetic Theory - Three semester hours. Same as EE 445. Solution of Laplace's equation in two dimensions, circular harmonics, cylindrical harmonics, method of finite differences; wave propagation, perfect dielectrics, conductors, lossy dielectrics, transmission line analogy, Smith chart solutions; and computer applications. **Prerequisite**: undergraduate course in electromagnetic theory

EE 551 Integrated Circuit Fabrication - Three semester hours. Same as EE 451*. Introduction to principles of monolithic IC fabrication including bipolar and MOS transistor processing. The course includes active and passive device and process design, simulation, cleanroom procedures, in-process and final test and evaluation techniques, yield, chip assembly and packaging. **Prerequisite**: undergraduate course or experience in semiconductor devices

EE 552 Semiconductor Instrumentation - Three semester hours. Same as EE 452*. Basic principles of semiconductor testing and evaluation. Various tools and techniques will be introduced for test and evaluation of semiconductor materials, devices and integrated circuits. **Prerequisite**: undergraduate course or experience in semiconductor devices

EE 555 Optimal Control Theory - Three semester hours. Same as EE 455. A review of state space methods; optimal control problems, performance criterion, minimum time problems, minimum energy problems, and minimum fuel problems; optimization, using calculus of variations, Lagrange, Meyer, and Bolza problems, Lagrange equations, solution, applications; Pontryagin's maximum principle, formulation, co-state variables, solution; dynamic programming, principle of optimality, discrete control processes; Hamilton-Jacobi approach, closed loop control law, matrix Riccati equation, applications; and stability in the sense of Lyapunov. **Prerequisite:** undergraduate course in control theory

EE 556 Nonlinear Control Systems - Three semester hours. Same as EE 456. A study of nonlinearities, classification, saturation, dead zone, hysteresis; phase plane formulation, phase portraits; description of function approach, limit cycles, and relay servomechanisms. **Prerequisite**: undergraduate course in control theory

ELEMENTARY EDUCATION

ELE 509 Evaluation in Elementary Schools – Three semester hours. This course is designed to develop candidates' understanding of the principles

and procedures of evaluation in elementary classroom settings. Both formal and informal methods of evaluation will be emphasized, including designing and constructing criterion-referenced tests, analyzing and interpreting results of norm-referenced tests, as well as developing portfolios, rubrics, checklists, and other performance assessments. National standards and the evaluation of personnel, programs, and curricula will be included in this course.

ELE 511 Workshop in Elementary Schools – Three semester hours. This course is designed to allow graduate candidates the opportunity to study or work on topics or projects of collective concern. Topics vary.

ELE 519 Elementary School Curriculum – Three semester hours. The course is designed to help students develop or extend their knowledge base regarding curricular and instructional concepts, designs, problems, and variables. Students will study the historical, psychological, philosophical and social foundations of the elementary school curriculum. The course will focus on characteristics of children/learners, curriculum designs, strategies for learning, and content areas in the elementary school.

ELE 595 Internship in Elementary Education – Six semester hours. This course is an intensive 14-week, full-time supervised internship in a public school. Weekly on-campus seminars are a required part of the course.

ELE 614 Teaching Strategies for the Affective Dimension of Reading – Three semester hours. The content of the course is centered around teaching strategies that motivate children to seek self-actualization through pleasure and knowledge acquired from reading. Techniques of bibliography and children's literature related to the affective domain are included.

ELE 698 Thesis I – Three semester hours. Candidates will complete the proposed thesis.

ELE 699 Thesis II – Three semester hours. Candidates will complete the thesis.

ENGLISH

ENG 500 Writing for Graduate Students - Three semester hours. This course meets during the regular sessions and during the summer session to help students gain competency in writing. The course cannot be used as credit toward a graduate degree.

ENG 501 History of the English Language - Three semester hours. Growth of the English Language from the Old English period to our time. Special attention is given to Old English and Middle English and those aspects most responsible for the present state of the English language.

ENG 502 Linguistics and Literature - Three semester hours. The close relationship between linguistics and literature. Further, it shows how and understanding of one enhances the study of the other.

ENG 503 Biography - Three semester hours. A study of either the history of biography or specific trends, such as mythical patterns. Emphasis is placed on critical analyses of examples.

ENG 504 Criticism - Three semester hours. A study of literary criticism which may vary from a survey of the history of literary criticism to criticism of a particular genre or period. Practical application of theory is stressed.

ENG 505 The Novel - Three semester hours. A study of selected novels designed to stress historical development of the genre, elements of the novel, or trends of a particular period.

ENG 506 The Essay - Three semester hours. A study of selected essays. The emphasis may vary from a historical study to a study of the categories, argumentation, description, exposition, and narration.

ENG 507 Drama - Three semester hours. A survey of the historical development of drama or concentration on the drama of a particular period. Includes critical analyses and reading plays as literature and/or theatre.

ENG 508 Shakespeare - Three semester hours. A study of at least eight plays with occasional attention to the poems.

ENG 509 Chaucer - Three semester hours. A study of The Canterbury Tales and other major works.

ENG 510 Milton - Three semester hours. A study of Paradise Lost and other major works.

ENG 511 Tennyson - Three semester hours. A study of In Memoriam and other major works.

ENG 512 Sixteenth Century English Literature - Three semester hours. A study of the writers in prose and poetry (exclusive of drama) with major concern given to the theory and practice of lyric and epic poetry, romance, epyllion, and the verse essay.

ENG 513 Eighteenth Century English Literature Three semester hours. A survey of the major works of Pope, Swift, Johnson, Boswell, Goldsmith, and Burns. Writers of intellectual prose, including Hume, Gibbon, and Burke, are also studied.

ENG 514 Twentieth Century American Literature - Three semester hours. A survey of major figures and movements from Frost to the present. The emphasis varies from poetry to fiction to drama each time the course is offered.

ENG 515 Bibliography - Three semester hours. A study of bibliographical practices with reference to literary history, research, and criticism. This course must be taken by students who wish to write a thesis under the direction of a member of the English Faculty. It must be completed before the student begins research for a thesis. Students who wish to substitute this course for EDU 503 should petition the Dean of Graduate Studies.

ENG 516 Poetry - Three semester hours. Elements of poetry and intellectual developments as reflected in poetry. This course may be approached as a survey of poetic development or may concentrate on a particular period.

ENG 517 Seventeenth Century English Literature - Three semester hours. Includes a study of essayists, poets, and dramatists from Francis Bacon through John Dryden, with major emphasis on the currents of thought that influenced the literature.

ENG 601 American Literature Before 1900 - Three semester hours. A critical, historical and appreciative study of the English Romantic Movement. Attention is given to Blake, Wordsworth, Coleridge, Scott, Byron, Shelley, Mary Godwin, Mary Shelley, Dorothy Wordsworth, Hazlitt, Lamb and DeQuincy.

ENG 602 Romantic Movement - Three semester hours. A survey of American literature from its beginning through the nineteenth century, concluding with Stephen Crane.

ENG 603 Composition Theory and Rhetoric - Three semester hours. This course emphasizes the study of rhetoric and composition as a means of fostering the development of writing abilities. Theoretical insights and practical approaches in the acquisition of composition skills will be explored. Special attention will be given to the relevant and current pedagogy that will help to provide practical approaches in the teaching of composition.

ENG 604 Shakespearean Tragedy - Three semester hours. A study of one or more early tragedies and five tragedies of 1602-1608, with attention to the most important critical and scholarly approaches.

FOOD SCIENCE

FAS 503 Food Microbiology - Four semester hours. Theoretical and practical studies on the role of microorganisms in foods pertaining to processing, preservation, spoilage and Pathogenicity. Quantitative and qualitative microbial evaluation procedures applicable to food industry and science. Term paper and presentation of current topics in the subject area are required. (Prerequisite: BIO 330 and BIO 330L**) Fall.**

FAS 504 Animal Hygiene and Parasitology - Four semester hours. This course has a comprehensive background in the housing and management of farm animals, including parasitic diseases in farm animals. The laboratory is intended to give practical training in the identification of parasites. (Prerequisite: BIO 103, BIO 103L) **Spring.**

FAS 505 Meat Science and Technology - Three semester hours. Histological and physiological aspects of skeletal muscle affecting meat quality. Principles of processing and preservation of meat and meat products. Methods of studying and evaluating meat characteristics and composition. Selection, identification and utilization of wholesale and retail cut of meat. Term paper and presentation of current topics in the subject area are required**. Even Fall.**

FAS 507 Food Chemistry - Four semester hours. Provides a broad overview of the chemistry of food constituents and their contribution to functional, flavor and textural characteristics as well as chemical and physical changes in food components during processing and storage. (Prerequisites: CHE 301, CHE 301L or Consent of Instructor) **all.**

FAS 508 Food Analysis - Four semester hours. Methods of analysis of foods and the application of these methods in the food industry. Analytical procedures using current equipment for the detection and quantification of nutrients, anti-nutrients and other components will also be discussed. (Prerequisite: FAS 507 or Consent of Instructor) **Spring.**

FAS 521 Poultry Products Technology - Three semester hours. Factors affecting poultry products quality, their identification, control and maintenance. Information on procurement, processing, packaging and distribution of poultry products will be disseminated. A term paper and presentations of current topics in the subject area are required. **Odd Fall.**

FAS 528 Physiology of Reproduction - Four semester hours. A study of early fetal growth, differentiation and development of the gonads, secondary sex organs and the gametes. Comparative anatomy and physiology of the male and female reproductive tracts of the common domestic species; including mechanism of endocrine control of reproduction, fertilization, cleavage, implantation and parturition. Advantages of cryo-preserving sperm, ova and embryos are also discussed. **Spring.**

FAS 538 Fruits, Vegetables and Cereal Products Technology - Three semester hours. The post-harvest handling of fruits, vegetables and cereals including storage, preservation and utilization; post harvest physiology, controlled atmosphere storage, processing and preservation etc. will be discussed. Experience is provided in developing appropriate information and applying it to the decision making process in the food industry. Odd **Spring.**

FAS 550 Regulation of Food Safety and Quality - Three semester hours. History of food laws and regulations; various agencies involved in enforcing the food laws; and how these agencies carry out their assigned duties. This course is open to other majors. (Prerequisite: Consent of Instructor) **Spring.**

FAS 551 Food Quality Assurance - Three semester hours. Basic principles of quality assurance related to the food processing industry. Various attributes and characteristics of food quality and product quality evaluation methods will be presented to set forth examples of producers', processors', consumers' and regulators' concerns in maintaining food quality. **Odd Fall.**

FAS 553 Agricultural Biochemistry - Four semester hours. Introduction to the fundamentals of biochemistry. Intermediary metabolism, mechanism of inheritance and gene manipulation techniques will be discussed. Accompanying laboratory deals with basic techniques in biochemistry. (Prerequisites: CHE 204, CHE 301 or equivalent) **Spring.**

FAS 561 Food Engineering - Four semester hours. Principles of elementary mechanics, physical properties of food and processing materials, heat transfer, fluid mechanics, psychrometrics, refrigeration and dehydration for design of food processing systems. Steady and unsteady-state heat transfer problems. Analysis of different aspects of a food system from the engineering viewpoint. (Prerequisites: MTH 126 and PHY 103) **Fall.**

FAS 572 Food Processing - Four semester hours. Application of basic principles and practices of unit operations for food processing and preservation. Understanding of prediction methods for design of food processes such as canning, freezing and dehydration. Effect of processing on food quality, food storage. Class presentation and a term paper are required. (Prerequisite: FAS 461L/FAS 561) **Spring.**

FAS 605 Special Problems - Two to three semester hours. Involves a detailed experimental study of a chosen problem in food science or animal science. (Prerequisite: Consent of Instructor)

FAS 611 Food Toxicology - Three semester hours. Principles and problems in evaluating the wholesomeness and safety of foods, food components, food additives and food contaminants; selective toxicity, detoxification mechanisms, structure and biological activity of food toxicants. **Fall.**

FAS 615 Food Enzymes - Three semester hours. Even though the course will deal with properties of enzymes in general, emphasis will be placed on those properties of enzymes used specifically in food processing and practical application of enzymes at the various phases of the food industry. **Odd**.

FAS 617 Food Flavors and Pigments - Three semester hours. A detailed study of the chemistry and organoleptic characteristics of flavor compounds, food colors and pigments, their

formulations, modification, methods of incorporation and regulatory considerations. **Odd Spring.**

FAS 622 Advanced Livestock Judging - Two semester hours. Advanced instruction and training for prospective livestock judging instructors. In depth study of criteria involved in accurate evaluation, objective and fundamental measurements for assessing the breeding or market value of different livestock species. Special emphasis is placed on proper procedures for giving oral reasons in comparing beef cattle, dairy cattle, horses, poultry, rabbits, sheep, goats and swine. (Prerequisite: FAS 355 or Consent of Instructor)

FAS 623 Quantitative Genetics - Four semester hours. Advanced principles of animal and plant breeding with emphasis on quantitative techniques used to augment genetic improvement. Access to computer facilities and software programs, which simulate various selection strategies based upon biological genetic systems, will be available. **Spring.**

FAS 626 Ruminant Nutrition and Metabolism - Three semester hours. Principles of ruminant digestion and metabolism with emphasis on nutritional factors in production and fundamentals of evaluative research. **Odd Spring.**

FAS 630 Advanced Reproductive Physiology of Vertebrates - Three semester hours. This course presents topics associated with relevant advances in mammalian reproduction and biotechnology research. Topics include: physiology, morphology and development of gametes; transport and survival of gametes; fertilization, cleavage and implantation; experimental manipulation of embryos; the ovary-folliculogenesis, egg maturation and ovulation; the testes - spermatogenesis and androgen synthesis; maternal recognition and maintenance of pregnancy, induction of parturition and causes of abortion. (Prerequisite: FAS 430 or Consent of Instructor) **Even Spring.**

FAS 632 Monogastric Nutrition and Metabolism - Three semester hours. Review of recent advances in monogastric nutrition and metabolism. Discussion of nutrient requirements, balanced rations for livestock animals and balanced diets for human beings. Student seminars on current topics in monogastric nutrition. **Fall.**

FAS 640 Product Development and Research - Three semester hours. Art, science and technology of developing and marketing new food products through lecture and hands-on experience. Each student will be responsible for submitting a proposed topic, literature review and proposed methodology for manufacturing the product. Product models will be further tested. **Spring.**

FAS 642 Minerals and Vitamins in Foods and Nutrition - Three semester hours. Chemical structures and analytical methods applicable to minerals and vitamins. Role of minerals and vitamins in the food industry and their importance in nutrition and diseases. **Fall.**

FAS 644 Proteins in Foods and Nutrition - Three semester hours. Supply of and the need for proteins in the world; characteristics of proteins from animal and plants; processing and preservation of protein foods; unconventional protein sources; assimilation and importance of proteins in nutrition including effects of toxic proteins, peptides and amino acids. **Fall.**

FAS 646 Carbohydrates and Lipids in Foods and Nutrition - Three semester hours. Physical and chemical structures; analytical methods applicable to research; and reactions, interactions and metabolism of carbohydrates and lipids in food industry and diseases. **Spring.**

FAS 654 Food Microbiological Techniques - Three semester hours. An advanced laboratory techniques course stressing analytical examination of microorganisms in food systems. (Prerequisites: FAS 503 and FAS 507) **Fall.**

FAS 657 Analytical Techniques and Instrumentation - Three semester hours. Review of modern techniques and instrumentation used in analyzing and characterizing food components. **Spring.**

FAS 658 Food Microstructure - Three semester hours. Microstructure of foods will be studied using scanning and transmission electron microscopy, light microscopy and fluorescence microscopy. Effects of various processing methods in relation to the microstructure, identification and characterization of macromolecules and use of x-ray microanalyses in evaluating mineral composition of foods will be covered. Preparation methods for food samples for studying microstructure, interpretation of micrographs, and identification of food components will also be covered. **Even Spring.**

FAS 662 Food Rheology - Three semester hours. Concepts, principles and application of rheology with focus on food and related biological materials. Study of standard rheological methods and mathematical relationships describing major rheological variables. Relationship between rheology and texture. Principles and application of extrusion to food materials. **Fall.**

FAS 671 Introduction to Biotechnology - Three semester hours. Provides an assessment of the accomplishments and future of biotechnology and genetic engineering and their application to human health, food, plants and animals. The student will learn the basic principles of recombinant DNA technology, plant and animal biotechnology, Federal regulation of biotechnology, job categories and more**. Fall.**

FAS 676 Food Processing and Nutrients - Three semester hours. Deals with those principles that relate processing procedures to the nutritional value of foods. The effects of various production, processing, storage and packaging techniques on nutrient availability and retention, including nutrition labels on foods. **Fall**

FAS 686 Advanced Topics in Animal Science - One to three semester hours. Students may choose to study selected topics in animal breeding, animal nutrition, poultry production, animal physiology or dairy science. A comprehensive study of the selected topic will be made. **Spring**

FAS 697 Seminar - One semester hour. A review and discussion of current literature in food science and animal science. Students will prepare a presentation to students, colleagues and faculty. **Spring.**

FAS 698 Master's Report - Research Paper - One to four semester hours each.

FAS 699 Research for Master of Science - One to six semester hours each.

FAS 701 Advanced Food Microbiology - Three semester hours. This course is open to advanced graduate students. Current literature discussions will include: newly emerging food pathogens and their control, food spoilage microbes and the utility of microorganisms in processing and preservation of food and their potential health benefits. **Even Summer.**

FAS 707: Advanced Food Chemistry - Three semester hours. Recent advances in chemistry and biochemistry of foods including chemical reactions occurring during food processing, storage and utilization by man. **Even Fall**

FAS 711 Advanced Food Toxicology - Three semester hours. Review of recent advances in food toxicology including methodology of evaluation of toxicants, detoxification mechanisms, biological activities and regulatory and legal considerations. **Spring.**

FAS 736 Advanced Sensory Evaluation - Three semester hours. An experimental study of the effects of variations in treatments on the quality of food, with an emphasis on panel training, product optimization and correlations of sensory data with objective measure of foods. Activities in sensory laboratory are integral to instruction **Fall**

FAS 741 Advances in Nutrition - Three semester hours. Discussion topics in this course will encompass advances in nutritional methodologies (heavy isotopes, noninvasive techniques), current aspects of impact of food processing on nutrition and health, and other topics of interest to the students. **Odd Spring**

FAS 761 Advanced Food Engineering - Three semester hours. Thermodynamics, reaction kinetics and transport phenomena fundamentals in food rheology, heat transfer, freezing and melting processes, evaporation and dehydration, and other physical separation processes employed in food industry will be considered. **Odd Spring.**

FAS 771 Advanced Food Biotechnology - Three semester hours. Provides an assessment of the accomplishments and future of food biotechnology. The students will study how specific genes are isolated, cloned and used to transform plants, animals and micro-organisms to enhance or produce new ingredients and how fermentation technology, genetic engineering, bioprocessing, and monoclonal antibody production can be of benefit to human health and nutrition. FDA regulations and social and ethical ramifications of biotechnology will be discussed. **Spring.**

FAS 772 Advanced Food Processing - Three semester hours. Methods of food preservation and ingredient manufacture by radiation, heat processing, dehydration and chilling with emphasis on the unit operations including design and

operation of the various food processing equipment used in the food industry will be studied. **Spring**

FAS 796 Advanced Topics in Food Science - One to three semester hours. Students may choose to study the selective topics in cereals, meats, food product development and formulation, food microbiology, sensory evaluation, dairy products technology or postharvest physiology and processing of fruits and vegetables. A comprehensive study of the selected topics will be made. **Even Spring**

FAS 797 Seminar - One semester hour. Food science faculty and Ph.D. students reviewing current developments in food science and related topics through visiting presenters and by reviews of current literature.

FAS 799 Research for Ph.D. - Three to twelve semester hours each. Individual research work towards dissertation requirements. **Each Semester.**

FAMILY AND CONSUMER SCIENCES

FCS 505 Curriculum Planning and Development in Family and Consumer Sciences - Three semester hours. An overview of philosophies of curriculum development and the identification of principles, practices, and internal/external forces impacting the curriculum development process. Special emphasis is placed on methods and techniques of curriculum designed for specific target audiences in Family and Consumer Sciences.

FCS 508 Trends and Issues in the Profession - Three semester hours. Designed to evaluate and synthesize trends and issues of the profession and society as a whole, and their impact and/or implications for the family and consumer sciences profession and various Family and Consumer Sciences related organizations.

FCS 511 Administration, Leadership and Supervision in the Profession – Three semester hours. Principles of administration and leadership to include an analysis of management/leadership styles, and roles and responsibilities of individuals in various supervisory positions.

FCS 512 Technological Advances and Application in the Profession - Three semester hours. Critique of current technology used in the various program areas in Family and Consumer Sciences. Emphasis is placed on acquiring basic computer skills and computer integration and application in various specializations.

FCS 514 Seminar - One semester hour. Presentation of thesis and comprehensive reports by graduate students. A discussion of current research trends and issues in the various specializations is provided.

FCS 530 Special Problems - One, two, or three semester hours. An investigation of problems in one of the specialized areas of the profession, or issues and problems related to family well-being.

FCS 590 Research Methods in the Agricultural Sciences - Six semester hours. Thesis credit only.

FCS 599 Master's Thesis - One to six semester hours. An investigation of a research problem for the completion of the master's thesis in an area of concentration (Apparel, Merchandising and Design; Human Development and Family Studies; or Nutrition and Hospitality Management) under the supervision of an assigned advisor.

FCS 600 Program Planning and Evaluation - Three semester hours. Designed to acquaint students with the principal elements and steps necessary to plan and evaluate formal and non-formal educationally-related Family and Consumer Sciences programs.

FCS 601 Public Policy and Issues - Three semester hours. An identification of the role of family and consumer professionals in community, state and national public policy issues related to the family. Analysis of how to develop interactions with related local, state and national organizations to facilitate finding solutions to individual and family problems and concerns.

FCS 603 Philosophical Issues in the Profession - Three semester hours. A study of the theoretical and conceptual bases of Family and Consumer Sciences.

FCS 610 Internship - Three semester hours. Supervised work experience.

FCS 699 Thesis Research - Six semester hours. An investigation of research problems for the Specialist degree.

FINANCE

FIN 511 Financial Management and Policy - Three semester hours. This is an introductory graduate course in the art of money and capital management at the level of the firm. Topics covered include methods used to maximize the value of the firm, financial statement analysis, capital budgeting, the cost of capital, working capital management, dividend policy, and lease financing. The mathematics of finance will also be explained to the student. (Prerequisite: MBA 506 or an undergraduate course in principles of finance)

FIN 541 Security Analysis and Portfolio Management - Three semester hours. A study of the various analytical techniques used to appraise the value of various securities, including marketing analysis and industry analysis. This course also covers the methods and practices used in selecting and administering the securities of institutional and large individual investors. (Prerequisite: FIN 511)

FIN 542 Money and Capital Markets - Three semester hours. A study of the theoretical concepts and actual operations of money and capital markets, the central focus will be on interest rate determination, role of financial intermediaries, and the operations of short- and long-term capital markets. (Prerequisite: FIN 511)

FIN 543 International Finance - Three semester hours. A detailed analysis of the treasurer's functions and controller's activities in managing the finance function of multinational firms. In particular, flow of short-term funds, Euro and Petro-dollars, floating exchange rates, and problems of recurring parity changes are emphasized. (Prerequisite: FIN 511)

FOUNDATIONS OF EDUCATION

FED 501 Foundations of Education – Three semester hours. Bases of modern education studies from the standpoint of their historical development and interpreted in relation to their social, economic, philosophical and psychological foundations.

FED 502 Introduction to Educational Statistics – Three semester hours. The meaning and importance of statistics as a scientific tool in educational investigation; measures of central tendency, variability, and relation as descriptive devices; the computation of descriptive measure; and the presentation of data in graphic and tabular form.

FED 503 Introduction to Educational Research – Three semester hours. Aims to give the graduate student an introduction to the field of research; includes practical training in research and writing techniques in the field of education; bibliographical material; footnotes; and use of library resources. The course is designed for users as well as producers of research projects.

FED 521 Multicultural Education – Three semester hours. Prepares the educator for perceiving, believing, evaluating, and behaving in different cultural settings. It should help the educator become more responsive to the human condition, individual cultural integrity, and cultural pluralism in today's society.

FED 529 Computer-Based Instructional Technologies – Three semester hours. The course is designed to help teachers develop competency in the use of computer-based technologies in educational and non-educational settings. This course will include a historical perspective of educational computing, computer terminology, proper techniques for operating computer systems, and practical classroom applications of the computer like word processing, spreadsheet, and databases. Students will have the opportunity to work with Macintosh and IBM formats. No prior computer knowledge or skills is necessary.

FED 531 Current and Emerging Instructional Technologies – Three semester hours. The course is designed to help educators develop skills in using desktop publishing, computer graphics, hypermedia environments, telecommunications, and optical technology. (Prerequisite: ELE 530 or an equivalent graduate level course)

FED 532 Curriculum Integration of Technology – Three semester hours. The content will focus on the following major areas: principles of instructional design, techniques for integrating computers and related technologies into the school's curriculum, designing and evaluating software and coursework, hypermedia for instructional uses, and repurposing interactive video material. (Prerequisites: ELE 530 and FED 531)

FED 504 Evaluation of Teaching-Learning – Three semester hours. A complete exploration into the pertinent theories, research, procedures, and problems in learning and teaching evaluation. Various readings and experiments will be explored. Students will be required to do a terminal research.

FED 600 Advanced Curriculum Development – Three semester hours. This course is designed to assist teachers, administrators, supervisors, curriculum directors, and other instructional personnel in developing competencies as instructional leaders. Two critical factors in a program of curriculum development and improvement are examined: (1) an analysis of factors relative to the concept of change in education, and (2) the development of a concept of leadership for instructional improvement.

FED 601 Advanced Philosophy of Education – Three semester hours. Critical study in the examination of the various educational theories and philosophies of education, their relationships and implications for teaching; applicable for classroom teachers, practicing school administrators, and other certified, non-teaching school personnel.

FED 603 Advanced Educational Research. Three semester hours. An in-depth study of research methodologies and designs. Emphasis is placed on thesis preparation.

FED 604 Advanced Evaluation of Teaching and Learning – Three semester hours.
An in-depth study of the theories, processes and procedures relating to the evaluation of teaching and student learning.

FED 605 Qualitative Methods of Educational Research – Three semester hours. Through reading, research, discussion, writing and presentations students will learn the theoretical and practical aspects of qualitative research. The course content will cover ethics, IRB, letters of permission/consent, theoretical approaches, research design, fieldwork, observations, interviews, surveys, questionnaires, data and analysis. Technical writing, thesis proposals and articles will be highlighted for form and content. Weekly projects will be required in this course. Surveys, interviews and observations will be highlighted in this course. Each students will write a qualitative research proposal he or she may expand into a thesis proposal.

FED 696 Action Research – This course will teach roles and skills necessary to be an effective Action Researcher. This class will also give candidates the skills needed to work on problems specific to their classrooms and their schools. This course is also designed to identify the theoretical foundations of action research, develop practical applications, investigate the applicability of action research in a current work setting, and develop an Action Research plan. Candidates will earn a letter-grade from this course.

FED 967 Action Research II – The course is designed to guide candidates through the development of a problem, data collection, analyses and feedback. Candidates will also design a course of action to address the issues, make implementation of the research and asses the results. Candidates will earn a letter-grade from this course.

GENERAL ENGINEERING

GEN 590 Special Topics– Three semester hours. This course focuses on topics based on modern trends in materiel engineering. The specifics of each course will be identified prior to it being offered.

GEN 600 Special Topics– Three semester hours. This course focuses on topics based on modern trends in materiel engineering. The specifics of each course will be identified prior to it being offered..

GEN 601 Life-Cycle Design Engineering– Three semester hours. This course is intended to provide insight and experience in theory and in practice in dealing with product complexity associated with such design processes. Topics include contemporary techniques such as product realization process, robust design, design for six-sigma, and design for manufacturability. Also considered are systems architectural principles; system optimization; standardization; and case studies in real-life product design projects. **Prerequisite**: bachelor's degree in engineering or admission to Materiel Engineering graduate program.

GEN 602 Product Assurance Engineering– Three semester hours. This course involves techniques for establishing product specifications, process controls for quality assurance, compatibility analysis, and product reliability and maintainability. Topics include system reliability; confidence intervals-limits; normal and exponential distribution; failure analysis; the Weibull model in life testing; quality control; aging and system reliability; and case

studies. **Prerequisite**: bachelor's degree in engineering or admission to Materiel Engineering graduate program; basic knowledge of statistics.

GEN 603 Analysis and Simulation Methods– Three semester hours. The course centers on stochastic search methods for system optimization and the analysis and construction of Monte Carlo simulations. The focus is on issues in algorithm design and mathematical modeling, together with implications for practical implementation. Finite-element analysis is also given major consideration**. Prerequisite**: bachelor's degree in engineering or admission to Materiel Engineering graduate program; capability in computer programming.

GEN 604 Test and Evaluation Engineering– Three semester hours, lecture and laboratory. This course provides an intensive introduction to test methods and evaluation techniques; statistical considerations in measurement uncertainties; experiment planning, designing, debugging, and execution; instrumentation for data acquisition; signal processing; techniques for data analysis and evaluation; methods for hardware verification and validation. **Prerequisite**: bachelor's degree in engineering or admission to Materiel Engineering graduate program; basic knowledge of statistics and electronic instrumentation.

GEN 690 Materiel Engineering Project– Three semester hours. The activity is initiated by a seminar covering the requirements, with an emphasis on reports typical in the engineering profession. The project subject must relate one or more topics from core courses with a detailed topic from a specialty course, providing a state-of-the-art treatment based on available literature.

HIGHER EDUCATION ADMINISTRATION

HEA 622 Program Development in Higher Education – Three semester hours. A study of the background and development aims, and problems of the curriculum in junior colleges and universities.

HEA 623 Planning, Management, and Evaluation in Higher Education – Three semester hours. The study of the basic principles, concepts, and models in the establishment of goals assessing and analyzing needs; identifying resources and analyzing alternative strategies and selecting strategies; securing and allocating resources and formulating the program implementation plan; operating and evaluating programs in junior colleges, colleges, and universities.

HEA 624 American Education – Three semester hours. Overview and historical development of higher education in America; social context, unique characteristics, present status, scope, diversity, and current issues and trends in American higher education.

HEA 625 Community college – Three semester hours. Philosophy, history, organization, establishment and control, students, and curriculum of the two-year college; its teaching and learning environment, role in the community and career orientation.

HEA 626 Finance of Higher Education – Three semester hours. Financial aspects of the operation of junior colleges, colleges, and universities.

HEA 635 The Community College Curriculum – Three semester hours. Trends, problems, and issues in the development of the Community Junior College Curriculum, including vocational-technical education, continuing education, and community services, are studied.

HEA 680 Educational Supervision for the Practitioner – Three semester hours. This course is designed to provide specific, practical assistance to on-the-job supervisors in the successful realization of their profession of instruction. The course deals with task areas and a collection of accepted patterns for supervision, definite procedures, techniques, and devices.

HISTORY

HIS 501 Historiography - Three semester hours. Development of historical thought and history as a discipline. It seeks to provide students with an understanding of the nature of history by examining the evolution of historical studies and the trends in historical thought.

HIS 509 Afro-American History - Three semester hours. A survey course of Afro-American history which emphasizes the Afro-American experience in modern American history. Post-Reconstruction is the essential background for turn of the century developments and those events that have determined

the present role of Afro-Americans in society and the world.

HIS 510 Foundations of American Civilization - Three semester hours. A detailed analysis of the origin and development of American democracy, including economic and social institutions.

HIS 512 History of the South - Three semester hours. A reappraisal of the Old South and the Civil War and Reconstruction Period with special emphasis on the political, economic, and social problems of the New South.

HIS 513 Constitutional History of the United States - Three semester hours. A reappraisal of the formation of the United States Constitution and its operation in the early years, with special emphasis on recent interpretations by the United States Supreme Court covering current political, economic, and social problems.

HIS 514 Contemporary American History - Three semester hours. Specific considerations of the problems of the United States as a great world power, and the major
political, economic, and social internal problems.

HIS 520 Contemporary European History - Three semester hours. A detailed study of
the current forces of nationalism, regionalism, and internationalism operating within Europe, including Europe's use of these factors in relation to the rest of the world.

HIS 521 Modern Asia - Three semester hours. The emergence of new independent nations of the Far East, Middle East, and Near East will be analyzed as to their formation,
development, and current problems, both foreign and domestic.

HIS 522 African History - A survey course which places special emphasis on modern Africa and seeks to understand the forces that have shaped African societies and are playing an important role in African history today.

HIS 523 Latin American History - A survey course which places special emphasis on modern Latin America and seeks to understand the forces that have shaped Latin American societies and are playing an important role in Latin American history today, including the Caribbean.

HIS 525 Philosophy of History - Three semester hours. A study of the principles of historical interpretation through an analysis of the major speculative theories of history and of the major critical issues in the field. Religious, secular, and scientific approaches to historical interpretation will be considered, including but not limited to, those of Augustine, Vico, Kant, Hegel, Herden, Ranke, Ricbert, Dilthey, Collingwood, Spengler, Toynbee, Sorokin, Huxley, and Chardin. (Prerequisite: HIS 501)

HIS 609 Selected Topics in Afro-American History - Three semester hours. This course is designed to introduce students to some of the main topics growing out of the Afro-American experience. Although the Afro-American experience is part of the general history of America, this course places emphasis on those events that helped shape the African's experience in America. The topics discussed and analyzed, for the most part, are those that have reference to situations or issues posing unique and interesting problems, questions, or perspectives during major periods of Afro-American history.

HIS 614 Selected Topics in 20th Century U.S. History - Three semester hours. Each semester this course will focus on one major topic of 20th Century U.S. History, which will be examined in depth, both the necessary background and, particularly, the nature of the issue and its current developments.

HIS 615 Modern World History - Three semester hours. Background and significance of selected topics in twentieth century world history (e.g., the emergence of Africa, the crisis in the Middle East, developments in Southern Africa, etc.).

HIS 698 Individual Research in History - Three semester hours. Independent reading or research directed by assigned faculty involving a survey of existing research on a given topic, an area of interest to the student or a report on the early stages of work on a thesis.

GEOGRAPHY

GEO 503 Geography of Asia - Three semester hours. Physiographic and political divisions of Asia and the development of present cultural activities in each region. Reference is made to national and international problems in relation to the present world order.

GEO 505 Cartography for Elementary and Secondary Schools - Three semester hours. Principles of map construction and interpretations as related to the teaching of the Social Science in elementary and secondary schools. Problems of scale, projection, symbolization, and map reproduction are considered.

HUMAN DEVELOPMENT AND FAMILY STUDIES

HDF 500 Family Development and Culture - Three semester hours. A review of theoretical approaches in studying the family. Emphasis is placed on the family life cycle and family systems as impacted by culture.

HDF 515 Social and Emotional Development of Children - Three semester hours. Concerned with how family and community elements affect the social and emotional development of children. Topics will include the agents and outcomes of socialization, such as values, morals and self-esteem.

HDF 517 Consumer Behavior - Three semester hours. Topics will include facts important to individuals as purchasing agents.

HDF 518 Parenting Perspectives - Three semester hours. An analysis of theories, practices and research related to parent-child interactions. Attention will focus on parenting with regard to family structure, goals, values, styles of parenting and the developmental characteristics of children from birth through adolescence.

HDF 519 Child Development Programs - Three semester hours. Provides an analysis of programs for children from birth to six years of age. Concerned with the arrangement of the physical environment in addition to the instructional program that promotes children's physical, social, emotional, cognitive and language development.

HDF 520 Family Resource Management - Three semester hours. Explores the principles and methods of managing family resources. The analysis, planning and management of resources will be studied.

HDF 521 Youth Programs - Three semester hours. Concerned with the developmental characteristics and needs of children during the middle childhood and teenage years. Emphasis will be placed on the development of appropriate activities for both in-school and out-of-school groups.

HDF 524 Adults and their Relationships - Three semester hours. Analysis of the stages of adulthood and relationships during those years.

HDF 526 Multi-Sensory Approaches to Learning - Three semester hours. The development of the sensory avenues and concomitant processes in infancy and childhood, including concept information.

HDF 530 Special Problems - Three semester hours. An investigation of problems related to family and individual child development.

HDF 544 Support Systems for the Elderly - Three semester hours. A study of ways to involve family and community organizations in meeting the needs of the elderly.

HDF 604 Readings in Child Development and Early Childhood Education – Three semester hours. This course provides a study of all facets of child growth, development and learning.

HDF 610 Strategies of Parent Involvement - Three semester hours. Covers the importance and utilization of parents in programs that serve children and adolescents. Students will evaluate some of the practices that are currently in use.

INDUSTRIAL TECHNOLOGY MANAGEMENT

INT 500 Manufacturing and Design Problems – Three semester hours. Advanced study of recent developments in manufacturing, including mechanical design procedures and problems of manufacturing. Critical path scheduling and machine relations are also covered.

INT 510 Computer-Integrated Manufacturing – Three semester hours. A laboratory-based course designed to Integrate the total manufacturing system. Topics include flow line production, materials handling, group technology, and flexible and computer integrated manufacturing.

INT 512 Statistical Methods in Applied Engineering, Technology, and Management – Three semester Hours. Application of problem-solving tools and procedures for statistical analysis and interpretation of research data. Introduction to probability, descriptive data analysis, distribution functions, confidence intervals, test of hypothesis, regression models, and analysis of variance.

INT 515 Advanced Statistical Quality Control – Three semester hours. Analysis of advanced statistical quality control techniques for achieving product quality and process improvements. Prerequisite: INT 512.

INT 525 Management of Technology and Operations – Three semester hours. Principles of operations and managements as related to technical resources.

INT 530 Industrial Management – Three semester hours. Principles and practices in managing a business or industrial enterprise; organization and management structure; procurement; quality and quantity control; research and development; management science; personnel management; labor-employee relations; and marketing in industrial and manufacturing plants.

INT 534 Quality Management –Three semester hours. Tools and techniques to control quality of products and services and improve business performance by ensuring quality of processes, systems, organization, and leadership. Prerequisite: INT 512.

INT 535 Leadership and Supervision in Technology Management – Three semester hours. An analysis of supervisors' job with respect to their roles and responsibilities for supervising the work of subordinates and employing technology systems in the production of consumer goods and services.

INT 537 Industrial Safety Standards – Three semester hours. A study of specific federal and state safety and health standards as applied to building and facilities, materials and handling and storage, machines and machine guarding, welding, electrical hazards, construction, and transportation in factories and plants.

INT 540 Industrial Automation – Three semester hours. Principles and analysis of automated manufacturing systems, including CNC, CAD/CAM, PLC, cellular manufacturing systems, flexible manufacturing systems, transfer lines, robotics, and quality control systems.

INT 541 Design of Experiments – Three semester hours. Principles and procedures for using statistically designed experiments for product and process improvement as well as their applications for improving quality and efficiency in systems. Prerequisite: INT 512.

INT 543 Lean-Six Sigma – Three semester hours. Systems improvement and design based on philosophies and principles for identifying and eliminating wastes or non-value-added activities in technological operations. Prerequisite: INT 512.

INT 550 Research Techniques for Applied Engineering & Technology Mgt. – Three semester hours. Research techniques, including collection, analysis, and interpretation of research data, in applied engineering, technology, and management fields. A final research report is required.

INT 554 Industrial Ergonomics – Three semester hours. Methods for designing tools, machines, tasks, and work procedures to meet physical (anthropometric and biomechanical) and mental requirements of human beings in working safely and efficiently.

INT 560 Project Management – Three semester hours. Theory and practice of managing projects including the application of modern project management software.

INT 570 Internship/Co-operative Education – Threes semester hours. Supervised work experience and training in applied engineering, technology, or management. A minimum of 45 hours of employment is required during the semester in which the student is enrolled. Individual written report on work experience is required.

INT 575 Engineering Cost Analysis – Three semester hours. Practical approach for financial and technical decision making in evaluating the economic feasibility of engineering systems and projects. Applied engineering economy techniques for cost reduction, continuous profit improvement, and financial management of contemporary organizations.

INT 610 Applied Engineering, Technology, & Management Project – Three semester hours.

Individual research project in lieu of thesis. Students complete a faculty directed research project in applied engineering, technology, or management. A final report will be presented in open forum. Must be taken by students who choose the non-thesis option.

INT 612 Special Problems in Applied Engineering, Technology, & Mgt. – Three semester hours. Individualized research and investigation into areas not covered in other classes. Prerequisite: Graduate standing. Offered fall, spring, and summer

INT 699 Master's Thesis – Three semester hours. Required for a student working and receiving direction on a master's thesis. A thesis student must enroll for 3 hours each semester, for a minimum of 6 hours, while working and receiving direction on the master's thesis. Prerequisite: Completion of 15 semester hours.

LOGISTICS AND SUPPLY CHAIN MANAGEMENT

LSM 536 Logistics and Supply Chain Management - Three semester hours. Critical examination of logistics and supply chain management (SCM) role in both the commercial and military sectors; strategic foundations that support supply chain and operational skills required to develop and/or design an effective supply chain. The cross-functional integration of premier business processes within the organization and across the network of enterprises that make up the supply chain. Additional topics include demand management, procurement and supply chain, performance based logistics, data warehousing, reverse supply chain logistics, transportation management, supply chain logistics information systems, logistics outsourcing, third-party logistics, supply chain performance measurement, supply chain economics, and supply chain finance.

LSM 572 Logistics and Supply Chain Risk Management - Three semester hours. The focus is on global sourcing issues, risk and uncertainties, supply chain logistics vulnerability and disruption, enterprise-wide risk management, crisis response logistics management, and Homeland Security's global supply chain logistics measures within the context of the commercial and military environments. (Prerequisite: LSM 536)

MASTER OF BUSINESS ADMINISTRATION

MBA 503 Quantitative Methods for Business - Three semester hours. This course covers descriptive and inferential statistical methods used in business. Students would learn about the appropriate statistical techniques for describing and analyzing data, as well as the interpretation of the results. Statistical software will be used. Topics include graphical and quantitative description of data, probability theory, important discrete and continuous probability distributions, estimation of parameters, testing of hypotheses using sample data, analysis of variance, chi-square test, regression methods, and other quantitative decision-making tools. (Prerequisite: Pre-calculus algebra)

MBA 506 Foundations of Accounting and Finance - Three semester hours. This course provides non- business students coming into the program with a basic understanding of the concepts of accounting and finance. It covers the techniques of the preparation and use of financial statements, the basic concepts of corporate finance, the structure of financial markets, and the process of financial analyses.

MBA 507 Basics of Management and Marketing - Three semester hours. The primary objective for this course is to introduce those MBA students who lack formal undergraduate courses in management and/or marketing to the basic management and marketing fundamentals before they plunge into advanced theoretical courses. The course is an exploratory one that will help students to answer the basic questions: What does a manager do? What is management? How did it evolve? What is marketing? What is the marketing concept? What is target marketing? What is the marketing mix?

MBA 517 Global Issues in Business – Three semester hours. This is an integrative course that not only focuses on the study of the environment and management of international business but also on the strategy, environment-assessment, and cross-functional processes designed to implement a strategy as management deals with contemporary global issues that confront the business such as legal/political policies, socio-cultural differences and social changes, financial and economic institutional development demands upon marketing, management, finance, accounting, and human resources. (Prerequisite: ACC 512, ECO 514, FIN 511, MGT 515, MKT 514)

MBA 550 Independent Research in Business – This is for a major research project involving an in-depth study of an issue in any of the business areas. The project, conducted under the guidance of an instructor, will culminate into a detailed, comprehensive paper on the issue. (Pre-requisite: Consent of the MBA Director)

MANAGEMENT

MGT 510 Operations Management - Three semester hours. This course covers the study of the concepts and techniques related to the operations function. The operations function is responsible for planning, organizing, and controlling resources in order to efficiently and effectively produce the goods and services customers want, as well as meet the goals of the organization. Topics include operations planning, forecasting, process analysis, quality management, materials management, scheduling, MRP/ERP, project management, just-in-time and lean techniques, supply chain management, and other decision-making tools for management. (Prerequisite: MBA 503 or equivalent)

MGT 515 Organizational Theory and Behavior - Three semester hours. This course will deal with the macro and micro aspects of organizations. It will emphasize the behavior of people within organizations. The impacts of environment on human behavior are examined. Conditions of organization viability and renewal, as well as structures used in their internal and external elaboration, are also considered. (Prerequisite: MBA 507 or an undergraduate introductory course in management)

MGT 516 Strategic Management - Three semester hours. This course is designed to develop an understanding of strategy, policy, and decision-making as applied to the overall management of large corporations or other formal organizational structures. The course objectives are achieved through the integration of economic, marketing, accounting, finance, and management fundamentals. The case method is used. (Prerequisites: (MBA 517)

MGT 554 Training and Development - Three semester hours. This course emphasizes the broadening role of training in corporate life. Training is a systematic process of altering the behavior of employees in a direction that will achieve organizational goals. Training and development is an attempt to improve current and future employee performance by increasing an employee's ability to perform through learning, usually by changing the employee's attitude or increasing his or her skills and knowledge. (Prerequisite: MGT 515)

MGT 564 Human Resource Management - Three semester hours. A critical examination will be made of personnel functions, such as selection, training, placement, transfers and promotions, performance appraisal policies, motivation, inventory of skills, and human resource development.(Prerequisite: MGT 515)

MGT 565 Entrepreneurship/Small Business Management - Three semester hours. Interdisciplinary course dealing with various aspects of starting a small business; selecting promising ideas, initiating enterprises, exploiting opportunities, obtaining initial financing, site selection, and licensing. (Prerequisite: MGT 515)

MGT 566 Management and Labor Relations - Three semester hours. This course introduces students to substantive topics that define and explain the relationship between labor and management. It examines the history of the labor movement and the rights and duties of both parties as defined by various labor laws. It also examines the labor relations process as it relates to negotiating and administering the labor agreement, and resolving issues related to employee discipline, rights and prerogatives of management and employee groups, wage issues, administrative issues and the use of arbitration to resolve labor disputes and maintain labor peace. Moreover, it examines how the labor relations process works in the public, federal and non-traditional sectors of the economy. (Prerequisite: MGT 515)

MGT 545 Foundation of Database Management Systems - Three semester hours. This course focuses on the important process of database design. A highly useful methodology for designing databases is presented and illustrated through a variety of examples. On the completion of this course, the student should be able to use database management systems such as Access to set up and manipulate data files, query a data file, and format a report. The student should also be able to compare the capabilities of a single file record management system with database management system. (Prerequisites: MGT 502 or equivalent, or consent of instructor)

MGT 580 Emerging Information Technologies - Three credit hours. This course examines various managerial and technical issues associated with the introduction of new information technologies within the firm. Topics include environmental scanning for new Information Technologies (IT) developments, assessment of new IT, and legal/ethical issues. (Prerequisite: MGT 545 or equivalent, or consent of instructor)

MARKETING

MKT 514 Management of Marketing Activities - Three semester hours. This course develops the societal, managerial, and strategic underpinnings of marketing. It presents concepts and tools for analyzing any market and marketing environment to discern opportunities, as well as principles for researching and selecting target markets. It also deals with strategic marketing and describes how firms can develop their marketing strategies. In addition, the course is concerned with tactical marketing, describes how firms handle each element of the marketing mix, and examines the administrative side of marketing, namely how firms organize, implement, and control marketing efforts. This course also features a unit on the global environment and a unit on customer satisfaction. (Prerequisite: MBA 507 or an undergraduate introductory course in marketing)

MKT 532 Consumer Behavior - Three semester hours. A review and evaluation of major theories of consumer behavior from the economics, behavioral science, and marketing literatures, topics include buyer behavior models, problem/need recognition, search behavior, information processing, involvement and motivation, learning theory , cultural-lifestyle-social class influence, role of consumer perceptions and attitudes in decision making, family decision making, adoption and diffusion of innovations, consumer trends, and behavioral influence strategies. (Prerequisite: MKT 514)

MKT 538 International Marketing and Logistics - Three semester hours. This course is an in-debt analysis of the specific issues, factors, and conditions which affect the marketing and logistic of products and services on a global, as opposed to a domestic basis. Attention will be focused on the challenges of identifying and evaluating opportunities in overseas markets, developing and adapting marketing strategies in relation to specific national market needs and constraints, and coordinating these strategies on a worldwide basis. (Prerequisite: MKT 514); cross-listed with LOG 538.

MATHEMATICS

MTH 501 Mathematics Seminar I - One semester hour. Investigation and discussion of problems related to mathematics instruction and/or special topics in mathematics.

MTH 504 A Survey of Higher Mathematics - Three semester hours. Concepts of sets, logic, probability, abstract algebra, and elementary function theory.

MTH 505 Selected Topics in Calculus and Analytic Geometry - Three semester hours. Principal ideas and techniques of calculus and analytic geometry from a contemporary point of view.

MTH 506 Computers and the Teaching of Mathematics - Three semester hours. A brief overview of basic concepts in computer science; mathematics materials for computers and computing; laboratory practice in programming mathematical curriculum materials.

MTH 507 Abstract Algebra - Three semester hours. Elementary theory of groups, rings, fields, vector spaces, and linear transformations. (Prerequisite: MTH 504 or Consent of Instructor)

MTH 508 Linear Algebra - Three semester hours. Systems of linear equations, vector spaces, matrices, linear transformations, change of basis, determinants, characteristic roots and vectors. (Prerequisites: MTH 504, MTH 507 or Consent of Instructor)

MTH 525 Computer Theory and Programming - Three semester hours. Advanced concepts in computer science; mathematics materials for computers and computing; and laboratory practice in programming mathematical curriculum materials.

MTH 533 Foundations of Geometry - Three semester hours. Euclidean geometry, non-Euclidean geometry, analytic geometry, finite geometry, and similarity in Euclidean space.

MTH 552 Analysis I - Three semester hours. Functions, sequences, limits, continuity, uniform continuity, derivatives, intermediate value theorem. (Prerequisite: MTH 505 or Consent of Instructor)

MTH 553 Analysis II - Three semester hours. Integration, bounded variation, series, convergences, elementary functions, and sequences and series of functions. (Prerequisite: MTH 552)

MTH 620 Topology - Three semester hours. The topology of the real line; Euclidean, metric, and topological spaces; connectedness; compactness; and continuity. (Prerequisite: MTH 552 or Consent of Instructor)

MTH 651 Mathematical Logic - Three semester hours. Principles of logic and the elementary structure of mathematics; connectives and quantifiers, sets and relations; negation; inductive and deductive reasoning. (Prerequisite: MTH 504 or Consent of Instructor)

MTH 665 Theory of Numbers - Three semester hours. Divisibility, congruencies, residues, Diophantine analysis, sieve methods, and geometry of numbers. (Prerequisite: MTH 507 or Consent of Instructor)

MTH 673 Probability and Statistical Analysis - Three semester hours. Algebra of sets; empirical frequency distributions; combinatorics; mathematical expectation; discrete and continuous probability distributions; probability densities; hypothesis testing; and estimation. (Prerequisite: MTH 504 or Consent of Instructor)

MTH 681 Mathematics Seminar II - One semester hour. A study, by seminar method, of additional topics in mathematics from the history of mathematics, algebra, linear algebra, geometry, or analysis.

MTH 682 Mathematics Seminar III - One semester hour. A study, using research methods, of current topics in mathematics and/or mathematics education.

MECHANICAL ENGINEERING

ME 511 Power Plant Performance - Three semester hours. Same as ME 411*. A study of the fundamentals of aerothermodynamics of propulsion systems, cycle analysis, ideal Bryton air cycle, and real turbojet and turbofan performance. Basic sizing techniques, economy parameters, performance simulation, and prediction will be covered. Introduction to power plant/airframe integration will be introduced. **Prerequisites**: undergraduate course in thermodynamics and power generation

ME 512 Analysis and Synthesis of Gas Turbines and Components - Three semester hours. Same as ME 412*. A review of aerothermodynamics of propulsion systems, characterization of power plant utilization, and operation cycle analysis. On-off design performance, component characterization, component design, component matching, optimization, and introduction to power plant integration systems in a fixed or moving architecture are also covered. **Prerequisite**: ME 511 or the equivalent

ME 513 Rocket Propulsion - Three semester hours. Same as ME 413*. A study of propulsion system requirements for terrestrial and interplanetary flight. Basic principles and performance of both solid and liquid chemical rocket propulsion systems, elements of nuclear rockets, nuclear-electrical power systems, and electrical propulsion systems are addressed. **Prerequisites**: undergraduate courses in thermodynamics and fluid mechanics

ME 514 Gas Turbine Engine Design and Manufacture - Three semester hours. Same as ME 414 A study of synthesis of gas turbine design under the constraints of power plant system integration or airframe integration. Definitions of system requirements, preliminary configuration analysis and engine sizing; inlet preliminary design; compressor, combustor, turbine and nozzle design; co-generation and heat recovery considered for stationary power plants.; engine on and off design performance simulation; installed thrust and system interference effects; noise sources and noise control are covered. **Prerequisites**: undergraduate courses in heat and mass transfer and machine dynamics

ME 515 Heating, Ventilating, Air Conditioning, Refrigeration - Three semester hours. Same as ME 415. A study of refrigeration cycles, psychrometrics, thermal comfort, ventilation, duct design, equipment sizing, energy recovery, and solar design concepts. **Prerequisites**: undergraduate courses in thermodynamics and heat and mass transfer

ME 516 Gas Dynamics - Three semester hours. Same as ME 416*. A study of the fundamental theory of one-dimensional gas dynamics: Isentropic

flow, flow in converging-diverging nozzles, shock propagation, normal and oblique shock theory, Prandtl-Meyer expansions, Fanno line flow, and measurement methods. **Prerequisites**: undergraduate courses in thermodynamics and fluid mechanics

ME 532 Design for Manufacture and Reliability - Three semester hours. Same as ME 432*. A study of the design synthesis and methods; strength design of mechanical structures and components; optimization and reliability principles; and computer-aided design techniques. Emphasis is on modeling synergistic processes for manufacture. **Prerequisites**: undergraduate course in machine dynamics or consent of instructor.

ME 571 Systems Engineering - Three semester hours. Same as ME 471. The systems engineering process is defined and investigated in this course. Among the topics introduced and studied are conceptual, preliminary, and detail design concepts using modern tools such as CAD, optimization, and systems test and evaluation in completing designs built for increased reliability, maintainability, and supportability. Environmental and social impact and life-cycle costs are also introduced. **Prerequisites**: undergraduate courses in advanced engineering mathematics.

ME 572 Economic Evaluation of Design - Three semester hours. Same as ME 472*. The concepts of life-cycle costs and optimization of alternatives are investigated. The formal study of decision-making and economic theory are applied to engineering projects. Case studies are used. **Prerequisites:** undergraduate course in machine dynamics or consent of instructor

ME 573 Logistics - Three semester hours. A study of the initial distribution and the subsequent sustaining life-cycle maintenance and support of a system of products throughout the consumer use phase. Systems design will be re-evaluated with emphasis placed on maintenance and support, taking into consideration reliability, maintainability, human factors, and life-cycle cost factors. **Prerequisite**: undergraduate course or experience in system design

ME 581 Quality and Reliability Assurance - Three semester hours. Same as ME 481*. An introduction to probability and statistics. Quantitative techniques for establishing product specifications and process controls for quality assurance, ISO 9000; the role of reliability in manufacturing operations; and so forth, are covered. **Prerequisite**: undergraduate course or experience in system design

ME 582 Operations Planning and Scheduling - Three semester hours. Same as ME 482*. Analysis and design of production and control systems for both intermittent and continuous manufacturing, inventory effects on production, and production control techniques review of Just In Time manufacturing. Emphasis is given to extending concurrent engineering techniques and methods for manufacturing and product development. **Prerequisite:** undergraduate course or experience in concurrent engineering

MUSIC EDUCATION

MUS 517 Conducting – Two semester hours. A review of basic conducting coupled with a study of advanced techniques for choral and instrumental ensembles.

MUS 520 History and Philosophy of Music Education - Three semester hours. A study of the historical development of music education in the United States, and the philosophies that encouraged music education's growth.

MUS 530 K-12 Music Curriculum – Three semester hours. A course in the development and implementation of the music education curriculum.

MUS 543 – Advanced Keyboard Techniques – Three semester hours. This course is designed to improve technical proficiency, pedagogical skill and strategies for accompanying on keyboard instruments, acoustic and electric.

MUS 553 Advanced Vocal Diction – Two semester hours. A survey course dealing with the pronunciation and enunciation of English, Italian, French, German, Latin and Afro-American Dialects.
MUS 554 Advanced Vocal Diction – Two semester hours. A survey course dealing with the pronunciation and enunciation of English, Italian, French, German, Latin and Afro-American Dialects.

MUS 563 Advanced Woodwind Brass Techniques – Three semester hours.

MUS 573 Advanced Woodwind Techniques – Three semester hours.

MUS 583 Advanced Percussion Techniques – Three semester hours

MUS 593 Advanced String Techniques – Three semester hours. Each of these courses is designed to instruct and strengthen instrumental teachers in performance, pedagogical skills, acoustics and literature.

MUS 610 Survey of Music Theory – Three semester hours. A review of harmony and concepts of form with a goal toward analysis, improving aural skills in the classroom and arranging.

MUS 611 Analytical Techniques – Three semester hours. An intensive examination of how musical elements and concepts of sonata form are used in Classical and Romantic compositions. (Prerequisite: MUS 610)

MUS 612 Analytical Techniques – Three Semester hours. An intensive examination of how musical elements and concepts of sonata form are used in Classical and Romantic compositions. (Prerequisite: MUS 610)

MUS 620 Survey of Music History – Three semester hours. A general survey of the History of music from antiquity to the present.

MUS 621 History of Musical Styles – Three semester hours. An in-depth examination of music from 1600 to 1860. (Prerequisite: MUS 620)

APPLIED MUSIC – One semester hour each. Technique and literature stressed in accordance with the student's ability.

MUS 533-534 - One hour VIOLIN

MUS 535-536 - One hour VIOLA

MUS 537-538 - One hour CELLO

MUS 539-540 - One hour DOUBLE BASS

MUS 541–542 - One hour PIANO

MUS 551-552 - One hour VOICE

MUS 545-546 - One hour FLUTE

MUS 547-548 - One hour OBOE

MUS 547-548 - One hour SAXOPHONE

MUS 571-572 - One hour CLARINET

MUS559-560 - One hour FRENCH HORN

MUS 561-562 - One hour TRUMPET

MUS 583-584 - One hour TUBA

MUS 589-590 -One hour TROMBONE

MUS 581-582 - One hour PERCUSSION

NATURAL RESOURCES

NRE 500 - Techniques for Teaching Horticulture in K-12 - Three semester hours. Provides horticultural education as a supplement to general science and botany. Experiences with ornamentals, floriculture, fruits, vegetables and soil to improve understanding of nature and horticulture. **Summer.**

NRE 501 - Floral and Garden Center Management - Three semester hours. Management of garden centers, including financing, selection of a location, design of the facilities, greenhouse construction, selection of plant materials, personnel management, marketing, and maintenance of plant materials. Principles and practices of establishment and management of a retail flower shop. (Prerequisite: NRE 101 or consent of instructor) **Odd Spring.**

NRE 502 Scientific Writing - Three semester hours. Preparation of scientific evidence for the thesis or dissertation or for publication in scientific journals, parts of the scientific paper, graphical and tabular presentation of data, sources of funding to support research, writing research grants, the editorial process, elements of style, and ethics (Prerequisite: ENG 304) **Fall.**

NRE 503 Techniques for Land Judging - Three semester hours. Fundamental principles of soil science as related to land, differences in soils and their capabilities, methods of soil conservation and improvement, treatments to improve productivity and selection of suitable home sites. **Summer.**

NRE 505 Instrumental Techniques for Plant and Soil Science - Three semester hours. The principles and practice of Atomic absorption spectrophotometry, Kjeldahl digestion, gas chromatography, amino acid analysis, electrophoretic separation techniques, inductive couple plasma mass-spectroscopy (ICPMS),

inductive couple plasma (ICP), ion chromatography (IC), scanning electron microscopy, thermocouple psychrometry, porometry, and immunoassay. One-hour lecture with a four-hour lab per week. (Prerequisite: Consent of instructor) **Even Spring.**

NRE 506 Soil Microbiology - Four semester hours. A study of the properties and classes of microorganisms as related to soil and crop production. Effects of microorganisms on the fertility, and chemical and physical properties of soil. (Prerequisite: BIO 101, 102, 330) **Odd Spring.**

NRE 510 Forage Management - Three semester hours. A study of the soil-plant-animal complex as it relates to the morphology, physiology and utilization of forages. Emphasis will be on agronomic practices and physiological considerations in forage management in Alabama. (Prerequisite: NRE 101 or BIO 203-204) **Odd Spring.**

NRE 511 Weed Science and Herbicide Technology - Three semester hours. Phenology of weeds, habitat management by cultural, mechanical, biological and chemical means, dissipation and phytotoxicity of herbicides. Application and physiological relationships of herbicides and recent advances in weed control problems. (Prerequisite: NRE 101 or BIO 204 and BIO 204L) **Odd Fall.**

NRE 512 Field Research Techniques in Agronomy - Two semester hours. Principles of field plot research, Hypothesis and treatments, procedures in large/small plot experimentation, such as laying out of experiments, size and shape of plots, border effects, selection of valid error term, parameters, technique of data collection, their summarization and publication of results or research paper (Prerequisite: Consent of instructor) **Even Spring**.

NRE 514 Crop Production Technology - Three semester hours. Emphasis on techniques for different soil, climate, moisture, and temperature requirements for successful crop production. (Prerequisite: NRE 101 and NRE 310) **Even Fall.**
NRE 515 Seed Biology - Four semester hours. Biological and physiological aspects of seed development, maturation, longevity, dormancy, storability, invigoration treatments, and process of germination in agriculture (crop, vegetable, and tree seeds will be emphasized). (Prerequisites: NRE 440 and consent of instructor) **Odd Fall.**

NRE 517Sustainable Crop Production – Three semester hours. Principles of sustainable agriculture with modern crop production practices, management of biological, physical, and human resources to optimize field crop production in a sustainable and cost-effective manner. Emerging biotechnologies, precision agriculture, etc. are highlighted. (Prerequisite: None**)Spring.**

NRE 521 Plant Propagation - Three semester hours. Principles, processes, methods and materials involved in sexual and asexual propagation of plants. (Prerequisite: NRE 101 or consent of instructor) **Odd Spring.**

NRE 522 Landscape Design and Construction - Four semester hours. Advanced landscape design, including finished drawings, selection and arrangement of plants, design of construction features, preparation of bills of materials, and cost estimates. (Prerequisite: NRE 423) **Even Spring.**

NRE 523 Ornamentals I – Trees and Shrubs – Three semester hours. Type, characteristics, adaptation, maintenance, and functional uses of ornamental plants used in landscape design with a special emphasis on trees, shrubs, vines and groundcovers. (Prerequisite: NRE 101 or consent of instructor) **Odd Fall.**

NRE 524 Horticulture Marketing and Management - Three semester hours. An analysis of produce marketing, pricing, postharvest handling, supply and demand, and marketing crops through produce outlets and differing management and scenarios. Resource "game playing." (Prerequisite: Consent of instructor) **Even Summer.**

NRE 525 Lawn and Turf Management – Methods and principles of establishing and maintaining residential lawns as well as special-purpose turf grasses for commercial landscapes, golf courses or athletic fields, including weed and pest control. **Even Spring.**

NRE 527 Ornamentals II – Flowers and Foliage Plants – Three semester hours. Identification, culture, and use of herbaceous annuals and perennials, bulbs, herbs and ornamental grasses. Flower bed and border preparation and maintenance; selection, installation, and care of tropical foliage plants in interior settings; use of light, plant acclimatization, growing media, fertilizers, containers, and pest control (Prerequisites: SPS 101 or consent of instructor) **Even Fall.**

NRE 528 Fruit and Vegetable Production - Three semester hours. Commercial fruit and vegetable culture, including site selection and preparation, classes of vegetables, species of fruits, establishment, pest control, and harvesting are emphasized. (Prerequisite: SPS 101 or consent of instructor). **Even Spring.**

NRE 529 Statistics - Three semester hours. Concepts and methods of statistical data analysis. Descriptive statistics, probability distributions, estimation, confidence intervals, hypothesis testing, chi-square, analysis of variance, simple linear regression, and correlation. (Prerequisite: MTH 113) **Fall.**

NRE 530 Principles of Experimentation - Three semester hours. Principles in planning experiments to minimize error variance and avoid bias. Designs and models to accomplish these objectives will be examined in detail. (Prerequisite: SPS 529 or equivalent statistics course) **Spring.**

NRE 531 Principles of Plant Breeding - Three semester hours. Principles, methods and techniques involved in plant breeding and its application to field crops. (Prerequisites: BIO 203-204 and BIO 311) **Spring.**

NRE 532 Plant Disease Diagnosis - Four semester hours. General principles and methods in identification, epidemiology, etiology and control of major plant diseases. (Prerequisite: Consent of instructor) **Fall.**

NRE 533 Introduction to Molecular Genetics - Four semester hours. Prokaryotic DNA structure and replication, restriction analysis, sequencing, transcription, translation, gene regulation, and gene expression. Co-requisite: must be taken with NRE 533L (Prerequisite: At least one course each in biology and genetics or consent of instructor) **Fall.**

NRE 533L Introduction to Molecular Genetics Laboratory – One semester hour. Basic techniques used in molecular genetics and provides a step-by-step approach and hands-on experience in the field of recombinant DNA technology. (Co-requisite: NRE 533) **Fall.**

NRE 534 Cytogenetics - Four semester hours. Chromosome structure, mechanics and behavior, their significance for problems of genetics, evolution and the origin of species. Emphasizing inter- and intrachromosomal aberrations and heteroploidy. (Prerequisite: A course in genetics**) Even Fall.**

NRE/CMP 535 Introduction to Bioinformatics – Four semester hours. An interdisciplinary course melding information from molecular biology and computer/information sciences. Structure and function of proteins and nucleic acids, retrieval and interpretation of bioinformation, algorithms and software use for sequence alignment, similarity searching of nucleic acid/protein sequence databases, and exposure to JAVA and PERL. **Fall.**

NRE 536 Regression Analysis - Three semester hours. Analysis and interpretation of linear, multiple and polynomial regression models using standard computer programs. Correlation, stepwise methods, and use of dummy variables included. Emphasis on application and use of analysis. (Prerequisite: NRE 529 or equivalent) **Summer.**

NRE 537 Plant Tissue Culture Methods and Applications - Three semester hours. Application of tissue culture techniques for the improvement of economic plants; hands-on laboratory procedures will be emphasized. (Prerequisite: CHE 102, BIO 204 and consent of instructor) **Even Spring.**

NRE 538 Plant Genetics - Two semester hours. Both qualitative and quantitative gene actions are considered. Methods of testing hypotheses, chromosome mapping, selection procedures, gain from selection procedures, measuring heritability and other factors are covered. (Prerequisite: A course in genetics) **Odd Fall.**

NRE 539 SAS-Programming - Three semester hours. Statistical analysis of data using the Statistical Analysis System (SAS). Data entry and manipulation, report writing, and effective use of SAS manuals will be emphasized, along with selection and execution of important SAS procedures. (Prerequisite: NRE 430 or NRE 529) **Spring.**

NRE 540 Seed Production Practices - Four semester hours. Principles and practices in the production of pure seeds, with emphasis on harvesting, drying and storage, crop and weed seed identification and laboratory practices in seed testing, official rules for testing seeds, and seed laws for marketing. (Prerequisite: NRE 101 or NRE 310) **Even Fall**.

NRE 541 Phyto-physiology - Four semester hours. A study of the environment-plant growth interaction

in the physiology of plants with emphasis on whole plant processes. (Prerequisite: NRE 101) **Even Fall.**

NRE 545 Bioinformatics Applications – Three semester hours. Analysis of genomic data, high-throughput sequencing, functional genomics, and proteomics. Emphasizes mastering of various tools for analyzing DNA, RNA, and protein data, understanding of underlying algorithms, and their application to biological problems. **Spring**

NRE 550 Earth Science – Three semester hours. Overview of earth science concepts, processes, and categories, with emphasis on plate tectonics, volcanism, weathering and erosion, global weather and climate, vegetation, and soil. Emphasis is placed on human interactions and relationships with the physical environment and resulting public policy and management conflicts, and strategies. (Prerequisite: None) **Even Fall.**

NRE 551 Environmental Toxicology - Three semester hours. Toxic effects of environmental chemicals on living systems, the chemical and biological characteristics of major pollutants, their origins and uses, and the exposure, transformation and elimination of toxic substances by biological systems. (Prerequisite: CHE 102, CHE 302 or consent of instructor) **Odd Fall.**

NRE 552 Soil Fertility and Fertilizers – Three semester hours. Relationship of soil chemistry, forms of nutrients in soils and role of plant nutrients in crop production, and other factors associated with soil productivity; basic concepts of fertilizer application and manufacturing. (Prerequisite: CHE 102 and NRE 251) **Even Fall.**

NRE 553 Hazardous Waste Management - Three semester hours. The impact, technologies, problems and issues associated with hazardous wastes and management practices. Case studies of hazardous waste spills, risk assessments, and remediation techniques (Prerequisite: Consent of instructor**)** **Odd Spring.**

NRE 560 Soil Chemistry - Three semester hours. Chemical and mineralogical composition of soils, fundamental chemical properties of soils, soil colloids, exchange phenomena in soils, and soil reactions. (Prerequisite: CHE 102 and NRE 251) **Odd Spring.**

NRE 561 Soil Physics - Four semester hours. Study of physical make-up and properties of soil, including structure, thermal relationship, consistency, plasticity, water, and how they are related. (Prerequisite: PHY 103 and NRE 251) **Even Fall.**

NRE 562 Plant Pathology Techniques - Four semester hours. General principles and methods of isolation, culture and inoculation of plant pathogens (bacteria, fungi, nematodes, and plant viruses). (Prerequisite: NRE 101 or BIO 204) **Even Spring.**

NRE 563 Plant Nutrition and Water Relations - Three semester hours. Mineral nutrition, function and metabolism, ion and water relations, translocation in vascular plants, and physiological responses to biotic stresses. Photosynthesis, respiration, and other aspects of plant metabolism are covered (Prerequisite: NRE 101 and NRE 251). **Even Fall.**

NRE 564 Plant Growth and Development - Three semester hours. A study of recent developments related to growth regulation and plant development as influenced by auxins, gibberellins, cytokines, ethylene, inhibitors, and environmental factors. (Prerequisite: NRE 441) **Odd Spring.**

NRE 565 Applications of Geostatistics – Three semester hours. Concepts and methods to describe and analyze environmental data. Use of geostatistical models in sampling experimental design, mapping contaminant concentration, risk analysis, remediation, planning and probability analyses. Conceptual development of relationships between theory, research and action in managing natural resources. (Prerequisites: MTH 112, MTH 113, NRE 430 or equivalent) **Even Spring.**

NRE 567 Plant Virology - Three semester hours. Principles and methods of detection, isolation, chemical constitution, replication, transmission, and control of plant viruses. (Prerequisite: NRE 432 or NRE 562) **Odd Spring.**

NRE 570 Soil, Plant and Water Analysis - Four semester hours. Principles and application of chemical and instrumental methods in the analysis of soil, plant, and water samples; experimental and descriptive inorganic and organic analyses; spectrophotometry, atomic and molecular absorption and emission spectroscopy, mass spectrometry, X-ray diffraction and fluorescence, gas and ion chromatography, and ion-selective electrodes (CHE 102, CHE 202 and NRE 251) **Even Spring.**

NRE 571 Aerial Photo-Interpretation - Three semester hours. Detection, identification, and

analysis of objects or features from aerial photographs. Sensing devices and other equipment related to photogrammetry application. Interpretation of terrain, vegetation, and cultural features. (Prerequisite: Consent of instructor) **Fall.**

NRE Soil, Water and Air Pollution - Three semester hours. Fate of chemical fertilizers, pesticides, and other agricultural and industrial pollutants in relation to environmental quality. Effects of these factors on checks and balances of natural terrestrial and aquatic ecosystems. (Prerequisite: CHE 102 and NRE 251**) Even Spring**.

NRE 574 Quantitative Approaches in Remote Sensing - Three semester hours. A "hands-on" approach with computer analysis or remotely-sensed data, software design, classification algorithms, and image pre-processing overlay and enhancement. Theory and concepts of field instrumentation will be demonstrated and discussed. (Prerequisite: NRE 476) **Odd Spring.**

NRE 575 Principles of Wetlands – Three semester hours. Wetlands as important environments, their importance to surface and ground water quality and to aquatic and terrestrial wildlife; use of constructed wetlands in waste treatment applications, and principles of wetland delineation. (Prerequisite: Consent of instructor) **Even Fall.**

NRE 576 Remote Sensing of the Environment I - Four semester hours. The principles of remote sensor systems and their utility, natural resource inventory and management, land use planning and environmental monitoring. Interpretation of color infrared photos, multispectral and thermal scanners, and radar imagery (Prerequisite: Consent of instructor) Odd **Fall.**

NRE 577 Insect Biology and Pest Management – Three semester hours. Biology of insects, emphasizing taxonomy, basic structure and function, ecology and the management of insect pest populations. The course includes a weekly three-hour laboratory for developing skills in identification and collection of insects. (Prerequisite: Consent of instructor) **Odd Spring.**

NRE 578 GIS, Spatial Analysis and Modeling – Four semester hours. Provides theoretical and practical skills needed for using GIS for analyzing spatial phenomena at different scales. Focuses on principles and methods of spatial analysis and their application to different disciplines such as urban planning, environmental science, and natural resource management. Prepares students for advanced GIS course. **Spring.**

NRE 580 Natural Resource Policy - Three semester hours. Evaluation of land and forest problems and policies in the United States; analysis of current social and resource characteristics that have shaped policy (Prerequisite: Consent of instructor) Spring**.**

NRE 581 Hydrology & Watershed Management - Three semester hours. Occurrence and movement of water over the earth's surface. The hydrologic cycle, runoff relations, relationship of precipitation to stream flow with frequency analysis, unit hydrograph theory, flood routing, and probability in hydrology, hydrologic simulation and stochastic methods in hydrology. (Prerequisite: Consent of instructor) **Odd Spring.**

NRE 582 Forest Tree Improvement - Three semester hours. Practical problems, concepts and techniques to genetic improvement of forest trees (Prerequisite: Consent of instructor) **Even Spring.**

NRE 583 Forest Resource Economics - Three semester hours. Discussion of the market, price, and cost affecting factors as they relate to timber harvesting techniques for determining the best economic alternative (Prerequisite: Consent of instructor) **Fall.**

NRE 584 Ecological Processes - Three semester hours. Review of ecological concepts and processes. Investigations into the ecological role of fire and wetlands. (Prerequisite: NRE 374 or consent of instructor) **Odd Fall.**

NRE 586 Wildlife Techniques – Three semester hours. Introduces students to broad range of methods and equipment used by wildlife professionals to gather information on wild animals and their habitats. **Fall.**

NRE 587 Landscape Ecology – Three semester hours. Study of ecological science with emphasis on interactions between spatial patterns and ecological processes characterized by spatial explicitness and scale multiplicity. Provides integrative theoretical basis, technical tools, and applications for land management. **Fall.**

NRE 589 Forest Ecological Management - Three semester hours. Integrated management of forest resources including plant, site, and landscape processes. Interrelationships of forestry practices,

wildlife and range management, hydrology, recreation, and other demands. (Prerequisite: NRE 373 or consent of instructor) **Spring.**

NRE 590 Advanced Topics in Soil and Plant Science - One to three semester hours. Independent research on current advanced topics of interest in the area of soil and plant science. Topics to be selected by the student and work performed under supervision of a faculty member. (Prerequisites: Graduate standing and consent of instructor) **Each Semester.**

NRE 591 Graduate Seminar - One semester hour. (Prerequisite: Consent of instructor) **Each Semester.**

NRE 598 Master's Report - Four semester hours. A literature review, survey or a report of experimentation. A requirement for all non-thesis majors.

NRE 599 Master's Thesis - One to six semester hours. Research work towards completing the thesis requirements for M.S. in Plant and Soil Science. **Each Semester.**

NRE 701 Applied Forest Ecology – Three semester hours. Ecological and silvicultural foundations for conservation and sustainable use of forest resources, enhancement of wildlife habitat, water and soil protection, and increase recreational value of forest ecosystems with emphasis on upland, hardwood forest ecosystems. **Even Fall.**

NRE 710 Plant Ecology - Three semester hours. Physical and biotic environment of crops in relation to crop culture, production, and geographic distribution, relation among the human population, crop productivity, and the environment. (Prerequisites: NRE 251 and NRE 310) **Odd Fall.**

NRE 715 Seed Biology - Four semester hours. Biological and physiological aspects of seed development, maturation, longevity, dormancy, storability, invigoration treatments, and process of germination in agriculture (crop, vegetable, and tree seeds will be emphasized). (Prerequisites: NRE 440 or consent of instructor) **Odd Fall.**

NRE 716 Modeling Natural Resources Management – Three semester hours. This course is designed to use computer models in managing natural resources. Experience in model development and validation will be provided (Prerequisite: Consent of instructor) Odd **Spring**.

NRE 724 Horticulture Marketing and Management - Three semester hours. An analysis of produce marketing, pricing, postharvest handling, supply and demand, and marketing crops through produce outlets and differing management and scenarios. Resource "game playing." (Prerequisite: Consent of instructor) **Even Summer**.

NRE 725 Stress Physiology of Crops - Three semester hours. Responses of plants to environmental stresses including drought, heat, cold, chilling, biotic and mechanical stress. The mechanism for adaptation or tolerance to these stresses, the metabolic and hormonal responses to onset of stress (Prerequisite: NRE 541) **Even Spring.**

NRE 730 Applied Multivariate Analysis - Three semester hours. Use of MANOVAs, canonical correlation, discriminate analysis, principal component analysis, and factor analysis. Emphasis on applications and interpretation of computer outputs (Prerequisites: NRE 530 and NRE 536) Odd **Fall.**

NRE 731 Advances in Ecological Research – Three semester hours. Further develop graduate student's knowledge, critical thinking, and research skills in forest ecology. The course emphasizes scientific approaches, review of current issues and developments in ecological research. **Fall.**

NRE 733L Advanced Molecular Genetics Laboratory - Two semester hours. Recombinant DNA technology, DNA and mRNA isolation, Genomic and cDNA cloning, physical analysis of recombinants, DNA sequencing, oligonucleotide synthesis and design. (Prerequisites: NRE 533/533L, NRE 663) **Odd Spring.**

NRE 734 Cytogenetics - Four semester hours. Chromosome structure, mechanics and behavior, their significance for problems of genetics, evolution and the origin of species. Emphasizing inter- and intra-chromosomal aberrations and heteroploidy. (Prerequisite: A course in genetics) **Even Fall.**

NRE 735 Advanced Soil Classification - Three semester hours. Principles of the comprehensive system of soil classification and other classification systems, advanced study of soil formation, soil characterization and methods of studying soil genesis. (Prerequisite: NRE 350) **Even Fall.**

NRE 738 Plant Genetics - Two semester hours. Both qualitative and quantitative gene actions are considered. Methods of testing hypotheses, chromosome mapping, selection procedures, gain from selection procedures, measuring heritability and other factors are covered. (Prerequisite: A course in genetics) **Odd Fall.**

NRE 750 Advanced Soil Chemistry - Four semester hours. Surface chemical reactions of colloidal particles in the soil such as the adsorption phenomenon, zeta potential and surface charge. Thermodynamics of soil reactions, action exchange reactions, and clay organic complexes and interactions. A one credit hour lab included. (Prerequisites: NRE 460 and CHE 401-402) **Odd Fall.**

NRE 751 Advanced Soil Physics - Four semester hours. A mathematical study of the physical properties of the soil, to water flow in both saturated and unsaturated soil, soil temperature and heat flow, internal drainage and water redistribution, solute transport and their effects on water uptake by plants. A one credit hour laboratory included (Prerequisite: Consent of instructor) **Odd Fall.**

NRE 763 Advanced Molecular Genetics - Three semester hours. Molecular cloning by recombinant DNA, restriction enzyme and mapping, isolation of recombinant clones, isolation of MRNA from eukaryotes, synthesis of CDNA oligonucleotide site directed mutagenesis, and state of the art DNA sequencing (Prerequisite: Consent of instructor) **Even Spring.**

NRE 767 Plant Virology - Three semester hours. Principles and methods of detection, isolation, chemical constitution, replication, transmission, and control of plant viruses. (Prerequisite: NRE 432 or NRE 562) **Odd Spring.**

NRE 774 Quantitative Approaches in Remote Sensing - Three semester hours. A "hands-on" approach with computer analysis of remotely-sensed data, software design, classification algorithms, and image pre-processing overlay and enhancement. Theory and application of field instrumentation. (Prerequisite: NRE 476) **Odd Spring.**

NRE 775 Advanced Principles of Geographic Information Systems - Four semester hours. GIS applications in environmental and natural resource inventories and analyses; major components of GIS; raster and vector data structures; modules for data input, verification, storage and output; digital terrain models; spatial analysis and modeling. (Prerequisite: CMP 409, URP 526 or their equivalent) **Even Spring.**

NRE 778 Remote Sensing of the Environment II – Three semester hours. Remote sensing of the environment and microwave remote sensing using active and passive sensors. Data analysis and interpretation of the electromagnetic response of the radiometers and radars. Concepts of microwave brightness temperature from passive systems, radar backscatter and emission models. (Prerequisite: NRE 476 and NRE 576) **Even Fall.**

NRE 779 Advanced Environmental Geostatistics – Three semester hours. Application of geostatistics to environmental problems. Methods for determining number of environmental samples and their distribution. Extensive use of the U.S. Environmental Protection GEO-EAS and GEOPACK software for variogram analysis and Kriging. (Prerequisites: MTH 170, NRE 529, NRE 465 and NRE 565) **Even Fall.**

NRE 781 Advanced Hydrology – Study of physical hydrological processes and interactions among hydrology, ecology, biogeochemistry, and human activities. Provides a hands-on experience in various aspects of professional and research hydrology.

NRE 799 Doctoral Dissertation - One to six semester hours. Individual research work towards completing the dissertation requirements for the Ph.D. in Plant and Soil Science. **Each Semester.**

NUTRITION AND HOSPITALITY MANAGEMENT

NHM 501 Advanced Maternal and Child Nutrition - Three semester hours. A study of the nutritional requirements in relation to the biological and physical changes during pregnancy, lactation and infancy through adolescence. Emphasis will be placed on the analysis and application of dietary standards relative to each population group and survey of the latest research.

NHM 502 Advanced Quantity Food Production - Three semester hours. (Practicum Included.) A study of various quantity food system operations in relation to food purchasing, storage, preparation and service. Experience is gained in quantity food preparation and use of institutional food service

equipment through a quantity food laboratory and practicum assignments.

NHM 503 Experimental Foods - Three semester hours. Experimental studies of the effects of variation of ingredients and preparation treatments on the quality characteristics of food.

NHM 504 Breastfeeding and Human Lactation - Three semester hours. A comprehensive review of the theoretical background and the clinical management of breastfeeding and human lactation.

NHM 505 Contemporary Problems in the Hospitality Industry - Three semester hours. Consideration and analysis of relevant industry problems and issues facing management personnel in the hospitality industries.

NHM 511 - Nutrition Education Program Planning and Implementation –Three semester hours. The development and implementation of nutrition education programs for grades K-12. Students will gain experience in developing program objectives, learning strategies, teaching materials and resource files for a nutrition education program.

NHM 530 Special Problems - Three semester hours. An investigation of problems in nutrition or on issues and problems related to food and/or nutrition and family well-being.

NHM 548 Workshop - Three semester hours. Topics will vary. Selected phases of food, nutrition and institutional management will be addressed focusing on current trends and issues in the area.

NHM 610 Current Trends in Food and Nutrition - Three semester hours. Critical evaluation of research in food and nutrition.

NHM 612 Adolescent and Geriatric Nutrition - Three semester hours. Nutritional problems of adolescents and aging individuals, nutritional requirements and dietary requirements of these age groups. The effect of nutrition on the developmental processes of adolescents and the rate of biological aging.

OFFICE SYSTEMS MANAGEMENT

OSM 519 Managerial Communications - Three semester hours. This course is designed to provide MBA students a broad range of managerial communication fundamentals. A review of the theory of human communications, behavioral concepts, communication through letters and memos, and communication about employment will be presented. Major emphasis will be on international business communications, including demographic diversity, the communication technology revolution, oral communications, the report process and research methods, and communication management.

PHYSICS

PHY 500 Analytical Mechanics - Three semester hours. Generalized coordinates, ignorable coordinates, conservative fields, velocity dependent potentials, canonical transformations, and Hamiltonian mechanics. Hamilton's equations of motion and application to simple dynamical systems. Hamilton-Jacobi theory, small oscillations, Larmor precession, asymmetrical top (Prerequisite PHY 321 or equivalent)

PHY 501 Concepts of Modern Physics - Three semester hours. Basic concepts; special theory of relativity, wave-particle duality. The Atom: atom structure, introduction of quantum mechanics; properties of matter; physics of molecules, the solid state; the nucleus, the atomic nucleus, nuclear transformation, elementary particles.

PHY 502 Bio-Physics - Three semester hours. Some physical forces exemplified in man, matter waves, sound and ultrasound, electromagnetic radiation and matter, radioactivity; biological tracers, big molecules - structure of macromolecules and living membranes, speeds of some processes in biological studies on nerve and muscle, the language and concepts of control.

PHY 503 Methods of Mathematical Physics - Three semester hours. Vector analysis, matrix analysis, functions of a complex variable, calculus of residues, differential equations, special functions of mathematical physics, Fourier series, Fourier transforms, tensor analysis. (Prerequisite PHY 303 or equivalent)

PHY 504 Physics in Modern Technology - One to three semester hours. Physical basis of computers, communication systems, propulsion and power generation; energy and environment, properties of special materials, infrared detecting devices, satellites and long range weather predictions, transistors, chips and printed circuits. This course will be taught through seminars by invited

specialists in each of the areas. However, there will be a faculty member coordinating the course who will design techniques for student participation and methods for evaluation of student performance. (Prerequisite PHY 201 or equivalent)

PHY 505 Electromagnetic Theory I - Three semester hours. Maxwell's equations, electrostatics, magnetostitics, wave propagation, radiation, waves in transparent and conducting media, resonant cavities, electrodynamic potentials, multi-pole expansions, covariant formulation of electrodynamics. (Prerequisite PHY 331 or equivalent)

PHY 506 Electromagnetic Theory II - Three semester hours. Radiation from a moving charge, scattering, radiation damping and electrodynamics in material media, special theory of relativity, motion of charged particle in electric and magnetic fields. Cherenkov radiation. Bremsstrahlung, classical theory of dispersion and dispersion relations, electrodynamics of moving media. Magneto- hydrodynamics and plasma physics. (Prerequisite: PHY 505)

PHY 518 Thermodynamics and Statistical Mechanics - Three semester hours. A survey of thermodynamics from classical and statistical mechanics point of view. (Prerequisite PHY 341 or equivalent)

PHY 519 Advanced Statistical Mechanics - Three semester hours. Foundations of classical and quantum statistical mechanics, kinetic theory of gases, Liouville and Boltzman H theorems, ensembles, quantum statistical mechanics, statistics of independent particles, applications to magnetic phenomena and cooperative interactions, non-equilibrium statistical mechanics. (Prerequisite: PHY 518)

PHY 521 Quantum Mechanics I - Three semester hours. Postulates of quantum mechanics. Schrödinger equation. Simple systems, elementary scattering theory, potential wells and tunneling, bound states, Hillbert's Space, matrix mechanics. (Prerequisite PHY 421 or equivalent)

PHY 522 Quantum Mechanics II - Three semester hours. Angular momentum, coupling, Wigner-Eckart theorem, Application to atomic spectra, elementary quantum theory of electromagnetic fields; elementary perturbation theory. (Prerequisite: PHY 521)

PHY 525 and PHY 600 Solid State Physics I and II - Three semester hours. Classification of solids by forces, properties and symmetries, lattice vibration and its quantization in terms of phonons, interaction of phonons with electromagnetic fields. Bloch theorem, band structure, optical, dielectric and magnetic phenomena. (Prerequisite PHY 451 or equivalent)

PHY 531-532 Mathematical Methods in Applied Physics I and II - Three semester hours. Review of analysis in the complex plane, evaluation of definite integrals, contour integration, differential equations and special functions. Green's function, Fourier integrals, linear vector spaces. (Prerequisite PHY 503 or equivalent)

PHY 537 Advanced Laboratory - Three semester hours. Selected experiments in optics, atomic and nuclear and solid-state physics, high vacuum and machine shop experience.

PHY 552 Problems in Physical Science - Three semester hours. Physics of particles and aggregate physics of fields, wave physics, quantum physics.

PHY 610 Introduction to Solar-Terrestrial Physics - Effects of solar disturbances on the Earth's environment. Distinct modes of energy and momentum transfer from the Sun's surface to the Earth. Formation of solar wind. Interplanetary magnetic field and magnetic sectors. Formation of the magnetosphere. Effects of quiet and disturbed solar wind on the magnetosphere, ionosphere and thermosphere. Solar flares and coronal mass ejections. Effects on man-made facilities. Space weather forecast and prediction.

PHY 612 Physics of the Sun and the Solar Wind - The structure of the Sun. Heat transport and convection inside the Sun. The solar atmosphere and its structure: the photosphere, chromosphere and corona. Solar spectrum and chemical composition. The Sun's magnetic fields. Quiet and active Sun. Sunspots and solar cycle. Solar flares and particle acceleration. Coronal mass ejections. The solar wind, its dependence on solar cycle and heliographic latitude. The interplanetary magnetic field and its transport to the Earth. Solar events and space weather.

PHY 614 Physics of the Magnetosphere - Formation and structure of the magnetosphere. Cold and hot plasma in the magnetosphere. Electric and magnetic fields and motion of charged particles in the magnetosphere. Transverse and field-aligned currents in the magnetosphere. Magnetospheric

convection. Geomagnetic disturbances and storms. Waves and resonant oscillations in the magnetosphere. Geomagnetic pulsations. Particle acceleration and particle precipitation into the ionosphere. Types of auroras and global distribution of auroral activity. Acceleration of particles to high energies and generation of the radiation belts. Indices for geomagnetic activity, their meaning and importance for space weather prediction.

PHY 617 Physics of the Ionosphere and Thermosphere - Survey of the upper atmosphere and ionosphere. Stratifications based on composition, temperature and ionization. Morphologies. Diurnal, seasonal, annual and solar cycle variations. Solar and geomagnetic control of the ionosphere and atmosphere. Effects of solar electromagnetic and corpuscular radiation and cosmic rays. Neutral atmospheric and ionospheric modeling. Active and passive remote sensing of the atmosphere and ionosphere.

PHY 620 Radio Wave Propagation in the Ionosphere - Historical perspective. Characteristics of electromagnetic waves and plasmas. Propagation electromagnetic of waves through homogeneous and inhomogeneous media, isotropic and anisotropic media, and dispersive media. Plasma properties. Motion of charged particles in electric and magnetic fields. Magnetoionic theory and Appleton's formula. Radio sounding of the ionosphere: ionosonde and incoherent scatter sounders. Topside sounding from satellites.

PHY 625 Planetary Atmospheres and Ionospheres - Atmospheres of inner planets (Mercury, Venus, Earth and Mars) and outer planets (Jupiter, Saturn, Uranus and Neptune): Composition, pressure and temperature structures. Circulation and convection. Similarities and differences. Photochemistry in Jovian atmospheres. History and evolution. Atmospheric escape. Atmospheric clouds. Ionospheres and magnetospheres of inner and outer planets. Similarities and differences. Planetary spacecraft missions. Atmospheres of Pluto, Titan and Triton.

PHY 632 Elements of Materials Science - Three semester hours. Engineering requirements on materials, arrangement of atoms in materials, metallic phases and their properties, ceramic phases and their properties, multi-phase materials. The effect of macrostructure upon properties of materials, corrosion and thermal behavior of materials in service. (Prerequisite PHY 451 or equivalent)

PHY 633 Physical Metallurgical Principles - Three semester hours. Principles underlying the structure and behavior of metals, equilibrium and non-equilibrium phase relations in metal and alloys, kinematics of diffusion and nucleation. Phase transformations, heat treatment and hardenability. (Prerequisite PHY 632)

PHY 634 Crystal Physics and Crystal Growth - Three semester hours. Description and determination of atomic arrangement in perfect and imperfect crystals, binding forces elastic waves in solids, photons and lattice vibration, Brilliouin zones, thermal properties of solids, X-ray diffraction, Fourier analysis in diffraction. Basic principles and phenomena involved in the growth and perfection of crystalline solids from melt, solution, vapor, electrodeposition, etc. Discussion of the merits of various preparation methods. (Prerequisite PHY 632)

PHY 635 Magnetic and Optical Properties of Materials - Three semester hours. Dia-, para- and ferro-magnetism, magnetic relaxation and resonance phenomena. Electronic and thermal conductivity of metals, superconductivity. Relationship between electronic structure and optical properties of solids, magneto-optics infrared photoconductivity, excitations, infrared and Raman spectra due to lattice vibrations, impurity-induced lattice absorption, spectra of ions in crystals. (Prerequisite PHY 632)

PHY 636 Semi-conductor Physics - Three semester hours. Semiconductor principles, electron band theory of solids. Electronic properties of insulators and semiconductors, Hall effect. Defect states and interaction in semiconductors, elemental and compound semiconductors. Recombination and trapping, organic semiconductors. (Prerequisite PHY 632)

PHY 637 Special Topics in Materials Science - Three semester hours. Topics will be selected in accordance with the special interest of students. (Consent of Instructor)

PHY 638 Imperfection in Solids - Three semester hours. General theory of imperfections, relation of lattice defects to the physical properties of crystals, point defects and their relation to transport properties in metallic, covalent and ionic crystals, geometric and energetic aspects of dislocation theory, relation between dislocation mechanics and mechanical properties of crystals, structure and properties of interfaces. (Prerequisite PHY 632)

PHY 639 Electron Spectroscopy and Electron Diffraction - Three semester hours. Principles and techniques of electron microscopy. Use and maintenance of electron microscopes, preparation of specimens for electron microscopy by replication transmission, study of fine structures in hardened alloys, demonstration of dislocation movements, distribution and identification as to type, Burger's vector. (Prerequisite PHY 632 or equivalent)

PHY 640 Mechanical Behavior of Solids - Three semester hours. Behavior of materials under stress, elastic/plastic deformation in single crystals, critical resolved shear stress, microscopic yield, ductility, mechanical twinning, effect of temperature and rate of deformation, mechanical properties in tension, true stress-strain, work hardening compression, creep, fracture mechanics. (Prerequisite PHY 632)

PHY 642 Materials for Energy Production Devices - Three semester hours. Material limitations for the operation of fossil fuel and nuclear power generation systems, microstructure and properties of materials in terms of current and future demands on temperatures, stresses and chemical and radiation attacks, possible future materials. Solar cells and selective solar radiation filters. (Prerequisite PHY 632 or equivalent)

PHY 644 Modern Composite Materials - Three semester hours. Fundamental aspects of modern composite materials, particulate and fibrous reinforcement, micro-mechanics, failure modes, fiber- reinforced plastics and metals, inorganic particulate composites and dispersion-strengthened metals, testing and analysis concepts. Ceramic materials and applications. (Prerequisite PHY 632)

PHY 648 Advanced Laboratory in Material Science - Three semester hours. Experiments will be conducted out of the following: X-ray diffraction, Hall effect and transport properties, Dielectric constant measurement as a function of frequency. Study of dislocations using microscope, specific heat measurements with DSC-4.

PHY 649 Geometrical Optics - Three semester hours. Review of image formation, ray tracing, optical invariants, monochromatic and chromatic aberrations, geometrical image evaluation. (Prerequisite PHY 401 or equivalent)

PHY 650 Instrumental Optics - Three semester hours. Optical systems design, testing optical components, fabrication, coating, mirrors and prisms, introduction of Fourier Optics. (Prerequisite PHY 401 or equivalent)

PHY 651 Spectroscopy - Four semester hours. Spectra of atomic and molecular systems, energy levels, vibrational and rotation levels, lifetimes, Raman spectra, molecular and atomic lasers. (Prerequisite PHY 401 or equivalent)

PHY 655 Optics Laboratory - Four semester hours. Selected experiments in interference, diffraction, optical imaging systems, holography, lasers, detectors, UV, visible and IR spectroscopy.

PHY 657 Physical Optics and Interferometry - Four semester hours. Propagation and vector nature of light, dipole radiation, Lorentz atom, Rayleigh scattering, dispersion, Coherence and interference, design and use of conventional two beam and multibeam interferometers, evaluation of interferograms. (Prerequisite PHY 649)

PHY 660 Quantum Optics - Three semester hours. Planck's radiation law and Einstein coefficients, quantization of radiation field, photon concept, photon statistics, interaction of radiation with matter, spontaneous emission, Dicke super-radiance. (Prerequisite PHY 521 or equivalent)

PHY 663 Electro-Optical Systems - Four semester hours. Theory, design and use of electro-optical devices and system optical properties, performance criteria, applications of electro-optics, magneto-optic and acousto-optic devices, behavior of electro-optic devices as circuit elements, modulators rotators, and isolators. (Prerequisite PHY 657 or equivalent)

PHY 665 Lens Design - Four semester hours. Paraxial Optics, aberration theory, image assessment, Fourier optics, merit function, mathematical methods, least squares, damped lest squares, decent methods, metric. (Prerequisite PHY 649 or equivalent)

PHY 670 Non-Linear Optics - Three semester hours. Photon echo, self-induced transparency, self-focusing, scattering of light, parametric amplification, harmonic generation, damage effects. (Prerequisite PHY 657 or equivalent)

PHY 671-672 Laser Physics I and II - Four semester hours. Density matrix-formulation of interaction of radiation with matter, laser threshold condition, optical resonators, pressure effects, survey of laser types and mechanisms. (Prerequisite

PHY 657 or equivalent)

PHY 675 Thin Films and Integrated Optics - Four semester hours. Semiconductor and metallic films, design methods of multilayer interference filter coating, guided waves in dielectric films and fibers, beam-to-guide couplers, survey of devices for integrated optics. (Prerequisite PHY 671 or equivalent)

PHY 680 Holography - Three semester hours. The Gabor hologram, hologram as a zone plate, Fresnel image, Fourier-transform and reflection holograms, applications to interferometry, information storage, and optical processing. (Prerequisite PHY 657 or equivalent)

PHY 690 Introduction to Biophotonics – Four semester hours. This is an interdisciplinary course dealing with applications of laser techniques to biology and medicine. Topics include fundamentals of light matter interaction, principles of lasers and laser technology, interaction of light with cells and tissues, bioimaging applications, optical biosensors including fluorescence sensing and fiber-optic biosensors, light activated therapy, tissue engineering with light, microarray technology for genomics and proteomics, principle of laser tweezer action and manipulation of single DNA molecules, Bionanophotonics and Biomaterials for photonics.

PHY 692 Nanophotonics – Three semester hours. This will be an interdisciplinary course dealing with applications related to fusion of nanotechnology with photonics. Topics include nanoscale optical and electronic interactions, near field optical interactions, quantum dots, quantum wells, quantum wires, metallic nanoparticles and metallic nanostructures, rare-earth doped nanostructures, epitaxial growth and nanochemistry, nanostructured polymeric media, photonic crystal sensors, near-field nanolithography, and bioderived materials.

PHY 699 Thesis - One to three semester hours. Research work towards completing the thesis requirement.

PHY 701 and PHY 791 Applied Solid State Electronics I and II - Three semester hours. Semiconductor devices, rectifier and amplifier circuits, logic control, analog and digital transducers, optoelectronics, VLSI circuit fabrication memory devices, computer aided engineering of VLSI systems, VLSI microprocessor system design. (Prerequisite PHY 451 or equivalent)

PHY 703 Laser Systems - Four semester hours. Survey of a variety of laser systems, and prepares the student to contribute to the design of new laser systems. The course starts with a general description of lasers and optical amplifiers in terms of relatively simple rate equations. Various classes of lasers (e.g., optically-pumped solid lasers, gas lasers, organic dye lasers, etc.). Designs of specific laser systems from each class will be described in detail (e.g., CW Nd: YAG laser, argon ion laser, rhodamine 6G dye laser, etc.). Other topics, which will be covered, include: optical resonator mode theory, techniques for controlling and modifying laser outputs, and techniques for measuring the spectral and temporal properties of laser beams. (Prerequisite PHY 671 or equivalent).

PHY 705 Solid State Diffusion - Three semester hours. Fundamentals of diffusion in the solid state. Special emphasis to diffusion kinetics for atoms and crystals. (Prerequisite PHY 634)

PHY 710 Thermodynamics of Materials - Three semester hours. Advanced treatment of thermodynamic properties of inorganic materials. Introductory thermodynamics. Application of laws of thermodynamics to chemical behavior of elements, compounds and solutions. Discussion of heterogeneous equilibrium, chemical reactions and thermodynamics of structural defects and interfaces. (Prerequisite PHY 518 or equivalent)

PHY 712 Optical Phase Conjugation I - Three semester hours. Conjugation by parametric mixing in transparent media, transient response of Kerr-like phase conjugation, degenerate four wave mixing, optical phase conjugation in photo refractive crystals stimulated Raman scattering and Brilliouin scattering, wave front reversal, and phase conjugation under stimulated scattering. (Prerequisite PHY 670 or equivalent)

PHY 714 Optical Phase Conjugation II - Three semester hours. Phase conjugation and high resolution spectroscopy by resonant degenerate four wave mixing in semiconductors, wave front reversal by a reflecting surface optical resonator using phase conjugate mirrors, applications of optical conjugation. (Prerequisite PHY 712 or equivalent)

PHY 715 Fiber Optics - Three semester hours. Basic principles of optical fiber communication and applications, materials and fiber preparation, propagation in optical fibers, wave guides and their fabrication, fiber optic cables and cable connectors,

detectors and measurement techniques, semi-conductor light sources for optical fiber communications, system design. (Prerequisite PHY 657 or equivalent)

PHY 720 Radiation effects in Crystalline Solids - Three semester hours. A unified treatment based on governing principles in defect structure thermodynamics and kinetics of equilibrium and nonequilibrium systems. Discussion of radiation effects in metals and semiconductors. (Prerequisite PHY 632 or equivalent)

PHY 725 Optical Fiber Communications - Three semester hours. Basic concepts of fiber-optic communications, channel multiplexing and modulation formats, light emitting diodes and semiconductor lasers, receiver noise, bit-rate error, system architecture, local-area networks, dispersion broadening, coherent lightwave systems, multichannel communication systems, multiplexing and demultiplexing, crosstalk, optical amplifiers, soliton communication systems, communication systems of future. (Prerequisite PHY 715 or equivalent)

PHY 730 Solidification Process - Three semester hours. Principles of control of structure, properties and shape in processes involving liquid-solid and vapor-solid transformations. Heat flow, solute redistribution, nucleation, growth kinetics. Resultant structures and properties. (Prerequisite PHY 634)

PHY 735 Materials for Radiation Detectors - Three semester hours. This course will be more extensive rather than intensive. Discussion of materials problems for devices using ceramics, semiconductors and pyroelectric materials. Materials for detectors for ranges in x-ray, gamma-ray, ultra-violet, visible, near-infrared and far–infrared. (Prerequisite PHY 632 or equivalent)

PHY 750 Laser Spectroscopy - Three semester hours. Turnable coherent light sources, Doppler limited absorption and fluorescence spectroscopy with lasers, Laser Raman as Brillouin Spectroscopy, High resolution sub-Doppler spectroscopy, trim-resolved laser spectroscopy, optical Ramsay fringes, ultra-high resolution. (Prerequisite PHY 651 or equivalent)

PHY 755 Optics Laboratory II (Sample List) - Three semester hours.

(1) Growth and decay of holographic grating formed in photo-refractive crystals with coherent laser beams.
(2) Optical phase conjugation through degenerate four wave mixing in photo-refractive crystals.
(3) Laser photo acoustic spectroscopy of I2 using N2 laser-pumped dye laser
(4) Holography
(5) Laser photo-acoustic studies in gases using Ar-ion laser
(6) Optogalvanic spectrum of Ne using tunable dye laser
(7) Laser-excited fluorescence in laser material crystals

PHY 771 Signal Processing - Three semester hours. Fourier analysis and two dimensional line, a systems-scalar diffraction theory, Fresnal and Fraunhofer diffraction frequency analysis of optical imaging systems, optical filters, coherent optical processing, incoherent optical processing, hybrid processors, and linear and non-linear optical data processing. (Prerequisite PHY 505 or equivalent)

PHY 775 Thin Film and Integrated Optics II - Three semester hours. Optical wave guide modes, wave guide fabrication techniques: deposited thin films, molecular beam epitaxial crystal growth, substantial dopant atoms, wave guide losses, input and output couplers, electro-optic modulators, acousto-optic modulators, semiconductor laser and modulation, hetero-structure lasers, and integrated optical detectors. (Prerequisite PHY 675 or equivalent)

PHY 796-97 Advanced Selected Topics in Materials Science - One to four semester hours. (Consent of Instructor)

PHY 799 Dissertation - One to six hours. Individual research towards completing dissertation requirements.

POLITICAL SCIENCE

PSC 502 International Relations - Three semester hours. An evaluation of all types of international organizations and critical analysis of the foreign policies of the major nations and their relationship with each other. Particular attention will be given to the emerging nations of Africa and Asia.

PSC 511 American Political Thought - Three semester hours. American political thought from colonial Puritanism to the present, including the philosophies of John Cotton, Roger Williams,

Thomas Paine, Jefferson, Hamilton, Garrison, Calhoun, Wilson, the Roosevelts, etc.

PSC 610 Contemporary Problems in American Government - Three semester hours. An inquiry into the nature of recently emergent sociopolitical phenomena and the fashion in which they impact the political process in the United States. Problems relative to the functioning of traditional political institutions and processes, the advent of unconventional modes of political activity, and the increased importance of international affairs as a constraint on political decision making, will be principal points of emphasis.

PSC 698 Individual Research in Political Science - Three semester hours. Independent reading or research directed by assigned faculty involving a survey of existing research on a given topic, an area of interest to the student, or a report on the early stages of work on a thesis.

PHYSICAL EDUCATION

PED 501 Sociology of Sport and Physical Education – Three semester hours. This course is a comprehensive study in the fields of physical education with special emphasis on current issues, trends and problems. Students will also be provided with a broad perspective on the economic, political, and social aspects of sports in the western hemisphere. Prerequisite: none.

PED 502 Fitness/Research Application and Evaluation – Three semester hours. Investigation and comparative analysis of the latest research in contemporary areas of education such as competency based education, school-based management, fitness and wellness concepts and total quality education.

PED 503 Advanced Exercise Physiology – Three semester hours. In-depth background regarding the physiological effects of physical activity on the human body. This course represents a contingency-based approach to developing additional background information and skills specific to application, analysis, synthesis and evaluation levels of learning as required by the graduate program in physical education.

PED 504 Curriculum and Instruction in Physical Education – Three semester hours. Designed to assist with the development of specific analytical skills using various instructional constructs. The dynamics of curriculum building, formulation of a plan of evaluation and how to differentiate its components are discussed in detail.

PED 505 Procedures – Three semester hours. Develop specific skills in the total approach to self-appraisal and student success. In addition, the student is required to research the following topics and their interrelatedness: content, analysis, test-item analysis, test-banks, behavioral accountability, evaluation and computer-based instructions, mastery learning and personalized systems of instruction. Special seminars are included.

PED 506 Evaluation and Measurement in Physical Education & Sport – Three semester hours. This course is designed to enhance students understanding and ability to apply strategies used in evaluation and measurement of performance in physical education and exercise science. Emphasis will be placed on strategies appropriate for gathering data for research and assessment purposes.

PED 507 Management in Physical Education and Athletic Programs - Three semester hours. The purpose of this course is to promote the development of skills in planning, organizing, budgeting, supervision, evaluation and other essential management functions. Strategies for purchasing and managing equipment and facilities, maintaining a legal environment and developing effective lines of communication will also be examined.

PED 508 Psychomotor Foundations of Sport – Three semester hours. The course includes an overview of the relationships between psychological factors and motor performance; research methods associated with motor behavior and sport psychology; and review of the literature and current issues regarding the psychomotor variables related to sports participation and competitive athletics.

PED 509 Coaching Theory and Techniques – Three semesters hours. The course is designed to expose the student to new and/or different techniques, theories and philosophies of coaching. It includes an in depth examination of the philosophies factors that impact individuals and their performance in the athletic setting. The student will develop intervention strategies, techniques and skills to enhance their physiological effectiveness in the athletic domain.

PED 512 Advanced Biomechanics – Three semester hours. This course was designed to provide

the student with a generalized, qualitative approach to mechanical kinesiology or biomechanics. This course will follow a systematic program to enable the student to build a foundation for understanding the science of motion.

PED 595 Internship in Physical Education - Six semester hours. This course is an intensive fourteen (14) week, full-time supervised internship in a public school. Weekly on-campus seminars are an integral part of the course.

PED 598 Research in Physical Education and Sport– Three semester hours. Designed to provide the student with opportunities involving the use of scholarly and scientific inquiry. Topics may be selected from various interdisciplinary areas assigned to teach education and more specifically, physical education

PSYCHOLOGY

PSY 502 Descriptive & Inferential Behavioral Statistics – Three semester hours. Methods of statistics; the meaning and importance of statistics as a scientific tool in social science research, including the following topics: sampling, frequency distributions, central tendency, graphic representation, reliabilities, hypothesis testing, standard deviation, regression, estimation, and application

PSY 507 Introduction to Rehabilitation Counseling Three semester hours. This course includes basic principles of rehabilitation; history of rehabilitation philosophy and legislation; rehabilitation counseling ethics; and disability conditions. Organizational structure of the vocational rehabilitation system, including public, private for-profit, and not-for-profit service settings; laws and ethical standards affecting rehabilitation counseling practice, with examples of their application; and societal issues, trends, and developments as they relate to rehabilitation and job placement in the world of work.

PSY 508 Job Development and Placement - Three semester hours. This course relates the psychological meaning of work, the vocational development theories of occupational choice, and labor market information to current methods of job development, job analysis, selective placement and follow-up with workers who are disabled.

PSY 509Vocational Assessment - This course is designed to provide students with an overview of vocational evaluation and assessment, work adjustment, personal-social adjustment, and independent living services for persons with disabilities and special needs primarily as they are applied in rehabilitation facilities. Field trips to facilities providing evaluation are required.

PSY 510 Rehabilitation High and Low Technology Three semester hours. This course provides an overview of high and low technology focused on adaptive and assistive rehabilitation technology, including aids for daily living. This technology will assist individuals with disabilities to achieve their maximum potential, and provide training to students interested in gaining expertise in the use of technology while working with people with disabilities across the human lifespan.

PSY 512 Adolescent Psychology – Three semester hours. Study of the age period between 12 and 19. Physical, social, and psychological development during this period will be investigated. The overlapping of several theoretical orientations will be integrated

PSY 514 Advanced Developmental Psychology – Three semester hours. Study of the physical, mental, emotional and social growth of the individual and their relation to the learning process

PSY 515 Experimental Psychology – Three semester hours. Scientific investigation of motor learning, verbal learning, psychophysics, and individual differences.

PSY 516 Physiological Psychology – Three semester hours. A functional investigation of basic neural and endocrine processes and their correlation with behavior.

PSY 530 Individual & Family Therapy – Three semester hours. Application of major theoretical approaches and models of treating individuals and families with problems.

PSY 553Case Management for Rehabilitation - The case management process is taught, including case finding, service coordination, referral to and utilization of other disciplines, and client advocacy; planning for the provision of independent living services and vocational rehabilitation services; identification and use of community resources and services in rehabilitation planning and report writing.

PSY 554 Medical Aspects and Adjustment in Rehabilitation -
This course provides an orientation to the medical profession and related rehabilitation professions. Discussion of body systems and functions, malfunctions and common physiological and diagnostic treatments and rehabilitative procedures as well as implications of disabilities within the overall scope of the rehabilitative process including: rehabilitation considerations, vocational implications, clinical manifestations and functional limitations will be discussed including all major areas of client information. The course includes synthesis of client information; rehabilitation plan development; knowledge of service delivery; identification of community, state, and local community resources, initiating, managing, and tracking individual clients.

PSY 555 Personality Theory – Three semester hours. Major theories of psychology and counseling, their tenants of personality development, psychopathological personality development, and therapeutic intervention

PSY 556 Group Dynamics - Three semester hours. Basic understanding of group development, dynamics, and counseling theories; group structure, group leadership styles, and group counseling methods and skills. (Prerequisite: PSY 559)

PSY 557 Organization and Administration of Guidance Services – Three semester hours. Lectures, case methods, reading demonstration projects, group processes, and individual work used to explore the philosophy of guidance services, functions, and programs.

PSY 558 Use and Interpretation of Tests – Three semester hours. Methods of selecting appropriate group tests, understanding of individual tests and clinical reports, and application of testing results to learning situations.

PSY 559 Counseling/Techniques – Three semester hours. Intensive study of basic theories and techniques of counseling and psychotherapy, and their application in the counseling and psychotherapy settings. (Prerequisite: PSY 555)
PSY 560 Occupational Psychology – Three semester hours. Study of basic career development theories. Occupational and educational information sources and systems; career decision-making and leisure counseling; career development and effectiveness evaluation.

PSY 561 Individual Testing – Three semester hours. An intensive study of the construction, administration, and scoring of the Stanford Binet, the Wechsler Adult Intelligence Scale, and the Wechsler Intelligence Scale for Children. (Prerequisite: Consent of Instructor)

PSY 563 Learning Theory – Three semester hours. A study of the various learning theories and their application in counseling and education.

PSY 564 Independent Study – Three semester hours. The student with the major advisor may elect to study a particular problem area of breadth and depth of knowledge. A research paper is required as a product outcome of such study.

PSY 571 Abnormal Psychology – Three semester hours. Study of behavioral disorders classified in the Diagnostic and Statistical Manual.

PSY 585 Research in Psychology – Three semester hours. The design of research studies in psychology and guidance. The student designs a study and carries it out under the supervision of the instructor. Reports of research done by the student are read and evaluated by the instructor and suggestions are made as to their improvement. (Prerequisite: PSY 502)

PSY 587 Cognitive Behavior Psychology – Three semester hours. The design of research studies in psychology and guidance. The student designs a study and carries it out under the supervision of the instructor. Reports of research done by the student are read and evaluated by the instructor and suggestions are made as to their improvement. (Prerequisite: PSY 502)

PSY 590 Personality Assessment – Three semester hours. Develop assessment capabilities of the student in the clinical setting an d provide a basis for clinical intervention in the patient's emotional.

PSY 591 Psychosocial Aspects -
Testing and assessment of the functional capacities of individuals with disabilities and appropriate intervention resources including assistive technology as appropriate; psychosocial aspects of selected disabilities to include alcoholism, chemical substance abuse, developmental delays, mental retardation, and mentally and emotionally disturbed. Issues to be addressed will include the impact of disability on the individual, family, and personal, social and cultural adjustment to life, and litigated disability cases. The administration of tests, test selection, test scoring &

limitations as well as interpretation of test results, and resources for assessment will be a consideration.

PSY 592 Professional Orientation/Issues- Three semester hours. An introduction to the professional practice of psychology and counseling, including a broad survey of issues such as its history and trends, ethical and legal standards, preparation standards and credentialing, roles and functions, goals and objectives and organizations and associations of the profession.

PSY 594 Advanced Educational Psychology – Three semester hours. This course provides an exploration of the principles of psychology applied to teaching and learning, techniques of educational evaluation, and models of cognitive and social development.

PSY 595 Counseling Diverse Populations– Three semester hours. Emphasis on developing knowledge, skills, and attitudes for more effective counseling with person different from the counselor regarding characteristics such as cultural race, gender, sexual orientation, physical disability, and religious preference. Substantial attention is given to developing awareness of one's own values, attitudes, and beliefs as they relate to counseling in a diverse society. Provides an understanding of how diverse values and morals, interaction patterns, social conditions, and trends related to diversity affect counseling.

PSY 597 Practicum – Three semester hours. The goal of practicum is to provide students with a supervised counseling experience in individual group counseling. Emphasis will be placed on basic counseling skills and application of knowledge. (Prerequisite: PSY 559)

PSY 599 Master's Thesis – Six semester hours. The presentation in proper format of an original piece of research. Four faculty members shall guide the student in the completion of the thesis.

PSY 602 Industrial Psychology – Three semester hours. Psychology as a functioning instrument in ascertaining work attitudes, motivations, job satisfaction, morale, production, potential, fitting the workers to the job, and establishing worker-employer rapport.

PSY 603 Introduction to School Psychology – Three semester hours. An introduction of the psychologist to the school setting. The cognitive role will be a major focus of attention.

PSY 605 Psychopharmacology – Three semester hours. Course designed to acquaint non-medical mental health professionals (counselors, social workers, and psychologist) with the category and therapeutic effects of drugs used to treat behavioral disorders, as well as the adverse effects of both prescribed and major illicit drugs.

PSY 607 Human Sexuality – Three semester hours. An intensive study of the physiological, psychological, sociological, and ethical considerations of human sexuality.

PSY 610 Psychopathology – Three semester hours. Acquaints the student with the behavioral disorders in the Diagnostic and Statistical Manual, and the gathering of clinical and psychometric data to make differential diagnoses.

PSY 612 School Counseling Internship – Three semester hours. This placement is in a school setting consistent with the intern's major area of concentration. The school's philosophy, organization, and yearly calendar of counseling or activities will be stressed. Academic, as well as personal-social counseling and vocational exploration, will be emphasized

PSY 614 Introduction to Vocational Rehabilitation Counseling – Three semester hours. Overview of the field of rehabilitation. It focuses on the institutional approach to the problems of clients.

PSY 616 Internship in Vocational Counseling I Three semester hours. Students spend a minimum of 300 hours in the field working part time (20 clock hours) a week during normal working hours under direct supervision of university faculty member and a selected staff member of a rehabilitation setting.

PSY 61 Internship in Rehabilitation Counseling II Three semester hours.
Students spend a minimum of 300 clock hours in the field working part time (20 clock hours) a week during normal working hours under direct supervision of university faculty member and a selected staff member of a rehabilitation setting.

PSY 618 School Psychometry Internship – Three semester hours. Satisfactory performance as a school psychometrist in a full-time internship of the equivalent in a school or schools supervised by a qualified school psychologist. (Prerequisite: Consent of Instructor)

PSY 620 & 621 Counseling Internship – Six semester hours. The first practicum experience is designed to acquaint the student with the working environment. Emphasis is on the acquisition of procedural skills in the work environment. The student is expected to learn the procedures for intake and case openings and the record keeping procedure, and to know all of the services of the comprehensive mental health clinic, as well as to be cooperative in carrying out assigned tasks. (Prerequisite: Consent of Instructor)

PSY 622 & 623 Clinical Internship — Six semester hours. The student is expected to learn the procedures for intake and case openings and the record keeping procedure, and to know all of the services of the comprehensive mental health clinic, as well as to be cooperative in carrying out assigned tasks. The student is expected to be a front-line therapist, utilizing the therapeutic techniques called for by the history and present symptoms. (Prerequisite: Consent of Instructor)

PSY 625 Personnel Psychology – Three semester hours. The principles of employee selection, retention, promotion, and compensation are covered in this course.

PSY 626 Seminar in Personnel Psychology – Three semester hours. This course seeks to cover all aspects of the personnel administrator's job. Topics covered include affirmative action, health care compensation packages, career ladder concepts, profit sharing, in-house educational programs, and company recreation programs.

PSY 627 Organizational Psychology – Three semester hours. Beginning and development of organizations and the role they play in society. It utilizes a systems approach to understanding the dynamics of an on-going organization.

PSY 645 & 646 Internship in School Psychology – Six semester hours. Supervised experiences in the school in actual professional situations as a school psychologist.

PSY 653 Counseling the Elderly – Three semester hours. A study of the unique needs of the elderly as seen in therapy. Specific techniques that have been tried and evaluated for their appropriateness either the elderly will be studied.

PSY 660 Consultation – Three semester hours. Strategy for counselors functioning as consultants within elementary schools, secondary schools, post-secondary schools, community agencies, and mental health facilities.

PSY 661 Needs Assessment – Three semester hours. Various uses of needs assessment, such as personal environment, program planning and evaluation, and exploration of various models of needs assessment.

PSY 665 Seminar in Psychology – Three semester hours. Seminar designed to meet the educational needs of current students in Psychology and Guidance. Subjects of contemporary interest will be explored in depth by students and reported to the class. (Open to AA students only)

PSY 682 Problems in Counseling with Adolescents – Three semester hours. Consideration of the special problems encountered in counseling with adolescents. Methods of dealing with these problems and improving the counseling techniques (Open to AA students only)

PSY 683 Problems in the Administration of Guidance Services – Three semester hours. Dealing with the problem of administering a guidance service in educational or community agencies. Problems of leadership program evaluation and planning. (Prerequisite: Course in Organization and Administration of Guidance Services. Open to AA students only)

PSY 686 Advanced Social Psychology – Three semester hours. Group structure, topology, and dynamics. Communications within and between people and the improvement of impaired relationships. Group influence in changing behavior.

PSY 698 Field Research – Three semester hours. A quasi-experimental research project designed to evaluate or develop programs in schools. A research design and methodology must be approved as well as data analysis and techniques.

PSY 699 Research Thesis/Project – Six semester hours. An original research of sufficient magnitude to warrant the conclusion that candidates show evidence of mastery of research tools, techniques, and understanding.

READING EDUCATION

RDG 512 Language Arts Across the Curriculum - Three semester hours. This course provides students with the knowledge, skills, and dispositions required of a teacher of language arts. Course content includes the integration of the components of the language arts into the self-contained and departmentalized/content area classrooms at P-12 levels. Knowledge and practical insights for teaching language arts will be gained by examining scientifically based research and effective methods of instruction. Topics to be covered include reading, writing, listening, speaking, spelling, vocabulary, grammar and usage, and handwriting.

RDG 515 Content Area Reading – Three semester hours. This introductory course provides students with the knowledge, skills, and dispositions required of a teacher to build comprehension in the content areas at the P-12 levels through the activation of prior knowledge; metacognitive strategies; schema theory; use of before, during, and after reading strategies; amount of reading; text structure; deep discussion and questioning; vocabulary development; writing connected to reading; and study skills

RDG 516 Assessing and Accelerating Reading Ability – Three semester hours. Students will learn techniques for assessing reading ability and designing and implementing instruction to improve the reading ability of students reading below grade level at the P-12 levels. Topics to be covered include the role of the diagnostic teacher, gathering data formally and informally, designing diagnostic lessons, selecting appropriate instructional techniques and materials, and the role of technology. Cognitive, home, school, and other factors will be used to gather data to diagnose a student's strengths and weaknesses in reading and design a research-based program for acceleration of reading ability.

RDG 517 Children's and Adolescent Literature – Three semester hours. This course provides students with the knowledge, skills, and dispositions required of a teacher relative to the various genres of children's and adolescent literature and their relationship to beginning reading, enhancement of reading comprehension, and intervention instruction in the various content areas.

RDG 595 Internship for Reading Specialist Certification – Six semester hours. This internship provides students with opportunities to refine and implement the knowledge, skills, and dispositions required of a reading specialist in school and classroom settings. Students will demonstrate their competencies in providing and/or assisting with the implementation of effective, research-based developmental reading and reading intervention instruction, literacy programs at the P-12 grade levels, and professional development activities.

RDG 700 Trends and Issues in Reading/Literacy – Three semester hours. Students will learn about the historical movements (basal readers, whole language, phonics, multicultural influences, etc.) that have affected current practices in reading/literacy research theories and instruction. Various aspects of reading will be traced back to their beginnings.

RDG 701 Assessment in Reading/Literacy – Three semester hours. Political, social, economic, and psychological implications of reading/literacy assessment are explored through examination of the testing movement and of issues that have emerged from the movement.

RDG 702 Quantitative Research Methods in Reading/Literacy – Three semester hours. Students will learn quantitative research methods that are used to investigate reading/literacy. Students will work collaboratively with a faculty member in carrying out a research proposal by formulating questions, designing a study, creating testing instruments and approaches to data analysis.

RDG 703 Qualitative Research Methods in Reading/Literacy – Three semester hours. Students will learn qualitative research methods that are used to investigate reading/literacy. Students will work collaboratively with a faculty member in conducting a research proposal by formulating questions, designing a study, creating testing instruments, and approaches to data analysis.

RDG 704 Curriculum in Reading/Literacy – Three semester hours. Students will investigate research and practice relative to various aspects of reading/literacy such as teaching reading, writing, literature, grammar, usage, and spelling.

RDG 705 Seminar in Reading - Special Topics – Three semester hours. This curriculum is designed to meet the individual interests of students relative to topics in reading/literacy. Individually selected topics will be addressed in an in-depth manner.

RDG 706 Advanced Seminar in Reading/Literacy – Three semester hours. Major topics in reading/literacy will be studied. Emphasis will be placed on analysis, synthesis, and interpretation of original research.

RDG 707 Advanced Clinical Application in Reading/Literacy – Three semester hours. This course will require the student to gain an in-depth understanding of formal and informal assessments used in diagnosis of reading difficulties. Under close supervision, the graduate student will work with children with serious reading problems by assessing, establishing a program of acceleration, tutoring, and recording and reporting results.

RDG 708: Leadership in School Program Development – Three semester hours. In this course students will examine leadership theory and research, leadership styles, coaching, and methods for affecting change in curriculum and instruction.

RDG 709 Advanced Study in Content Area Reading – Three semester hours. Students will examine the research that identifies the aspects of content area reading, which impact student achievement.

RDG 710 Doctoral Dissertation Research in Reading/Literacy – One, three, or six semester hours. The graduate student will complete a proposal for a detailed research study, conduct the study, and defend the completed dissertation during an oral examination.

SECONDARY EDUCATION

SED 521 English in the Secondary School – Three semester hours. This course will consider objectives of English in the secondary school, content and organization of the English curriculum, and direction of learning in the English program.

SED 522 Secondary School Mathematics – Three semester hours. Literature, research, and content in mathematics, current trends, experimental programs, graduation of subject matter, criteria for program evaluation, and basic issues.

SED 523 Social Science in the Secondary School Curriculum – Three semester hours. The course content, along with related material, will consist of the examination of the basic purposes and objectives of the social studies program in the junior and senior high school and recent trends and developments in the field, selecting and organizing content materials, planning various kinds of learning experiences, and exploring effective ways of teaching and learning democratic citizenship.

SED 524 Science in the Secondary School Program – Three semester hours. For teachers and supervisors of science in the junior and senior high school. Units of subject matter presented through assigned reading, lectures, demonstrations, and discussions will be studied. Students will participate in demonstrations, selected laboratory work, and field trips. There will be a comprehensive examination covering of the content of general science.

SED 527 Guiding Learning in the Secondary School – Three semester hours. Basic principles and techniques of learning as related to the various fields and levels of Secondary Education.

SED 530 The Secondary School Curriculum – Three semester hours. Principles of curriculum construction as they apply to the secondary school and the various subject areas; will be a critical study of recent efforts to combine fields of subject matters.

SED 552 Independent Research – One, two or three semester hours. This course is designed for and restricted to graduate students seeking the master's degree in Secondary Education and/or certification. The content of the course is drawn from current research data. The students have an opportunity to identify and analyze areas of interest, study issues, trends, problems, procedures, implications, and innovative programs identified in research data. The course cannot be substituted for required courses.

SED 699 Thesis – One, three, or six semester hours.

Please consult the Teacher Service Center for a list of courses approved for the following teaching fields (Approved Program Checklist):

- Agriscience
- Biology
- Business/Marketing Education
- Chemistry
- English Language Arts
- Family and Consumer Sciences
- General Science
- General Social Science

• Mathematics
• Physics
• Technical Education
• Career Technologies

SPECIAL EDUATION

SPE 500:Teaching Secondary Students with Disabilities in General Classrooms – Three semester hours. This course is designed to introduce the graduate level teacher to principles useful for working with secondary students demonstrating a variety of academic, behavioral, and social needs.

SPE 501: Introduction to the Study of Exceptional Learners – Three semester hours. This course provides an overview of the various exceptionalities and an introduction to basic special education services and procedures.

SPE 515: Language Development – Three semester hours. This course involves the study of normal language development, with emphasis on the development of the phonological, syntactic, and semantic systems in children with disabilities.

SPE 516: Collaborative Consultation – Three semester hours. This course is designed to provide teachers with knowledgeable skills required to successfully facilitate intervention strategies with general education classroom teachers and other education support personnel in meeting the needs of children with disabilities in an inclusive educational setting. Additional skills are designed to facilitate efforts of special education teaching personnel in facilitating intervention strategies with parents and community agencies in assisting students with disabilities to make a successful transition from the school to employment and community living activities

SPE 518: Application of Child Development to Special Education – Three semester hours. An in depth study of the principles and theories of child development from early childhood through adulthood. Specific emphasis is upon the implications of child development theory on teaching exceptional students.

SPE 520: Learning Strategies for Adolescents – Three semester hours. This course is designed to provide teachers of children with disabilities in grades 6-12 with current strategies for assessing student learning styles and modifying instructional methods for optimal student learning.

SPE 522: Learning Strategies for Elementary Schools – Three semester hours. This course is designed to provide teachers of children with disabilities in grades K-6 with validated, research-based approaches to plan for and incorporate student learning styles in inclusive classrooms to for optimal student learning.

SPE 524: Sign Language – Three Semester hours. American Sign Language and Finger spelling will be taught with opportunities for group practice, opportunities with children and adults who are deaf and/or hard of hearing.

SPE 525: Transitioning Students with Disabilities (Secondary) – Three semester hours. This course the historical development of career education, model programs for individuals with disabilities, techniques for developing and implementing a career education program, and instructional strategies for providing career education to individual students with disabilities.

SPE 540: Teaching Elementary Students with Disabilities in Elementary Schools – Three semester hours. This course is designed to provide pre-service teachers an opportunity to plan methods and materials to be used in inclusive settings, addressing the educational needs of students with disabilities in upper elementary school

SPE 541: Teaching Early Childhood Students with Disabilities In General Classrooms – Three semester hours. This course is designed to provide pre-service teachers an opportunity to plan methods and materials to be used in inclusive settings, addressing the educational needs of students with disabilities birth through grade three.

SPE 545: Introduction to Early Childhood Special Education – Three semester hours. This course covers the rationale for early childhood special education and provides a comprehensive overview of major principles and practices relating to the provision of services to young children with disabilities from birth through age eight.

SPE 546: Parent and Family Assessment, Support, and Cooperation – Three semester hours. This course is designed to investigate methods of family assessment and evaluation as well as methods in training, counseling, and support of young children with disabilities.

SPE 548: Assessment in Early Childhood Special Education – Three semester hours. This course emphasizes the basic skills and knowledge that are required to analyze, select, and implement effective assessment practices with children with disabilities.

SPE 549: Adaptive Techniques and Methods in Early Childhood Special Education – Three semester hours. This course involves the study of techniques and methods that are requisites to adapt early childhood curricula to the specialized needs of young children with disabilities from birth through age eight.

SPE 550: Learning Strategies for Young Children with Disabilities – Three semester hours. This course is designed to provide teachers of children with disabilities aged 0– 8 with current strategies for assessing student learning styles and modifying instructional methods for optimal student learning.

SPE 595 Internship In Early Childhood Special Education – Three semester hours. This course engages the candidate to practice learned proficiencies in an educational setting by providing supervised teaching experiences in an early childhood special education setting involving children from birth to age eight. Candidates will demonstrate competencies to develop and implement instructional strategies under the supervision of a certified teacher of children with disabilities from birth to age eight in a setting of service delivery designed to maximize children's learning potential.

SPE 609: Seminar In Special Education – Three semester hours. This course is designed to stimulate the candidate's thinking in the field of special education, current research, programming innovations, curricular trends, and theoretical perspectives to be discussed.

SPE 641: Evaluation and Methods and Materials of Special Education – Three semester hours. This course is designed to present innovative positions regarding how children in special education may be aided in the learning process.

SPE 643: Curriculum Planning--K-6 – Three semester hours. This course focuses on the study of the philosophical and psychological foundations of special education and designing curriculum specific to addressing the needs of individuals with disabilities within an inclusive education setting in grades K-6.

SPE 644: Curriculum Planning --6-12 – Three semester hours. This course focuses on the study of the philosophical and psychological foundations of special education and designing curriculum specific to addressing the needs of individuals with disabilities within an inclusive education setting in grades 6-12.

SPE 660: Advanced Collaborative Consultation – Three semester hours. This course is designed to provide teachers with opportunities to successfully plan and facilitate intervention strategies to be implemented in a school-wide inclusion program. The focus is upon implementing strategies which garner teacher support for collaborative consultation while simultaneously meeting the needs of children with disabilities.

SPE 664: Supervising Collaborative Consultation Programs K-6 – Three semester hours. This course is designed to provide opportunities for teachers of young children with disabilities with practical experience in facilitating collaborative activities among special educators and general educators, families, and interagency personnel.

SPE 665: Supervising Collaborative Consultation Program 6-12 – Three semester hours. This course is designed to provide opportunities for teachers of adolescents with disabilities with practical experience in facilitating collaborative activities among special educators and general educators, families, and interagency personnel.

SPE 667: Professional Writing (3)- This course focuses upon professional writing strategies and processes for professional educators. The course emphasis is upon identifying funding sources, professional organizations, and refereed journals for which professional writing is appropriate.

SOCIAL WORK

SWK 500 Social Work Practice I - Three semester hours. The course focuses on the history, foundation domains and roles of social work practice. It introduces the generalist social work practice model with emphasis on an overview of the social work profession, discussion of social work values and ethics, and applications of the generalist model to individuals and families. Required of all students in the 60 hour degree program. (Prerequisites: Admission to the MSW program.)

SWK 501 Social Work Practice II – Three semester hours. Continuation of SWK 500. Explores further the roles, domains, philosophy and roles of social work practice. Basic theory, values, ethics and methods generic to social work practice at various system levels are presented with an emphasis on practice with mezzo and macro systems (e.g., families, groups organizations and communities). This course is required all students in the 60 hour degree program. (Prerequisites: SWK 500)

SWK 510 Social Welfare Policy & Services I - Three semester hours. Examines the historical evolution of social welfare institutions; political, economic, religious, social and ideological perspectives will be analyzed. This course is required all students in the 60 hour degree program.

SWK 511 Social Welfare Policy & Services II - Two semester hours. Continuation of SWK 510 - Social Welfare Policy & Services I. Emphasizes analytic models of welfare policies and lays framework for decision making. Contemporary issues will be discussed and international policies examined. This course is required for all students in the 60 hour degree program.
(Prerequisites: SWK 510)

SWK 520 Human Behavior in the Social Environment I - Three semester hours. Theories concepts, and knowledge about human development and behavior within the context of the social environment through the study of life cycle development in the ecological system. Major social and cultural institutions and their impacts on diverse individuals, families, groups and organizations will be examined. This course is required for all students. This course is required for all students in the 60 hour degree program

SWK 521 Human Behavior in the Social Environment II - Three semester hours. This is the second of a two-course sequence dealing with adult development, including old age and death. The societal impact of families, groups, and organizations on the elderly and the elderly interaction with these systems and their diverse impacts will also be discussed. This course is required for all students in the 60 hour degree program. (Prerequisites: SWK 520, 500 and 510).

SWK 522 Race, Ethnicity, Gender and Diversity - Three semester hours. This course will introduce and sensitize students to the major concepts of culture, sub-culture, race, ethnicity and gender, cultural diversity, and pluralism and conflicts caused ethnocentrism, discrimination and prejudice. Further, it will emphasize public policies as well as interpersonal responses and the relationship between race, ethnicity, gender, diversity and social work practice. Emphasis is placed on the examination of major ethnic sub-cultures as well as sub-cultural groupings based on such factors as gender, race, ethnicity, religion, national origin, age, sexual orientation, physical and mental abilities and other differences in human populations. The common elements of oppressions are emphasized and prejudicial and discriminatory practices are evaluated from both micro - and macro theoretical frames of reference. This is a course is required of all students.

SWK 523 Rural-Urban Social Work - Two semester hours. Develop and apply theoretical knowledge and skills used in Urban and Rural Social Work Practice. Overall, the course assumes general knowledge of basic concepts in issues/problems, policies, community organizations, administration, service delivery systems, resource allocation, sociological knowledge, and program implementation in both urban and rural environments. Students will engage in projects that involve assessing the needs of rural communities and suggest intervention strategies. Teamwork reflecting professional standards of individual performance will be stressed as a means of accomplishing the objectives. Group and individual assignments will be used to assist students to develop teamwork, personal practice skills and competencies in evaluating practice. Thus, a group project involving rural-urban issues and problems, policy formation, planning, implementation, evaluation and issues feedback is used as a medium for the application of knowledge and skills. This course is required of all students. (Prerequisites: SWK 500, 510, 520 or Advanced Standing).

SWK 530 Applied Social Work Research - Three semester hours. This outline covers the general content and assignments included in the syllabus. During the regular academic year, completion of this course typically requires about 14 to 16 weeks. Successful completion requires the ability to consume a great deal of written information, the use of complex thinking skills to understand social work applications, and advanced conceptualization and organization skills for preparation of the assignments. For most students this course represents and introduction to research but it is, nevertheless, a graduate level course. Therefore, all

students are expected to perform accordingly. For these reasons, all assignments are required, and work must be submitted in a timely manner. This outline was prepared for students' ease in moving toward a successful completion of the course. This is the first of two research courses. This course is required of all students in the 60 hour degree program.

SWK 581 Field Practicum & Seminar I - Four semester hours. This is the first practicum course in the three-part practicum sequence. The purpose of this sequence is to expose students to the professional application of theory practice in community- based human service organizations. This course can be taken concurrent with or subsequent to classroom instruction. The field practicum courses must be taken in sequence and is a requirement for all students. (Prerequisites: SWK 500, 510, 520, 522 and 530; co-requisites SWK 501, 511, 521 and 523).

SWK 587 Social Work Empowerment - Three semester hours. This is a bridge course, which strengthens and assures a common core of professional knowledge for all advanced standing students prior to the beginning of coursework in Concentration areas. It explores the foundations, domains, values, ethics, philosophy, and roles of generalist social work. The foundations include human behavior in the social environment, social work and social welfare policy, practice, research, and fieldwork. Understanding the relationship of each of the foundation areas to the others, as well as their impact and interactive effects on social work practice will be important in this course. The historical and contemporary use of empowerment and strengths perspectives will be examined along with the impact of factors such as race, sex, gender, class, and other diversity issues on practice decisions made in these contexts. Classroom learning and assignments will include application of ecological perspectives and problem solving processes; assessment and planning skills; differential utilization of knowledge of the impact of race, ethnicity, class, culture, gender, sexual orientation, and varying abilities on social work relationships. This is a required introductory course exclusively planned for all advanced standing students. Other students may not take this course without permission from the Program Chair/Coordinator.

SWK 600 Social Work Intervention Strategies With Vulnerable Clients - Three semester hours. This practice seminar focuses on relationship-building, assessment and interventions with vulnerable individuals and families. Theories needs (e.g., mental illness, delinquency, and physical handicaps), foster care, and protected services for abused and neglected children. Social Work values and ethics will be infused throughout the course. This course is required of all students in the Family and Child Welfare concentration. (Prerequisites: SWK 510, 511, 520, 521, or Consent of Instructor)

SWK 613 Budgeting and Financial Management - Three semester hours. Basic knowledge and theoretical underpinnings required to manage the fiscal and budgetary aspects of human service organizations. The course emphasis is the development and administration of fiscal resources to effectively meet the mission and goals of the organization. Along with the practical aspects of budget planning, development and implementation, the course will address major funding sources for human service organizations, and the strategies of influencing and accessing these sources. The role of politics and its impact on social services within our society will be explored, and students will be taught to manage with decreasing resources especially in rural areas. Required of all Policy, Planning and Administration concentration students. (Prerequisites: **All** foundation year courses or Consent of Instructor)

SWK 614 Principles of Planning and Program Implementation - Three semester hours. The focus of this course is on the concept of planning within social welfare agencies institutions for the purpose of program implementation. Students acquire knowledge and understanding of planning concepts, strategies, and objectives for program development, implementation and evaluation. An ecological system perspective is applied to promote understanding of the interrelationships among individuals (micro systems), families, groups (mezzo systems), organizations/institutions and communities (macro systems). Likewise, a problem solving approach is used to provide content for understanding the differential strategies for resolving needs of individuals, families, and small groups, and larger organizational or community systems. Theoretical, empirical, and experimental contents are utilized to provide the student with an awareness of both comparative and contrasting aspects of systemic planning with other activities required in program implementation and program evaluation. Required of all Policy, Planning and Administration concentration students. (Prerequisites: **All** foundation year courses or Consent of Instructor)

SWK 615 Grant Writing - Two semester hours. Explores various grant writing theories and skills and demonstrates practical application of the process. Students will assist agencies and organizations to apply for local, state, federal, and international grants for their programs or projects. Required of all students in the Policy, Planning and Administration concentration, (Prerequisites: **All** foundation year courses or Consent of Instructor)

SWK 616 Issues & Policies in Community Mental Health - Three semester hours. Examines the impact of policies on social work practice in mental health settings, including local, state and national policies from which services are derived. Also examines the differential impact of race, ethnicity and social class on policy formulation and service delivery in mental health settings. This course is required of all students in the Community Mental Health concentration. (Prerequisites SWK 500, 501, 520, 521, or Consent of Instructor)

SWK 621 Family Theories and Processes- Three semester hours. This advanced level practice course explores sociological concepts of marriages and families in contemporary society; vulnerable families; family preservation; and the assessment and treatment of marriages and families. Treatment models, techniques, and strategies are highlighted. Social work values and ethics, research on marriages and families and the treatment thereof, and cultural diversity issues are emphasized. This course is required of all students in Direct Practice. (Prerequisites: SWK 500,501,520,521,601,602,610 or Consent of Instructor)

SWK 630 Needs Assessment and Program Evaluation - Three semester hours. This course builds on foundation courses and the need for scientific problem-solving, decision-making and accountability in professional social work practice. Knowledge of the social work research process is the foundation upon which students will develop needs assessment and program evaluation skills. Understanding of social work knowledge, values, skills and ethics associated with practice, policy, and human behavior perspectives will be articulated in the student's conceptualization and development of either a need assessment or a program evaluation. Additionally, these skills will be applied to a variety of social systems and social problems for the purposes of promoting, sustaining, and enhancing individuals, families, groups, communities, and societal well-being. (Prerequisites: SWK 530, or Consent of Instructor)

SWK 631 & 632 Research Project/Thesis - Two to six semester hours. This course offers students the opportunity to prepare an empirically based research thesis derived from a practice problem. The thesis is designed to make a significant contribution to a special area of interest within the student's concentration. Upon approval by the student's Thesis Committee, or the research project panel, and acceptance by the Dean of the School of Graduate Studies (Graduate Bulletin, 1999-2000), students complete their research and thesis under the guidance of a graduate faculty member and thesis committee. Upon completion of the research project, the thesis is defended before the student's thesis committee. (Prerequisites: Completion of all first-year courses, or Advanced Placement status, and Registration for SWK 631: Research Project)

SWK 641 Crisis Intervention and Short Term Psychotherapy - Two semester hours. In-depth exploration of the history and theory of crisis intervention and brief therapies. Crisis intervention and short-term theoretical models and techniques are applied to diverse and vulnerable populations. Also examined are social work values and related ethical dilemmas, legal and professional issues and social work research, particularly the evaluation of practice effectiveness. (Prerequisites: SWK 500, 510, 520 or Consent of Instructor)

SWK 642 Sexual Abuse: Assessment & Intervention - Two semester hours. Issues of sexual abuse and rape across cultures. The emphasis is on childhood sexual abuse, incestuous and non-familial, and its effects on the developing child and the adult survivor. Protective service issues as well as psychotherapeutic issues will be addressed. Course content includes: assessment of sexual abuse; treatment philosophies and techniques for children and adult survivors, including individual, family and group therapy; assessment of childhood sexual abuse in custody and visitation cases; false memory syndrome; offender treatment; and social work roles, including protective services worker, therapist, and witness. Building on the knowledge of human behavior and diversity, social work practice, and social welfare policy acquired in the study of the core curriculum, this course emphasizes the application of this knowledge in the area of childhood sexual abuse and rape. It is an elective in the Direct Practice concentration, and builds upon this body of knowledge, especially SWK 600, 602, 610 and 616. (Prerequisites: SWK 500, 501, 521 & 522 or Consent of Instructor)

SWK 643 Interventions with Children and Adolescents – Three semester hours. Provides an overview of practice with emphasis on physical, psychological, and cultural developmental engagement, processes and characteristics unique to children and adolescents. The course also explores assessment and intervention strategies useful with children/adolescents in family, group, and institutional settings. Critically examines values, ethics, research and other issues regarding effective practice with this vulnerable population. (Prerequisites: SWK 500, 510, 520 or Consent of Instructor)

SWK 652 Social Work and Law – Two semester hours. This seminar examines the judicial system and its relevancy to social welfare and social work. The focus is on skills and knowledge needed for effective participation in the legal process as a social work professional. (Prerequisites are SWK 500, 501, 510, 511, 520, 521 or Consent of Instructor)

SWK 658 International Social Welfare and Social Work – Two semester hours. Sensitizes students to the knowledge base required in international social welfare and social work practice and international social work education. Further, it will emphasize the significance of traditional and modern ways of foreign welfare and social work practices in developed and developing countries. Emphasis is placed on the examination of macro, mezzo and micro social systems and their interaction. Further, these concepts will be discussed in class: demography, social issues/problems, community development, community organization, transfer of technology, non-governmental organizations (NGOs), governmental organization (GOs) and the like. (Prerequisites: SWK 510, 511, 520, 521 or Consent of Instructor)

SWK 660 Personality Theories and Psychopathology - Three semester hours. In-depth focus on assessment and diagnosis in social work practice with some attention to change personality theories. Includes in-depth discussion and critique of DSM-IV-TR and its use in social work practice. Information on assessment etiology and treatment of mental illnesses is provided. Required of all students in direct practice concentrations. (Prerequisites: Completion of **ALL** foundation courses or Consent of Instructor)

SWK 663 Substance Abuse – Two semester hours. Examines the impact of substance abuse on individuals, families, groups, organizations/institutions and communities. Also, societal responses, contributing factors, social problems, policies, programs, services, intervention strategies, and needed resources will be examined. (Prerequisites: SWK 500, 501, 520, 521, or Consent of Instructor)

SWK 667 Social Work Practice with Aging - Two semester hours. Discusses impact of mental illness on the elderly. Focuses on demographic issues and problems of the aged will be infused into the course content with a special emphasis on Alzheimer's disease and other mental illnesses. Assessment and intervention strategies used by social workers will be examined. (Prerequisites: SWK 500, 501, 520, 521, 522 or Consent of Instructor)

SWK 680 Field Practicum & Seminar II - Four semester hours. This is the second practicum course in the three part sequence. (Prerequisites: **ALL** foundation year courses, co-requisites SWK 600 or 616 and 621)

SWK 681 Field Practicum & Seminar III - Four semester hours. This is the last course in the three-part practicum sequence. (Prerequisites: SWK 680)

SWK 689 Integrative Seminar - Three semester hours. Focuses on social work as a profession and on integration of all curriculum areas in the professional practice of social work. Emphasis will be placed on all aspects of professional social work practice including methods, knowledge, values, ethics, skills and legal issues. This course is required of all students and should be taken during the semester that students are graduating from the program.

SWK 698 Independent Study - One to three semester hours. Students may register for one to three hours of independent study with a professor competent in the area of student's interest. An application for Independent Study **must be approved** by both the instructor consenting to supervision and the MSW program coordinator. An independent study must not replicate another course in the MSW curriculum.
and Empowerment Strategies are addressed for vulnerable clients (e.g., persons living in poverty, survivors of violence, trauma and natural disasters, and survivors of abuse and neglect). Required of all students in the Family & Child Welfare Specialization. (Prerequisites: ALL foundation year courses or consent of the instructor)

SWK 601 Social Work Practice with Groups - Three semester hours. Methods and skills for

engaging, assessing and intervening with task and treatment groups are explored. Concepts and ethics applied to group work are emphasized. Also discussed are therapeutic interventions and theories appropriate for group work. Required of all students in the Direct Practice Concentration. (Prerequisites SWK 600, 602 or consent of the instructor)

SWK 602 Social Work Practice in Health & Mental Health - Three semester hours. This course highlights critical issues faced by social workers within the mental health system and the worker's accountability in various practice settings. Engagement, assessment and intervention strategies will be explored. Theoretical perspectives and treatment models useful in mental health practice are emphasized. Prerequisites: SWK 500, 501, 520, 521 or permission of the professor. This course is a requirement for all students in the Community Mental Health specialization.

SWK 604 Theory and Practice of Social Welfare Administration & Planning - Three semester hours. Provides the knowledge base and beginning competency required for the mid-level administration of a social welfare organization within the community. Theoretical perspectives on the evolutionary development of administration and grounded principles of management will be discussed. Social Work ethics, values, methods, knowledge and skills introduced in earlier courses will lay the foundation for additional work in these areas. Contemporary issues impacting on modern organizations, including but not limited to economic and social justice, diversity issues including race, women, gays and lesbians, and people who are physically and mentally challenged, will be discussed. The student will gain a comprehensive view of Administration in the macro environment, and will solidify his/her perception on the administrative style of choice. Course prerequisites include ALL the foundation courses or consent of the instructor.

SWK 605 Organizational Behavior and Management - Three semester hours. This course is predicated on the assumption that people are truly the most valuable asset in any organization; therefore, management must demonstrate a realistic appreciation of workers, individually and collectively. This course deals with the management of people, inter-personal interactions, and relationships within organizations including, but not limited to, individual and group behavior, motivation, learning, leadership, supervisory behavior, communication, role, status and conflict resolution. Professional social work values and ethics including and abiding respect for the dignity and worth of the individual will be emphasized. The role of diversity (ethnic, racial, sexual orientation, religious, physical and mental abilities and gender) and the social policy of affirmative action will be discussed. 2nd year standing.

NOTE: Students **must** register for this course in the Psychology Dept. (PSY 627) or the Department of Management (MBA 515).

As a concentration course prerequisites include ALL the foundation year courses or consent of the instructor.

SWK 610 Family & Child Welfare Policy - Three semester hours. The predominant focus of this course is to identify, discuss and integrate family and child welfare issues and policy. Although the course discussions will be on child welfare policies affecting children and families in general, the emphasis will be on children and families with special needs, e.g. protective services, foster care and adoption. The concept of the "best interest of the child" will be analyzed in depth. This course traces the historical development of child welfare services in the U.S. from the beginning of the twentieth century until the present time. Five areas of services, programs and policies will be discussed: adoption, teenage pregnancy and parenthood, children with special needs (e.g., mental illness, delinquency, and physical handicaps), foster care, and protected services for abused and neglected children. Social Work values and ethics will be infused throughout the course. This course is required of all students in the Family and Child Welfare concentration. (Prerequisites: SWK 510, 511, 520, 521, or Consent of Instructor)

SWK 613 Budgeting and Financial Management - Three semester hours. Basic knowledge and theoretical underpinnings required to manage the fiscal and budgetary aspects of human service organizations. The course emphasis is the development and administration of fiscal resources to effectively meet the mission and goals of the organization. Along with the practical aspects of budget planning, development and implementation, the course will address major funding sources for human service organizations, and the strategies of influencing and accessing these sources. The role of politics and its impact on social services within our society will be explored, and students will be taught to manage with decreasing resources especially in

rural areas. Required of all Policy, Planning and Administration concentration students. (Prerequisites: **All** foundation year courses or Consent of Instructor)

SWK 614 Principles of Planning and Program Implementation - Three semester hours. The focus of this course is on the concept of planning within social welfare agencies institutions for the purpose of program implementation. Students acquire knowledge and understanding of planning concepts, strategies, and objectives for program development, implementation and evaluation. An ecological system perspective is applied to promote understanding of the interrelationships among individuals (micro systems), families, groups (mezzo systems), organizations/institutions and communities (macro systems). Likewise, a problem solving approach is used to provide content for understanding the differential strategies for resolving needs of individuals, families, and small groups, and larger organizational or community systems. Theoretical, empirical, and experimental contents are utilized to provide the student with an awareness of both comparative and contrasting aspects of systemic planning with other activities required in program implementation and program evaluation. Required of all Policy, Planning and Administration concentration students. (Prerequisites: **All** foundation year courses or Consent of Instructor)

SWK 615 Grant Writing - Two semester hours. Explores various grant writing theories and skills and demonstrates practical application of the process. Students will assist agencies and organizations to apply for local, state, federal, and international grants for their programs or projects. Required of all students in the Policy, Planning and Administration concentration, (Prerequisites: **All** foundation year courses or Consent of Instructor)

SWK 616 Issues & Policies in Community Mental Health - Three semester hours. Examines the impact of policies on social work practice in mental health settings, including local, state and national policies from which services are derived. Also examines the differential impact of race, ethnicity and social class on policy formulation and service delivery in mental health settings. This course is required of all students in the Community Mental Health concentration. (Prerequisites SWK 500, 501, 520, 521, or Consent of Instructor)

SWK 621 Family Theories and Processes- Three semester hours. This advanced level practice course explores sociological concepts of marriages and families in contemporary society; vulnerable families; family preservation; and the assessment and treatment of marriages and families. Treatment models, techniques, and strategies are highlighted. Social work values and ethics, research on marriages and families and the treatment thereof, and cultural diversity issues are emphasized. This course is required of all students in Direct Practice. (Prerequisites: SWK 500,501,520,521,601,602,610 or Consent of Instructor)

SWK 630 Needs Assessment and Program Evaluation - Three semester hours. This course builds on foundation courses and the need for scientific problem-solving, decision-making and accountability in professional social work practice. Knowledge of the social work research process is the foundation upon which students will develop needs assessment and program evaluation skills. Understanding of social work knowledge, values, skills and ethics associated with practice, policy, and human behavior perspectives will be articulated in the student's conceptualization and development of either a need assessment or a program evaluation. Additionally, these skills will be applied to a variety of social systems and social problems for the purposes of promoting, sustaining, and enhancing individuals, families, groups, communities, and societal well-being. (Prerequisites: SWK 530, or Consent of Instructor)

SWK 631 & 632 Research Project/Thesis - Two to six semester hours. This course offers students the opportunity to prepare an empirically based research thesis derived from a practice problem. The thesis is designed to make a significant contribution to a special area of interest within the student's concentration. Upon approval by the student's Thesis Committee, or the research project panel, and acceptance by the Dean of the School of Graduate Studies (Graduate Bulletin, 1999-2000), students complete their research and thesis under the guidance of a graduate faculty member and thesis committee. Upon completion of the research project, the thesis is defended before the student's thesis committee. (Prerequisites: Completion of all first-year courses, or Advanced Placement status, and Registration for SWK 631: Research Project)

SWK 641 Crisis Intervention and Short Term Psychotherapy - Two semester hours. In-depth exploration of the history and theory of crisis intervention and brief therapies. Crisis intervention and short-term theoretical models and techniques are applied to diverse and vulnerable populations.

Also examined are social work values and related ethical dilemmas, legal and professional issues and social work research, particularly the evaluation of practice effectiveness. (Prerequisites: SWK 500, 510, 520 or Consent of Instructor)

SWK 642 Sexual Abuse: Assessment & Intervention - Two semester hours. Issues of sexual abuse and rape across cultures. The emphasis is on childhood sexual abuse, incestuous and non-familial, and its effects on the developing child and the adult survivor. Protective service issues as well as psychotherapeutic issues will be addressed. Course content includes: assessment of sexual abuse; treatment philosophies and techniques for children and adult survivors, including individual, family and group therapy; assessment of childhood sexual abuse in custody and visitation cases; false memory syndrome; offender treatment; and social work roles, including protective services worker, therapist, and witness. Building on the knowledge of human behavior and diversity, social work practice, and social welfare policy acquired in the study of the core curriculum, this course emphasizes the application of this knowledge in the area of childhood sexual abuse and rape. It is an elective in the Direct Practice concentration, and builds upon this body of knowledge, especially SWK 600, 602, 610 and 616. (Prerequisites: SWK 500, 501, 521 & 522 or Consent of Instructor)

SWK 643 Interventions with Children and Adolescents – Three semester hours. Provides an overview of practice with emphasis on physical, psychological, and cultural developmental engagement, processes and characteristics unique to children and adolescents. The course also explores assessment and intervention strategies useful with children/adolescents in family, group, and institutional settings. Critically examines values, ethics, research and other issues regarding effective practice with this vulnerable population. (Prerequisites: SWK 500, 510, 520 or Consent of Instructor)

SWK 652 Social Work and Law – Two semester hours. This seminar examines the judicial system and its relevancy to social welfare and social work. The focus is on skills and knowledge needed for effective participation in the legal process as a social work professional. (Prerequisites are SWK 500, 501, 510, 511, 520, 521 or Consent of Instructor)

SWK 658 International Social Welfare and Social Work – Two semester hours. Sensitizes students to the knowledge base required in international social welfare and social work practice and international social work education. Further, it will emphasize the significance of traditional and modern ways of foreign welfare and social work practices in developed and developing countries. Emphasis is placed on the examination of macro, mezzo and micro social systems and their interaction. Further, these concepts will be discussed in class: demography, social issues/problems, community development, community organization, transfer of technology, non-governmental organizations (NGOs), governmental organization (GOs) and the like. (Prerequisites: SWK 510, 511, 520, 521 or Consent of Instructor)

SWK 660 Individual Assessment - Three semester hours. In-depth focus on assessment and diagnosis in social work practice with some attention to change personality theories. Includes in-depth discussion and critique of DSM-IV-TR and its use in social work practice. Information on assessment etiology and treatment of mental illnesses is provided. Required of all students in direct practice concentrations. (Prerequisites: Completion of **ALL** foundation courses or Consent of Instructor)

SWK 663 Substance Abuse – Two semester hours. Examines the impact of substance abuse on individuals, families, groups, organizations/institutions and communities. Also, societal responses, contributing factors, social problems, policies, programs, services, intervention strategies, and needed resources will be examined. (Prerequisites: SWK 500, 501, 520, 521, or Consent of Instructor)

SWK 667 Social Work Practice with Aging - Two semester hours. Discusses impact of mental illness on the elderly. Focuses on demographic issues and problems of the aged will be infused into the course content with a special emphasis on Alzheimer's disease and other mental illnesses. Assessment and intervention strategies used by social workers will be examined. (Prerequisites: SWK 500, 501, 520, 521, 522 or Consent of Instructor)

SWK 680 Field Practicum & Seminar II - Four semester hours. This is the second practicum course in the three part sequence. (Prerequisites: **ALL** foundation year courses, co-requisites SWK 600 or 616 and 621)

SWK 681 Field Practicum & Seminar III - Four semester hours. This is the last course in the three-part practicum sequence. (Prerequisites: SWK 680)

SWK 689 Integrative Seminar - Three semester hours. Focuses on social work as a profession and on integration of all curriculum areas in the professional practice of social work. Emphasis will be placed on all aspects of professional social work practice including methods, knowledge, values, ethics, skills and legal issues. This course is required of all students and should be taken during the semester that students are graduating from the program.

SWK 698 Independent Study - One to three semester hours. Students may register for one to three hours of independent study with a professor competent in the area of student's interest. An application for Independent Study **must be approved** by both the instructor consenting to supervision and the MSW program coordinator. An independent study must not replicate another course in the MSW curriculum.

TECHNICAL EDUCATION

TTE 501 Teaching Curriculum Core Subjects in Career/Technical Education – Three semester hours. This course focuses on analyzing, selecting, and sequencing subjects to be taught in the curriculum core course in career/technical education at the secondary level. The candidate master teacher will develop a course of study, units of instruction and lesson plans to be used in teaching and evaluating student performance in the career/technical education curriculum core course. **Prerequisites**: Admission to the Teacher Education program in Technical Education; and completion of TTE 302, TTE 305, TTE 404, TTE 406, and TTE 409.

TTE502 Instructional Strategies, Materials Development, and Technology in Career/Technical Education – Three semester hours. This course focuses on developing and selecting instructional materials and strategies to be used in teaching technical subjects in career/technical education programs at the secondary or postsecondary level; and the use of the computer as a teaching tool in the classroom. The candidate teacher is required to develop units of instruction and lesson plans that incorporate instructional materials and strategies to be used in teaching and evaluating students' performance in the classroom, shop, and laboratory. **Pre-requisites:** Admission to the graduate school..

TTE 503 Career Information and Guidance – Three semester hours. Course provides instruction on the foundations of career development; career counseling, appraisal, and students with special needs; career development practices; organizing career development programs; understanding the world of work; providing career guidance information; and special setting future possibilities. The use of a variety of computer assisted guidance systems to research career information is required in this course. This course is not opened to students who have completed TED403 or similar course at another institution.

TTE 504 Classroom/Laboratory Management in Career and Technical Education – Three semester hours. This course includes instruction on excepted processes and practices of managing activities in the career/technical education laboratories and shops. Emphasis is placed on equipment and supply selection; facilities planning; materials control; maintenance and records; safety; organizing personnel; budget preparation; orienting students to laboratory and shop activities; students with special needs/special populations; adult students in career and technical education programs; and incorporating basic skills in career and technical education laboratory and shop activities. This course is not opened to students who have completed TED404 or a similar course at another institution.

TTE 505 Coordination of Cooperative Career/Technical Education – Three semester hours. This course covers the responsibilities and roles of the teacher-coordinator in a cooperative career/technical education program. It includes instruction on establishing guidelines, policies, and procedures for the program; managing the attendance, transfers, and termination of Co-op students; cooperating with administrators, faculty, and counselors in selecting students for participation in the Co-op program; securing training stations, developing training plans, and training agreements; coordinating on-the-job instruction, providing student general related instruction in the classroom, and working with other career/technical education instructors in providing technical related instruction; evaluating students on-the-job performance; supervise an employer-employee appreciation event; and maintain an office in accordance with established local and state rules and policies. This course is not opened to students who have completed TED405 or similar course at another institution.

TTE 506 Principles of Teaching Technical Subjects in Career and Technical Education – Three semester hours. The course is designed to provide the career and technical education teacher with the required knowledge and understanding to design and present technical instruction in a career/technical education program at the secondary and post-secondary levels. This course is not open to students who have completed TED406 or a similar course at another other institution. **Pre-requisites:** Admission to master's degree program in Technical Instructor Development.

TTE 507 Career/Technical Student Organizations – Three semester hours. The duties and responsibilities of the career/technical education teacher in advising students in a career/technical student organization. This course is not available to students who have completed TED407 or similar course at another institution. **Prerequisites:** Admission to the graduate program in Technical Education.

TTE 509 Special Needs in Career/Technical Education – Three semester hours. Course covers special populations in the workforce; learners with disabilities; characteristics of other special populations including educationally and economically disadvantages, single parents, individuals in correctional institutions; vocational assessment; individualized education programs; curriculum modification; instructional strategies; evaluation strategies; career and technical student organizations; coordinated student services; and transition process. This course is not opened to students who have completed TED409 or similar course at another institution.

TTE 510 Foundations in Career/Technical Education – Three semester hours. This course covers the economical, educational, historical, philosophical, and psychological foundations of career and technical education and their impact on curriculum and instruction in career and technical education. **Pre-requisites:** Admission to Graduate School.

TTE 512 Curriculum Development Systems in Career/Technical Education – Three semester hours. The course covers the systems approach to developing the curriculum for a career/technical education program at the secondary or postsecondary level. The student is required to employ the curriculum development system to develop a course of study for his/her specialty area in career/technical education. **Pre-requisites:** Admission to graduate program in Career and Technical Education.

TTE 514 Individual Studies in Career/Technical Education - Three semester hours. Course provides an opportunity for career/technical education students to develop additional knowledge and understanding of specific program areas in career/technical education. **Pre-requisites:** Instructor's permission required to enroll in this course.

TTE 521 Evaluating Students Achievement in Career/Technical Education – Three semester hours. Methods and procedures for developing instruments to be used in evaluating student's knowledge and understanding in a career/technical education program setting. Candidate teachers will be required to develop master test plans based on established course and program learning outcomes; knowledge and skills tests; procedures and standards for evaluating student performance in career/technical student organization contests; and follow-up studies of program graduates.

TTE 525 Instructional Development Systems in Industry – Three semester hours. This course focuses on the system approach to developing courses for the development, training, and utilization of technical employees in the workforce. Students are required to employ the instructional system approach in developing a technical course for use in industry. **Pre-requisites:** Admission to Graduate School.

TTE 540 Supervised Occupational Development – Three semester hours. The career/technical education teacher participates in technical workshops and seminars conducted by professional organizations and society, and work experience programs directly related to their career/technical program area. This experience is designed to aid the career/technical education teacher in maintaining existing knowledge and skills; improving existing knowledge and skills; or developing new knowledge and skills. Instructor approved required prior to enrolling this course.

TTE 550 Practicum in Technical Education – Three semester hours. Practical experience gained in a career and technical education in a classroom setting at the secondary or post-secondary level. Advisor's approval is required to participate in this course.

TTE 599 Thesis Research – 6 semester hours. Enrollment in Thesis Research is limited to graduate students who have chosen the Thesis Option. Students must enroll in a minimum of two (2) semesters to complete the thesis. Students complete the thesis proposal during the first semester, and conduct the research and write the thesis during the second semester. This study is done under the supervision of the thesis advisor and committee, with the approval of the department head, school dean, and dean of graduate studies. **Pre-requisites:** Completion of 24 semester hours of graduate coursework and the comprehensive examination.

TTE 600 Contemporary Issues and Philosophy in Career/Technical Education – Three semester hours. The course focuses on selected readings in the profession with emphasis on current issues in career/technical education; and significant philosophies that shape developments and future directions in career/technical education.

TTE 610 Research and Evaluation in Career/Technical Education – Three semester hours. An analysis of research and evaluation studies on career/technical education; and recommendations for program improvements in curriculum and instruction; administration and supervision; and other program areas.

TED 614 Individual Studies in Career/Technical Education – Three semester hours. Course provides an opportunity for career/technical education students to develop additional knowledge and understanding of specific program areas in career/technical education. **Pre-requisites:** Instructor's permission required to enroll in this course.

TTE 617 Postsecondary Career/Technical Education Programs – Three semester hours. An analysis of the contributions of postsecondary institutions to meet the career development needs of the adult population, developments in various program areas including curriculum, instruction, finance, administration, facilities, and evaluation. Future directions in postsecondary career/technical education programs are also considered.

TTE 618 Administration, Leadership, and Legislation – Three semester hours. In this course the student will an analysis of public laws and policies at the federal and state levels; and their impact on career/technical education programs at the secondary and postsecondary levels.

TTE 621 Teaching Career/Technical Education – Three semester hours. This course is designed for career/technical education teachers who are interested in improving the instructional process based on the results of recent research studies and practices in the following instructional area: planning, execution, evaluation, and management.

TT E 625 Instructional Supervision – Three semester hours. The professional role and responsibility of school personnel in planning the student teaching experience and supervising student teachers during their internship; and newly employed teacher.

TTE 630 Career Education and Workforce Development – Three semester hours. This course focuses on trends and issues in the training, development, and utilization of a contemporary workforce.

TTE 640 Supervised Occupational Development – Three semester hours. – The career/technical education teacher participates in technical workshops and seminars conducted by professional organizations and society, and work experience programs directly related to their career/technical program area. This experience is designed to aid the career/technical education teacher in maintaining existing knowledge and skills; improving existing knowledge and skills; or developing new knowledge and skills. Instructor approved required prior to enrolling this course.

TTE 650 Practicum in Technical Education – Three semester hours. Practical experience gained in a career and technical education in a classroom setting at the secondary or post-secondary level. Advisor's approval is required to participate in this course. **Pre-requisites**

TTE 699 Thesis Research – Six Semester Hours. This is a requirement for graduate students in the specialist degree program. Students must enroll in a minimum of two (2) semesters to complete the thesis. Students complete the thesis proposal during the first semester, and conduct the research and write the thesis during the second semester. This study is done under the supervision of the thesis advisor and committee, with the approval of the department head, school dean, and dean of graduate studies. **Pre-requisites:** Completion of 24 semester hours of graduate coursework in the specialist degree program and the comprehensive examination.

URBAN PLANNING

URP 500 Fundamentals of Planning - One semester hour. The course provides a fundamental understanding of the field of urban and regional planning, the actors in the planning process, and contemporary planning issues and methods for beginning students. The parameters of planning and the contexts within which the profession is practiced are stressed.

URP 504 Internship - Three semester hours. The purpose of this course is to provide on-the-job training for students who have not had any prior work experience in the field for which they are training. Students perform a pre-determined work assignment under direct agency supervision of ten hours during fall and spring semesters, and 20 hours during the summer. Individual work plans and learning outcomes are established to support the internship experience. (Pre-requisite- six semester hours in the MURP program)

URP 506 Urban Economics - Three semester hours. A study of the economic forces underlying urban phenomena or problems; industrial and residential location, urban transportation, waste disposal and pollution, urban government finance, poverty, crime and income, maintenance programs. (Pre-requisite: ECO 232 or ECO 231)

URP 510 Theory and History of Planning - Three semester hours. This course examines the evolution of the urban and regional planning profession. It presents alternative theories of planning and critically examines procedural, substantive, and decision-making theories of planning practice. The course also explores the relationship of history and theories of planning to equity, diversity, ethics and values issues in the society and in the profession.

URP 511 Planning Research Methods I (Quantitative Analysis) - Three semester hours. A basic graduate course on statistical concepts and methods with applications in urban and regional planning. It is intended to give the student a broad understanding of the meaning, purpose, methods and use of descriptive and inferential procedures in urban analysis and planning. It includes a review of basic mathematical concepts fundamental to quantitative methods, linear and nonlinear functions focusing on growth curves, data measurement and display, descriptive statistics and probability, and introduction to use of computer software packages (SPSS) as a tool in analysis of planning related data.

URP 513 Urban Geography - Three semester hours. This course analyzes the location, evolution (including decline and rebirth) of cities, and functional classification of cities. Urban growth theories and economic influence of cities over larger geographic areas are also studied.

URP 515 Regional Development Theory - Three semester hours. This course provides an introduction to regional development theory, issues and policy. The topics covered in the course include location of economic activities, trade and other forms of contact between regions, processes of regional growth and decline, reasons for different levels of economic development, relations between more or less developed regions, the effects of globalization on development, and implication for regional planning policy.

US 519 Seminar of Social Policy Issues - Three semester hours. This course provides the student with the opportunity to analyze demographic changes, needs and ideological debates which affect social policy in the US compared with other societies.

URP 520 Legal Basis of Planning - Three semester hours. The course focuses on statutory law, policies and the constitutional framework which support the authority for planning and guiding urban and regional development. Through the examination of enabling legislation models, general plans, zoning, development reviews systems, and planning law, this course provides an understanding of how law and urban policy intersect and thus influence the planning process.

URP 521 Planning Research Methods II (Applied Research Methodology) – Three semester hours. This course presents a range of concepts which provide a foundation for the student to understand and apply appropriate research methods according to the research need. Both quantitative and qualitative research designs are explored along with techniques of data collection, treatment, analysis and interpretation which support development and preparation of professional plans and reports and their evaluation in the practice of planning. (Pre-requisite: Instructor's approval required)

URP 525 Planning Studio I - Three semester hours. This course focuses on local land use planning and site design. It is designed to provide the students with practical experiences in urban development process, the basic methods and tools of site and land use planning, evaluation, and

implementation strategies. (Pre-requisite- Instructor's approval required)

URP 526 Computer Applications in Planning - Three semester hours. This course is designed for beginning graduate students in urban and regional planning. It begins with an overview of excel and exploration of GIS web resources. It advances to application of Arc GIS desktop in local and regional planning. Approximately half of the class time during the semester is dedicated to teaching Arc GIS while the other half focuses specifically on the application of Arc GIS in the development, preparation and presentation of a database containing tables, maps and graphs typically required for the preparation of comprehensive plans in planning agencies. (Prerequisite- Instructor's approval required)

URP 527 Planning Studio II - Three semester hours. The course focuses on comprehensive plan making at the municipal and multi-jurisdictional (regional) levels. It is designed to build on the skills and concepts learned in Planning Studio I. The course provides the students with practical experiences in integration and application of various components of the planning process into a holistic policy plan. It emphasizes the use of research, analytical, forecasting and evaluation methods in plan-making. Also both collaborative and individual student products are emphasized. (Pre-requisite- Instructor's approval required)

URP 529 Professional Practice - Three semester hours. The purpose of the course is to assist students in understanding the professional responsibility of the practicing planner. The objectives are to teach the concept of professionalism, to train students in the ethical conduct of a professional planner, and to prepare students for careers as a practitioners within private and public domains, and to meet requirements of membership in the American Institute of Certified Planners (AICP). The course teaches students how to develop, implement and plan projects; how to prepare budgets and how to work in a bureaucratic organization. (Pre-requisite – URP 500, URP 510, URP 520; URP 525 and URP 527 OR Instructor's approval)

URP 531 Economic and Population Analysis for Planners - Three semester hours. The course examines the interactive relationships between demographic, economic and other social processes which impact on the quality of life, and influence planning policies and programs. Topics covered in the course include the vital processes of population change, economic processes and activity forecasting, and their cumulative impacts on urban and regional structures and planning policies.

URP 533 Land Use Planning - Three semester hours. This course focuses on analysis of major determinants of land use, growth potentials and land use alternatives for urban regions. Current policy issues, and approaches and techniques of land use planning at the national, state and local levels, and their impact on community revenues and outlays will also be explored.

URP 534 Community Facilities Planning - Three semester hours. This course is designed to set forth and explore the methods, techniques, analysis and planning for the delivery of basic community facilities in terms of programs, policies, and physical facilities. Areas of exploration include community parks, water and sewage, airports, fire protection, solid waste and related special community facilities. In addition, community organizational structures are also described as they related to the delivery of services and facilities operation.

URP 535 Transportation Planning - Three semester hours. This course is designed to provide an overview of the transportation planning process together with a detailed understanding of the techniques used to assess the transportation impacts of land development. Components of the long range metropolitan area transportation planning process will provide an understanding as to how area wide transportation plans are generated tested, evaluated, and implemented. The course will focus on the project level of land use and transportation system interaction.

URP 536 Health and Urban Planning - Three semester hours. This course examines federal legislation and legislative actions which have influenced the broad spectrum of health planning services, emergency medical services, nursing home standards, health maintenance organizations and relevant responsibilities of planners in the broadening health planning field.

URP 538 Transportation Modeling - Three semester hours. This course is designed to present an in-depth orientation to contemporary transportation planning computer model packages and analytical techniques. Practical applications are provided to gain experience in transportation data generation, data management, program execution

and interpretation of computer output. (Pre-requisite: URP 535)

URP 539 Transportation Administration - Three semester hours. This course will focus on a broad examination of mass transit issues including legislation, funding, technology assessment planning, and planning process, implementation, and management of public transportation operations.

URP 542 Environmental Planning - Three semester hours. This course explores the relationship between the natural environment and physical planning. Ramifications of federal, state, and local environmental analysis and impact assessment are also discussed. Broad aspects of the environment including physical, social, economic, cultural, and aesthetic are presented as a means of ensuring environmental stability for future generations.

URP 543 Housing Issues in Planning - Three semester hours. This course provides an introduction to housing markets and existing housing programs. It examines the structure of the demand and supply of housing and the various methods used by the public sector to intervene in the housing market. The different programs and policies used by governments at all levels to serve different housing goals and how well they work are analyzed. In addition, it examines the methodology and techniques for assessing housing conditions and needs, and presents case studies of current innovative approaches for addressing community housing problems. (Pre-requisite URP 506)

URP 544 Historic Preservation and Neighborhood Conservation - Three semester hours. Overview of the historic preservation field including topics such as taxation, gentrification, minority displacement, aesthetic revitalization, structural rehabilitation, alternative uses and other issues relevant to the conservation and preservation of historic facilities and neighborhoods are addressed.

URP 545 Environmental Assessment -Three semester hours. This course focuses on how to assess the likely impacts of land use plans and projects on the bio-physical and socio-economic environment. It examines federal, state and local environmental regulations with an emphasis on translating environmental assessment results into public policy, conceptualization of the mitigation of identifiable environmental conflicts.

URP 553 Community Development Process - Three semester hours. Elements of community resource development strategies based on developmental practices of private investors and governmental agencies. Special attention is given to the political, business and citizen organizational structure at the local level and their relevant impact on code enforcement practices and developmental practices.

URP 555 Terminal Research Proposal Preparation - One semester hour. This course is the initial development stage of the terminal research paper. The research proposal outlines the approach for conducting the research, with focus on the research design. The proposal is developed under the supervision of the student's approved research committee.

URP 556 Independent Research - Three semester hours. A formal presentation of an investigation directed by an assigned faculty member within the department with respect to the student's specialization. It is intended to meet the needs of students for study in urban planning beyond the regularly scheduled courses. The research will consist of either a survey of existing research on a given and specific area of study, an area of the student's interest beyond the scope of instructional courses or work on a problem approved by the faculty of the department. Registration for this course requires a written approval of the faculty advisor and the Chairman of the department.

URP 557 Terminal Research - Two semester hours. Non-thesis, faculty guided research paper developed independently by the student. The paper must thoroughly explore a relevant issue (topic or question) which shall be substantiated by data derived from primary or secondary sources. The research topic or issue must be related or derived from the student's specialty area. (Prerequisites: URP 511; URP 521; URP 555)

URP 559 Planning Project - Three semester hours. This is an applied research focused on the examination of a planning issue or problem under the supervision of the student's project committee culminating in the presentation of a report on the planning project. (Prerequisites: URP 511; URP 521; URP 555)

URP 560 International Program Management and Evaluation - Three semester hours. This course is intended to enable the student to gain an

understanding of the principles, issues, processes and problems involved in the planning, management and evaluation of international programs. Specific examples are provided from projects and programs supported by the U.S. Agency for International Development (USAID) and other principle public and private agencies.

URP 561 Interdisciplinary Seminar in Economic Development - Three semester hours. The course is designed to provide a common understanding of methods and issues involved in planning for economic development. Emphasis will be placed upon national and international development.

URP 566 Global Environment and Population Issues in Planning - Three semester hours. This course will examine the main problems of global environment change and world population dynamics including population control, rural-urban population flows and its impact, population and environment issues. This course will also examine the challenges and problems involved in the national development process, where planning for effective utilization of national resources must incorporate elements of environmental management in conjunction with national economic goals. Contemporary and potential environmental problems, such as desertification, soil erosion, water, health, and urban pollution are examined.

URP 599 Thesis - Six semester hours. Preparation of a scientific research report evidencing a significant contribution to the candidate's special area of interest and study. The thesis is based on the compilation and analysis of primary and secondary data including actual "field related" research approved by the thesis committee and accepted by the Dean of the School of Graduate Studies and Extended Education. (Prerequisites: URP 511; URP 521; URP 555 and Departmental faculty approval)

Administration

Hugine, Andrew, *President*
B.S. South Carolina State University; M.Ed. South Carolina State University; Ph.D. Michigan State University

Rolle, Kevin, *Chief of Staff*
B.S. Southern University; M. S. Southern University; Ph.D. Colorado State University

Wims, Daniel, *Provost and Vice President for Academic Affairs*
B.S. Fort Valley State University; M.S. Ohio State University; Ph.D. University of Maryland

Vital, Allen, *Vice President of Institutional Advancement*
B.A. Southern University; M.Ed., University of Maryland-Eastern Shore

Burgin, Jeffrey, *Interim Vice President for Student Affairs*
B.A. University of Cincinnati; M.Ed., Ohio University

Kobler, Wendy, *Vice President Marketing, Communication & Advancement*
B.S. University of West Florida

Johnson, Ralph, *Vice President of Business-Finance*
B.S. Bradley University; MBA Tulane University

Morrow, Greg, *Chief Information Officer*
B.S. North Carolina A&T University; M.S. North Carolina A&T University

Stewart, Juarine, *Associate Provost for Undergraduate Affairs*
B.S. Knoxville College; Ph.D., University of Tennessee Knoxville

Newkirk, Vann, *Associate Provost for Academic Affairs and Dean of Graduate Studies*
B.A. Barber-Scotia College; M.A. Winthrop University; M.S. North Carolina Central University; Ph.D. Howard University

College Deans

Newkirk, Vann, *Associate Provost for Academic Affairs and Dean of Graduate Studies*
B.A. Barber-Scotia College; M.A. Winthrop University; M.S. North Carolina Central University; Ph.D. Howard University

Sarkar, Amin, *Dean, School of Business and Public Affairs*
M.A. and Ph.D. University of California, Berkeley

Martin, Curtis, *Dean, School of Education, Humanities and Behavioral Sciences*
B.S. Ashland University; MED and Ph.D. Ohio State University

Montgomery, V. Trent, *Dean, School of Engineering, Technology & Physical Sciences*
B. S. Southern University; M.S. University of Illinois; Ph.D. University of Texas-Austin.

Walker, Lloyd, *Dean, School of Agriculture, Life and Natural Sciences*
B.S. and M.S., Prairie View A&M University; Ph.D., Texas A&M University

Graduate Studies

Saintjones, Marilyn, *Enrolled Student Manager and International Graduate Student Advisor*
B. S. Alabama Agricultural & Mechanical University; M. S. Alabama Agricultural & Mechanical University

Taylor, Beverly, *Admission Coordinator*
B. S. Tuskegee University; M.Ed. Michigan State University; AA Certification Alabama Agricultural & Mechanical University

Johnson, Jacquette, *Administrative Secretary*
A.A. Kentucky State University; B. A. Midway College

Simpson, Mylaka, *Records Management Clerk*
Further Study, Alabama Agricultural & Mechanical University

Alexander, Jeanette, *Grant and Scholarship Coordinator for Graduate Studies*
B.S Alabama Agricultural & Mechanical University

Graduate Faculty

M.D. AGGARWAL
Professor of Physics
Ph.D., Calcutta University

NESSAR U. AHMED
Professor of Civil Engineering
Ph.D., Vanderbilt University

GARY L. ALDERMAN
Associate Professor of Psychology
Ph.D., University of South Carolina

JAMES G. ALEXANDER
Professor of Finance, Economics, & OSM
Ph.D., University of Texas

MOHAMMAD A. ALIM
Professor of Electrical Engineering
Ph.D., Marquette University

VENKATA ATLURI
Associate Professor of Computer Science
Ph.D., Nagarjuna University, India

A.K. BATRA
Associate Professor of Physics
Ph.D., India Institute of Technology

SUDIP BHATTACHARJEE
Professor of Civil Engineering
Ph.D., Worchester Polytechnic Institute

GATSINZI BASANINYENZI
Associate Professor of English
Ph.D., University of Iowa

ROBERT BEAN
Associate Professor of Fine Arts
MFA, Louisiana State University

JOSEPH BEFECADU
Professor of Agribusiness
Ph.D., Oklahoma State University

KAMALA BHAT
Assistant Professor of Chemistry
Ph.D., Alabama A&M University

FREDERICK BIGENHO
Professor of Reading
Ph.D., Vanderbilt University

UDAI R. BISHNOI
Professor Emeritus of Plant & Soil Sciences
Ph.D., Mississippi State University

EDWARD L. BOND
Professor of Behavioral Sciences
Ph.D., Louisiana State University

DOROTHY BRANDON
Associate Professor of Family & Consumer Sciences
Ph.D., Ohio State University

GEORGE BROWN
Professor Emeritus of Natural Resources & Environmental Sciences
Ph.D., University of Tennessee

SUSAN BROWN
Professor of English
Ed.D., University of Alabama

JAMES O. BUKENYA
Professor of Agribusiness
Ph.D., West Virginia University

BARBARA BUSH
Associate Professor of Psychology, Counseling, Special Education & CSD
AUD., Pennsylvania College of Optometry

BARBARA CADY
Professor of Psychology, Counseling, Special Education & CSD
Ph.D., University of Kansas

VIRGINIA CAPLES
Professor of Family & Consumer Sciences
Ph.D., Iowa State University

HORACE CARNEY
PROFESSOR OF Fine Arts
Ph.D., University of Iowa

ERNST CEBERT
Associate Professor of Natural Resources & Environmental Sciences
Ph.D., Purdue University

CHRISTOPHER CHACHA
Professor of Social Work
Ph.D., University of Alabama

WILLIE CHEATHAM
Professor of Agribusiness
Ph.D., Iowa State University

ROSANNA H. CHANG
Associate Professor of Sociology and Criminal Justice
Ph.D., Oklahoma State University

SHOWKAT CHOWDHURY
Professor of Mechanical Engineering
Ph.D., Clarkson University

FRAN CHURCH
Assistant Professor of Fine Arts
D.Ed., University of Oregon

TOMMY l. COLEMAN
Professor of Natural Resources & Environmental Sciences
Ph.D., Iowa State University

KOY B. COOK, JR.
Professor of Electrical Engineering
Ph.D., Michigan State University

JULIAO E. CORREA
Associate Professor of Food & Animal Sciences
Ph.D., Michigan State University

MICHAEL D. CURLEY
Associate Professor of Physics
Ph.D., Alabama A&M University

DERRICK DAVIS
Professor of Curriculum, Teaching & Educational Leadership
Ph.D., University of Southern Mississippi

CAROL DEAKIN
Associate Professor of Psychology, Counseling, Special Education & CSD
Ph.D., Southern Illinois University of Carbondale

LUBEN DIMOV
Associate Professor of Natural Resources & Environmental Sciences
Ph.D., Louisiana State University

MOSTAFA DOKHANIAN
Professor of Physics
Ph.D., Alabama A&M University

EMEKA DUNU
Professor of Management & Marketing
Ph.D., University of North Texas

SANDRA DURHAM
Professor of Finance, Economics, & OSM
Ed.D., Auburn University

LYNNE EDMONSON
Associate Professor of Physical Education & Recreation
Ph.D., Southern Illinois University

MATTHEW E. EDWARDS
Professor of Physics
Ph.D., Howard University

VANESSA EDWARDS
Assistant Professor of Physics
Ph.D., Alabama A&M University

UCHENNA ELIKE
Professor of Finance, Economics, & OSM
Ph.D., University of Alabama

ADNAN ELKHALDY
Assistant Professor of Chemistry
Ph.D., Rajasthan University

MAGED ELSHAMY
Professor of Mathematics
Ph.D., University of Georgia

KATHYRYNN ENGBERG
Professor of English
Ph.D., University of Alabama

CHRIS ENYINDA
Professor of Management & Marketing
Ph.D., University of Tennessee/North Dakota State University

KAREN FOSTER
Professor of Curriculum, Teaching & Educational Leadership
Ph.D., University of Southern Mississippi

EDITH FRASER
Professor of Social Work
Ph.D., Smith School for Social Work

RORY FRASER
Professor of Natural Resources & Environmental Sciences
Ph.D., Pennsylvania State University

RUSSELL FRICANO
Professor of Community Planning & Urban Studies
Ph.D., Canisius College

YUJIAN FU
Assistant Professor of Computer Science
Ph.D., Florida International University

CEDEDONIO M. GAPASIN
Professor of Agribusiness
Ph.D., Pennsylvania State

MOHAMMAD K. GHANBARI
Professor of Computer Science
Ph.D., University of Alabama – Huntsville

MALINDA GILMORE
Assistant Professor of Chemistry
Ph.D., University of California at Davis

EARL N. M. GOODING
Professor of Community Planning and Urban Studies
Ph.D., Atlantic Union College

VENKATA R. GOTETI
Professor of Electrical Engineering
Ph.D., University of Massachusetts, Lowell

MARSHA D. GRIFFIN
Associate Professor of Management & Marketing
Ph.D., Louisiana Technical University

PADMAJA GUGGILLA
Assistant Professor of Physics
Ph.D., Alabama A&M University

KAY HAMILTON
Professor of Physical Education, Health & Recreation
Ph.D., Vanderbilt University

RAZI HASSAN
Associate Professor of Chemistry
Ph.D., New York University

PATRICK HAWLEY
Professor of Curriculum, Teaching & Educational Leadership
Ed.D., Indiana University

KAVEY HEIDARY
Professor of Electrical Engineering
Ph.D., Syracuse University

BERNEECE HERBERT
Professor of Community Planning & Urban Studies
Ph.D., University of Virgin Islands

LINDA HOLLOWAY
Associate Professor of Psychology, Counseling, Special Education & CSD
Ed.D., Mississippi State University

SAMPSON HOPKINSON
Assistant Professor of Biology
Ph.D., Alabama A&M University

DANNY HUTSON
Assistant Professor of Fine Arts
D.M.A., University of Oklahoma

DODO W. HORTENSE
Professor of Food & Animal Sciences
Ph.D., University of Abidjan, Ivory Coast

CHUKUDI V. IZEOGU
Professor of Community Planning & Urban Studies
Ph.D., University of California

ROHIT JAIN
Professor of Accounting
Ph.D., University of Florida

ABDUL R. JALLOH
Professor of Mechanical Engineering
Ph.D., University of Arizona

HOSSEIN JAMSHIDI
Associate Professor of Management & Marketing
Ph.D., University of Alabama, Huntsville

RUBY JEWEL
Assistant Professor of Curriculum, Teaching & Educational Leadership
Ed.D., University of Tennessee

EDWARD L. JONES
Professor of Curriculum, Teaching & Educational Leadership
Ph.D., Michigan State University

JEANETTE JONES
Professor of Biology
Ph.D., Ohio State University

PURUSHOTTAM KALE
Professor of Biology
Ph.D., Banaras Hindu University, India

JOHNSON KAMALU
Professor of Family & Consumer Sciences
Ph.D., Howard University

RAMESH KANTETY
Associate Professor of Natural Resources & Environmental Sciences
Ph.D., Purdue University

JITENDRA KAPOOR
Professor of Social Work
Ph.D., Lucknow University

MOHAMMED KARIM
Professor of Mathematics
Ph.D., Concordia University, Montreal

LAMIN KASSAMA
Assistant Professor of Food & Animal Sciences
Ph.D., University of Montreal, Canada

MARGARET KELLY
Professor of Family & Consumer Sciences
Ph.D., Iowa State University

JEONOAH KIM
Professor of Social Work
Ph.D., Ohio State University

JONGHWA KIM
Associate Professor of Chemistry
Ph.D., Ohio State University

KOFFI KONAN
Professor of Food & Animal Sciences
Ph.D., University of Picardie, France

NICKOLAI KUKHTAREV
Professor of Physics
Ph.D., University of Physics, Kier, Ukraine

RAVINDRA B. LAL
Professor Emeritus
Ph.D., Agra University, India

JUNGKI LEE
Professor of Management & Marketing
Ph.D., University of Alabama

JOSEPH LEE
Assistant Professor of Community Planning & Urban Studies
MURP, University of North Carolina

MAKONNEN LEMA
Associate Professor of Food & Animal Sciences
Ph.D., Oklahoma State University

GOANG S. LIAW
Professor of Civil Engineering
Ph.D., University of Alabama, Huntsville

RENA LOTT
Professor of Early Childhood & Elementary Education
Ph.D., Texas Women's University

GEORGE MAMBOLEO
Professor of Education & Psychology
Ph.D., University of Arizona

CALVIN MATTHEWS
Professor of Education & Psychology
Ph.D., Michigan State University

MONDAY O. MBILA
Associate Professor of Plant & Soil Science
Ph.D., Iowa State University

EVERTON G. MCINTOSH
Professor of Psychology, Counseling, Special Education & CSD
Ph.D., Howard University

JOANNE MCLINN
Assistant Professor of Social Work
M.Ed., Tuskegee University

SRINIVASA RAO S. MENTREDDY
Professor of Plant & Soil Sciences
Ph.D., University of Tasmania, Australia

FAYEQUE MIJID
Associate Professor of Mathematics
Ph.D., University of Alabama, Tuscaloosa

AMIR MOBASHER
Professor of Mechanical Engineering
Ph.D., University of Alabama, Huntsville

ERNEST E. MOYERS
Associate Professor of Computer Science
Ph.D., Pacific Western University

VERNELL TRENT MONTGOMERY
Professor of Electrical Engineering
Ph.D., University of Texas, Austin

KOZMA NAKA
Professor of Plant & Soil Sciences
Ph.D., Virginia Tech University

ERMSON NYAKATAWA
Professor of Plant & Soil Sciences
Ph.D., Alabama A&M University

LEOPOLD M. NYOCHEMBERY
Professor of Natural Resources & Environmental Sciences
Ph.D., Penn State University

EMMANUEL E. OBUAH
Associate Professor Political Science
Ph.D., University of Sussex, Falmer, United Kingdom

JAMIU ODUTOLA
Associate Professor of Chemistry
Ph.D., University of Oregon, Eugene

SYLVANUS OGBURIA
Professor of Management & Marketing
Ph.D., Louisiana State University

FLORENCE OKAFOR
Professor of Biology
Ph.D., University of Nigeria

PAUL OKWEYE
Assistant Professor of Chemistry
Ph.D., Alabama A&M University

JACOB OLUWOYE
Professor of Community Planning & Urban Studies
Ph.D., University of New South Wales

OKWUDILI ONIANWA
Professor of Agribusiness
Ph.D., University of Minnesota

DONALD OUTLAND
Professor of Community Planning & Urban Studies
M.S., Urban Studies, Alabama A&M University

RUBY PACUMBABA JR.
Assistant Professor of Plant & Soil Sciences
Ph.D., Kansas State University

CRAIG D. PATTON
Associate Professor of History & Behavioral Sciences
Ph.D., University of California, Irvine

TONYA E. PERRY
Professor of Social Work
Ph.D., University of Alabama

O. GUY POSEY
Associate Professor of Management & Marketing
Ph.D., University of North Texas, Denton

ROBERT POWELL
Professor of English
Ph.D., Florida State University

DELORES A. PRICE
Associate Professor of Curriculum, Teaching & Educational Leadership
Ph.D. Loyola University

XIAOQING (CATHY) QIAN
Professor of Mechanical Engineering
Ph.D., University of Tennessee

HALIMA QURESHI
Professor of Economics and Finance
Ph.D., Vanderbilt University

ARJUNA RANASINGHE
Professor of Mathematics
Ph.D., University of Alabama, Huntsville

B.R. REDDY
Professor of Physics
Ph.D., Indian Institute of Technology, Kanpur

PHILLIP L. REDRICK
Associate Professor of Curriculum, Teaching & Educational Leadership
Ph.D., Ohio State University

HOPE C. REED
Associate Professor of Psychology, Counseling, Special Education & CSD
SLP.D., Nova Southeastern University

JAMES A. REID
Assistant Professor of Physical Education, Health & Recreation
Ph.D., Middle Tennessee State University

HARACE W. RICE
Professor of Management & Marketing
Ph.D., University of Toledo

MOHAMMAD G. ROBBANI
Professor of Finance, Economics & OSM
Ph.D., Florida International University

RUBEN ROJAS-OVIEDO
Associate Professor of Mechanical Engineering
Ph.D., Auburn University

PETER L. ROMINE
Professor of Technology
Ph.D., University of Alabama, Huntsville

JOSEPH H. ROSHER
Assistant Professor of Sociology and Criminal Justice
Ph.D., Mississippi State University

PABITRA K. SAHA
Professor of Civil Engineering
Ph.D., University of Illinois, Urbana

ELAINE SAMPSON
PROFESSOR OF Education & Psychology
Ph.D., University of Cincinnati

OLA GOODE SANDERS
Professor of Family & Consumer Sciences
Ph.D., University of Tennessee

AMIN SARKAR
Professor of Economics & Finance
Ph.D., University of California, Berkeley

ANDREW R. SCOTT
Associate Professor of Electrical Engineering
Ph.D., University of Missouri-Kansas City

MOAMMED A. SEIF
Professor (Chairperson) of Mechanical Engineering
Ph.D., University of Central Florida

ZACHARY SENWO
Professor of Plant & Soil Sciences
Ph.D., Iowa State University

ANUP SHARMA
Professor of Physics
Ph.D., Columbia University, New York

GOVIND SHARMA
Professor of Plant & Soil Sciences
Ph.D., Kansas State University

QIAN SHEN
Associate Professor of Economics & Finance & OSM
Ph.D., Southern Illinois University

RHONDA SHERROD
Professor of Education & Psychology
Ph.D., Jackson State University

NAHID A. SISTANI
Professor of Family & Consumer Sciences
Ph.D., Alabama A&M University

RONALD L. SLAUGHTER
Associate Professor of Behavioral Sciences
Ph.D., Atlanta University

CYNTHIA SMITH
Professor (Chairperson) of Family & Consumer Sciences
Ph.D., Ohio State University

SCOTT L. SMITH
Associate Professor of Fine Arts
MFA, University of Miami

KHAIRY M. SOLIMAN
Professor of Plant & Soil Sciences
Ph.D., University of California, Davis

MARY SPOR
Professor of Curriculum, Teaching & Educational Leadership
Ph.D., University of Pittsburg

FREDDIE STEWART
Associate Professor of Psychology, Counseling, Special Education & CSD
Ed.D., University of Alabama

JAMES STEWART
Professor of Psychology
Ed.D., University of Tennessee

William (WES) STONE
Associate Professor of Plant & Soil Science
Ph.D., Utah State University

WUBISHET TADESSE
Associate Professor of Plant & Soil Science
Ph.D., Alabama A&M University

ARJUN TAN
Professor Emeritus of Physics
Ph.D., University of Alabama

LESLIE TAYLOR
Professor of Psychology, Counseling, Special Education & CSD
Ph.D., Purdue University

ROBERT W. TAYLOR
Professor of Plant & Soil Sciences
Ph.D., Michigan State University

ENOCH C. TEMPLE
Associate Professor Emeritus of Mathematics
Ph.D., University of Alabama

RANATUNGA THILINI
Assistant Professor of Plant & Soil Sciences
Ph.D., Purdue University

JAMES THOMPSON
Professor of Chemistry
Ph.D., University of Delaware

WENDALL H. THOMPSON
Professor of Curriculum, Teaching & Educational Leadership
Ph.D., Kansas State University

THELMA TOWNSEND
Associate Professor of English
Ph.D., Michigan State University

DOUGLAS TURNER
Assistant Professor of Political Science
M.P.S., Cornell University

MICHAEL O. VAUGHN
Assistant Professor of History
M.S. and M.A., University of Southern Mississippi

JENNIFER VINSON
Professor of Psychology, Counseling, Special Education & CSD
Ph.D., Nova Southeastern University

MARTHA VERGHESE
Professor of Food & Animal Sciences
Ph.D., Alabama A&M University

JESSICA WALKER
Professor of English
Ph.D., University of Georgia

LLOYD T. WALKER
Professor of Food & Animal Sciences
Ph.D., Texas A&M University

HWEI CENG WANG
Professor of Accounting and Business Education
Ph.D., Nova Southeastern University

JAI CHING WANG
Professor of Physics
Ph.D., University of Massachusetts

YONG WANG
Professor of Plant & Soil Sciences
Ph.D., University of Southern Mississippi

KENNETH WARD
Professor of Plant & Soil Sciences
Ph.D., Mississippi State University

RUFINA WARD
Professor of Plant & Soil Sciences
Ph.D., University of California, Riverside

JOE WASHINGTON
Associate Professor Fine Arts
MFA, School of the Arts Institute of Chicago

ANNIE M. WELLS
Professor o f Psychology, Counseling, Special Education & CSD
Ph.D., University of Montana, Missoula

DARLENE TURNER-WHITE
Assistant Professor of Early Childhood & Elementary Education
Ph.D., Nova Southwestern University

TAMIKA WILLIAMS
Professor of Fine Arts
MFA, Memphis College of Art

CONSTANCE J. WILSON
Professor of Community Planning & Urban Studies
Ph.D., University of Alabama, Tuscaloosa

JOAN FOBBS-WILSON
Associate Professor of Psychology, Counseling, Special Education & CSD
Ph.D., Ohio State University

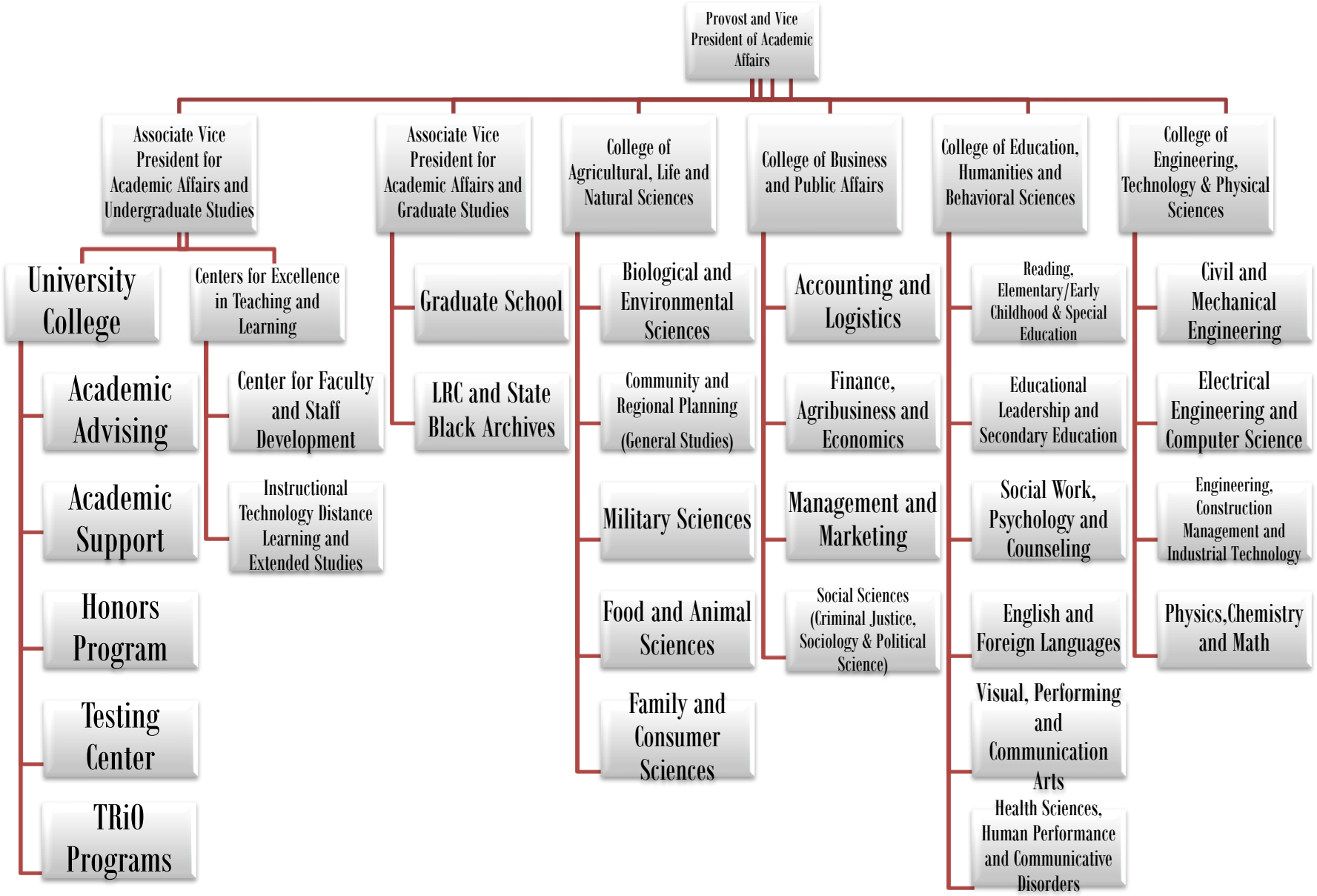
SHELLEY WYCKOFF
Professor Emeritus of Social Work
Ed.D., Vanderbilt

CHEN XIONGWEN
Assistant Professor of Plant & Soil Sciences
Ph.D., Northeast Forestry University, Harbin, China

ALLISON P. YOUNG
Assistant Professor of Family & Consumer Sciences
Ph.D., University of Minnesota

TIANXI ZHANG
Professor of Physics
Ph.D., Nagoya University

ACADEMIC AFFAIRS ORGANIZATIONAL CHART



INDEX

ABOUT ALABAMA A&M UNIVERSITY,7
ACADEMIC CALENDAR, 4
ACADEMIC COMPUTING, *9*
ACADEMIC INTERGRITY, *20*
ACADEMIC PROBATION,20
ACADEMIC SUPPORT AND FACILITIES, *9*
ACCREDITATION, 2
ADMISSIONS POLICIES, *12*
AGRIBUSINESS, MS DEGREE PROGRAM, 28
ALABAMA A&M UNIVERSITY MISSION STATEMENT, 8
ALABAMA A&M UNIVERSITY ORGANIZATIONAL CHART, 183
APPEALS/GRIEVEANCE PROCESS, *20*
APPLICATION FOR GRADUATION, *25*
ART EDUCATION, MED DEGREE PROGAM, 29
ASSISTANTSHIPS/FELLOWSHIPS, 19
AUDITING, 23
BIOLOGY, MS DEGREE PROGRAM, 30
BOOKSTORE, *11*
BUSINESS MANAGEMENT & ADMINISTRATION, MBA DEGREE PROGRAM, 33
CAFETERIA SERVICES, *11*
CAREER DEVELOPMENT SERVICES, *9*
CLASS ATTENDANCE, *21*
CLINICAL PSYCHOLOGY, DEGREE PROGRAM, 35
COMMUNICATIVE SCIENCES & DISORDERS, DEGREE PROGRAM, 36
COMPREHENSIVE EXAM REQUIRMENTS, *24*
COMPUTER SCIENCE, DEGREE PROGRAM, 39
CONFERRING OF DEGREE, 26
COUNSELING & GUIDANCE, MS DEGREE PROGRAM, 41
COUNSELING PSYCHOLOGY, MS DEGREE PROGRAM, 42
COURSE DESCRIPTIONS, 99
COURSE LOAD REQUIREMENTS, 16
CREDIT HOUR REQUIREMENTS, *21*
CREDITS AND QUALITY POINTS, 24
CROSS-REGISTRATION WITH THE UNIVERSITY OF ALABAMA-HUNTSVILLE, 16
DEPARTMENT OF PUBLIC SAFETY, *10*
DISMISSAL FROM GRADUATE STUDY, *20*
DISPOSITION OF APPLICATION MATERIALS, *16*
EDUCATIONAL TESTING SERVICE, 14
ELEMENTARY EDUCATION, MED/MS DEGREE PROGRAMS, 44
ENGLISH WRITING PROFICIENCY REQUIREMENT, *22*
FAMILY AND CONSUMER SCIENCES, MS DEGREE PROGRAM, 50
FEDERAL REGULATIONS, *16*
FEES AND EXPENSES, *16*
FIELD RESEARCH REQUIREMENTS, 23
FINANCIAL AID, *19*
FOOD SCIENCE, MS DEGREE PROGRAM, 54
FOOD SCIENCE, PH.D. PROGRAM, 55
FOREIGN TRANSFER CREDITS (ACCEPTANCE), 24
GRADE CHANGES, 23
GRADING POLICIES, *22*
GRADUATE FACULTY, 176
GUIDANCE AND PSYCHOLOGY, MS DEGREE PROGRAM, 58
INCOMPLETE WORK, 23
INDEPENDENT STUDY, 23
INDUSTRIAL TECHNOLOGY, MS DEGREE PROGRAM, 59
INSTRUCTIONAL LEADERSHIP, MED DEGREE PROGRAM, 62
INTERNATIONAL STUDENT PROGRAMS, *9*
LEARNING RESOURCES CENTER, *9*
LOANS AND PART-TIME EMPLOYMENT, 19
MATERIEL ENGINEERING, MS DEGREE PROGRAM, 64
MATHEMATICS PROFICIENCY SKILLS, *22*
NON-DEGREE STUDENT REQUIREMENTS , 13
OFFICE OF VETERAN AFFAIRS, *10*
PARKING, *10*
PHYSICAL EDUCATION, DEGREE PROGRAM, 67
PHYSICS, MS DEGREE PROGRAM, 69
PHYSICS, PH.D. PROGRAM, 71
PLANT AND SOIL SCIENCE, MS DEGREE PROGRAMS, 74
PLANT AND SOIL SCIENCE, PH.D. PROGRAM, 75
PROGRAMS OF STUDY, *21*
QUALITY OF WORK, *20*
READING, PH.D.PROGRAM, 77
READMISSION POLICY, *14*
REFUND POLICIES, *18*
REGISTRATION, *16*
REPETITION OF COURSES, 23
RESIDENCY REQUIREMENTS, *17*
SCHOLARSHIP REQUIREMENTS, 19
SCHOOL OF GRADUATE STUDIES AT ALABAMA A&M UNIVERSITY, 8
SECOND MASTER'S DEGREE, 26
SECONDARY EDUCATION, MED/MS DEGREE PROGRAMS, 79
SOCIAL WORK, MSW DEGREE PROGRAMS, 88
SPECIAL EDUCATION, MED/MS DEGREE PROGRAMS, 92
STATUTE OF LIMITATIONS FOR COURSE WORK, *21*
STUDENT HEALTH SERVICES, *10*
STUDENT IDENTIFICATION CARDS, *10*
STUDENT LIFE, *8*
TEST OF ENGLISH AS A FOREIGN LANGUAGE (TOEFL), 14
THESIS/DISERTATION REQUIREMENTS, *25*
CHANGING FROM THESIS TO NON-THESIS OPTION, 65
TRANSFER CREDIT INFORMATION, 24
GRADUATE CREDIT FOR NATIONAL BOARD CERTIFICATION, 24
URBAN AND REGIONAL PLANNING, MUP DEGREE PROGRAM, 96
WITHDRAWAL, 23
WORLD EDUCATION SERVICES, 14