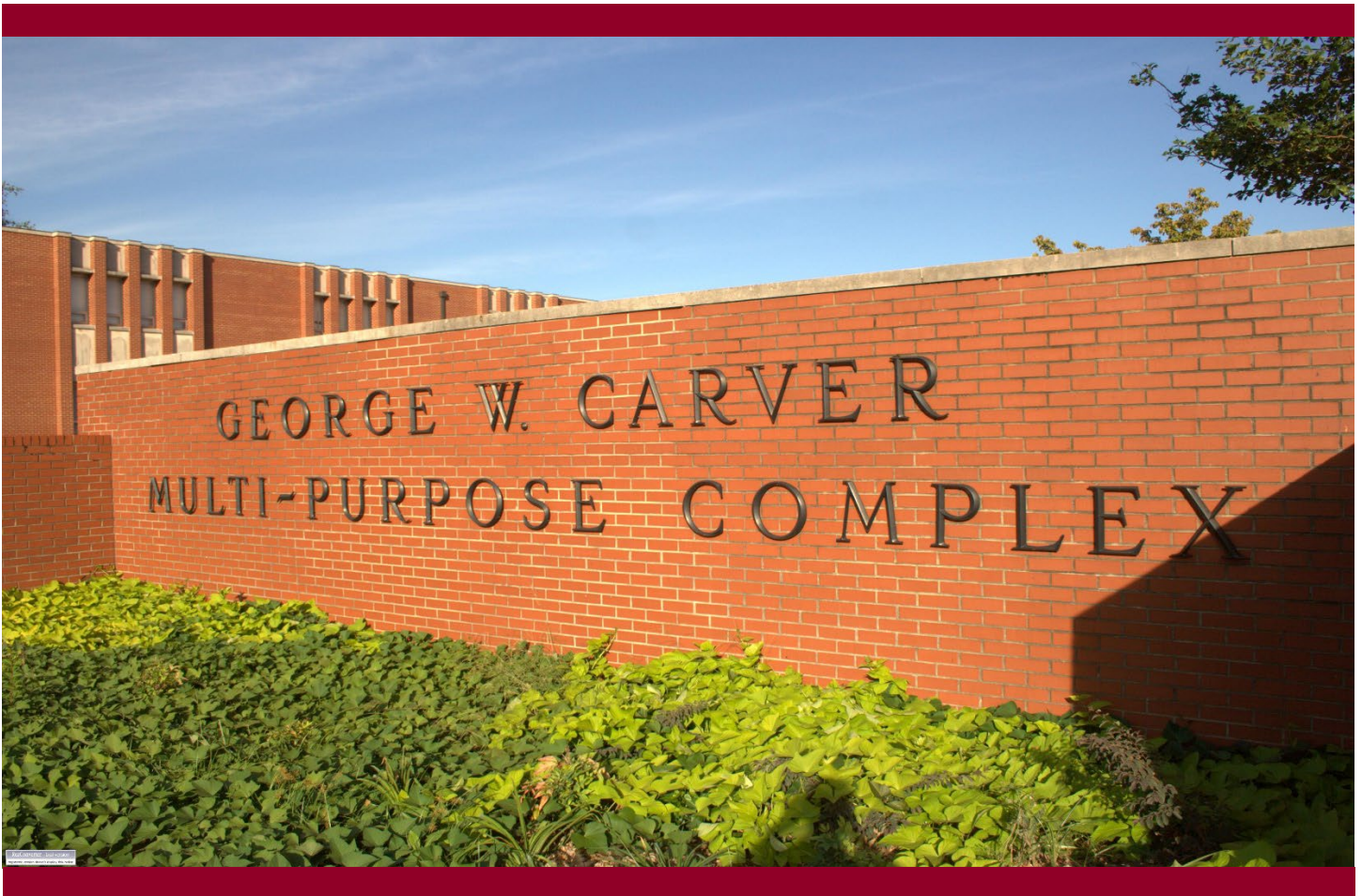




**ALABAMA  
AGRICULTURAL & MECHANICAL  
UNIVERSITY**



**GRADUATE CATALOG  
2017 - 2018**

# Alabama Agricultural and Mechanical University

## *Graduate Catalog*

**2017 – 2018**

(Fall 2017 through Summer 2018)

4900 Meridian Street  
Normal, Alabama 35762

(256) 372-5000

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## University Profile

Location:	Normal, Alabama Northeast sector of Alabama 89 miles south of Nashville, TN
Academic Year:	Two semesters (Fall and Spring) and a summer session (optional)
Office Hours:	8:00 a.m. to 5:00 p.m., Monday – Friday
Graduate Office:	
Telephone:	(256) 372-5266 – main (256) 372-5267 – alternate
Facsimile:	(256) 372-5269
URL:	<a href="mailto:grad.school1@aamu.edu">grad.school1@aamu.edu</a>
Web:	<a href="http://www.aamu.edu/gradstudies">www.aamu.edu/gradstudies</a>
Address:	4900 Meridian Street, Normal, AL, 35762
University Calendar:	<a href="#">AAMU Calendar</a>
University Map:	<a href="#">AAMU Map</a>

**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 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.

**ABOUT 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 is a public, comprehensive 1890 Land-Grant institution, committed to access and opportunity, and dedicated to intellectual inquiry. The application of knowledge and excellence in teaching, research and service is responsive to the needs of a diverse student population and the social and economic needs of the state and region. The University offers contemporary baccalaureate, master's, educational specialist and doctoral level degrees to prepare students for careers in the arts, sciences, business, engineering, education, agriculture and technology. As a center of excellence, the University is dedicated to providing a student-centered educational environment for the emergence of scholars, scientists, leaders and critical thinkers, who are equipped to excel through their contributions and leadership in a 21st century national and global society.

**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.

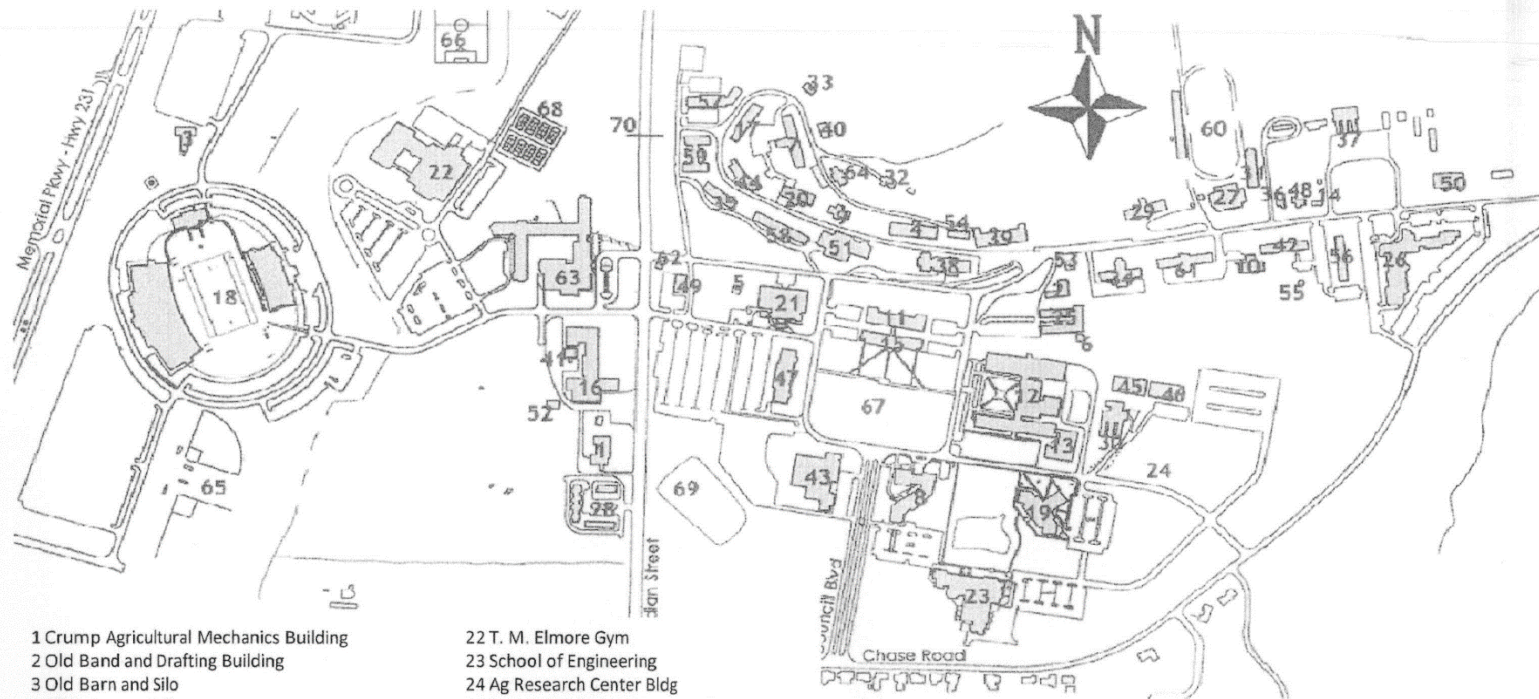
**STUDENT LIFE**

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, *Diverse Issues in Higher Education*
- Dr. Henry Panion III, Grammy award winning conductor
- Ruben Studdard, season two winner, "American Idol"
- Sun Ra, jazz musician
- Michael Crooms, music producer



- 1 Crump Agricultural Mechanics Building
- 2 Old Band and Drafting Building
- 3 Old Barn and Silo
- 4 Bibb Graves Hall
- 5 Boiler #1
- 6 Boiler #2
- 7 Buchanan Hall
- 8 School of Business
- 9 Carnegie Library
- 10 Carpentry Building
- 11 Carter Science Hall
- 12 Carver Complex
- 13 Carver Annex
- 14 Councill Credit Union
- 15 Chambers Science Building
- 16 Councill Training Center
- 17 W. H. Councill Hall
- 18 Louis Crews Stadium
- 19 Dawson Building
- 20 Drake Dining Hall
- 21 Drake Memorial Learning Resources Center (Library)

- 22 T. M. Elmore Gym
- 23 School of Engineering
- 24 Ag Research Center Bldg
- 25 Foster Irradiation Center
- 26 Foster Living Learning Complex
- 27 Frank Lewis Gym
- 28 Gravitt Apartments
- 29 Grayson Hall
- 30 Greenhouses
- 31 Gym Annex
- 32 Hillcrest (President's Home)
- 33 Honors Building
- 34 Hopkins Hall
- 35 Hurt Hall
- 36 Infirmary
- 37 Eugene Kendrick Maintenance Facility
- 38 Ralph H. Lee University Center
- 39 McCalep Vocational Building
- 40 McCormick Building
- 41 Mechanical Engineering Annex
- 42 Morris Hall
- 43 Morrison Building

- 44 Palmer Hall
- 45 T. G. Parker Building
- 46 T. G. Parker Annex
- 47 Patton Hall
- 48 Polk Cottage
- 49 Post Office
- 50 Poultry Science Building
- 51 Prentice Dining Hall
- 52 ROTC Skills Center
- 53 Campus Police Office
- 54 Old Security Office
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- 58 Thigpen Hall
- 59 Thomas Hall
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## **Admissions Policies and Procedures**

### **Admission 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 2.75 on a 4.0 scale in all undergraduate courses taken at a regionally accredited college or university).
2. Official, GRE/GMAT scores for programs that require entrance exams. The following master's degree programs do not require GRE/ GMAT scores: Biology, Pre-Elementary Education, Family & Consumer Sciences, Plant & Soil Science, Psychology, Secondary Education, and Social Work.
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, 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.
6. Students who previously attended other graduate schools must be in good standing (i.e., minimum GPA, 3.0) when seeking admission to a graduate degree program.
2. 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 many programs. The Graduate Management Admission Test (GMAT) is required for the MBA (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 "Graduate Admission Reference" 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). 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 coursework to strengthen their backgrounds.
7. Other requirements specified by the particular degree program to which the applicant is applying.

### **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.

### **Admission Categories**

#### **Regular/Full**

To be admitted unconditionally, applicants must:

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. Graduates of the following institutions do not have to pay the application fee: Bennett, Bethune-Cookman, Central State, Chowan, Claflin, Elizabeth City State, Fisk, Fort Valley State, Harris Stowe State, Jarvis Christian, Johnson C. Smith, Lane, Livingstone, Martin Methodist, Morris, Rust, Shaw, Saint Augustine, Shaw, Texas, Tougaloo, Voorhees, Wilberforce, Wiley, and Winston-Salem State.
1. Have a minimum cumulative grade point average of 2.75 (4.00 scale) at the undergraduate level from a regionally accredited college/university. Students who previously attended other graduate schools in the United States must also be in good standing (i.e., 3.00) at the institution previously attended.
2. Submit a minimum score of 146 on the verbal and 140 on the quantitative portions of the GRE (if required). Together the combined score must be a minimum of 286. Some programs may require higher GRE scores. MBA students are required to attain 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**

Conditional admission is available to applicants with a complete admission application packet but do not qualify for full admission. This could be because of a bachelor's degree GPA being below 2.75, or other departmental requirements.

Students admitted conditionally must possess a cumulative GPA of at least 2.5 on the undergraduate level, or a GPA of 2.3 with a 3.0 in the major curriculum during the final two years of undergraduate study. After completing nine graduate hours, a conditional student must attain an overall graduate grade point average of 3.00 or higher. Failure to achieve the minimum 3.0 GPA after completing nine graduate hours will result in suspension of the student from further graduate study.

Conditional status is also extended to students who do not meet the GRE/GMAT requirements. Students admitted in this category are allowed one semester to fulfill the GRE or GMAT requirement. Students failing to meet these standards can be, at the discretion of the Dean of Graduate Studies, dismissed from graduate study.

Conditionally admitted students who fail to meet other departmental requirements have two semesters (inclusive of summer sessions) to remove all provisions outlined in the original letter of admission. Students who fail to remove conditions at the end of two semesters will be ineligible to receive student loans or other forms of financial assistance.

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

The Office of Graduate Studies will not process any student seeking a change of status outside of the dates listed above.

### **Non-Degree**

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.

### **International Students**

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 foreign (non-U.S.) transcripts must be translated and evaluated by the World Education Services (WES) or a current member of the National Association of Credential Evaluation. 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](http://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.

4. All international students seeking admission into Alabama A&M University's School of Graduate Studies, who have previously attended a U.S. graduate school, must be in good standing (3.0) at the graduate school in which they previously attended. Failure to disclose information about

attendance at another U.S. graduate school is grounds for immediate denial of the application or subsequent dismissal.

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.

### **Re-Admission**

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.

### **While Still an Undergraduate**

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 2.50 GPA (on a 4.00 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.

### **Education Program Admissions While Still an Undergraduate**

Students seeking admissions into graduate degree programs in Elementary, Special, and Pre-Elementary Education, who have not completed an undergraduate degree, but are scheduled to complete an undergraduate degree (prior to the term for which they are seeking admission) into an AAMU Education degree program, may be admitted, with provisions, as a teacher education prospect, by the Graduate School. The student may be admitted as provisional, non-degree seeking, until final transcripts are received. The student must provide documented evidence of their (unofficial) undergraduate transcript indicating they are performing at or above the requisite GPA. These students must furnish a final and official transcript showing completion of the undergraduate degree before they are admitted into the Elementary, Special, or Pre-Elementary Education programs. Students who fail to submit a final transcript with the published date of degree conferral, within thirty (30) days of the semester of admission, will be ineligible to enter graduate teacher education degree programs.

### **Admission Medical Record**

The Admission Medical Record is a part of the Admission Application and must be completed, including the required immunizations, before admission is granted and class registration is permitted.

### **Application Petition/Appeal Policy**

An applicant who is denied admission to any of the University's degree programs may submit a petition to the Graduate School. The petition form may be obtained from the Graduate School's web page. A copy of the completed petition should be submitted to the Graduate School for review by the Graduate Admissions Review Committee. Recommendations or resolutions made by the Graduate Admissions Review Committee will be communicated in writing to the applicant. Decisions made by the Graduate Admissions Review Committee are final.

### **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).

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.
3. The Graduate Dean of Alabama A&M University approves such credit for acceptance.

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 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**

All non-English transcripts must be translated and evaluated by the World Education Services (WES). This review must provide a conclusive course-by-course evaluation of all coursework the student seeks to transfer.

### **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

## Financial Information

### **Fees for Tuition, Housing, Meals**

All expenses for a term must be satisfied in full at the beginning of the term as a condition of admission to classes and residential, and access to the privileges and rights of an account paid in full.

For further information, please visit their web page. You may access the link [here](#).

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### **Books And Supplies**

Textbooks may be purchased from the Bookstore located in the Ralph H. Lee Student Center.

For further information, please visit their web page. You may access the link [here](#).

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### **Restrictions Due To Indebtedness To The University**

No student will be permitted to register for a semester until all bills from the previous semester have been paid. Failure to meet financial obligations, as scheduled, will cause a forfeiture of privileges of the dining facilities, residence halls, classroom facilities and other activities.

No transcript or record will be issued for any student who is indebted to the University. This includes, but is not restricted to, a delinquent Carl D. Perkins Loan.

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### **Refund of Room Rent and Board**

The application for campus housing and subsequent room assignment is a contract between AAMU and the student for a one-year period. Room rent will not be refunded to a student unless he or she officially withdraws from the University.

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### **Disciplinary Suspension Refund**

Suspension is a temporary dismissal from the University for a specific period of time. The student loses all the rights and privileges as a student, and forfeits all fees paid.

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### **Emergency Separation for Military Spouses Policy**

Students who withdraw due to being called to active duty or spouses of persons called to active duty may be eligible for a full refund of required tuition, room and board, and fees. All students who receive Title IV funds will be processed according to federal policies. Federal policy statements are available in the Office of Student Financial Aid.

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### **Cancellation of Registration**

Students will initiate the process by requesting cancellation in the Registrar's Office. A full refund of tuition and fees will be given if the student is eligible.

## Financial Aid Policies and Procedures

### Types of 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:

#### Assistantships (research or teaching)

A number of graduate assistantships are available in departments that offer graduate degree programs. To maintain a graduate assistantship (Teaching or Research) a student must be enrolled in a minimum of six (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. An assistantship is limited to four semesters (two academic years) not inclusive of summer sessions. Students must apply for extensions. Master of Science students are limited to 20 hours per week maximum on assistantships.

#### Fellowships (research or teaching)

A number of graduate fellowships 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 & 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.

#### Scholarships

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.

### Satisfactory Academic Progress

A student must meet the standards of Satisfactory Academic Progress in order to receive Title IV funds. The concept of Satisfactory Progress goes beyond good standing to mean evidence of positive movement toward the student's degree.

Alabama A&M University is required by federal regulation, to establish standards of Satisfactory Academic Progress Policy for students receiving assistance through the below named programs:

1. Federal Direct Loan Program
2. Federal Carl D. Perkins Loan
3. Federal Work Study (FWS)
4. Federal Supplemental Educational Opportunity Grant
5. Federal Stafford Loan Program
6. Federal Parent Loans
7. Federal Pell Grant
8. Alabama Student Assistance Grant
9. Academic Competitiveness Grant (ACG)
10. National SMART Grant
11. Teacher Education Assistance for College and Higher Education Grant (TEACH)

Graduate students must maintain a cumulative GPA of 3.00. The maximum allowable hours that a graduate student can attempt and remain eligible to receive Title IV funds are outlined below:

Maximum Credit Hours	Description
70	Traditional master's degree
80	Graduate business degree
100	Specialist's degree or 2 <sup>nd</sup> master's (Both includes master's degree hours)
120	Doctoral degree (includes master's degree hours)

- Grades of "I" received during the first two semesters, by graduate students enrolled in Thesis or Dissertation courses are exempt from being included in the total hours attempted.
- Title IV funds will not be granted to graduate students who have attempted more than 120 credit hours.

Each of the following components must be met by the aid recipient:

- Qualitative Component (the grade point average you must maintain)
- Quantitative Component (the number of hours you must successfully pass)
- Time Frame Component (the length of time you will be eligible to receive aid).

To receive aid, students must successfully earn the required percentage of attempted hours, obtain the grade point average and not exceed the number of hours of eligibility. All students who desire to become or who are recipients of Title IV funds must meet the Standards of Satisfactory Academic Progress Policy requirements.

However, in all cases graduate students are required to earn at least 67% of the hours which they attempt. All periods of a student enrollment count when calculating Satisfactory

Academic Progress, even periods in which the student did not receive Title IV funds.

### **Financial Aid Appeals Process**

Students losing aid may appeal to have their Title IV aid reinstated only under the following conditions:

1. Undue hardship as a result of extenuating circumstances such as;
  - a. Student's illness
  - b. Illness or death of a parent or spouse

All students seeking to redress a financial aid decision must file an appeal within two weeks of the date the student is notified of the financial aid suspension.

For more information on the Appeals process visit the financial aid web site at:

<http://www.aamu.edu/Admissions/fincialaid/importantinformation/Pages/Satisfactory-Academic-Progress-Policy.aspx>.

Students who fail to meet the requirements for Satisfactory Academic Progress may file a financial aid appeal. Appeals can be submitted online via the financial aid website. The appeals must include the reason why the student failed to make "Satisfactory Academic Progress" as well as a plan of action that will allow the student to make SAP at the next evaluation. If an appeal is approved, the student is placed on probation for a one semester period. Students who have not met the requirements after the probationary period are required to submit a new appeal along with an academic plan which will ensure that they are able to meet Satisfactory Academic Progress by a specific point in time. This timeframe must coincide with the maximum timeframe outlined in the University's Satisfactory Academic Policy.

## **Registration Policies and Procedures**

### **General Registration Guidelines**

Every graduate student is expected to become familiar with the University and all Graduate School regulations. The information and educational requirements in the catalog 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.

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.

### **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 (9) graduate credit hours is 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 six (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.

## Academic Policies and Procedures

### 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
	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 (thesis, dissertation, research)

### Auditing

A student may register to audit a course only with the approval of the instructor. The letter "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 has 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) if the courses are to be listed on the official student's program of study submitted to the School of Graduate Studies. 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.

However, graduate students are only allowed to repeat a course once if it is listed on the official student's program of study. Any student who repeats and fails a course the second time may be dismissed from the graduate degree program.

### 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.

### Catalog Rights and Exclusions

Students' academic requirements are based on the Catalog that is in force during their first semester of enrollment at Alabama A&M University. Students are not allowed to switch from one catalog to another. Students who transfer from one program to another are admitted to the new program under the catalog-in-force at the time of admission. Dismissed students are reinstated under the catalog-in-force at the time of reinstatement.

### Responsibility Statement

While Alabama A&M University will endeavor to provide timely and accurate advisement, each student is held responsible for reading, understanding, and meeting the requirements for graduation as set forth in the University Graduate Bulletin.

### Request for Transcript

In compliance with the Family Educational Rights and Privacy Act, Alabama A&M University does not release transcripts of a student's work at the University except upon the student's written request. A student or former student who desires a transcript of his/her record from the University must make this request in writing to the Registrar. Students or former students requesting transcripts should state all possible names under which their records may be located. **Telephone requests cannot be honored.**

A student may secure an unofficial transcript for his/her use, but official transcripts must be sent by the Registrar's Office to other colleges, organizations, companies and other interested sources. "Official" transcripts are not normally hand-carried without prior permission of the receiving institution. However, if this permission is granted, the transcript must be in a sealed envelope and marked "issued to student."

Each student is entitled to one (1) transcript without charge. A fee of \$5.00 is charged for each additional transcript, whether it is an official or unofficial copy. Each student should consult the

University's fee schedule or contact the Office of the Registrar to verify the current fee for a copy of the transcript.

Transcripts are not issued to or for students who have outstanding obligations to the University.

### Academic Loads

Nine (9) graduate credit hours are considered a full academic load during the two regular academic semesters. Six (6) graduate credit hours are considered a full academic load during the Summer Session. To maintain a graduate assistantship (Teaching or Research), a student must be enrolled in a minimum of six (6) graduate hours during the regular academic semester and three (3) during the summer session. During summer sessions students must enroll in 3 semester hours offered by Alabama A&M University to qualify for a graduate assistantship. As an assistant, a student may enroll in up to nine (9) graduate hours during the regular academic semester and six (6) during the summer session with the Graduate Dean's approval. Enrollment in more than 10 hours is not permitted.

### Graduate Co-op

To register for Graduate Co-op, the following must be met:

1. 3.0 GPA or higher.
2. Must have completed all CORE courses in program.
3. Co-op must be on the students Planned Degree Program at the time of registration.
4. Letter from the Department Chairperson stating that the Co-op is approved.
5. The Registration Form requesting registration in Graduate Co-op must have the signatures of the Department Chairperson and Dean of the School of Graduate Studies.

Graduate Co-op sites and Co-op supervisors must be visited and recommended for approval by the Graduate Co-op Coordinator. Exception to this policy must have the approval of the Department Chairperson and the Dean of the School of Graduate Studies. A site visit and an interview with the potential supervisor of the Graduate Co-op must be made. Once a site is "officially" approved, only the Co-op supervisor need be contacted.

Students may not register for a Graduate Co-op at a site if employed by that site. International students on "Practical Training" may not register for Graduate Co-op credit or for any classes at A&M while in Practical Training.

See the Career Development Services Office for additional requirements.

### Transient Students

Students registered at AAMU who desire credits taken at other collegiate institutions to be applied toward their degrees at AAMU must receive approval before enrolling at the other institution. The completed Transient Student Form must be signed by the student's advisor and submitted to the School of

Graduate Studies. Students who receive such approval must submit official transcripts documenting the work as soon as it is completed, whether they still desire credit for the work or not. The total number of hours taken at another institution or the sum of credits taken at AAMU and another institution during the same term cannot exceed the maximum allowed during the same enrollment term at AAMU: 10 credit hours for fall and spring semesters; 9 credit hours for the summer session. All transfer grades must be "B" or above to be accepted.

Advisors will evaluate whether or not the courses for which the student intends to enroll will transfer back to AAMU based on a comparison of course descriptions in the AAMU Bulletin and the bulletin of the institution the student wants to attend. Approval of transient credit is contingent upon whether the intended course is equivalent to a course at AAMU and whether or not it will be accepted by the major department for fulfilling of degree program course requirements.

Students and advisors are reminded that they should carefully review the number of credit hours that will be awarded for courses taken at another institution. Since AAMU awards credit for course work based on semester hours, credit hours awarded for course work completed at institutions which use a quarter system must be converted to semester hours upon transfer. In some instances, such a conversion may result in the student receiving an insufficient number of credit hours to fulfill the required number of semester hours for a course.

### **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 for 15 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.

### **Statute of Limitations**

There is a statute of limitations on all graduate 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 limitations. 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. Courses over 12 years will not be accepted for credit toward any degree program.

### **Withdrawal from Class(es)**

Students who withdraw from classes officially or unofficially should understand how withdrawals affect their eligibility for financial aid as determined by this Satisfactory Academic Progress procedure. Withdrawals affect students Cumulative Grade Point Averages. Financial aid will not be awarded, if the Grade Point Average (GPA) falls below the required level. Moreover, hours enrolled in which a student failed to complete will affect the student's completion rate. If the student falls below the required number of hours that must be completed, the student will be ineligible for further aid until all deficiencies have been resolved. In determining whether the student meets the qualitative and quantitative components, the following will not be considered as credits successfully completed: Grades of "F", "I" (Incomplete), "W" (Withdrawals), "WP" (Withdrawals while Passing); or "FA" (Failure to Appear). These grades, however, are counted as hours attempted. Transfer hours accepted toward completion of a student's program must be counted as hours attempted and hours earned. Repeated courses will also be included in the total hours attempted and earned.

### **Withdrawal from the University**

When a student finds it necessary to discontinue his or her enrollment at any time other than at the end of a semester or summer session, he or she must complete a withdrawal form obtained from the Registrar's Office. The student must clear all AAMU accounts as listed on the form. When a student withdraws before the last two weeks of any semester or summer session, the student will receive a grade of "W" in all courses. When enrolled for a regular semester, however, a student may not withdraw during the last two calendar weeks prior to the first day of final examinations. In a summer session, a student may not withdraw during the last calendar week prior to the first day of final examinations.

When a student leaves AAMU at any time during the semester or a summer session without filing a Withdrawal Form and without clearing all University accounts, the student may receive a grade of "F" in all courses. Further, he or she will forfeit all rights to a statement of honorable dismissal, thereby jeopardizing re-entry into AAMU or transfer to another accredited institution.

### **Leave of Absence**

A leave of absence permits a student to continue under the curriculum requirements which applied prior to the absence and may be granted for a maximum of one year. Students in good standing who have completed at least six (6) semester hours of

course work towards a degree may qualify for a leave of absence. A "Request for Leave of Absence" letter is the responsibility of the student and must provide the academic unit graduate advisor and the Dean of Graduate Studies appropriate information in order to make a decision. Any one of the following circumstances may be grounds for requesting a leave of absence

1. Illness or disability (permanent or temporary) or similar personal exigencies including pregnancy which make it impossible or inadvisable for a student to register for class.
2. Activities which enhance a student's professional career objectives.
3. Active duty in the armed forces of the United States.
4. Other reasons at the discretion of the Dean of Graduate Studies. After review by the Graduate Studies Office, the academic unit, and the Registrar's Office, a response is mailed to the student. A first-time leave of absence of one semester only will normally be granted upon request for students who qualify and will not require an application for readmission to the university. Registration materials for the semester following the leave will be sent to the student. Students requesting a subsequent leave or a leave longer than one semester are required to provide appropriate documentation (e.g., doctor's recommendation, verification of employment). Such requests must also be endorsed by the academic program advisor. A leave granted for more than one semester does not reserve a place for the student at this university, nor does it guarantee financial assistance. An application for admission must be filed in order to be readmitted and permitted to enroll when the leave terminates. The leave of absence, however, will not count as part of the time limitations required for a degree.

A leave of absence does not negate adherence to the policy on statute of limitations.

### **Academic Integrity**

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.

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.

### **Academic Probation**

Students enrolled in graduate degree programs offered by Alabama Agricultural & Mechanical University are expected to maintain a 3.0 cumulative grade-point average. Students whose cumulative grade-point average fall below 3.0 and are above 2.5, or who fail to make satisfactory progress, will be placed on academic probation. Students placed on academic probation are required to restore their cumulative grade point average to 3.0 within nine additional semester hours of graduate work, including repeated and dropped courses. Failure to do so may result in dismissal from graduate study. Graduate students whose cumulative GPA falls below 2.5 in any given semester are subject to dismissal, at the discretion of the Dean of Graduate Studies. However, if permission is granted for an additional semester of study, the student will remain on probation and will be limited to six credit hours of enrollment. Students must attain a semester GPA of 3.0 at the end of the probationary semester. Failure to attain the requisite GPA will result in the student being dismissed. Students who attain the requisite semester GPA will remain on probation. Individual departments may have other requirements.

### **Dismissal**

Students wishing to be readmitted following a suspension 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 dismissal from further graduate study.

### **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. Instructions for filing a grievance are available at: [http://www.aamu.edu/Academics/gradstudies/Documents/GS\\_GrievanceForm.pdf](http://www.aamu.edu/Academics/gradstudies/Documents/GS_GrievanceForm.pdf).

### **Quality of Work**

Students enrolled in graduate programs must produce 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. Other than one grade of "C" being allowed in each program, no grades below "B" will be acceptable for graduate credit.

## 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. 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.

## Change of Program

Students who wish to change their major will complete an advising session with either the current program advisor or a program advisor for the intended major. The student will complete a Change of Program Form available on-line, which must be approved by the Program Advisor, Department Chairperson, and Dean of the School in which the student wishes to enroll. The signed application is sent to the Office of Graduate Studies for processing. All coursework regardless of major remain on the student's transcript and is used to calculate the grade point average.

## 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 demonstrate 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).

## 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 146 on 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.

Enrollment in ENG 500 is not a substitute for the GRE Verbal Exam. Nor is enrollment in the course 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.

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 Mathematic 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 286 or a minimum 140 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 or GMAT are required to enroll in MTH 500 and pass the course with a grade of B or A.

Enrollment in MTH 500 is not a substitute for the GRE Mathematics Exam. Nor is enrollment in the course 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.

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.

### **Thesis/Dissertation**

Students who choose the option of writing a thesis or dissertation 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:
  - a. A Planned Degree Program.
  - b. Attend the thesis/dissertation preparation workshop.
  - c. Prepare an acceptable thesis or dissertation proposal. All thesis and dissertation papers must conform to the APA, Chicago, or MLA writing styles (depending on the preference of the specific department).
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 hour of thesis/dissertation writing during the semester they expect to defend the thesis/dissertation. The student must also submit a committee-approved draft to the Office of Graduate Studies using the ETD process (for more information see: Action Research/Final Research paper submission criteria on the Graduate School website) at least two weeks prior to the scheduling of the oral defense. All thesis and dissertation papers must be submitted electronically by the following dates:

For more details about the electronic submission of thesis and dissertation papers see the Thesis and Dissertation Guide).

5. Immediately following the candidate's oral defense examination, the student should consult either the advisor or the Graduate Office or the Thesis and Dissertation Guide for specific directions concerning binding, labeling and other routine procedures.

### **Non-Thesis Research Project/Paper**

All students completing the non-thesis option of master's degree programs (except MBA, CSD) must submit a copy of the final paper/final research project (electronically) to the Office of Graduate Studies (for more information see: final paper/final research project submission criteria on the Graduate School website). All papers submitted to the Graduate School must be received in a timely manner before the end of the semester in which the student seeks to complete the degree program.

### **Action Research**

All students seeking Ed.S. degrees must complete an Action Research project. Action Research projects are designed to solve practical problems through the application of the scientific method. Most projects are concerned with a local problem and are conducted in a local setting. Action research problems may employ either a quantitative or qualitative methodology. In the completion of the Action Research Project students must adhere to the following:

1. Enroll in the courses FED 696 and FED 697 (courses must be taken in sequence).
2. Prepare an Action Research paper proposal in conjunction with the instructor of FED 696. Each proposal must:
  - a. Briefly state the rationale for the study.
  - b. Describe the population from which the study will target. How many subjects will be used and how will they be selected (If consent will have to be given by proxy, be sure to include a statement of why this particular project is merited with this population).
  - c. Describe in non-technical terms the experimental research procedures to which subjects will be exposed. Include sufficient detail so that the instructor of FED 696 can independently evaluate the risks to subjects. If questionnaires will be used, include copies of these items with your proposal.
  - d. Describe the procedures you will use to insure that information gleaned from participants will remain confidential, or give reasons why this cannot be done. In cases involving sensitive or potentially harmful information, where subject identities are to be retained please describe your security procedures.
3. Once project has been approved by the instructor of FED 696 student continue to development of the Action Research proposal in FED 697.
4. After the final paper has been approved by the instructor of FED 697 the student must submit a copy of the paper electronically to the Office of Graduate Studies using the

ETD process (for more information see: Action Research/Final Research paper submission criteria on the Graduate School website). All papers submitted to the Graduate School must be submitted at least three weeks before the end of the semester in which the student seeks to complete the degree program.

### **Changing from Thesis to Non-Thesis**

Students are allowed one change from thesis to non-thesis 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 to non-thesis must:

1. Officially withdraw from all thesis courses.
2. Complete a new program of study which shows the additional courses the student will need to complete to finish the non-thesis option.
3. Reapply for graduation and admission to candidacy.
4. Complete all of the identified requirements (including curriculum) of the new-degree program curriculum.
5. All students who change from thesis to non-thesis are prohibited from graduating in the semester in which the change from thesis to non-thesis was initiated.

### **Comprehensive Examination**

Students eligible to take the Comprehensive Examination must formally apply for the test on the prescribed form in the office of Graduate Studies. Students who fail to apply in a timely manner will be prohibited from sitting for the Comprehensive Examination.

The scores of students who sit for a Comprehensive Exam without receiving certification to sit for the exam from the graduate program and prior approval from the Graduate School will be voided.

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 a second time, the student will be dismissed from further graduate study.

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, the Graduate Program must certify the student(s) meets the following requirements:

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 a certain percentage of the credits required for the degree, i.e., at least 66% for Master's and Educational Specialist programs and 80% for Doctoral programs.
5. Remove all I's, except thesis grades.
6. Remove all grades of "D" and "F" in the student's current program of study.

### **7. Approval of graduate advisor and coordinator.**

A student who applies to take the Comprehensive Exam must be enrolled for the entire semester in which they intend to sit for the Comprehensive Exam.

#### M.S./M.Ed.

All non-thesis master's students, with the exception of students enrolled in the degree programs in Business Management & Administration and Systems & 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 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.

## **Graduation**

### **Application for Graduation**

Students must apply for graduation before the deadline dates given below. All students seeking to graduate must be enrolled in courses at Alabama A&M University in the semester in which they seek to graduate.

Dec. Graduation	September 20 <sup>th</sup>
May Graduation	January 24 <sup>th</sup>
July Degree Completion	May 29 <sup>th</sup>

If the student fails to meet degree requirements for the semester applied, they must reapply for graduation.

### **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 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.

### **Participation in University Commencement**

The Alabama A&M University School of Graduate Studies recognizes the importance of Commencement Ceremony in our students' lives. On occasion, a student is unable to complete graduation requirements in accordance with School of Graduate Studies criteria and deadlines. Students who are projected to graduate but do not meet the graduation requirements may, with the support of their advisor, program chair, and dean of academic college, request to participate in the University Commencement Ceremony. A Request to Participate in

University Commencement Ceremony Form must be submitted to the School of Graduate Studies by April 15 for the Spring term or November 15 for the Fall term.

### **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. Students holding a master's or other advanced degree from Alabama A&M University seeking a second master's or other advanced degree from Alabama A&M University are not required to submit a new GRE/GMAT score if the original GRE score is five years old or less.

## **Intellectual Property**

Alabama A & M University recognizes and encourages the publication of works and the development/creation of inventions as an integral part of learning, research and service. The University acknowledges that research graduate students usually prepare for publication through individual effort and initiative. Publications and inventions however, may also result from work supported either partially or completely by Alabama A&M University. With the advent of innovative techniques and procedures, the variety and number of materials which might be created in a university community have increased significantly, causing the ownership of such patentable and copyrightable materials to become increasingly complex.

Alabama A&M University is aware that the value of patent materials and copyrights comes from the ability of its owner to control its use and that such value is directly related in the degree of protection it enjoys under the law. Alabama A&M University encourages the protection of such expressions of knowledge through the use of patent & copyright laws. This policy governs the ownership and disposition of intellectual property and creative works developed by students of Alabama A & M University.

### **Student Rights to Intellectual Property**

The rights, ownership and disposition of all intellectual properties shall be determined as follows:

#### Copyrights

Except as provided below, copyrightable works authored by a graduate student shall be presumed to be owned by the student. Such works may be registered, sold and licensed by the student without permission or payment to the University. Works that were assigned by and submitted to a professor must first be released to the student by the professor.

The University may assert ownership of copyrightable works created under the following conditions: Works created pursuant to agreements with the Deans of the Colleges of the University, the Dean of Graduate Studies, and the Graduate Council. Governmental or private entities shall be governed according to

such agreements. Additionally, the work must be within the scope of the student's assigned research.

The creation of the work involving substantial University resources as determined by the Intellectual Property committee. The use of University libraries, classrooms, office space, word processors or other minor uses of University computers shall not by themselves, be considered the use of substantial University resources.

Where the Intellectual Property committee determines that the University has an ownership interest in a work, the student shall, upon request, promptly execute all contracts assignments, waivers or other documents necessary to vest in the University.

Notwithstanding the student's ownership rights of the work, the University shall have the right to use, at no cost and for educational purposes only, all intellectual properties created while the student is enrolled at the University and utilized during the course of their teaching or employment activities.

#### Inventions

Inventions arising from research sponsored by the Federal Government shall be controlled by the terms of the contract, grant, or cooperative agreement, and any applicable federal regulations. Where patent rights are not claimed or are waived by the Federal Government, such inventions or discoveries shall be controlled by this policy.

Ownership of patentable and copyrightable material developed by research graduate students of Alabama A & M University, where AAMU provides support of their efforts or use of institutional resources in more than a purely incidental way (unless such resources are available without charge to the public) shall be shared by the student inventor and by AAMU. Alabama A&M University may at its sole discretion determine to release its ownership rights in the intellectual property or creative works to developer/inventor upon conditions the University deems beneficial and fair to all parties. Any such release will be provided in writing to all parties.

### **Intellectual Property Administration**

The Intellectual Property Committee shall be generally responsible for administering the Intellectual Property Policy.

1. Receive all disclosures of properties submitted under this Policy.
2. Determine the ownership of properties in accordance with guidelines developed by the Committee and approved by the President.
3. Determine whether a property, which the University owns, is subject to protection through patent, copyright or trademark registration.
4. In consultation with the student, the Office of the General Counsel and outside consultants, evaluate potential commercial use and investigate possible courses of action for protecting and/or marketing properties in which the University has an ownership interest.
5. Authorize the negotiation of licensing and technology transfer agreements.

6. Maintain complete records on all disclosures and other intellectual property matters of interest to the University administration.
7. Prepare periodic reports of the Intellectual Property Committee to the President and the Board of Trustees as requested.
8. General Counsel shall serve as an ex-officio member of the committee and serve as an advisor to the committee.

### **Invention Management**

With respect to all inventions to which the University asserts ownership, the patent rights shall be assigned by the student to the University.

For all patent rights assigned to the University under this Policy, the University will at no expense to the student make reasonable efforts to evaluate the interest of others in commercializing the property, seek licenses and options for licenses, have applications for property protection filed and prosecuted, and otherwise manage the properties or arrange for their management by recognized management organizations

If the University determines that neither commercial possibilities nor the potential contribution to the public good warrants proceeding further, the patent rights of the invention will be returned to the student and shall belong to him or her unless such action is precluded by prior agreement with sponsors. The University shall make such determination within three months from the date of disclosure, unless additional time is agreed to by the parties.

In recognition that the evaluation of inventions and the development and processing of patents and licensable inventions involves substantial time, expense and special expertise, the University may contract with outside organizations covering specific inventions believed to be patentable and patents developed therefrom, or covering all such inventions and patents in which the University claims an ownership interest.

### **Appeals**

The graduate student researcher shall have the right to appeal the decisions of the Intellectual Property Committee by filing a grievance (Level III) through the Graduate Student Appeals process. For more information on the Graduate Student Appeals process visit:

[http://www.aamu.edu/Academics/gradstudies/Documents/GS\\_GrievanceForm.pdf](http://www.aamu.edu/Academics/gradstudies/Documents/GS_GrievanceForm.pdf).

### **Academic Misconduct**

All students in attendance at Alabama A&M University are expected to be honorable and to observe standards of conduct appropriate to a community of scholars. The University expects from its students a higher standard of conduct than the minimum required to avoid discipline. All acts of dishonesty in any academic work constitute academic misconduct. This includes, but is not necessarily limited to the following:

1. Cheating – using or attempting to use unauthorized materials, information, or study aids in any academic exercise.
2. Plagiarism – representing the words, ideas, or data of another as one's own in any academic exercise.
3. Fabrication – unauthorized falsification or invention of any information or citation in an academic exercise.
4. Aiding and abetting academic dishonesty – intentionally or knowingly helping or attempting to help another student commit an act of academic dishonesty.

## Other Support Services

### 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 (LRC)

Dr. Annie Payton, Director  
Voice: (256) 372-5007, [annie.payton@aamu.edu](mailto:annie.payton@aamu.edu)

The Joseph F. Drake Memorial Library and Learning Resources Center (Drake LRC) is the main library for graduate studies at Alabama A & M University. Drake LRC named in honor of the fourth president was dedicated in 1968 and became the LRC with the merger of the library and media center. The 1,000 seat modern facility provides students with access to a collection of books, print, online journals, microforms and databases. Accessible, to students from the LRC, are two computer lab, 2 multi-purpose rooms, 7 group study rooms, learning commons areas on each level. A team of professional librarians provide services to faculty and students approximately 81 hours per week. The Virtual Library of Alabama (AVL) provides all students, teachers, and citizens of the State of Alabama with online access to essential library and information resources. It is primarily a group of online databases that have magazines, journals, and newspaper articles for research such as *EbscoHost Academic Search Primer*, *ERIC*, *Business Source Primer*, *MasterFile Primer* and *Gale's Cengage InfoTrac PowerSearch*. Drake LRC is a member of the Network of Alabama Academic Libraries (NAAL). Through this consortium network an additional seventeen databases such as *PsycInfo*, *PsycArticles*, *SportDiscus*, *SocIndex*, and *Mental Measurement Yearbook* are provided for students. For resources that are not contained in the approximately 400,000 volume collection of books, eBooks, microforms and journals, faculty and students may request those items through interlibrary loan. Drake LRC is on social media – follow us on Twitter and Facebook or call us at 256-372-4723 or 4712.

For further information, please visit their web page. You may access the link [here](#).

### Office of International Programs

Ashley Simmons, Director  
209 Ralph Lee Student Center  
Voice: (256) 372-5418, Fax: (256) 372-5952,  
[ashley.simmons@aamu.edu](mailto:ashley.simmons@aamu.edu)

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.

For further information, please visit their web page. You may access the link [here](#).

### Office of Veteran Affairs & Disability Services

Ms. Sanoyia Williams, Certifying Official  
106 Carver Complex South, Bonner Wing  
Voice: (256) 372-4263/5805, Fax (256) 372-5243,  
[sanoyia.williams@aamu.edu](mailto:sanoyia.williams@aamu.edu)

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 for Veteran Affairs works closely with the U.S. Veteran's Administration Office in the disbursement and coordination of appropriate documents and benefits.

For further information, please visit their web page. You may access the link [here](#).

For students receiving VA education benefits, any complaint against the school should be routed through the VA GI Bill® Feedback System by going to the following link: <http://www.benefits.va.gov/GIBILL/Feedback.asp>. The VA will then follow up through the appropriate channels to investigate the complaint and resolve it satisfactorily. For students receiving VA education benefits, any complaint against the school should be routed through the VA GI Bill Feedback System by going to the following link: <http://www.benefits.va.gov/GIBILL/Feedback.asp>. The VA will then follow up through the appropriate channels to investigate the complaint and resolve it satisfactorily.

GI Bill® is a registered trademark of the U.S. Department of Veterans Affairs (VA). More information about education benefits offered by VA is available at the official U.S. government Web site at <https://www.benefits.va.gov/gibill>.

### Student Health Center

Dr. Allwyn D. Graham  
4011 Meridian Street  
Voice: (256) 372-4751, [allwyn.graham@aamu.edu](mailto:allwyn.graham@aamu.edu)

The mission of the Alabama A&M University Student Health Center (SHC) is to provide quality student centered medical, counseling, and mental health services. By enabling our students

to experience and further develop a healthy, productive, and complete lifestyle. This is achieved through practices of physical, social, and psychological wellness. The SHC proudly utilizes the community health model to support preventative illness and health care maintenance.

All professional services are rendered with attention to confidentiality. The healthcare center is an outpatient campus based facility located in the AAMU Student Health and Wellness Center. Services provided at the center are covered by the required AAMU student supplemental health insurance plan.

The AAMU Student Health Center employs a licensed and professional staff which provides compassionate care to those we serve. We are a fully operational staff within the AAMU Division of Student Affairs. The students who receive health care services at our center are provided clinical and medical services for acute and chronic illnesses.

For further information, please visit their web page. You may access the link [here](#).

### **Student Wellness Center**

Ms. Brittany Morton, Membership & Marketing Coordinator  
4011 Meridian Street  
Voice: (256) 372-7002, [brittany.morton@aamu.edu](mailto:brittany.morton@aamu.edu)

The Student Health and Wellness Center, located in the heart of the Alabama A&M University Campus, offers over 78,000 square feet of fitness space to students, employees, alumni and the community.

The center's features include:

- Seven (7) lane swimming pool
- One (1) outdoor volleyball court
- Four (4) lane suspended running/walking track
- One (1) weight room and cardio training area
- Two (2) locker rooms complete with showers
- One (1) lounge area with complimentary Wi-Fi
- Six (6) lane bowling alley
- Two (2) basketball/volleyball court gymnasium
- Three (3) racquetball courts
- Three (3) multipurpose activity rooms
- Three (3) aerobics rooms

For further information, please visit their web page. You may access the link [here](#).

### **Student ID/Meal Card**

The identification/meal card is the student's official passport. It should be carried at all times. Loss of identification/meal cards should be reported immediately to the Financial Services Office (Cashier's Office) located on the first floor of Patton Hall. 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.

For further information, please visit their web page. You may access the link [here](#).

### **Student Cafeterias**

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. The unlimited meal plan provides access to all meals at the Knight Complex Student Cafeteria and the Foster Complex Student Cafeteria. Special consideration will be given to students who have medically-related dietary restrictions. 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 \$30.00 replacement fee will be charged for a lost or damaged Meal Card.

For further information, please visit their web page. You may access the link [here](#).

### **Campus Bookstore**

Ralph H. Lee Student Center

Alabama A&M University's Campus Bookstore is a full service student bookstore operated by Follett. It is located on the first floor of the Ralph Lee Student Center and is open M-F, 8-5pm.

For further information, please visit their web page. You may access the link [here](#).

### **Career Development Services**

Ms. Yvette Clayton, Director  
101 Patton Hall  
Voice: (256) 372-5690, Fax: (256) 372-5689,  
[yvette.clayton@aamu.edu](mailto:yvette.clayton@aamu.edu)

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.

For further information, please visit their web page. You may access the link [here](#).

### **Department of Public Safety**

Nadis E. Carlisle, Executive Director  
Public Safety Building

Voice: (256) 372-5555, Fax: (256) 372-8336

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.

For further information, please visit their web page. You may access the link [here](#).

### **Bulldog Transit System (BTS)**

Marshall Chimwedzi, Director  
315 Patton Hall

Voice: (256) 372-7433, [marshall.chimwedzi@aamu.edu](mailto:marshall.chimwedzi@aamu.edu)

The Bulldog Transit System is owned by Alabama A&M University Transportation. BTS shuttle buses will run continuously Monday-Friday, throughout the day, during the fall and spring semesters. There will be limited service during the summer months. No tickets, money, or reservations are needed. Students, faculty, and staff should park their cars in the color-coded parking lots and they can walk or ride the BTS to any point on campus.

For further information, please visit their web page. You may access the link [here](#).

### **Parking on Campus**

All vehicles parked on University property must display a valid University Permit or Dept of Public Safety (DPS) issued Parking Pass.

For further information, please visit their web page. You may access the link [here](#).

### **WJAB FM Radio Station**

Elvin Jenkins, Director  
Electronic Media Communications  
202 Morrison Building

Voice: (256) 372-5793, [elvin.jenkins@aamu.edu](mailto:elvin.jenkins@aamu.edu)

WJAB - FM is a professional, non-commercial radio station serving the interests of the citizens of Huntsville and surrounding areas. A mixture of various forms of jazz and blues dominate WJAB-FM's twenty-four hour, seven days a week format. Major support for the operation of the station comes from the licensee, AAMU. Additional funds are provided by AAMU listeners, the business community as well as the Corporation for Public Broadcasting.

For further information, please visit their web page. You may access the administrative link [here](#). You may access the radio station link [here](#).

## Biology

### Master of Science

Dr. Jeanette Jones, Program Coordinator  
310-B Carter Hall

Voice: (256) 372-4924, [jeanette.jones@aamu.edu](mailto:jeanette.jones@aamu.edu)

#### GRADUATE FACULTY

PROFESSORS	ASSOC. PROFESSORS	ASST. PROFESSORS
Jones, Jeanette	Hopkinson, Sampson	Farmer, Tyesha
Okafor, Florence Overton, Anthony	Yuan, Qunying	Kennedy, Karen London-Thomas, Laricca Sheeler, Cameron Vanterpool, Conwin

#### MISSION STATEMENT

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 specialization.
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.

#### DEGREE REQUIREMENTS

Students may choose a thesis option (Plan I), or non-thesis option (Plan II). The Biology Master of Science (MS) degree is a 30/36 semester hour program, organized into four major components:

1. Core courses (9 hours). 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 nine credit hours in biology concept courses. These courses focus on the basic concepts of biological research, instrumentation and ethics.
2. Specialization courses (15 [thesis] or 18 [non-thesis] hours).
3. Master's Thesis (6 hours) or Master's Report (non-thesis) and a minimum of nine (9) elective course credit hours.
4. Elective courses may be chosen from any biology concentration area or biological science-related areas as approved by the student's major advisor and/or graduate committee.
5. Oral defense (thesis) or Comprehensive examination (non-thesis)

#### Thesis Option, Plan I

All candidates must satisfactorily complete a minimum of 24 semester hours of course work, 6 thesis hours, and submit and defend an acceptable thesis, which shows creative thinking and independent judgment in developing a problem from primary sources.

#### Non-thesis Option, Plan II

All candidates must satisfactorily complete a minimum of 36 semester hours of course work, take the Comprehensive Examination and write an acceptable Master's Report to be submitted to the student's major advisor and departmental chair. The nature of the report can be a library search, survey, or experimentation as determined by the student's major advisor.

- Students must maintain the grade point averages and course grades noted on each curricula page for the program.

#### **Biology – Thesis**

30 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

CORE COURSES

BIO 500 Current Concepts in Biology	3
BIO 512 Instr in Biological Sciences	3
BIO 513 Research Ethics	1
BIO 690 Seminar	1
BIO 692 Research	1
<b>SPECIALIZATION</b>	<b>15</b>
MinHrs 15.	
<b>THESIS</b>	
Grade is Pass / Fail. MinHrs 6.	
BIO 699 Master's Thesis	1-3
Oral Defense	
<b>TEACHING ASSISTANT</b>	
Course subj/no., title, credit hours, semester taught	

\*One grade of C allowed at graduation.

### Biology – Non-thesis

36 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

<b>CORE COURSES</b>	
BIO 500 Current Concepts in Biology	3
BIO 512 Instr in Biological Sciences	3
BIO 513 Research Ethics	1
BIO 690 Seminar	1
BIO 692 Research	1
<b>SPECIALIZATION</b>	<b>18</b>
<b>ELECTIVES</b>	<b>9</b>
<b>TEACHING ASSISTANT</b>	
Course subj/no., title, credit hours, semester taught	
<b>MASTER'S REPORT</b>	
Grade is Pass / Fail.	
<b>COMPREHENSIVE EXAM</b>	
Grade is Pass / Fail.	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	

\*One grade of C allowed at graduation.

### Concentrations, Specializations & Electives

<b>MICROBIOLOGY SPECIALIZATION ELECTIVES</b>	
BIO 522 Microbial Physiology	3
BIO 523 Principles of Virology	3
BIO 524 Mycology	3
BIO 525 Parasitology	5
BIO 526 Microbial Ecology	3
BIO 621 Pathogenic Bacteriology (UAH)	5
BIO 622 Applied/Industrial Microbiology	3
BIO 623 Advanced Virology (UAH)	4
BIO 624 Immunology	4
BIO 625 Medical Mycology Lecture	3
BIO 631 Pharmacology	3

### PHYSIOLOGY SPECIALIZATION ELECTIVES

BIO 522 Microbial Physiology	3
BIO 531 Plant Physiology	4
BIO 533 Advanced Physiology I	3
BIO 534 Advanced Physiology II	3
BIO 535 Endocrinology	4
BIO 541 Cell Physiology	4
BIO 544 Cellular & Development Biology (UAH)	4
BIO 571 Plant Anatomy & Physiology	3
BIO 631 Pharmacology	3
BIO 632 Cardiovascular Physiology	3
BIO 633 Endocrinology	3
BIO 642 Advanced Cell Physiology	4
BYS 532 Animal Physiology & Lab (UAH)	4

<b>GENETICS &amp; MOLECULAR BIOLOGY SPECIALIZATION ELECTIVES</b>	
BIO 540 Molecular Biology	4
BIO 542 Analytical Biochemistry Lab	4
BIO 546 Cytogenetics	4
BIO 641 Advanced Cell Biology	4
BIO 642 Advanced Cell Physiology	4
BIO 643 Microscopy (UAH)	4
BIO 645 Human Cytogenetics & Applications	3
BIO 646 Molecular Genetics	3
BIO 647 Enzymology (UAH)	3
BIO 648 Enzymology Lab (UAH)	2
BIO 649 Advanced Genetics I	4

<b>ECOLOGY &amp; SYSTEMATICS SPECIALIZATION ELECTIVES</b>	
BIO 526 Microbial Ecology	3
BIO 560 Environmental Biology	3
BIO 561 Physiological Ecology (UAH)	4
BIO 562 Community Ecology (UAH)	4
BIO 564 Limnology (UAH)	4
BIO 565 Phycology	4
BIO 570 Plant Pathology	4
BIO 571 Plant Anatomy & Physiology	3
BIO 580 Adv Invertebrate Zoology (UAH)	4
BIO 660 Ecosystem Dynamics (UAH)	4
NRE 578 GIS, Spatial Analysis & Modeling	4
NRE 580 Natural Resource Policy	3
NRE 581 Hydrology & Watershed Management	3
NRE 586 Restoration of Forest Ecosystems	3
NRE 588 Wildlife Technology	3
NRE 589 Forest Ecological Management	3

<b>ENTOMOLOGY SPECIALIZATION ELECTIVES</b>	
BIO 551 Insect Physiology	4
BIO 552 Insect-Pest Management	4
BIO 553 Insect Taxonomy & Morphology	4
BIO 651 Medical Entomology	4
BIO 652 Advanced Applied Entomology	4
BIO 653 Taxonomy of Immature Insect	4

<b>BIOLOGY ELECTIVES*</b>	
BIO 510 Radiation Biology	4
BIO 511 Biological Control	4
BIO 590 Problems in Biological Sciences	3
BIO 691 Special Topics	1-4
FAS 671 Intro to Biotechnology	3

NRE 506 Soil Microbiology	4
NRE 535 Intro to Bioinformatics <b>OR</b>	4
NRE 545 Bioinformatics Applications	3
NRE 529 Biostatistics	4

\*Graduate courses from any of the biology M.S. specialization/concentration areas as approved by student's major advisor, may be used as elective courses.

## Business Management & Administration

### Master of Business Administration

Dr. Qian Shen, Program Coordinator  
301 College of Business & Public Affairs Building  
Voice: (256) 372-4885, [qian.sjhen@aamu.edu](mailto:qian.sjhen@aamu.edu)

#### GRADUATE FACULTY

PROFESSORS	ASSOC. PROFESSORS	ASST. PROFESSORS
Dunu, Emeka	Gabre, Helen	Abdullah, Shahnaz
Elike, Uchenna	Harris, Kendra	Jain, Ajeet
Jamshidi, Hossein	Hawkins, Andrea	Mu, Jifeng
Qureshi, Halima	McDaniel, Larry	
Robbani, Mohammad	Shen, Qian	

#### MISSION STATEMENT

The MBA Program is an integral part of the College of Business and Public Affairs, whose mission is to provide a high quality management education that promotes the development of students' potential as managers, entrepreneurs, and leaders, as well as productive employees and socially-responsible individuals.

#### ADMISSION 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) or Graduate Records Examination (GRE) and other relevant criteria. Applicants for regular admission to the program must meet all the requirements for admission to the Graduate School as well as the following:

1. MinGPA of 2.50 based on a 4.00 system.
2. Submit academic records.
3. Submit two letters of recommendation, each with appropriate signatures.
4. Submit a resume.
5. Submit a 200-250 word essay (statement of purpose)
6. GMAT score of at least 350

or  
GRE score of 146 verbal and 140 quantitative minima.

A waiver of the GMAT/GRE requirement will be considered if the candidate can verify a minimum of ten years of mid- to upper-level management experience or if the candidate has a minimum undergraduate GPA of 3.0.

#### DEGREE REQUIREMENTS

A minimum of 33 graduate-level credit hours beyond the basic core is required to complete the MBA Program. 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 24 credit hours of mandatory courses which focus on the internal and external business environments, the functional areas

of organizations, and quantitative techniques used by professionals. Students also choose nine credit hours of electives. To complete the MBA degree, students must have a minimum grade point average of 3.0 for all courses taken at Alabama A&M University as part of the MBA Program. They must also have a minimum grade point average of 3.0 for all courses taken at Alabama A&M University as part of the MBA Program beyond the basic core requirements. Transfer credit is not considered in the grade point average for the MBA Program. In addition, only students who have full admission and appropriate prerequisites will be admitted into courses in the professional core.

#### Business Management & Administration – Non-thesis

33-45 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.B.A.

**BASIC CORE	
ECO 500 Survey of Economic Analysis	OR 3
Fundamentals of Economics	
MBA 503 Quantitative Methods for Business	OR 3
Business Math and Statistics course	
MBA 506 Found. of Accounting & Finance	OR 3
Financial Accounting: A Mgt Perspective course and Understanding Corporate Finance course (2 classes)	
MBA 507 Basics of Mgt & Marketing	OR Princ of Mgt 3
course and Princ of Mkt course (2 classes)	
PROFESSIONAL CORE	
ACC 512 Accounting Analysis for Mgt	3
ECO 514 Managerial Economics	3
FIN 511 Financial Mgt and Policy	3
MBA 517 Global Issues in Business	3
MGT 510 Operations Management	3
MGT 515 Organizational Theory & Behavior	3
MGT 516 Strategic Management	3
MKT 514 Mgt of Marketing Activities	3
ELECTIVES	
	9

\*One grade of C allowed at graduation.

\*\*Depending upon previous academic records, students may be exempted from part or all of the basic core courses to complete the degree by Coordinator of the MBA Program.

#### BUSINESS MANAGEMENT & ADMINISTRATION ELECTIVES

Choose 9 hours

ACC 577 Special Topics in Accounting	3
ECO 503 Macroeconomic Theory	3
FIN 541 Security Analysis & Portfolio Mgt	3
LSM 536 Logistics & Supply Chain Mgt	3
LSM 571 Adaptive Supply Chain Mgt	3
LSM 572 Logistics & Supply Chain Risk Mgt	3
MGT 564 Human Resource Management	3
MGT 565 Entrepreneurship/Small Bus Mgt	3
MGT 580 Emerging Information Technologies	3
MGT 595 Leadership in Organizations	3
MKT 532 Consumer Behavior	3
MKT 538 International Marketing & Logistics	3

**LOGISTICS SPECIALIZATION ELECTIVES****Choose 9 hours**

LSM 536 Logistics & Supply Chain Mgt	3
LSM 571 Adaptive Supply Chain Mgt	3
LSM 572 Log & Supply Chain Risk Mgt	3
LSM 599 Strategic Supply Chain Planning	3

## Communicative Sciences & Disorders

### Master of Science

Dr. Carol Deakin, Program Coordinator  
104 Carver Complex North – Hollings Wing  
Voice: (256) 372-4043, [carol.deakin@aamu.edu](mailto:carol.deakin@aamu.edu)

#### GRADUATE FACULTY

PROFESSORS	ASSOC. PROFESSORS	ASST. PROFESSORS
Cady, Barbara	Bush, Barbara	Lewis, Cynthia
Vinson, Jennifer	Deakin, Carol	Phillips-Ross, Esther
	Reed, Hope	

#### 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 practice 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) for 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 – Apr 15<sup>th</sup> Spring – Oct 15<sup>th</sup>  
Note: CSD application deadlines are different from the Office of Graduate Studies. Only completed packages will be reviewed.

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 146 (400) on the Verbal portion and 140 (400) on the Quantitative portion is required.
3. Transcripts of all undergraduate and graduate work attempted, including junior, community, and four year 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.

#### 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. Students who do not hold a bachelor's degree in speech pathology will 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. 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.

#### Advising

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. Decision on clinical/academic performance and possible termination of students from the program will be based on factors such as course grades, demonstrated clinical competence, and personality/disposition factors.

#### Praxis

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 comprehensive exam of final semester of registered enrollment.

#### 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 College of Education, including CSD students.

#### Communicative Sciences & Disorders – Non-thesis

57-63 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

PROGRAM COURSES	
CSD 504 Adv Eval & Assess of Comm Dis	3
CSD 510 Stutter & Other Disorder of Speech	3
CSD 513 Language Disorders in Adults	3
CSD 515 Language Dev - Comm Disorders	3
CSD 520 Language Disorders in Children	3
CSD 522 Voice Disorders	3
CSD 525 Case Management in SLP	3
CSD 534 Artic & Dev Phonological Disorder	3
CSD 538 Neuroanatomy	3
CSD 539 Craniofacial Anomalies	3
CSD 544 Motor Speech Disorders	3
CSD 545 Swallowing & Swallowing Disorders	3
CSD 550 Seminar in CSD	3
CSD 598 Research Method in Comm Dis	3
PSY 502 Descriptive & Inferential Behavioral Statistics	3
PRACTICUM	
<sup>1</sup> CSD 516 Advanced Clinical Practicum	3
PRAXIS EXAM	
Passing score is ≥ 600.	
SLP EXAM	
FINGERPRINTING / BACKGROUND CHECK	

\*One grade of C allowed at graduation.

<sup>1</sup> CSD 516 to be repeated as needed to complete clinical clock hours

## Communications Specialist

### Master of Science

Dr. Melvin Williams, Program Coordinator  
210 Morrison Building  
Voice: (256) 372-4098, [melvin.williams@aamu.edu](mailto:melvin.williams@aamu.edu)

#### GRADUATE FACULTY

Reed, Hope

#### MISSION STATEMENT

The Communications Specialist (CSP) program is designed to provide organizations with employees skilled in the basic communicative processes of information transfer, negotiation, problem solving, persuasion, team building, and leadership. Emphasis is on mastering multiple modes of communication with internal and external stakeholders and diverse populations. The commitment of the CSP program to the University's mission is reflected in course content which includes courses that provide:

1. Developing communication skills (i.e. oral, written, e-mail and telephone etiquette, body language, voice preservation/improvement, public speaking, cross-cultural communication, negotiation, rhetoric, etc.).
2. Counseling skills (with the goal of being able to present ideas that can be predicted to improve a situation, learning ways of listening and speaking that provide support, understanding and validation).
3. Information management (collecting and managing of information from one or more sources and the distribution of that information to one or more audiences).
4. Basic management and marketing fundamentals.
5. Human resource management.
6. Organizational theory and behavior.
7. Macro and micro aspects of organizations.
8. Behavior of people within organizations.
9. Image-building, and communication processes in a variety of organizational contexts.

The program is designed to provide advanced knowledge to students in communication skills that enable them to better achieve corporate goals, advance the corporate image, improve and maximize professional communication ability, and increase sales and other business goals.

#### PROGRAM DESCRIPTION

The Communications Specialist master degree accommodates students who desire to design a degree program which coincides with their own career plans and interests. The degree is comprised of three components:

- 1) A 24 semester hour core curriculum that provides the fundamental framework for the communication specialist degree.
- 2) A 12 semester hour "Interest Area Track" with coursework specializations from the fields of Business, Communications Media, or Psychology Counseling - students must choose one of these fields – (NOTE: these specializations reflect

professional sectors associated with the field of communications and are considered mutually informative areas that have permeable and intersecting boundaries).

- 3) Six (6) hours of designated electives chosen with the guidance of the student's advisor. The total number of semester hours is 42.

An individual with a Communications Specialist master degree will qualify to serve in many varied employment titles/positions: Communications Specialist, Public Relations Specialist, Media Specialist, Human Resource Personnel, Employee Relations Specialist, Customer Service Representative, Proposal Specialist, Information Specialist, Journalist, Scientific and Technical Services, etc.

Employment of Communications Specialists is expected to grow faster than the average for all professions, increasing 23% from 2010 to 2020 (Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2012-13 Edition*). The need for organizations to maintain their public image in a high-information age, the growth of social media and the growing population will drive job growth in this profession.

Applicants to this program are expected to expand existing skill sets that will be immediately useful in locating / maintaining employment and procuring advancement in existing jobs. The focus of the Communications Specialist major is to prepare students for professional communication positions in business and industry.

This degree program is a five semester program.

#### OBJECTIVES

Alabama A&M University's Communications Specialist master degree program has four objectives: 1.) To produce graduates who will be at the center of a company's internal and external communications by virtue of their mastery of oral and written skills used to create and relate critical information to stakeholders; 2.) To produce graduates who have an understanding of basic management and marketing fundamentals; macro and micro aspects of organizations; behavior of people within organizations, and personnel functions relating to human resources; 3.) To produce graduates who have a basic understanding of human psychology that enables them to understand the attitudes and concerns of groups they will interact with and maintain cooperative relationships; and 4.) To produce graduates who are able to coordinate and competently create traditional and state-of-the-art media-driven reports, publications and events.

#### 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.

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. Transcripts of all undergraduate and graduate work attempted, including junior, community and four year colleges.
2. Three letters of recommendation (on departmental or institutional letterhead, preferably from the student's undergraduate professors).
3. A letter, written by the applicant, expressing a statement of professional goals and objectives (No specific format required at this time).
4. 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: CSP application deadlines are different from the Office of Graduate Studies. Only completed packages will be reviewed.

#### DEGREE REQUIREMENTS

##### Comprehensive Examination

A written comprehensive examination composed jointly by the faculties of all programs involved will be administered to each student. This examination will normally be taken in the last semester of course enrollment.

##### Advising

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.

Decision on academic performance and possible termination of students from the program will be based on factors such as course grades, class assignments, and personality/disposition factors.

##### Speech, Language & Hearing Screening

1. CSP 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.

#### Communications Specialist – Business – Non-thesis

42 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

CORE COURSES	
CSP 500 Survey of Communication Studies	3
CSP 501 Rhetorical Theory	3
CSP 502 Theory/Research Communication	3
CSP 503 Professional Ethics & Communication	3
CSP 504 Managing Workplace Diversity & Inclusion	3
CSP 505 Leadership & Communication	3
CSD 501 Business & Prof Communication	3
CSD 503 Communication in Corporate America	3
SPECIALIZATIONS	
MBA 507 Basics of Mgt & Marketing	3
MGT 515 Organizational Theory & Behavior	3
MGT 554 Training and Development	3
MGT 564 Human Resource Management	3
Electives	6
COMPREHENSIVE EXAM	
Passing score is $\geq 80\%$ . MaxAttempt 3.	

\*One grade of C allowed at graduation.

#### Communications Specialist – Psychology Counseling – Non-thesis

42 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

CORE COURSES	
CSP 500 Survey of Communication Studies	3
CSP 501 Rhetorical Theory	3
CSP 502 Theory/Research Communication	3
CSP 503 Professional Ethics & Communication	3
CSP 504 Managing Workplace Diversity & Inclusion	3
CSP 505 Leadership & Communication	3
CSD 501 Business & Prof Communication	3
CSD 503 Communication in Corporate America	3
SPECIALIZATION	
PSY 555 Personality & Counseling Theory	3
PSY 556 Group Dynamics	3
PSY 559 Counseling Techniques	3
PSY 563 Learning Theory	3
Electives	6
COMPREHENSIVE EXAM	
Passing score is $\geq 80\%$ . MaxAttempt 3.	

\*One grade of C allowed at graduation.

#### Communications Specialist – Communications Media – Non-thesis

42 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

CORE COURSES	
CSP 500 Survey of Communication Studies	3
CSP 501 Rhetorical Theory	3
CSP 502 Theory/Research Communication	3
CSP 503 Professional Ethics & Communication	3
CSP 504 Managing Workplace Diversity & Inclusion	3
CSP 505 Leadership & Communication	3
CSD 501 Business & Prof Communication	3

CSD 503 Communication in Corporate America	3
<b>SPECIALIZATION</b>	
TEL 501 Digital Media Theory and Culture	3
TEL 502 Political Communication and Social Change	3
TEL 511 Strategic Communication	3
TEL 512 Gender and Communication	3
Electives	6
<b>COMPREHENSIVE EXAM</b>	
Passing score is $\geq 80\%$ . Max Attempt 3.	

\*One grade of C allowed at graduation.

### **Concentrations, Specializations & Electives**

<b>COMMUNICATIONS SPECIALIST ELECTIVES</b>	
Choose from courses not listed in your planned degree.	
CSD 502 Voice and Diction	3
MBA 507 Basics of Mgt & Marketing	3
MGT 515 Organizational Theory & Behavior	3
MGT 554 Training and Development	3
MGT 564 Human Resource Management	3
PSY 555 Personality & Counseling Theory	3
PSY 556 Group Dynamics	3
PSY 559 Counseling Techniques	3
PSY 563 Learning Theory	3
TEL 501 Digital Media Theory and Culture	3
TEL 502 Political Communication and Social Change	3
TEL 511 Strategic Communication	3
TEL 512 Gender and Communication	3

## Computer Science

### Master of Science

Dr. Jian Fu, Program Coordinator  
333 Bond Engineering & Technology Building  
Voice: (256) 372-8461, [yujian.fu@aamu.edu](mailto:yujian.fu@aamu.edu)

#### GRADUATE FACULTY

PROFESSORS	ASSOC. PROFESSORS	ASST. PROFESSORS
Fu, Jian	Atluri, Venkata Bandyopadhyay, Alak Fu, Yujian Zhao, Xiang	Ghanbari, Muhammad

#### PROGRAM DESCRIPTION

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, real world project, and lab-work 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 140 on the quantitative portion of the GRE.

#### DEGREE REQUIREMENTS

The program provides for thesis and non-thesis options.

##### Thesis Option

Students who choose to take the thesis option must complete 33 semester hours of course work. The course work consists of 18 hours of core courses and 9 hours of computer science (CS) electives. The master's research and thesis (6 hours) must be an original work that (1) 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.

##### 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 (CS) 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.

##### 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.

### Computer Science – Thesis

33 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

CORE COURSES	
CS 511 Design & Anal of Algorithms	3
CS 521 Obj Oriented Prgming & Design	3
CS 531 Computer Architecture	3
CS 541 Operating System Principles	3
CS 551 Database Mgt Systems	3
CS 561 Software Engg Methodology	3
<b>ELECTIVES</b>	<b>9</b>
<b>THESIS</b>	
Grade is Pass / Fail. MinHrs 6.	
CS 599 Thesis	1-3
Oral Defense	

\*One grade of C allowed at graduation.

### Computer Science – Non-thesis

36 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

CORE COURSES	
CS 511 Design & Anal of Algorithms	3
CS 521 Obj Oriented Prgming & Design	3
CS 531 Computer Architecture	3
CS 541 Operating System Principles	3
CS 551 Database Mgt Systems	3
CS 561 Software Engg Methodology	3
<b>ELECTIVES</b>	<b>18</b>
<b>COMPREHENSIVE EXAM</b>	
Passing score is ≥ 75. MaxAttempt is 3.	

\*One grade of C allowed at graduation.

### **Concentrations, Specializations & Electives**

COMPUTER SCIENCE ELECTIVES	
CS 513 Management Information Systems	3
CS 515 Numerical Analysis	3
CS 517 Applications of Statistical Methods	3
CS 523 Compiler Design	3
CS 525 Advanced Data Structures	3
CS 533 Cyber Security Fundamentals	3
CS 535 Introduction to Bioinformatics	3
CS 543 Computer Communications	3
CS 550 Artificial Intelligence	3
CS 554 Neural Networks	3
CS 555 Advanced Database Systems	3
CS 562 Multimedia Systems and Applications	3
CS 563 Image Processing	3
CS 570 Computer Graphics and Animation	3
CS 577 Fuzzy and Expert Systems	3
CS 582 Wireless and Mobile Computing	3
CS 591 Cooperative Educational Work Experience	3
CS 593 Advanced Topics in Computer Science	3
CS 597 Independent Study	3

## Computer Science “4 + 1”

### Master of Science

Dr. Yujian Fu, Program Coordinator  
333 Bond Engineering & Technology Building  
Voice: (256) 372-8461, [yujian.fu@aamu.edu](mailto:yujian.fu@aamu.edu)

#### GRADUATE FACULTY

PROFESSORS	ASSOC. PROFESSORS	ASST. PROFESSORS
Fu, Jian	Atluri, Venkata	Ghanbari, Muhammad
	Bandyopadhyay, Alak	
	Fu, Yujian	
	Zhao, Xiang	

#### PROGRAM DESCRIPTION

The accelerated degree program, called the 4+1 program, will enable academically qualified students to earn both a bachelor's and a master's degree in Computer Science – graduating sooner than they would in traditional programs. Typically, it takes four years for a n undergraduate degree and two years for a graduate degree in computer science. In the 4+1 program, during their fourth year, students will take nine credit hours of graduate core courses. The remaining courses (27 hours including six credits of thesis) will be taken in three semesters (Summer, Fall and Spring) in their last year. These students are committed to research projects under their advisors.

#### ADMISSION REQUIREMENTS

1. Potential candidates must follow the admission requirements to graduate study to provide documents on time. The documents include an online application form, three recommendation letters, official transcript, GRE score (140 on the quantitative portion of the GRE).
2. Applicants must finish his/her junior year.
3. Applicants should hold at least a 3.5 cumulative GPA at the end of their junior year to be accepted into the CMP 4+1 Graduate Program. GRE will be waived under (1) 3.7+ GPA or (2) 133+ Major Field Test score.
4. Students need to take three graduate courses in the senior year once (s)he is admitted to the 4+1 program.
5. For the security area, students need to take two graduate security courses and one graduate course once admitted.
6. After entering graduate school, the students will complete the rest of the eight graduate courses, i.e., three Fall courses, three Spring courses, two Summer courses.

#### DEGREE REQUIREMENTS

The undergraduate portion of the 4+1 program can be found in the corresponding academic year of the [Undergraduate Bulletin](#). Students can apply for B.S. once finished 120 credit hours at the undergraduate level. The 4+1 program is for thesis option only.

#### Thesis Option

Students must complete 33 semester hours of course work. The course work consists of 18 hours of core courses and 9 hours of computer science (CS) electives. The master's research and thesis (6 hours) must be an original work that (1) 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.

### Computer Science 4+1 – Thesis

33 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

CORE COURSES	
CS 511 Design & Anal of Algorithms	3
CS 521 Obj Oriented Prgming & Design	3
CS 531 Computer Architecture	3
CS 541 Operating System Principles	3
CS 551 Database Mgt Systems	3
CS 561 Software Engg Methodology	3
ELECTIVES	
CS 5xx	3
CS 5xx	3
CS 5xx	3
THESIS	
Grade is Pass /Fail. MinHrs 6.	
CS 599 Thesis	1-3
Oral Defense	

\*One grade of C allowed at graduation.

## Education, Elementary

### Master of Education

Dr. Gwendolyn Williams, Program Coordinator  
222-C Carver Complex North – Hollings Wing  
Voice: (256) 372-5525, [gwendolyn.williams@aamu.edu](mailto:gwendolyn.williams@aamu.edu)

#### GRADUATE FACULTY

##### ASSOC. PROFESSORS

Lott, Rena

##### ASST. PROFESSORS

Dunbar, Rachel

Moore-Jackson, Rhonda

Williams, Angela

#### PROGRAM DESCRIPTION

The Elementary Education Program offers coursework and field experiences leading to the Master of Education with Teacher Certifications (Class A and Alternative Class A 5<sup>th</sup> Year) in Elementary Education (K-6).

#### 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.

#### ADMISSION REQUIREMENTS

##### Elementary Education (K-6), Class A

In addition to specific course requirements, applicants seeking admission must:

1. Be admitted to the School of Graduate Studies.
2. Be admitted to Teacher Education. Admission to Teacher Education requires the applicant to:
  - a. Present evidence of having completed a baccalaureate degree in a teaching field in which the degree is sought from a regionally accredited institution.
  - b. Present a copy of a Class B Professional Educator's Certificate (regular master's program).
  - c. Present transcript(s) showing a baccalaureate degree grade point average of 2.50 or better (4.00 system).

##### Elementary Education (K-6), Alternative Class A 5<sup>th</sup> Year

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, applicants seeking admission must:

1. Be admitted to the School of Graduate Studies.
2. Be admitted to Teacher Education. Admission to Teacher Education requires the applicant to:

- a. Present evidence of having completed a baccalaureate degree from a regionally accredited institution.
- b. Present transcript(s) showing a baccalaureate degree grade point average of 2.75 or better (4.00 system).
- c. Complete all undergraduate deficiencies.

Candidates must complete the following undergraduate teaching field courses if deficient:

ECE 304 Teaching Reading to Young Children  
ECE 305 M/M in Math  
ECE 407 Teaching Intermediate Readers  
ELE 300 Elementary School Organization  
PSY 403 Educational Psychology.

#### Internship Pre-reqs

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, FED 521, SPE 501 and FED 529. Only students who have a minimum of 3.25 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 3.25 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 semester prior to the internship semester. The deadline for the spring is September 15 of the previous semester, and for the fall semester, March 15 of the previous semester. 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. The student must meet general studies requirements.
4. The student must have obtained and maintained a minimum of 3.25 grade point average in professional studies, the teaching field and overall.
5. All undergraduate deficiencies must be completed.
6. The student must have completed all course work (excluding internship) from the State approved checklist.
7. The student must have removed all grades of "Incomplete."
8. The student must not have any grades lower than "C" in any course.
9. Program of study must be on file with the Teacher Service Center and the Graduate Office.
10. Official transcripts from other universities and colleges attended must be on file with the Teacher Service Center.
11. The student must obtain requisite score on the Praxis II Tests in appropriate area of concentration. (Including the PLT)
12. The student must clear the fingerprint/background check with the State Department of Education.

All students enrolled in the Alternative Master's (5<sup>th</sup> year program) must complete 219 hours of diverse field experience prior to enrolling in the fall or spring semester of internship.

### DEGREE REQUIREMENTS

#### Elementary Education (K-6), Class A

Candidates must successfully:

1. Complete all course work on the State-approved Checklist.
2. Obtain an overall GPA of  $\geq 3.00$  based on a 4.00 system.
3. Pass a written comprehensive examination that covers the content of the program.
4. Make application for certification through the Teacher Education and Certification Office.

#### Elementary Education (K-6), Alternative Class A 5<sup>th</sup> Year

Candidates must successfully:

1. Complete all course work on the State-approved Checklist.
2. Obtain an overall GPA of  $\geq 3.25$  based on a 4.00 system.
3. Pass a written comprehensive examination that covers the content of the program.
4. Complete an internship.
5. Pass all parts of the Alabama Educator Certification Testing Program (AECTP) Basic Skills Assessment Test.
6. Pass the Praxis II Tests in the appropriate area.
7. Make application for certification through the Teacher Education and Certification Office.

#### **Elementary Education (K-6) – Class A – Non-thesis**

33 Credit Hours

MinGPA cumulative 3.25. MinGrade C\*. Degree M.Ed.

##### REQUIRED COURSES

ECE 521 Res in Elementary & Early Childhd Ed	3
FED 503 Intro to Educational Research	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children OR FED 533 The Context of Urban Education	3

##### TEACHING FIELD

ECE 520 Foundations of Teaching Reading	3
ELE 509 Evaluation in Elementary Schools	3
ELE 519 Elementary School Curriculum	3

Choose 9 hours

Advisor-approved 5xx courses in ELE, ECE, RDG	9
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##### COMPREHENSIVE EXAM

Grade is Pass / Fail.

Written exam composed jointly by Advisory Committee.

To be taken after  $\geq 66\%$  completion of required course work.

##### CERTIFICATION APPLICATION

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.

#### **Elementary Education (K-6) – Alternative Class A 5<sup>th</sup> Year – Non-thesis**

45 Credit Hours

MinGPA admit 2.75; cum, req crs, TF, 3.25. MinGrade C. Degree M.Ed.

##### REQUIRED COURSES

ECE 520 Foundations of Teaching Reading	3
ELE 519 Elementary School Curriculum	3
FED 501 Foundations of Education	3
FED 504 Evaluation of Teaching & Learning	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children OR FED 533 The Context of Urban Education	3
SPE 530 Mgt of Classroom Behavior	3

##### TEACHING FIELD

ECE 514 Basic Skills	3
ECE 521 Res in Elementary & Early Childhd Ed	3
ELE 509 Evaluation in Elementary Schools	3

Choose 6 hours from the following

Advisor-approved 5xx courses in ELE, ECE, RDG	6
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##### INTERNSHIP

ELE 595 Internship	6
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##### AECTP EXAM

##### PRAXIS II TESTS

##### COMPREHENSIVE EXAM

Grade is Pass / Fail.

Written exam composed jointly by Advisory Committee.

To be taken after  $\geq 66\%$  completion of required course work.

##### CERTIFICATION APPLICATION

##### DEPT DEFICIENCIES TO ENTER

ECE 304 Teaching Reading to Young Children
ECE 305 M/M of Teaching Mathematics
ECE 407 Teaching Intermediate Readers
ELE 300 Elementary School Organization
PSY 403 Educational Psychology

(optional) Dual Certification in

##### PRE-ELEMENTARY ED (P-3) ENDORSEMENT

ECH 506 Curriculum Design
ECH 516 Multi-Sensory Approaches

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.

## Education, General

### Education Specialist

The program coordinator is dependent upon which department is offering the Ed.S. degree program being sought.

#### GRADUATE FACULTY

The graduate faculty listing is dependent upon which department is offering the Ed.S. degree program being sought.

#### PROGRAM DESCRIPTION

The program offers coursework and research opportunities for:

the Education Specialist (Ed.S.) degree with Class AA Teacher Certification in:

- Biology (6-12)
- Collaborative Teaching (K-6)
- Collaborative Teaching (6-12)
- Elementary Education (K-6)
- Family/Consumer Sci (6-12)
- Mathematics (6-12)
- Physics (6-12)
- Pre-Elementary Education (P-3)

the Education Specialist (Ed.S.) degree with Class AA

Instructional Support Personnel Certification in:

- Instructional Leadership
- School Psychology (P-12)

#### 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.

#### ADMISSION REQUIREMENTS

##### Class AA

- Biology 6-12
- Collaborative Teaching K-6
- Collaborative Teaching 6-12
- Elementary K-6
- Family & Consumer Science 6-12
- Mathematics 6-12
- Physics 6-12
- Pre-Elementary P-3

In addition to specific course requirements, applicants seeking admission must:

1. Be admitted to the School of Graduate Studies.
2. Be admitted to Teacher Education. Admission to Teacher Education requires the applicant to:

- a. 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.
- b. Present transcript(s) showing a Master's degree grade point average of 3.00 or better (4.00 system).

Special Education candidates holding a Class "A" teaching certificate in a field other than Special Education may enter the traditional Ed.S. program but are required to take SPE 403 and (SPE 500 or 522).

##### Instructional Leadership, Class AA

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

1. Be admitted to the School of Graduate Studies.
2. Be admitted to Teacher Education. Admission to Teacher Education requires the applicant to:
  - a. Present evidence of having completed a master's degree with Class A certification, in the same teaching field in which the Ed.S. degree is sought (except in Special Education), from a regionally accredited institution.
  - b. Present transcript(s) showing a master's degree grade point average of 3.00 or better (4.00 system).

In addition to an earned baccalaureate-level professional Educator Certificate in a teaching field and earned masters'-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 applicants' 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 candidates' 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.

In order to be admitted to the AA program in Instructional Leadership candidates must meet one of the following four (4) criteria:

1. Hold a Class A Instructional Leadership certificate earned after completing a redesigned program at an Alabama university.
2. Be currently serving as a superintendent, assistant or associate superintendent, assistant to the superintendent, principal, assistant principal, supervisor (any subject and/or grade level), administrator of career and technical education, coordinator, or evaluator.
3. Document three years of employment in an instructional leadership position for which one of the certificates in Rule 290-3-3-.53.01(2)(b) is proper certification according to the current edition of the Subject and Personnel Codes of the Alabama State Department of Education. To include: [Instructional Leader, Principal, Superintendent, Superintendent-Principal, Educational Administrator, Supervisor (any subject and/or grade level), Administrator of Career and Technical Education].
4. Demonstrate each of the abilities in the Class A Instructional Leadership standards prior to admission to the Class AA Instructional Leadership program or prior to completion of the Class AA Instructional Leadership program. In order to be admitted under Criteria 4-Candidates must adhere to the following:

Candidates must submit a portfolio demonstrating their knowledge of, and ability to satisfy mastery and implement the state standards in Instructional Leadership. The portfolio must contain the following:

1. Evidence of knowledge and ability to Plan for Continuous Improvement for the school and community.
2. Evidence of knowledge and ability to analyze, implement and facilitate the Instructional program as the instructional leader with the purpose of maximizing effective Teaching and Learning.
3. Evidence of knowledge and ability to plan and implement human resources development.
4. Evidence of knowledge and ability to lead school cultures that appreciate and promote diversity within the school and community.
5. Evidence of knowledge and ability to develop, implement, and promote, and implement effective community and stakeholder relationships.
6. Evidence of knowledge and ability to plan, promote, implement, and evaluate, the effective use of technology.
7. Evidence of knowledge and ability to manage the learning organization.
8. Evidence of knowledge and ability to understand and adhere to ethical standards for professional educators.

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

## DEGREE REQUIREMENTS

### Class AA

Biology 6-12  
Collaborative Teaching K-6  
Collaborative Teaching 6-12  
Elementary K-6  
Family & Consumer Science 6-12  
Instructional Leadership  
Mathematics 6-12  
Physics 6-12  
Pre-Elementary P-3  
School Psychology (P-12)

Candidates must successfully:

1. Complete all course work on the State-approved Checklist.
2. Obtain an overall GPA of  $\geq 3.25$  based on a 4.00 system.
3. Pass a written comprehensive examination that covers the content of the program.
4. Make application for certification through the Teacher Education and Certification Office.

## Education, General – Biology (6-12) – Class AA – Non-thesis 33 Credit Hours

MinGPA cumulative 3.25. MinGrade C\*. Degree Ed.S.

REQUIRED COURSES	
FED 601 Advanced Philosophy of Education	3
FED 603 Advanced Educational Research	3
FED 606 Culture and Language Diversity	3
FED 696 Action Research I	3
FED 697 Action Research II	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children OR FED 533 The Context of Urban Ed OR FED 521 Foundations of Multicultural Education	3
TEACHING FIELD	
Advisor-approved 6xx courses in Biology	15
COMPREHENSIVE EXAM	
Grade is Pass / Fail.	
Written exam composed jointly by Advisory Committee.	
To be taken after $\geq 66\%$ completion of required course work.	
ACTION RESEARCH PAPER	
CERTIFICATION APPLICATION	

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.

## Education, General – Collaborative Teaching (K-6) – Class AA – Non-thesis 36 Credit Hours

MinGPA cumulative 3.25. MinGrade C\*. Degree Ed.S.

REQUIRED COURSES	
FED 601 Advanced Philosophy of Education	3
FED 603 Advanced Educational Research	3

FED 606 Culture and Language Diversity	3
FED 696 Action Research I	3
FED 697 Action Research II	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children <b>OR</b> FED 533 The Context of Urban Education <b>OR</b> FED 521 Foundations of Multicultural Education	3
<b>PRACTICUM</b>	
SPE 522 Learning Strategies for Elementary Schools	3
<b>TEACHING FIELD</b>	
Advisor-approved 6xx courses in Collaborative Teaching K-6 areas	15
<b>COMPREHENSIVE EXAM</b>	
<b>Grade is Pass / Fail.</b>	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	
<b>ACTION RESEARCH PAPER</b>	
<b>CERTIFICATION APPLICATION</b>	
<b>DEPT DEFICIENCIES TO ENTER</b>	
SPE 403 IEP/IFSP Writing	
SPE 500 or SPE 522	

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.**Education, General – Collaborative Teaching (6-12) – Class****AA – Non-Thesis**

36 Credit Hours

**MinGPA cumulative 3.25. MinGrade C\*. Degree Ed.S.**

<b>REQUIRED COURSES</b>	
FED 601 Advanced Philosophy of Education	3
FED 603 Advanced Educational Research	3
FED 606 Culture and Language Diversity	3
FED 696 Action Research I	3
FED 697 Action Research II	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children <b>OR</b> FED 533 The Context of Urban Education <b>OR</b> FED 521 Foundations of Multicultural Education	3
<b>PRACTICUM</b>	
SPE 500 Teaching Secondary Students w/ Disabilities in General Classrooms	3
<b>TEACHING FIELD</b>	
Advisor-approved 6xx courses in Collaborative Teaching 6-12 areas	15
<b>COMPREHENSIVE EXAM</b>	
<b>Grade is Pass / Fail.</b>	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	
<b>ACTION RESEARCH PAPER</b>	
<b>CERTIFICATION APPLICATION</b>	

<b>DEPT DEFICIENCIES TO ENTER</b>	
SPE 403 IEP/IFSP Writing	
SPE 500 or SPE 522	

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.**Education, General – Elementary Education (K-6) – Class****AA – Non-thesis**

36 Credit Hours

**MinGPA cumulative 3.25. MinGrade C\*. Degree Ed.S.**

<b>REQUIRED COURSES</b>	
FED 601 Advanced Philosophy of Education	3
FED 603 Advanced Educational Research	3
FED 606 Culture and Language Diversity	3
FED 696 Action Research I	3
FED 697 Action Research II	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children <b>OR</b> FED 533 The Context of Urban Ed <b>OR</b> FED 521 Foundations of Multicultural Education	3
<b>TEACHING FIELD</b>	
ECE 602 Theoretical Foundations of ECH Ed	3
ECE 671 Reading & Research in ELE & ECH	3
ELE 511 Workshop in Elementary Schools	3
ELE 614 T'ching Strategies for the Affective Dimension of Reading	3
<b>Choose 6 hours from the following.</b>	
ECH 502 Workshop in Early Childhood Ed	3
FED 531 Current & Emerging Instructional Technology	3
FED 532 Curriculum Integration of Instructional Technology	3
<b>COMPREHENSIVE EXAM</b>	
<b>Grade is Pass / Fail.</b>	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	
<b>ACTION RESEARCH PAPER</b>	
<b>CERTIFICATION APPLICATION</b>	

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.**Education, General – Family & Consumer Sciences (6-12) – Class AA – Non-thesis**

33 Credit Hours

**MinGPA cumulative 3.25. MinGrade C\*. Degree Ed.S.**

<b>REQUIRED COURSES</b>	
FED 601 Advanced Philosophy of Education	3
FED 603 Advanced Educational Research	3
FED 606 Culture and Language Diversity	3
FED 696 Action Research I	3
FED 697 Action Research II	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children <b>OR</b> FED 533 The Context of Urban Ed <b>OR</b> FED 521 Foundations of Multicultural Education	3
<b>TEACHING FIELD</b>	
Advisor-approved 6xx courses in Family & Consumer Sci	15

**COMPREHENSIVE EXAM****Grade is Pass / Fail.**

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

**ACTION RESEARCH PAPER****CERTIFICATION APPLICATION**

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.**Education, General – Instructional Leadership – Class AA – Non-Thesis****36 Credit Hours****MinGPA cumulative 3.25. MinGrade C\*. Degree Ed.S.****REQUIRED COURSES**

EDL 638 Mentor Training & Ethics of School Leaders	3
FED 601 Advanced Philosophy of Education	3
FED 603 Advanced Educational Research	3
FED 606 Culture and Language Diversity	3
FED 696 Action Research I	3
FED 697 Action Research II	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children <b>OR</b> FED 533 The Context of Urban Education <b>OR</b> FED 521 Foundations of Multicultural Education	3

**MAJOR COURSES**

EDL 636 Advanced Education Law & Policy	3
EDL 637 Strategic Organizational Leadership	3
EDL 639 Educational Facilities Develop & Mgt	3
EDL 641 Adult Learning Theory	3
EDL 643 Seminar in Instructional Leadership	3

**COMPREHENSIVE EXAM****Grade is Pass / Fail.**

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

**ACTION RESEARCH PAPER****CERTIFICATION APPLICATION**

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.**Education, General – Pre-Elementary Education (P-3) – Class AA – Non-thesis****36 Credit Hours****MinGPA cumulative 3.25. MinGrade C\*. Degree Ed.S.****REQUIRED COURSES**

FED 601 Advanced Philosophy of Education	3
FED 603 Advanced Educational Research	3
FED 606 Culture and Language Diversity	3
FED 696 Action Research I	3
FED 697 Action Research II	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children <b>OR</b> FED 533 The Context of Urban Ed <b>OR</b> FED 521 Foundations of Multicultural Education	3

**TEACHING FIELD**

ECE 602 Theoretical Foundations of ECH Ed	3
ECE 671 Reading & Research in ELE & ECH	3
ECH 502 Workshop in Early Childhood Ed	3
ELE 614 T'ching Strategies for the Affective Dimension of Reading	3

**Choose 6 hours from the following.**

ELE 511 Workshop in Elementary Schools	3
FED 531 Current & Emerging Instructional Technology	3
FED 532 Curriculum Integration of Instructional Technology	3

**COMPREHENSIVE EXAM****Grade is Pass / Fail.**

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

**ACTION RESEARCH PAPER****CERTIFICATION APPLICATION**

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.**Education, General – School Psychology – Class AA – Thesis****36-51 Credit Hours****MinGPA cumulative 3.0. MinGrade C\*. Degree Ed.S.****REQUIRED COURSES**

FED 606 Culture and Language Diversity	3
PSY 502 Descriptive & Inferential Behavioral Statistics	0-3
PSY 560 Occupational Psychology	0-3
PSY 561 Individual Testing	0-3
PSY 585 Research in Psychology & Counseling	0-3
PSY 660 Consultation	0-3
PSY 698 Field Research I	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children <b>OR</b> FED 533 The Urban Context of Education <b>OR</b> FED 521 Foundations of Multicultural Education	3

**INSTRUCTIONAL SUPPORT AREA**

PSY 563 Learning Theories	3
PSY 603 Intro to School Psychology	3
PSY 661 Needs Assessment	3
PSY 682 Problems in Counseling Adol	3
SPE 520 Learning Strategies for Adol	3
SPE Children w/ Learning Disabilities	3
SPE 522 Learning Strategies for Elementary Schools	3

**INTERNSHIP**

PSY School Psychology Internship	3
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**THESIS****Grade is Pass / Fail. MinHrs 3.**

PSY 699 Thesis	1-6
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**PRAXIS EXAM****COMPREHENSIVE EXAM****Grade is Pass / Fail.**

Written exam composed jointly by Advisory Committee.

To be taken after  $\geq 66\%$  completion of required course work.

**CERTIFICATION APPLICATION**

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.

## Education, Instructional Leadership

### Master of Education

Dr. Lydia Davenport, Program Coordinator  
208 Carver Complex North – Hollings Wing  
Voice: (256) 372-5522, [lydia.davenport@aamu.edu](mailto:lydia.davenport@aamu.edu)

#### GRADUATE FACULTY

ASSOC. PROFESSORS

Davenport, Lydia  
Price, Delores

#### PROGRAM DESCRIPTION

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 College 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.

The Master of Education (M.Ed.) degree in Instructional Leadership 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.

#### ADMISSION REQUIREMENTS

In addition to an earned baccalaureate-level professional Educator Certificate in a teaching field or earned masters'-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 applicants' 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 two 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 candidates' 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.

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.

#### DEGREE REQUIREMENTS

The following criteria must be met in order to graduate:

1. Complete course work listed below.
2. Have an overall GPA 3.00 or higher.
3. Make application for certification through the Teacher Education and Certification Office.
4. Obtain a satisfactory score on the Comprehensive Exam.

#### Instructional Leadership – Class A – Non-Thesis

36 Credit Hours

MinGPA cumulative 3.25. MinGrade C\*. Degree M.Ed.

##### REQUIRED COURSES

FED 501 Foundations of Education	3
FED 503 Intro to Educational Research	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children <b>OR</b>	3
FED 533 The Context of Urban Education	

##### MAJOR COURSES

EDL 530 Data Driven Decision Making	3
EDL 543 Legal/Ethical Aspects of School Ops	3
EDL 547 Education Finance	3
EDL 563 Curriculum Develop, Improve, Assess	3
EDL 564 School Community Relations	3
EDL 566 Management of School Operations	3
EDL 567 Instructional Leadership	3
EDL 569 Collab, Mentoring, HR Develop	3

##### INTERNSHIP

EDL 596 Residency/Internship in Instruct Ldrshp	3
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##### COMPREHENSIVE EXAM

Grade is Pass / Fail.

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

##### CERTIFICATION APPLICATION

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.

NOTE: An applicant for certification in Instructional Leadership who holds a Class A certification in another teaching field or area of instructional support must take all courses indicated above that were not required for certification in another program at the Class A level.

## Education, Pre-Elementary

### Master of Education

Dr. Gwendolyn Williams, Program Coordinator  
222-C Carver Complex North – Hollings Wing  
Voice: (256) 372-5525, [gwendolyn.williams@aamu.edu](mailto:gwendolyn.williams@aamu.edu)

#### GRADUATE FACULTY

##### ASSOC. PROFESSORS

Lott, Rena

##### ASST. PROFESSORS

Dunbar, Rachel

Moore-Jackson, Rhonda

Williams, Angela

#### PROGRAM DESCRIPTION

The Pre-Elementary Education Program offers coursework and field experiences leading to the Master of Education with Teacher Certifications (Class A and Alternative Class A 5<sup>th</sup> Year) in Pre-Elementary Education (P-3).

#### 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.

#### ADMISSION REQUIREMENTS

##### Pre-Elementary Education (P-3), Class A

In addition to specific course requirements, applicants seeking admission must:

1. Be admitted to the School of Graduate Studies.
2. Be admitted to Teacher Education. Admission to Teacher Education requires the applicant to:
  - a. Present evidence of having completed a baccalaureate degree in a teaching field in which the degree is sought from a regionally accredited institution.
  - b. Present a copy of a Class B Professional Educator's Certificate (regular master's program).
  - c. Present transcript(s) showing a baccalaureate degree grade point average of 2.50 or better (4.00 system).

##### Pre-Elementary Education (P-3), Alternative Class A 5<sup>th</sup> Year

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, applicants seeking admission must:

1. Be admitted to the School of Graduate Studies.
2. Be admitted to Teacher Education. Admission to Teacher Education requires the applicant to:

- a. Present evidence of having completed a baccalaureate degree from a regionally accredited institution.
- b. Present transcript(s) showing a baccalaureate degree grade point average of 2.75 or better (4.00 system).
- c. Complete all undergraduate deficiencies.

Candidates must complete the following undergraduate teaching field courses if deficient:

ECE 304 Teaching Reading to Young Children  
ECE 305 M/M in Math  
ECH 300 Programs in Early Childhood  
ECH 405 Organization/Admin in ECH  
PSY 403 Educational Psychology.

#### Internship Pre-reqs

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, FED 521, SPE 501 and FED 529. Only students who have a minimum of 3.25 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 3.25 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 semester prior to the internship semester. The deadline for the spring is September 15 of the previous semester, and for the fall semester, March 15 of the previous semester. 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. The student must meet general studies requirements.
4. The student must have obtained and maintained a minimum of 3.00 grade point average in professional studies, the teaching field and 3.25 GPA overall.
5. All undergraduate deficiencies must be completed.
6. The student must have completed all course work (excluding internship) from the State approved checklist.
7. The student must have removed all grades of "Incomplete."
8. The student must not have any grades lower than "C" in any course.
9. Program of study must be on file with the Teacher Service Center and the Graduate Office.
10. Official transcripts from other universities and colleges attended must be on file with the Teacher Service Center.
11. The student must obtain requisite score on the Praxis II Tests in appropriate area of concentration. (Including the PLT)
12. The student must clear the fingerprint/background check with the State Department of Education.

All students enrolled in the Alternative Master's (5<sup>th</sup> year program) must complete 219 hours of diverse field experience prior to enrolling in the fall or spring semester of internship.

### DEGREE REQUIREMENTS

#### Pre-Elementary Education (P-3), Class A

Candidates must successfully:

1. Complete all course work on the State-approved Checklist.
2. Obtain an overall GPA of  $\geq 3.00$  based on a 4.00 system.
3. Pass a written comprehensive examination that covers the content of the program.
4. Make application for certification through the Teacher Education and Certification Office.

#### Pre-Elementary Education (P-3), Alternative Class A 5<sup>th</sup> Year

Candidates must successfully:

1. Complete all course work on the State-approved Checklist.
2. Obtain an overall GPA of  $\geq 3.25$  based on a 4.00 system.
3. Pass a written comprehensive examination that covers the content of the program.
4. Complete an internship.
5. Pass all parts of the Alabama Educator Certification Testing Program Work Keys Basic Skills Assessment Test.
6. Pass the Praxis II Tests in the appropriate area.
7. Make application for certification through the Teacher Education and Certification Office.

Candidates seeking the additional endorsement in Elementary Education (K- 6) must complete the following graduate courses:

ELE 509 Evaluation in Elementary Schools  
ELE 519 Elementary School Curriculum.

#### **Pre-Elementary Education (P-3) – Class A – Non-thesis**

33 Credit Hours

**MinGPA cumulative 3.25. MinGrade C\*. Degree M.Ed.**

##### REQUIRED COURSES

ECE 521 Res in Elementary & Early Childhd Ed	3
FED 503 Intro to Educational Research	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children OR FED 533 The Context of Urban Education	3

##### TEACHING FIELD

ECE 520 Foundations of Teaching Reading	3
ECH 506 Curriculum Design	3
ECH 517 Theory, Methods & Materials	3
<b>Choose 9 hours</b>	
Advisor-approved 5xx courses in ELE, ECE, RDG	9

##### INTERNSHIP

##### COMPREHENSIVE EXAM

**Grade is Pass / Fail.**

Written exam composed jointly by Advisory Committee.

To be taken after  $\geq 66\%$  completion of required course work.

##### CERTIFICATION APPLICATION

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.

#### **Pre-Elementary Education (P-3) – Alternative Class A 5<sup>th</sup> Year – Non-thesis**

45 Credit Hours

**MinGPA admit 2.75; cum, req crs, TF, 3.25. MinGrade C\*. Degree M.Ed.**

##### REQUIRED COURSES

ECE 520 Foundations of Teaching Reading	3
ECH 506 Curriculum Design	3
FED 501 Foundations of Education	3
FED 504 Evaluation of Teaching & Learning	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children OR FED 533 The Context of Urban Education	3
SPE 530 Mgt of Classroom Behavior	3

##### TEACHING FIELD

ECH 519 Home, School, Community Collaboration	3
ECE 521 Res in Elementary & Early Childhd Ed	3
ECH 517 Theory, M/M in ECE	3

**Choose 6 hours from the following**

Advisor-approved 5xx courses in ELE, ECE, RDG	6
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##### INTERNSHIP

ECH 595 Internship in Early Childhood	6
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##### AECTP EXAM

##### PRAXIS II TESTS

##### COMPREHENSIVE EXAM

**Grade is Pass / Fail.**

Written exam composed jointly by Advisory Committee.

To be taken after  $\geq 66\%$  completion of required course work.

##### CERTIFICATION APPLICATION

##### DEPT DEFICIENCIES TO ENTER

ECE 304 Teaching Reading to Young Children
ECE 305 M/M of Teaching Mathematics
ECH 300 Introduction to Early Childhood
ECH 405 Organization & Admin of ECE Programs
PSY 403 Educational Psychology

**(optional) Dual Certification in**

##### ELEMENTARY ED (K-6) ENDORSEMENT

ELE 509 Evaluation in Elementary Schools
ELE 519 Elementary School Curriculum

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.

## Education, Secondary

### Master of Education

Dr. Lydia Davenport, Program Coordinator  
208 Carver Complex North – Hollings Wing  
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#### GRADUATE FACULTY

<u>PROFESSORS</u>	<u>ASST. PROFESSORS</u>
Li, Sha	Hawley, Patrick
	Jewel, Ruby

#### PROGRAM DESCRIPTION

##### Music, Choral or Instrumental (P-12), Class A

The Class A Certificate is for one who holds a bachelor's degree in Music. The program enables one to acquire a deeper knowledge of music theory, pedagogy, curriculum, history, and repertoire.

##### Music, Choral or Instrumental (P-12), Alternative Class A 5<sup>th</sup> Year

The Alternative 5th Year program is for one who does not hold a baccalaureate degree in music, but does hold one in the music field i.e. Performance, Business, etc. The program enables one to acquire knowledge of music pedagogy, curriculum, history and philosophy of music and classroom management.

##### 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.

#### ADMISSION REQUIREMENTS

##### Class A

Biology 6-12  
Chemistry 6-12  
English Language Arts 6-12  
Family & Consumer Science 6-12  
General Science 6-12  
General Social Science 6-12  
Mathematics 6-12  
Music, Choral P-12  
Music, Instrumental P-12  
Physics 6-12

In addition to specific course requirements, applicants seeking admission must:

1. Be admitted to the School of Graduate Studies.
2. Be admitted to Teacher Education. Admission to Teacher Education requires the applicant to:

- a. Present evidence of having completed a baccalaureate degree in a teaching field from a regionally accredited institution.
- b. Present a copy of a Class B Professional Educator's Certificate (regular master's program).
- c. Present transcript(s) showing a baccalaureate degree grade point average of 2.50 or better (4.00 system).

##### Alternative Class A 5<sup>th</sup> Year

Biology 6-12  
Chemistry 6-12  
English Language Arts 6-12  
Family & Consumer Science 6-12  
General Science 6-12  
General Social Science 6-12  
Mathematics 6-12  
Music, Choral P-12  
Music, Instrumental P-12  
Physics 6-12

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, applicants seeking admission to the alternative 5<sup>th</sup> year programs must:

1. Be admitted to the School of Graduate Studies.
2. Be admitted to Teacher Education. Admission to Teacher Education requires the applicant to:
  - a. Complete all undergraduate deficiencies.
  - b. Pass all parts of the Alabama Educator Certification Testing Program (AECTP) Basic Skills Assessment.
  - c. Pass the Praxis II tests in the appropriate area.
3. Complete all undergraduate deficiencies.
4. Present transcript(s) showing a baccalaureate degree grade point average of 2.75 or better (4.00 system).

#### DEGREE REQUIREMENTS

Candidates must successfully:

1. Complete the prescribed courses listed in the approved program of study.
2. Obtain an overall GPA of 3.00 based on a 4.00 system for Class A Programs.
3. Obtain an overall GPA of 3.25 based on a 4.00 system for Alternative Class A 5<sup>th</sup> Year Programs.
4. Make application for certification through the Teacher Education and Certification Office.
5. Pass a written comprehensive examination that covers the content of the program.

##### Internship Pre-reqs

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, FED 521, SPE 501 and FED 529. Only students who have a minimum of 3.25 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 3.25 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 semester prior to the internship semester. The deadline for the spring is September 15 of the previous semester, and for the fall semester, March 15 of the previous semester. 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. The student must meet general studies requirements.
4. The student must have obtained and maintained a minimum of 3.00 grade point average in professional studies, the teaching field and 3.25 GPA overall.
5. All undergraduate deficiencies must be completed.
6. The student must have completed all course work (excluding internship) from the State approved checklist.
7. The student must have removed all grades of "Incomplete."
8. The student must not have any grades of "C" or lower in any course.
9. Program of Study must be on file with the Teacher Service Center and the Graduate Office.
10. Official transcripts from other universities and colleges attended must be on file with the Teacher Service Center.
11. The student must obtain requisite score on the Praxis II Tests in appropriate area of concentration. (Including the PLT)
12. The student must clear the fingerprint/background check with the State Department of Education.

All students enrolled in the Alternative Master's (5<sup>th</sup> year program) must complete 219 hours of diverse field experience prior to enrolling in the fall or spring semester of internship.

### Secondary Education – Biology (6-12) – Alternative Class A 5<sup>th</sup> Year – Non-thesis

45 Credit Hours

MinGPA admit 2.75; cum, req crs, TF, 3.25. MinGrade C\*. Degree M.Ed.

REQUIRED COURSES	
FED 501 Foundations of Education	3
FED 504 Evaluation of Teaching & Learning	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
SED 515 Reading in the Content Area	3
SED 524 Science in the Secondary School Prgm	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children OR FED 533, The Context of Urban Education	3
SPE 530 Mgt of Classroom Behavior	3
TEACHING FIELD	
Advisor-approved 5xx-6xx courses in Biology	15
INTERNSHIP	

SED 595 Internship	6
PRAXIS EXAM	
COMPREHENSIVE EXAM	
Grade is Pass / Fail.	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	
CERTIFICATION APPLICATION	

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.

### Secondary Education – English Language Arts (6-12) – Class A – Non-thesis

33 Credit Hours

MinGPA cumulative 3.25. MinGrade C\*. Degree M.Ed.

REQUIRED COURSES	
FED 503 Intro to Educational Research	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
SED 527 Guiding Learning in Secondary Schls	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children OR FED 533, The Context of Urban Education	3
TEACHING FIELD	
Advisor-approved graduate courses in ELA with at least 1 course in 2 of the following areas: literature, grammar, reading skills, writing, speech, theatre, print journalism or broadcast journalism.	18
COMPREHENSIVE EXAM	
Grade is Pass / Fail.	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	
CERTIFICATION APPLICATION	

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.

### Secondary Education – English Language Arts (6-12) – Alternative Class A 5<sup>th</sup> Year – Non-thesis

45 Credit Hours

MinGPA admit 2.75; cum, req crs, TF, 3.25. MinGrade C\*. Degree M.Ed.

REQUIRED COURSES	
FED 501 Foundations of Education	3
FED 504 Evaluation of Teaching & Learning	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
SED 515 Reading in the Content Area	3
SED 521 ELA in the Secondary School	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children OR FED 533 The Context of Urban Education	3
SPE 530 Mgt of Classroom Behavior	3
TEACHING FIELD	
Advisor- approved 5xx-6xx courses in ELA with at least 1 course in 2 of the following areas: literature, grammar, reading skills, writing, speech, theatre, print journalism or broadcast journalism.	15

<b>INTERNSHIP</b>	
SED 595 Internship	6
<b>PRAXIS EXAM</b>	
<b>COMPREHENSIVE EXAM</b>	
Grade is Pass / Fail.	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	
<b>CERTIFICATION APPLICATION</b>	

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.

### Secondary Education – Family & Consumer Sciences (6-12) – Class A – Non-thesis

33 Credit Hours

MinGPA cumulative 3.25. MinGrade C\*. Degree M.Ed.

<b>REQUIRED COURSES</b>	
FED 503 Intro to Educational Research	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
SED 527 Guiding Learning in Secondary Schls	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children OR FED 533, The Context of Urban Education	3
<b>TEACHING FIELD</b>	
Advisor-approved 5xx courses in Family/Cons Sci	18
<b>COMPREHENSIVE EXAM</b>	
Grade is Pass / Fail.	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	
<b>CERTIFICATION APPLICATION</b>	

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.

### Secondary Education – Family & Consumer Sciences (6-12) – Alternative Class A 5<sup>th</sup> Year – Non-thesis

45 Credit Hours

MinGPA admit 2.75; cum, req crs, TF, 3.25. MinGrade C\*. Degree M.Ed.

<b>REQUIRED COURSES</b>	
FCS 505 Curriculum, Plan, Dev in FCS	3
FED 501 Foundations of Education	3
FED 504 Evaluation of Teaching & Learning	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
SED 515 Reading in the Content Area	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children OR FED 533 The Context of Urban Education	3
SPE 530 Mgt of Classroom Behavior	3
<b>TEACHING FIELD</b>	
Advisor-approved 5xx-6xx courses in AMD, FCS, HDF, NHM	15
<b>INTERNSHIP</b>	
FCS 595 Internship	6

<b>PRAXIS EXAM</b>	
<b>COMPREHENSIVE EXAM</b>	
Grade is Pass / Fail.	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	
<b>CERTIFICATION APPLICATION</b>	

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.

### Secondary Education – General Science (6-12) – Class A – Non-thesis

33 Credit Hours

MinGPA cumulative 3.25. MinGrade C\*. Degree M.Ed.

<b>REQUIRED COURSES</b>	
FED 503 Intro to Educational Research	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
SED 527 Guiding Learning in Secondary Schls	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children OR FED 533, The Context of Urban Education	3
<b>TEACHING FIELD</b>	
Advisor-approved graduate courses with at least 1 course in 2 of the following areas: BIO, CHE, PHY	18
<b>COMPREHENSIVE EXAM</b>	
Grade is Pass / Fail.	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	
<b>CERTIFICATION APPLICATION</b>	

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.

### Secondary Education – General Science (6-12) – Alternative Class A 5<sup>th</sup> Year – Non-thesis

45 Credit Hours

MinGPA admit 2.75; cum, req crs, TF, 3.25. MinGrade C\*. Degree M.Ed.

<b>REQUIRED COURSES</b>	
FED 501 Foundations of Education	3
FED 504 Evaluation of Teaching & Learning	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
SED 515 Reading in the Content Area	3
SED 524 Science in the Secondary School Prgm	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children OR FED 533 The Context of Urban Education	3
SPE 530 Mgt of Classroom Behavior	3
<b>TEACHING FIELD</b>	
Advisor-approved graduate courses in BIO, CHE, PHY	15
<b>INTERNSHIP</b>	
SED 595 Internship	6
<b>PRAXIS EXAM</b>	

**COMPREHENSIVE EXAM****Grade is Pass / Fail.**

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

**CERTIFICATION APPLICATION**

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.**Secondary Education – General Social Studies (6-12) – Class****A – Non-thesis**

33 Credit Hours

**MinGPA cumulative 3.25. MinGrade C\*. Degree M.Ed.****REQUIRED COURSES**

FED 503 Intro to Educational Research	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
SED 527 Guiding Learning in Secondary Schls	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children <b>OR</b> FED 533, The Context of Urban Education	3

**TEACHING FIELD**

Advisor-approved graduate courses with at least 1 course in 2 of the following areas: HIS, GEO, PSC, ECO	18
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**COMPREHENSIVE EXAM****Grade is Pass / Fail.**

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

**CERTIFICATION APPLICATION**

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.**Secondary Education – General Social Studies (6-12) –****Alternative Class A 5<sup>th</sup> Year – Non-thesis**

45 Credit Hours

**MinGPA admit 2.75; cum, req crs, TF, 3.25. MinGrade C\*. Degree M.Ed.****REQUIRED COURSES**

FED 501 Foundations of Education	3
FED 504 Evaluation of Teaching & Learning	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
SED 515 Reading in the Content Area	3
SED 523 Social Sci in Secondary Schl Curriculum	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children <b>OR</b> FED 533 The Context of Urban Education	3
SPE 530 Mgt of Classroom Behavior	3

**TEACHING FIELD**

Advisor-approved 5xx-6xx courses with at least 1 course in 2 of the following areas: HIS, GEO, PSC, PSY	15
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**PRAXIS EXAM****INTERNSHIP**

SED 595 Internship	6
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**COMPREHENSIVE EXAM****Grade is Pass / Fail.**

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

**CERTIFICATION APPLICATION**

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.**Secondary Education – Mathematics (6-12) – Class A – Non-thesis**

33 Credit Hours

**MinGPA cumulative 3.25. MinGrade C\*. Degree M.Ed.****REQUIRED COURSES**

FED 503 Intro to Educational Research	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
SED 527 Guiding Learning in Secondary Schls	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children <b>OR</b> FED 533, The Context of Urban Education	3

**TEACHING FIELD**

Advisor-approved graduate courses in Mathematics	18
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**COMPREHENSIVE EXAM****Grade is Pass / Fail.**

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

**CERTIFICATION APPLICATION**

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.**Secondary Education – Mathematics (6-12) – Alternative Class A 5<sup>th</sup> Year – Non-thesis**

45 Credit Hours

**MinGPA admit 2.75; cum, req crs, TF, 3.25. MinGrade C\*. Degree M.Ed.****REQUIRED COURSES**

FED 501 Foundations of Education	3
FED 504 Evaluation of Teaching & Learning	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
SED 515 Reading in the Content Area	3
SED 522 Math in the Secondary School	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children <b>OR</b> FED 533 The Context of Urban Education	3
SPE 530 Mgt of Classroom Behavior	3

**TEACHING FIELD**

Advisor-approved 5xx-6xx courses in Mathematics	15
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**INTERNSHIP**

SED 595 Internship	6
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**PRAXIS EXAM****COMPREHENSIVE EXAM****Grade is Pass / Fail.**

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

**CERTIFICATION APPLICATION**

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.**Secondary Education – Music, Choral (P-12) – Class A – Non-thesis**

33 Credit Hours

MinGPA cumulative 3.25. MinGrade C\*. Degree M.Ed.

**REQUIRED COURSES**

FED 503 Intro to Educational Research	3
FED 529 Computer-based Instructional Tech	3
FED 521 Foundations of Multicultural Education	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children <b>OR</b> FED 533 The Context of Urban Education	3

**TEACHING FIELD**

Advisor-approved graduate courses in Music	21
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**COMPREHENSIVE EXAM**

Grade is Pass / Fail.

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

**CERTIFICATION APPLICATION**

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.**Secondary Education – Music, Choral (P-12) – Alternative Class A 5<sup>th</sup> Year – Non-thesis**

48 Credit Hours

MinGPA admit 2.75; cum, req crs, TF, 3.25. MinGrade C\*. Degree M.Ed.

**REQUIRED COURSES**

FED 501 Foundations of Education	3
FED 504 Evaluation of Teaching & Learning	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
SED 515 Reading in the Content Area	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children <b>OR</b> FED 533 The Context of Urban Education	3
SPE 530 Mgt of Classroom Behavior	3
MUS 530 K-12 Music Curriculum	3

**TEACHING FIELD**

MUS 517 Graduate Conducting	2
MUS 520 History & Philosophy of Music Ed	3
MUS 610 Survey of Music Theory	3
MUS 612 Analytical Techniques	3
MUS 620 Survey of Music History	3
Choose 2 courses from the following	
MUS 503 Advanced Keyboard Techniques	2
MUS 553 Advanced Vocal Pedagogy	2
MUS Applied Music (1 hr each)	2

**INTERNSHIP**

MUS 595 Internship in Music	6
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**PRAXIS EXAM****COMPREHENSIVE EXAM**

Grade is Pass / Fail.

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

**CERTIFICATION APPLICATION**

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.**Secondary Education – Music, Instrumental (P-12) – Class A – Non-thesis**

33 Credit Hours

MinGPA cumulative 3.25. MinGrade C\*. Degree M.Ed.

**REQUIRED COURSES**

FED 503 Intro to Educational Research	3
FED 529 Computer-based Instructional Tech	3
FED 521 Foundations of Multicultural Education	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children <b>OR</b> FED 533 The Context of Urban Education	3

**TEACHING FIELD**

Advisor-approved graduate courses in Music	21
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**COMPREHENSIVE EXAM**

Grade is Pass / Fail.

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

**CERTIFICATION APPLICATION**

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.**Secondary Education – Music, Instrumental (P-12) – Alternative Class A 5<sup>th</sup> Year – Non-thesis**

48 Credit Hours

MinGPA admit 2.75; cum, req crs, TF, 3.25. MinGrade C\*. Degree M.Ed.

**REQUIRED COURSES**

FED 501 Foundations of Education	3
FED 504 Evaluation of Teaching & Learning	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
SED 515 Reading in the Content Area	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children <b>OR</b> FED 533 The Context of Urban Education	3
SPE 530 Mgt of Classroom Behavior	3
MUS 530 K-12 Music Curriculum	3

**TEACHING FIELD**

MUS 517 Graduate Conducting	2
MUS 520 History & Philosophy of Music Ed	3
MUS 610 Survey of Music Theory	3
MUS 612 Analytical Techniques	3
MUS 620 Survey of Music History	3
Choose 4 hours from the following	
MUS 563 Advanced Brass Techniques	2
MUS 573 Advanced Woodwind Techniques	2
MUS 512 Advanced Percussion Techniques	2
MUS Applied Music (1 hr each)	2

**INTERNSHIP**

MUS 595 Internship in Music	6
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**PRAXIS EXAM**

**COMPREHENSIVE EXAM**

**Grade is Pass / Fail.**

Written exam composed jointly by Advisory Committee.

To be taken after  $\geq 66\%$  completion of required course work.

**CERTIFICATION APPLICATION**

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.

## Education, Special

### Master of Education

Dr. Gwendolyn Williams, Program Coordinator  
222-C Carver Complex North – Hollings Wing  
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#### GRADUATE FACULTY

##### PROFESSORS

Lott, Rena  
Williams, Gwendolyn

#### PROGRAM DESCRIPTION

The Special Education Program 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.

The program offers concentrations in:

- Collaborative Teaching (K-6) – Class A
- Collaborative Teaching (K-6) – Alternative Class A 5<sup>th</sup> Year. The Alternative 5<sup>th</sup> Year program is for applicants who do not hold a baccalaureate degree in a teaching field but wish 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.
- Collaborative Teaching (6-12) – Class A
- Collaborative Teaching (6-12) – Alternative Class A 5<sup>th</sup> Year
- Pre-Elementary Special Education (P-3) – Class A

#### 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.

#### ADMISSION REQUIREMENTS

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 and (SPE 500 or 520).

Present transcript(s) showing a baccalaureate degree grade point average of 2.75 or better (4.00 system) for Alternative Class A 5<sup>th</sup> Year Programs.

#### Collaborative Teaching (K-6) – Alternative Class A 5<sup>th</sup> Year

Undergraduate prerequisites:

ECE 305 M/M Teaching Mathematics  
SPE 303 Assessment of Children K-6

#### SPE 403 IEP Writing

#### Collaborative Teaching (6-12) – Alternative Class A 5<sup>th</sup> Year

Undergraduate prerequisites:

SED 422 M/M Teaching Math in Secondary Schools  
SPE 205 Language Development  
SPE 403 IEP Writing

#### Internship Pre-reqs

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, FED 521, SPE 501 and FED 529. Only students who have a minimum of 3.25 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 3.25 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 semester prior to the internship semester. The deadline for the spring is September 15 of the previous semester, and for the fall semester, March 15 of the previous semester. 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. The student must meet general studies requirements.
4. The student must have obtained and maintained a minimum of 3.25 grade point average in professional studies, the teaching field and overall.
5. All undergraduate deficiencies must be completed.
6. The student must have completed all course work (excluding internship) from the State approved checklist.
7. The student must have removed all grades of "Incomplete."
8. The student must not have any grades lower than "C" in any course.
9. Program of study must be on file with the Teacher Service Center and the Graduate Office.
10. Official transcripts from other universities and colleges attended must be on file with the Teacher Service Center.
11. The student must obtain requisite score on the Praxis II Tests in appropriate area of concentration. (Including the PLT)
12. The student must clear the fingerprint/background check with the State Department of Education.

#### DEGREE REQUIREMENTS

Candidates must successfully:

1. Complete all course work on the State-approved Checklist.
2. Obtain an overall GPA of  $\geq 3.00$  based on a 4.00 system for Class A Programs.
3. Obtain an overall GPA of  $\geq 3.25$  based on a 4.00 system for Alternative Class A 5<sup>th</sup> Year Programs.

4. Pass a written comprehensive examination that covers the content of the program.
5. Make application for certification through the Teacher Education and Certification Office.

**Alternative 5<sup>th</sup> year candidates must also:**

1. Complete an internship.
2. Pass all parts of the Alabama Educator Certification Testing Program Work Keys Basic Skills Assessment Test.
3. Pass the Praxis II Tests in the appropriate area.

**Special Education – Collaborative Teaching (K-6) – Class A**  
**– Non-thesis**

36 Credit Hours

MinGPA cumulative 3.25. MinGrade C\*. Degree M.Ed.

REQUIRED COURSES	
FED 503 Intro to Educational Research	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
SED 527 Guiding Learning in Secondary Schls	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children OR FED 533 The Context of Urban Ed	3
PRACTICUM	
SPE 522 Learning Strategies for Elementary Schools	3
TEACHING FIELD	
Advisor-approved graduate courses in Collaborative Teaching K-6 areas	18
COMPREHENSIVE EXAM	
Grade is Pass / Fail.	
Written exam composed jointly by Advisory Committee. To be taken after ≥ 66% completion of required course work.	
CERTIFICATION APPLICATION	
DEPT DEFICIENCIES TO ENTER	
SPE 403 IEP/IFSP Writing SPE 500 or SPE 520	

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.

**Special Education – Collaborative Teaching (K-6) –**  
**Alternative Class A 5<sup>th</sup> Year – Non-thesis**

48 Credit Hours

MinGPA admit 2.75; cum, req crs, TF, 3.25. MinGrade C\*. Degree M.Ed.

REQUIRED COURSES	
FED 501 Foundations of Education	3
FED 504 Evaluation of Teaching & Learning	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children OR FED 533 The Context of Urban Education	3
SPE 522 Learning Strategies for Elementary Schools	3
SPE 530 Mgt of Classroom Behavior	3
SPE 540 Teaching Elementary Students w/ Disabilities	3
TEACHING FIELD	
ECE 503 Learning Styles	3
ECE 512 Investigation of Language Arts	3

SPE 515 Language Development	3
SPE 516 Collaborative Consultation	3
SPE 518 Application of Child Dev to SPE	3
ECE 520 Foundations of Teaching Reading	3

**INTERNSHIP**

SPE 595 Internship in Special Education	6
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**AECTP EXAM****PRAXIS II TESTS**

Passing score is ≥ \_\_\_\_.

**COMPREHENSIVE EXAM**

Grade is Pass / Fail.

Written exam composed jointly by Advisory Committee.  
 To be taken after ≥ 66% completion of required course work.

**CERTIFICATION APPLICATION****DEPT DEFICIENCIES TO ENTER**

ECE 305 M/M of Teaching Mathematics  
 SPE 303 Assessment of Children K-6  
 SPE 403 IEP/IFSP Writing

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.

**Special Education – Collaborative Teaching (6-12) – Class A**  
**– Non-thesis**

36 Credit Hours

MinGPA cumulative 3.25. MinGrade C\*. Degree M.Ed.

REQUIRED COURSES	
FED 503 Intro to Educational Research	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
SED 527 Guiding Learning in Secondary Schls	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children OR FED 533 The Context of Urban Ed	3
PRACTICUM	
SPE 500 Teaching Secondary Students w/ Disabilities in General Classrooms	3
TEACHING FIELD	
Advisor-approved graduate courses in Collaborative Teaching 6-12 areas	18
COMPREHENSIVE EXAM	
Grade is Pass / Fail.	
Written exam composed jointly by Advisory Committee. To be taken after ≥ 66% completion of required course work.	
CERTIFICATION APPLICATION	
DEPT DEFICIENCIES TO ENTER	
SPE 403 IEP/IFSP Writing SPE 500 or SPE 520	

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.

**Special Education – Collaborative Teaching (6-12) –  
Alternative Class A 5<sup>th</sup> Year – Non-thesis  
48 Credit Hours**

MinGPA admit 2.75; cum. req crs, TF, 3.25. MinGrade C\*. Degree M.Ed.

**REQUIRED COURSES**

FED 501 Foundations of Education	3
FED 504 Evaluation of Teaching & Learning	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
SPE 500 Teaching Secondary Students w/ Disabilities in General Classrooms	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children <b>OR</b> FED 533 The Context of Urban Education	3

**TEACHING FIELD**

ECE 520 Foundations of Teaching Reading	3
SPE 516 Collaborative Consultation	3
SPE 518 Application of Child Dev to SPE	3
SPE 520 Learning Strategies for Adolescents	3
SPE 525 Transitioning Students w/ Disabilities	3
SPE 530 Mgt of Classroom Behavior	3

Choose 6 hours from the following:

SED 521 ELA in the Secondary School	3
SED 522 Math in the Secondary School	3
SED 523 Social Sci in Secondary Schl Curriculum	3
SED 524 Science in the Secondary School Prgm	3

**INTERNSHIP**

SPE 595 Internship in Special Education	6
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**AECTP EXAM**

**PRAXIS II TESTS**

**COMPREHENSIVE EXAM**

Grade is Pass / Fail.

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

**CERTIFICATION APPLICATION**

**DEPT DEFICIENCIES TO ENTER**

SED 422 M/M of Teaching Mathematics in Secondary Schools
SPE 205 Language Development
SPE 403 IEP/IFSP Writing

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.

## Family and Consumer Sciences

### Master of Science

Dr. Cynthia Smith, Program Coordinator  
104 Carver Complex – Hobson Wing  
Voice: (256) 372-4172, [cynthia.smith@aamu.edu](mailto:cynthia.smith@aamu.edu)

#### GRADUATE FACULTY

PROFESSORS	ASSOC. PROFESSORS	ASST. PROFESSORS
Sistani, Nahid	Anasuri, Sadguna	Dunlap, Angel
Smith, Cynthia	Brandon, Dorothy	Young, Allison
	Kamalu, Johnson	
	Warber, John Paul	

#### PROGRAM DESCRIPTION

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 initiatives and issues critical to 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.

#### ADMISSION REQUIREMENTS

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.

#### DEGREE REQUIREMENTS

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 thesis/21 non-thesis) may be taken through one of the area concentrations/specializations:

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

### Family and Consumer Sciences – Thesis

34-35 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

CORE COURSES	
AGB 590, FED 503, adv-aprvd rsrch course	3
FCS 508 Trends & Issues in the Profession	3
FCS 511 Admin, Ldrship, & Suprvsn in FCS	3
FCS 514 Seminar	1
NRE 529, PSY 502, adv-aprvd stat course	3-4
<b>SPECIALIZATION</b>	<b>15</b>
<b>THESIS</b>	
Grade is Pass / Fail. MinHrs 6.	
FCS 599 Thesis	1-6

#### Oral Defense

\*One grade of C allowed at graduation.

### Family and Consumer Sciences – Non-Thesis

34-35 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

CORE COURSES	
AGB 590, FED 503, adv-aprvd rsrch course	3
FCS 508 Trends & Issues in the Profession	3
FCS 511 Admin, Ldrship, & Suprvsn in FCS	3
FCS 514 Seminar	1
NRE 529, PSY 502, adv-aprvd stat course	3-4
<b>CONCENTRATION</b>	<b>21</b>
<b>MASTER'S REPORT</b>	
Grade is Pass / Fail.	
<b>COMPREHENSIVE EXAM</b>	
Grade is Pass / Fail.	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	

\*One grade of C allowed at graduation.

### Concentrations, Specializations & Electives

THESIS OPTION	
(FCS) APPAREL, MERCHANDISING & DESIGN SPECIALIZATION	
Choose 15 hours	
AMD 527 Consumer Textiles	3
AMD 528 Social, Psych, Econ Aspect of Clothing	3
AMD 530 Special Problems	3
AMD 533 Historical Costume	3
AMD 534 Advanced Costume Design	3
AMD 535 Advanced Tailoring	3
AMD 537 Fashion Merchandising Study Tour	1-3
AMD 540 Clothing for the Elderly	3
AMD 618 Textile Economics	3
AMD 650 New Directions in Textiles & Clothing	3
FCS 512 Tech Advances & Appl in the Profession	3
FCS 530 Special Problems	3
FCS 600 Program Planning and Evaluation	3

NON-THESIS OPTION	
(FCS) APPAREL, MERCHANDISING & DESIGN CONCENTRATION	
Choose 21 hours	
AMD 527 Consumer Textiles	3
AMD 528 Social, Psych, Econ Aspect of Clothing	3
AMD 530 Special Problems	3
AMD 533 Historical Costume	3
AMD 534 Advanced Costume Design	3
AMD 535 Advanced Tailoring	3
AMD 537 Fashion Merchandising Study Tour	1-3
AMD 540 Clothing for the Elderly	3
AMD 618 Textile Economics	3
AMD 650 New Directions in Textiles & Clothing	3
FCS 512 Tech Advances & Appl in the Profession	3

FCS 530 Special Problems	3
FCS 600 Program Planning and Evaluation	3

NHM 530 Special Problems	1-3
NHM 548 Food & Nutrition Workshop	3
NHM 612 Adolescent and Geriatric Nutrition	3

THESIS OPTION	
(FCS) HUMAN DEV & FAMILY STUDIES SPECIALIZATION	
Choose 15 hours	
FCS 512 Tech Advances & Appl in the Profession	3
FCS 530 Special Problems	3
FCS 600 Program Planning and Evaluation	3
HDF 500 Family Development & Culture	3
HDF 515 Social & Emotional Dev 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 and their Relationships	3
HDF 526 Multi-Sensory Approaches to Learning	3
HDF 530 Special Problems in Child Development	3
HDF 544 Support Systems for the Elderly	3
HDF 604 Readings in the Profession	3
HDF 610 Strategies of Parent Involvement	3

NON-THESIS OPTION	
(FCS) NUTRITION & HOSPITALITY MGT CONCENTRATION	
Choose 21 hours	
FCS 512 Tech Advances & Appl in the Profession	3
FCS 530 Special Problems	3
FCS 600 Program Planning and Evaluation	3
FIN 511 Financial Mgt & Policy	3
MGT 515 Organizational Theory and Behavior	3
MGT 564 Human Resource Management	3
NHM 501 Advanced Maternal & Child Nutrition	3
NHM 502 Advanced Quantity Foods	3
NHM 503 Experimental Foods	3
NHM 504 Breastfeeding and Human Lactation	3
NHM 505 Contemp Probs in Hospitality Industry	3
NHM 511 Nutrition Ed Program Plan/Implement	3
NHM 530 Special Problems	1-3
NHM 548 Food & Nutrition Workshop	3
NHM 612 Adolescent and Geriatric Nutrition	3

NON-THESIS OPTION	
(FCS) HUMAN DEV & FAMILY STUDIES CONCENTRATION	
Choose 21 hours	
FCS 512 Tech Advances & Appl in the Profession	3
FCS 530 Special Problems	3
FCS 600 Program Planning and Evaluation	3
HDF 500 Family Development & Culture	3
HDF 515 Social & Emotional Dev 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 and their Relationships	3
HDF 526 Multi-Sensory Approaches to Learning	3
HDF 530 Special Problems in Child Development	3
HDF 544 Support Systems for the Elderly	3
HDF 604 Readings in the Profession	3
HDF 610 Strategies of Parent Involvement	3

THESIS OPTION	
(FCS) NUTRITION & HOSPITALITY MGT SPECIALIZATION	
Choose 15 hours	
FCS 512 Tech Advances & Appl in the Profession	3
FCS 530 Special Problems	3
FCS 600 Program Planning and Evaluation	3
FIN 511 Financial Mgt & Policy	3
MGT 515 Organizational Theory and Behavior	3
MGT 564 Human Resource Management	3
NHM 501 Advanced Maternal & Child Nutrition	3
NHM 502 Advanced Quantity Foods	3
NHM 503 Experimental Foods	3
NHM 504 Breastfeeding and Human Lactation	3
NHM 505 Contemp Probs in Hospitality Industry	3
NHM 511 Nutrition Ed Program Plan/Implement	3

## Food Science

### Master of Science

Dr. Martha Verghese, Program Coordinator  
100-A Carver Complex Annex – Thomas Wing  
Voice: (256) 372-4175, [martha.verghese@aamu.edu](mailto:martha.verghese@aamu.edu)

#### GRADUATE FACULTY

PROFESSORS	ASSOC. PROFESSORS	ASST. PROFESSORS
Verghese, Martha	Abd-rahim, Gamal	Boateng, Judith
Vizcarra, Jorge	Correa, Julio	Coggins, Patti
Walker, Lloyd	Herring, Josh	Fakas, Stylianos
		Jackson-Davis, Armitra
		Kassama, Lamin

#### ADMISSION REQUIREMENTS

In addition to the general requirements for admission to graduate study at Alabama A&M University, applicants must have a Bachelor of Science degree in an area of agriculture 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. Deficiency course work does not count toward the degree requirements. Students without an undergraduate degree in Food Science are required to complete the following courses: FAS 503 – Food Microbiology, FAS 507 – Food Chemistry, FAS 561 – Food Engineering. Candidates must satisfy the minimum GPA of 2.75 in their undergraduate degree program for regular admission. Students seeking to enter the M.S. degree program will be admitted under the following conditions:

1. Regular Admit
  - a. A minimum overall GPA of 2.75 (4.00 system)
  - OR
  - b. A minimum major GPA of 3.00
2. Conditional Admit
  - a. A minimum overall GPA of 2.50 – 2.74 (4.0 system).

#### DEGREE REQUIREMENTS

##### Thesis Option

A minimum of 30 semester hours to include 24 hours of coursework with an additional 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 graduate faculty and program coordinator. 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 one hour of graduate seminar is required. 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 advisor. Passing a comprehensive examination administered by the departmental graduate faculty and program coordinator is required to complete the degree requirements.

#### Food Science – Thesis

31 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

CORE COURSES	
FAS 697 Seminar	1
NRE 529, NRE 530, FAS 540	4
MAJOR	
Minimum 9 hours at 6xx level	20
THESIS	
Grade is Pass / Fail. MinHrs 6.	
FAS 699 Research for M.S.	1-6
Oral Defense	

\*One grade of C allowed at graduation.

#### Food Science – Non-Thesis

37 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

CORE COURSES	
FAS 697 Seminar	1
NRE 529, NRE 530, FAS 540	4
MAJOR	
Minimum 9 hours at 6xx level	28
REPORT	
Grade is Pass / Fail.	
FAS 698 Master's Report	4
FINAL PRESENTATION	
COMPREHENSIVE EXAM	
Grade is Pass / Fail.	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	

\*One grade of C allowed at graduation.

#### Concentrations, Specializations & Electives

THESIS OPTION	
(FDC) FOOD SCIENCE ELECTIVES	
FAS 505 Meat Science & Technology	3
FAS 508 Food Analysis	4
FAS 521 Poultry Products Technology	3

FAS 538 Fruits, Veggies & Cereal Products Tech	3
FAS 550 Regulation of Food Safety & Quality	3
FAS 552 Food Quality Assurance	3
FAS 553 Agricultural Biochemistry	4
FAS 552 Food Quality Assurance	3
FAS 572 Food Processing	4
FAS 605 Special Problems	1-3
FAS 610 Sensory Science	3
FAS 611 Food Toxicology	3
FAS 615 Food Enzymes	3
FAS 617 Food Flavors and Pigments	3
FAS 626 Food Ingredient Technology	3
FAS 632 Monogastric Nutrition & Metabolism	3
FAS 640 Product Development & Research	3
FAS 642 Minerals/Vitamins in Foods & Nutrition	3
FAS 644 Proteins in Foods and Nutrition	3
FAS 646 Carbohydrates/Lipids in Foods & Nutrition	3
FAS 654 Food Microbiological Techniques	3
FAS 657 Analytical Techniques & Instrumentation	3
FAS 658 Food Microstructure	3
FAS 659 Food Systems Biosecurity & Bioterrorism	3
FAS 671 Introduction to Biotechnology	3
FAS 672 Food Rheology	3
FAS 676 Food Processing and Nutrients	3
FAS 701 Advanced Food Microbiology	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 780 Functional Foods & Nutraceuticals in Health Disease	3
FAS 796 Advanced Topics in Food Science	3

FAS 676 Food Processing and Nutrients	3
FAS 701 Advanced Food Microbiology	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 782 Advanced Food Packaging	3
FAS 796 Advanced Topics in Food Science	3

NON-THESIS OPTION (FDC) FOOD SCIENCE ELECTIVES	
FAS 505 Meat Science & Technology	3
FAS 508 Food Analysis	4
FAS 521 Poultry Products Technology	3
FAS 538 Fruits, Veggies & Cereal Products Tech	3
FAS 550 Regulation of Food Safety & Quality	3
FAS 552 Food Quality Assurance	3
FAS 553 Agricultural Biochemistry	4
FAS 572 Food Processing	4
FAS 605 Special Problems	1-3
FAS 611 Food Toxicology	3
FAS 615 Food Enzymes	3
FAS 617 Food Flavors and Pigments	3
FAS 632 Monogastric Nutrition & Metabolism	3
FAS 640 Product Development & Research	3
FAS 642 Minerals/Vitamins in Foods & Nutrition	3
FAS 644 Proteins in Foods and Nutrition	3
FAS 646 Carbohydrates/Lipids in Foods & Nutrition	3
FAS 654 Food Microbiological Techniques	3
FAS 657 Analytical Techniques & Instrumentation	3
FAS 658 Food Microstructure	3
FAS 671 Introduction to Biotechnology	3
FAS 672 Food Rheology	3

## Doctor of Philosophy

Dr. Martha Verghese, Program Coordinator  
100-A Carver Complex Annex – Thomas Wing  
Voice: (256) 372-4176, [martha.verghese@aamu.edu](mailto:martha.verghese@aamu.edu)

### GRADUATE FACULTY

#### PROFESSORS

Verghese, Martha  
Vizcarra, Jorge  
Walker, Lloyd

#### ASSOC. PROFESSORS

Abd-rahim, Gamal  
Correa, Julio  
Herring, Josh

#### ASST. PROFESSORS

Boateng, Judith  
Coggins, Patti  
Fakas, Stylianos  
Jackson-Davis, Armitra  
Kassama, Lamin

### ADMISSION REQUIREMENTS

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

1. An 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 graduate coursework.
3. A minimum combined score of 308 on the verbal and quantitative sections of the GRE or its equivalent.
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

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 teaching 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 minimum of 31 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 one credit hour of FAS 797 Seminar is required of all doctoral students.

2. A meaningful teaching experience and an additional three hours of FAS 798, Teaching Experience for PhD, course 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.
3. Successful completion of written and oral comprehensive examinations after completing at least 80 percent of the prescribed course work.
4. 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.
5. A final oral examination is required and must be taken per the Office of Graduate Studies Calendar. The examination will be concerned primarily with the candidate's dissertation but may include other aspects of the student's graduate work.
6. NRE 502 and 530 are required but not credited towards the degree.

### Food Science – Doctor of Philosophy

53 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree Ph.D.

CORE COURSES	
FAS 657 Analytical Techniques & Instrumentation	3
FAS 797 Seminar (2ch required)	1
NRE 502 Scientific Writing in Biological Sciences	3
NRE 530, FAS 540	4
MAJOR	
Minimum 9 hours at 7xx level	26
DISSERTATION	
Grade is Pass / Fail. MinHrs 12.	
FAS 799 Research for Ph.D.	1-3
Oral Defense	
CANDIDACY EXAM	
Pre-req – 80% of course work completed.	
Written	
Oral	
TEACHING EXPERIENCE	
FAS 798 Teaching Experience for PhD	3

\*One grade of C allowed at graduation.

### Concentrations, Specializations & Electives

DISSERTATION (FDC) FOOD SCIENCE ELECTIVES	
FAS 552 Food Quality Assurance	3
FAS 605 Special Problems	1-3
FAS 610 Sensory Science	3
FAS 611 Food Toxicology	3
FAS 615 Food Enzymes	3
FAS 617 Food Flavors and Pigments	3
FAS 626 Food Ingredient Technology	3
FAS 632 Monogastric Nutrition & Metabolism	3

FAS 640 Product Development & Research	3
FAS 642 Minerals/Vitamins in Foods & Nutrition	3
FAS 644 Proteins in Foods and Nutrition	3
FAS 646 Carbohydrates/Lipids in Foods & Nutrition	3
FAS 654 Food Microbiological Techniques	3
FAS 658 Food Microstructure	3
FAS 659 Food Systems Biosecurity & Bioterrorism	3
FAS 671 Introduction to Biotechnology	3
FAS 672 Food Rheology	3
FAS 676 Food Processing and Nutrients	3
FAS 701 Advanced Food Microbiology	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 780 Functional Foods & Nutraceuticals in Health Disease	3
FAS 782 Advanced Food Packaging	3
FAS 796 Advanced Topics in Food Science	3
FAS 798 Teaching Experience for PhD	3

## Kinesiology

### Master of Science

Dr. Rodney Whittle, Program Coordinator  
104 Carver Complex North – Hollings Wing  
Voice: (256) 372-8260, [rodney.whittle@aamu.edu](mailto:rodney.whittle@aamu.edu)

#### GRADUATE FACULTY

##### ASSOC. PROFESSORS

Conkle, Terry

##### ASST. PROFESSORS

Golightly, Jerolyn

#### PROGRAM DESCRIPTION

The Kinesiology Program offers coursework and field experiences leading to the Master of Science in Kinesiology. Students may select one of three options leading to the degree:

1. Applied Sport Science (non-teaching).
2. Teacher Certification (Class A) in Physical Education.
3. Teacher Certification (Alternative Class A 5<sup>th</sup> Year) in Physical Education.

Faculty will furnish candidates with research, theory, and techniques that provide students or prospective professionals with quality educational experiences that will lead to opportunities for teaching positions in physical education, or a broad array of careers beyond teaching physical education (e.g., fitness/wellness/personal conditioning/training, sport coaching, recreation, etc.). Additionally, faculty will emphasize technology integration across the applied sport sciences and teaching physical education.

#### PROGRAM OBJECTIVES

1. To articulate the diverse nature of many underlying kinesiology-related sub-disciplines, and integrating those into the areas of Sport Science and Physical Education.
2. To provide an opportunity for graduate students to learn through a prescribed set of courses that lead to command of professional content that reflects breadth and depth of knowledge and skills.
3. To plan and evaluate the program curriculum so students' educational needs and interests are addressed and student learning is promoted, while also meeting appropriate accreditation guidelines.
4. To address the basic goals of physical education and sport science, with a blend of key pedagogical principles and philosophies relative to the respective coursework.
5. To utilize authentic (i.e., applied, practical, real-world) assessment tools that are in alignment with state and national standards, as well as state and local program goals – to provide informational feedback for students and for continual program improvement.
6. To design and implement a sound instructional program (in theory and practice) that communicates the role in teaching physical education, coaching, recreation, and the fitness/wellness industry.

#### ADMISSION REQUIREMENTS

All students must be admitted to the University in full standing.

Alternative 5th year teacher certification students must possess an undergraduate GPA of 3.00 or higher. They must take and pass all three components of the Basic Skills Test of the Alabama Educator Certification Testing Program (AECTP). Candidates must pass the Praxis II for content knowledge and the PLT pedagogy exam. Students in this option will also complete practicum hours and a student internship.

In order to pursue the Class A single teaching field option, students must possess a valid Class B teaching certification in Physical Education.

#### DEGREE REQUIREMENTS

All students must pass a comprehensive exam at the end of their program. Alternative Class A 5<sup>th</sup> year students are required to have a 3.25 cumulative and completion GPA.

#### Kinesiology – Applied Sport Science – Non-thesis

33 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

REQUIRED COURSES	
MinGPA 3.0. MinGrade C*.	
PED 507 Mgt in PE & Athletic Programs	3
PED 512 Biomechanics of Exercise & Sports	3
PED 515 Legal Issues in PE & Sports	3
PED 598 Research in PE & Sport	3
ELECTIVES	
PED courses	21
COMPREHENSIVE EXAM	
Grade is Pass / Fail.	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	

\*One grade of C allowed at graduation.

#### Kinesiology – Physical Education (P-12) – Class A – Non-thesis

33 Credit Hours

MinGPA cumulative 3.25. MinGrade C\*. Degree M.S.

REQUIRED COURSES	
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
PED 504 Curriculum and Instruction in PE	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children OR FED 533 The Context of Urban Education	3
TEACHING FIELD	
PED 507 Mgt in PE & Athletic Programs	3
PED 512 Biomechanics of Exercise & Sports	3
PED 515 Legal Issues in PE & Sports	3
PED 598 Research in PE & Sport	3
PED Elective	3
PED Elective	3
PED Elective	3

**COMPREHENSIVE EXAM****Grade is Pass / Fail.**

Written exam composed jointly by Advisory Committee.

To be taken after  $\geq 66\%$  completion of required course work.**CERTIFICATION APPLICATION**

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.**Kinesiology – Physical Education (P-12) – Alternative Class****A 5<sup>th</sup> Year – Non-thesis**

45 Credit Hours

**MinGPA admit 2.75; cum, req crs, TF, 3.25. MinGrade C\*. Degree M.Ed.****REQUIRED COURSES**

FED 501 Foundations of Education	3
FED 504 Evaluation of Teaching & Learning	3
FED 521 Foundations of Multicultural Education	3
FED 529 Computer-based Instructional Tech	3
PED 504 Curriculum and Instruction in PE	3
SED 515 Reading in the Content Area	3
<sup>1</sup> SPE 501 Intro to Study Exceptional Children OR FED 533 The Context of Urban Education	3
SPE 530 Mgt of Classroom Behavior	3

**TEACHING FIELD**

PED 507 Mgt in PE & Athletic Programs	3
PED 512 Biomechanics of Exercise & Sports	3
PED 515 Legal Issues in PE & Sports	3
PED 598 Research in PE & Sport	3
PED Elective	3

**INTERNSHIP**

PED 595 Internship	6
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**PRAXIS EXAM****COMPREHENSIVE EXAM****Grade is Pass / Fail.**

Written exam composed jointly by Advisory Committee.

To be taken after  $\geq 66\%$  completion of required course work.**CERTIFICATION APPLICATION**

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.

## Physics

### Master of Science

Dr. Anup Sharma, Program Coordinator  
22 V. Murray Chambers Building  
Voice: (256) 372-8102, [anup.sharma@aamu.edu](mailto:anup.sharma@aamu.edu)

#### GRADUATE FACULTY

##### PROFESSORS

Aggarwal, Mohan  
Edwards, Matthew  
Johnson, Barry  
Lal, Ravi  
Reddy, Bommareddi  
Ruffin, Paul  
Tan, Arjun  
Wang, Jai-Ching  
Zhang, Tianxi

##### ASSOC. PROFESSORS

Batra, Ashok

##### ASST. PROFESSORS

Edwards, Vernessa  
Guggilla, Padmaja  
Schamschula, Marius

#### PROGRAM DESCRIPTION

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

For admission to the program, applicants must:

1. Have a bachelor's degree from a regionally accredited university with a major in physics, chemistry, physical science, astronomy or engineering;
2. Have an overall GPA of 3.00 (based on a 4.00 system);
3. Submit a minimum score of 146 on the verbal and 140 on the quantitative portions of GRE;

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).

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.

#### DEGREE REQUIREMENTS

##### Physics – Space Science – Thesis

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.

##### Physics – Space Science – Non-Thesis

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.

##### Physics – Optics – Thesis

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.

##### Physics – Optics – Non-Thesis

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

##### Physics – Materials Science – Thesis

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.

##### Physics – Materials Science – Non-Thesis

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.

##### Physics – Space Science – Thesis

30 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

##### CORE COURSES

PHY 500 Analytical Mechanics	3
PHY 505 Electromagnetic Theory I	3
PHY 521 Quantum Mechanics I	3

##### SPECIALIZATION

PHY 610 Intro to Solar-Terrestrial Physics	3
Space Science Electives	9
Gen'l Physics, Optics, Material Sci Elective	3

##### THESIS

Grade is Pass / Fail. MinHrs 6.

PHY 699 Master's Thesis	1-3
Oral Defense	

\*One grade of C allowed at graduation.

### Physics – Space Science – Non-Thesis

30 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

CORE COURSES	
PHY 500 Analytical Mechanics	3
PHY 505 Electromagnetic Theory I	3
PHY 521 Quantum Mechanics I	3
CONCENTRATION	
PHY 610 Intro to Solar-Terrestrial Physics	3
PHY 612 Physics of the Sun & Solar Wind	3
PHY 614 Physics of the Magnetosphere	3
PHY 617 Physics of Ionosphere & Thermosphere	3
PHY 620 Radio Wave Propagation in Ionosphere	3
PHY 625 Planetary Atmospheres & Ionospheres	3
Gen'l Physics, Optics, Mat. Sci, approved Comp Science Electve	3
COMPREHENSIVE EXAM	
Grade is Pass / Fail.	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	

\*One grade of C allowed at graduation.

### Physics – Optics – Thesis

30 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

CORE COURSES	
PHY 500 Analytical Mechanics	3
PHY 505 Electromagnetic Theory I	3
PHY 521 Quantum Mechanics I	3
SPECIALIZATION	
PHY 649 Geometrical Optics	3
PHY 657 Physical Optics & Interferometry	4
PHY 671 Laser Physics I	4
Gen'l Physics, Optics, Mat. Sci, Space Sci, approved Comp. Sci Elective	4
THESIS	
Grade is Pass / Fail. MinHrs 6.	
PHY 699 Master's Thesis	1-3
Oral Defense	

\*One grade of C allowed at graduation.

### Physics – Optics – Non-Thesis

30 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S. Two grades of C allowed.

CORE COURSES	
PHY 500 Analytical Mechanics	3
PHY 505 Electromagnetic Theory I	3
PHY 521 Quantum Mechanics I	3
CONCENTRATION	
PHY 649 Geometrical Optics	3
PHY 657 Physical Optics & Interferometry	4
PHY 671 Laser Physics I	4

Optics Elective	7
Gen'l Physics, Optics, Mat. Sci, Space Sci, approved Comp. Sci Elective	3

#### COMPREHENSIVE EXAM

Grade is Pass / Fail.

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

\*One grade of C allowed at graduation.

### Physics – Materials Science – Thesis

30 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

CORE COURSES	
PHY 500 Analytical Mechanics	3
PHY 505 Electromagnetic Theory I	3
PHY 521 Quantum Mechanics I	3
SPECIALIZATION	
PHY 632 Elements of Materials Science	3
PHY 634 Crystal Physics & Growth	3
PHY 635 Magnetic & Optical Properties of Materials	3
Materials Science Elective	3
Space Sci, Gen'l Physics, Optics Elective	3
THESIS	
Grade is Pass / Fail. MinHrs 6.	
PHY 699 Master's Thesis	1-3
Oral Defense	

\*One grade of C allowed at graduation.

### Physics – Materials Science – Non-Thesis

30 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

CORE COURSES	
PHY 500 Analytical Mechanics	3
PHY 505 Electromagnetic Theory I	3
PHY 521 Quantum Mechanics I	3
CONCENTRATION	
PHY 632 Elements of Materials Science	3
PHY 634 Crystal Physics & Growth	3
PHY 635 Magnetic & Optical Properties of Materials	3
Materials Science Elective	9
Space Sci, Gen'l Physics, Optics, Materials Sci, approved Computer Sci Elective	3
COMPREHENSIVE EXAM	
Grade is Pass / Fail.	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	

\*One grade of C allowed at graduation.

### Physics – Ambient Energy Systems –Thesis

30 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

CORE COURSES	
PHY 500 Analytical Mechanics	3
PHY 505 Electromagnetic Theory I	3
PHY 521 Quantum Mechanics I	3

SPECIALIZATION	
PHY 632 Elements of Materials Science	3
PHY 636 Semiconductor Physics	3
PHY 642 Materials for Energy Production Devices	3
PHY 667 Ambient Energy Harvesting	3
PHY 761 Nanostructures in Glasses	1
PHY 763 Fabrication & Characterization of Composite Thin Films	1
PHY 518, 525, 761, 762, 763, 764	1
THESIS	
Grade is Pass / Fail. MinHrs 6.	
PHY 699 Master's Thesis	1-
	3
Oral Defense	

\*One grade of C allowed at graduation.

### Physics – Ambient Energy Systems – Non-Thesis

30 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

CORE COURSES	
PHY 500 Analytical Mechanics	3
PHY 505 Electromagnetic Theory I	3
PHY 521 Quantum Mechanics I	3
CONCENTRATION	
PHY 632 Elements of Materials Science	3
PHY 636 Semiconductor Physics	3
PHY 642 Materials for Energy Production Devices	3
PHY 667 Ambient Energy Harvesting	3
PHY 761 Nanostructures in Glasses	1
PHY 763 Fabrication & Characterization of Composite Thin Films	1
Electives	7
COMPREHENSIVE EXAM	
Grade is Pass / Fail.	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	

\*One grade of C allowed at graduation.

### Concentrations, Specializations & Electives

(PHY) GENERAL PHYSICS ELECTIVES	
PHY 503 Methods of Mathematical Physics	3
PHY 504 Physics in Modern Technology	3
PHY 506 Electromagnetic Theory II	3
PHY 518 Thermodynamics & Stat Mechanics	3
PHY 519 Advanced Statistical Mechanics	3
PHY 522 Quantum Mechanics II	3
PHY 525 Solid State Physics I	3
PHY 531 Math Methods in Appl Physics I	3
PHY 532 Math Methods in Appl Physics II	3
PHY 537 Advanced Laboratory	3
PHY 600 Solid State Physics II	3
PHY 601 Seminar/Colloquium	0
PHY 667 Ambient Energy Harvesting	3
PHY 701 Applied Solid State Electronics I	3
PHY 761 Fabrication and Characterization of Nanostructures in Glasses	1

PHYS 762 Fabrication and Characterization of Heterostructures	1
PHYS 763 Fabrication and Characterization of Composite Thin Films	1
PHYS 764 Amorphous Organic Thin Films	1
PHY 791 Applied Solid State Electronics II	3
PHY 792 Selected Topics	3
PHY 794 Selected Topics	1-
	3

(PHY) MATERIALS SCIENCE ELECTIVES	
PHY 632 Elements of Materials Science	3
PHY 634 Crystal Physics & Growth	3
PHY 635 Magnetic/Optical Props of Materials	3
PHY 636 Semi-conductor Physics	3
PHY 637 Special Topics in Materials Science	3
PHY 638 Imperfections in Solids	3
PHY 639 Electron Spectroscopy & Diffraction	3
PHY 640 Mechanical Behavior of Solids	3
PHY 642 Materials for Energy Product Devices	3
PHY 644 Modern Composite Materials	3
PHY 648 Advanced Lab in Materials Science	3
PHYS 667 Ambient Energy Harvesting	3
PHY 705 Solid State Diffusion	3
PHY 710 Thermodynamics of Materials	3
PHY 720 Radiation Effects in Crystalline Solids	3
PHY 730 Solidification Process	3
PHY 735 Materials for Radiation Detector	3
PHYS 761 Fabrication and Characterization of Nanostructures in Glasses	1
PHYS 762 Fabrication and Characterization of Heterostructures	1
PHYS 763 Fabrication and Characterization of Composite Thin Films	1
PHYS 764 Amorphous Organic Thin Films	1
PHY 796 Selected Topics in Materials Sci	3
PHY 797 Advanced Topics in Materials Sci	3

(PHY) OPTICS ELECTIVES	
PHY 649 Geometrical Optics	3
PHY 650 Instrumental Optics	3
PHY 651 Spectroscopy	4
PHY 655 Optics Laboratory	4
PHY 657 Physical Optics & Interferometry	4
PHY 660 Quantum Optics	3
PHY 663 Electro-Optical Systems	4
PHY 665 Lens Design	4
PHYS 667 Ambient Energy Harvesting	3
PHY 670 Non-Linear Optics	3
PHY 671 Laser Physics I	4
PHY 672 Laser Physics II	4
PHY 675 Thin Film & Integrated Optics I	4
PHY 680 Holography	3
PHY 690 Intro to Biophotonics	4
PHY 692 Nanophotonics	3
PHY 703 Laser Systems	4
PHY 712 Optical Phase Conjugation I	3
PHY 714 Optical Phase Conjugation II	3

PHY 715 Fiber Optics	3
PHY 725 Optical Fiber Communications	4
PHY 750 Laser Spectroscopy	3
PHY 755 Optics Laboratory II	3
PHYS 761 Fabrication and Characterization of Nanostructures in Glasses	1
PHYS 762 Fabrication and Characterization of Heterostructures	1
PHYS 763 Fabrication and Characterization of Composite Thin Films	1
PHYS 764 Amorphous Organic Thin Films	1
PHY 771 Signal Processing	3
PHY 775 Thin Films & Integrated Optics II	3

**(PHY) SPACE SCIENCE ELECTIVES**

PHY 610 Intro to Solar-Terrestrial Physics	3
PHY 612 Physics of the Sun & Solar Wind	3
PHY 614 Physics of the Magnetosphere	3
PHY 617 Physics of Ionosphere & Thermosphere	3
PHY 620 Radio Wave Propagation in Ionosphere	3
PHY 625 Planetary Atmospheres & Ionospheres	3
PHYS 666 Ambient Energy Harvesting	3
PHYS 761 Fabrication and Characterization of Nanostructures in Glasses	1
PHYS 762 Fabrication and Characterization of Heterostructures	1
PHYS 763 Fabrication and Characterization of Composite Thin Films	1
PHYS 764 Amorphous Organic Thin Films	1

**(PHY) AMBIENT ENERGY SYSTEMS ELECTIVES**

PHY 525 Intro to Solid State Physics I	3
PHY 634 Crystal Physics & Growth	3
PHY 635 Magnetic and Optical Properties of Materials	3
PHY 648 Advanced Laboratory in Material Science	3
PHY 735 Materials for Radiation Detectors	3
PHY 762 Fabrication and Characterization of Heterostructures	1
PHY 764 Amorphous Organic Thin Films	1

**Doctor of Philosophy**

Dr. Anup Sharma, Program Coordinator  
 22 V. Murray Chambers Building  
 Voice: (256) 372-8102, anup.sharma@aamu.edu

**GRADUATE FACULTY**PROFESSORS

Aggarwal, Mohan  
 Edwards, Matthew  
 Johnson, Barry  
 Lal, Ravi  
 Reddy, Bommarreddi  
 Ruffin, Paul  
 Tan, Arjun  
 Wang, Jai-Ching  
 Zhang, Tianxi

ASSOC. PROFESSORS

Batra, Ashok

ASST. PROFESSORS

Edwards, Vernessa  
 Guggilla, Padmaja  
 Schamschula, Marius

**ADMISSION REQUIREMENTS**

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

**DEGREE REQUIREMENTS**

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. The departmental qualifying exam must be taken after the completion of 18 credit hours. 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.

**(APHY) Applied Physics – Doctor of Philosophy**

57-60 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree Ph.D.

**CORE COURSES**

PHY 500 Analytical Mechanics	3
PHY 503 Methods of Mathematical Physics	3
PHY 505 Electromagnetic Theory I	3
PHY 518 Thermodynamics & Stat Mechanics	3
PHY 521 Quantum Mechanics I	3

**CONCENTRATION**

30-33

**CANDIDACY EXAM**

To be taken after  $\geq 80\%$  completion of required course work.

**DISSERTATION**

Grade is Pass / Fail. MinHrs 12.

PHY 799 Dissertation

1-12

Oral Defense

\*Two grades of C allowed at graduation.

**Concentrations, Specializations & Electives****(APHY) AMBIENT ENERGY SYSTEMS CONCENTRATION (AES)**

MinGPA 3.0. MinGrade C\*.

PHY 632 Elements of Materials Science	3
PHY 636 Semiconductor Physics	3
PHY 642 Materials for Energy Production Devices	3
PHY 667 Ambient Energy Harvesting	3
PHY 761 Nanostructures in Glasses	1
PHY 763 Fabrication & Characterization of Composite Thin Films	1
Electives	19

**(APHY) MATERIALS SCIENCE CONCENTRATION (MAS)**

MinGPA 3.0. MinGrade C.

PHY 632 Elements of Materials Science	3
PHY 634 Crystal Physics and Growth	3
PHY 635 Magnetic/Optical Props of Materials	3
PHY 636 Semi-conductor Physics	3
Gen'l Physics, Optics, Materials Science, Space Science, or approved Computer Science Elective	21

**(APHY) OPTICS CONCENTRATION (OPT)**

MinGPA 3.0. MinGrade C.

PHY 649 Geometrical Optics	3
PHY 651 Spectroscopy	4
PHY 657 Physical Optics and Interferometry	4
PHY 671 Laser Physics I	4
Gen'l Physics, Optics, Materials Science, or approved Computer Science Elective	18

**(APHY) SPACE SCIENCE CONCENTRATION (SPSC)**

MinGPA 3.0. MinGrade C.

PHY 610 Intro to Solar-Terrestrial Physics	3
Space Science Elective	12
Gen'l Physics, Optics, Materials Science, or approved Computer Science Elective	18

**(APHY) AMBIENT ENERGY SYSTEMS ELECTIVES**

PHY 525 Intro to Solid State Physics I	3
PHY 634 Crystal Physics & Growth	3
PHY 635 Magnetic and Optical Properties of Materials	3
PHY 648 Advanced Laboratory in Material Science	3
PHY 644 Modern Composite Materials	3
PHY 720 Radiation Effects in Crystalline Solids	3
PHY 735 Materials for Radiation Detectors	3

PHY 762 Fabrication and Characterization of Heterostructures	1
PHY 764 Amorphous Organic Thin Films	1
PHY 797 Advanced Topics in Material Science	3

## (APHY) SPACE SCIENCE ELECTIVES

PHY 610 Intro to Solar-Terrestrial Physics	3
PHY 612 Physics of the Sun & Solar Wind	3
PHY 614 Physics of the Magnetosphere	3
PHY 617 Physics of Ionosphere & Thermosphere	3
PHY 620 Radio Wave Propagation in Ionosphere	3
PHY 625 Planetary Atmospheres & Ionospheres	3
PHYS 667 Ambient Energy Harvesting	3
PHYS 761 Fabrication and Characterization of Nanostructures in Glasses	1
PHYS 762 Fabrication and Characterization of Heterostructures	1
PHYS 763 Fabrication and Characterization of Composite Thin Films	1
PHYS 764 Amorphous Organic Thin Films	1

## (APHY) GENERAL PHYSICS ELECTIVES

PHY 503 Methods of Mathematical Physics	3
PHY 504 Physics in Modern Technology	3
PHY 506 Electromagnetic Theory II	3
PHY 518 Thermodynamics & Stat Mechanics	3
PHY 519 Advanced Statistical Mechanics	3
PHY 522 Quantum Mechanics II	3
PHY 525 Solid State Physics I	3
PHY 531 Math Methods in Appl Physics I	3
PHY 532 Math Methods in Appl Physics II	3
PHY 537 Advanced Laboratory	3
PHY 600 Solid State Physics II	3
PHY 601 Seminar/Colloquium	0
PHYS 667 Ambient Energy Harvesting	3
PHY 701 Applied Solid State Electronics I	3
PHYS 761 Fabrication and Characterization of Nanostructures in Glasses	1
PHYS 762 Fabrication and Characterization of Heterostructures	1
PHYS 763 Fabrication and Characterization of Composite Thin Films	1
PHYS 764 Amorphous Organic Thin Films	1
PHY 791 Applied Solid State Electronics II	3
PHY 792 Selected Topics	3
PHY 794 Selected Topics	1-3

## (APHY) MATERIALS SCIENCE ELECTIVES

PHY 632 Elements of Materials Science	3
PHY 634 Crystal Physics & Growth	3
PHY 635 Magnetic/Optical Props of Materials	3
PHY 636 Semi-conductor Physics	3
PHY 637 Special Topics in Materials Science	3
PHY 638 Imperfections in Solids	3
PHY 639 Electron Spectroscopy & Diffraction	3
PHY 640 Mechanical Behavior of Solids	3
PHY 642 Materials for Energy Product Devices	3

PHY 644 Modern Composite Materials	3
PHY 648 Advanced Lab in Materials Science	3
PHYS 667 Ambient Energy Harvesting	3
PHY 705 Solid State Diffusion	3
PHY 710 Thermodynamics of Materials	3
PHY 720 Radiation Effects in Crystalline Solids	3
PHY 730 Solidification Process	3
PHY 735 Materials for Radiation Detector	3
PHYS 761 Fabrication and Characterization of Nanostructures in Glasses	1
PHYS 762 Fabrication and Characterization of Heterostructures	1
PHYS 763 Fabrication and Characterization of Composite Thin Films	1
PHYS 764 Amorphous Organic Thin Films	1
PHY 796 Selected Topics in Materials Sci	3
PHY 797 Advanced Topics in Materials Sci	3

## (APHY) OPTICS ELECTIVES

PHY 649 Geometrical Optics	3
PHY 650 Instrumental Optics	3
PHY 651 Spectroscopy	4
PHY 655 Optics Laboratory	4
PHY 657 Physical Optics & Interferometry	4
PHY 660 Quantum Optics	3
PHY 663 Electro-Optical Systems	4
PHY 665 Lens Design	4
PHYS 667 Ambient Energy Harvesting	3
PHY 670 Non-Linear Optics	3
PHY 671 Laser Physics I	4
PHY 672 Laser Physics II	4
PHY 675 Thin Film & Integrated Optics I	4
PHY 680 Holography	3
PHY 690 Intro to Biophotonics	4
PHY 692 Nanophotonics	3
PHY 703 Laser Systems	4
PHY 712 Optical Phase Conjugation I	3
PHY 714 Optical Phase Conjugation II	3
PHY 715 Fiber Optics	3
PHY 725 Optical Fiber Communications	4
PHY 750 Laser Spectroscopy	3
PHY 755 Optics Laboratory II	3
PHYS 761 Fabrication and Characterization of Nanostructures in Glasses	1
PHYS 762 Fabrication and Characterization of Heterostructures	1
PHYS 763 Fabrication and Characterization of Composite Thin Films	1
PHYS 764 Amorphous Organic Thin Films	1
PHY 771 Signal Processing	3
PHY 775 Thin Films & Integrated Optics II	3

## Plant and Soil Science

### Master of Science

Dr. Jeanette Jones, Program Coordinator  
145 Agricultural Research Center (ARC)  
Voice: (256) 372-4924, [jeanette.jones@aamu.edu](mailto:jeanette.jones@aamu.edu)

#### GRADUATE FACULTY

PROFESSORS	ASSOC. PROFESSORS	ASST. PROFESSORS
Coleman, Tommy	Cebert, Ernst	Davis, Dedrick
Mays, David	Christian, Colmore	Garner, Kamita-Golson
Mentreddy, Srinivasa	Chen, Xiongwen	Lemke, Dawn
Nyakatawa, Ermson	Dimov, Luben	Moss, Elicia
Senwo, Zachary	Mankolo, Regine	Nyochembeng, Leopold
Soliman, Khairy	Mbila, Monday	Ranatunga, Thilini
Tadesse, Wubishet	Naka, Kozma	Tazisong, Irenus
Wang, Yong	Stone, William	Ward, Rufina
	Tadesse, Wubishet	

#### ADMISSION REQUIREMENTS

The candidate must have a B.S. degree in biology, agronomy, horticulture, plant science, soil science, environmental science, forestry, wildlife biology, ecology, natural resource, forestry, or closely related areas with 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. The departmental graduate committee may assign undergraduate courses for candidates to take to make up the deficiency in the emphasis area of the graduate study. Students may be admitted conditionally if they have an overall GPA of 2.50 to 2.75, or 2.75 to 3.00 in the major area of concentration. Before being formally admitted into the program, a candidate must identify and contact a faculty advisor who is in the area of research interest of the student for availability of graduate study and assistantship opportunities. The application must include a letter with a statement from a faculty member in the applicant's area of study that the faculty agrees to serve as the major professor of the applicant.

#### DEGREE REQUIREMENTS

Students must establish a graduate advisory committee with the assistance of their advisor during the first semester, and successfully present an oral and written proposal of their thesis research by the end of their first year in the program. A minimum of 30 credit hours at graduate level is required for the Master of Science degree with thesis and 32 credit hours for the non-thesis option. Only 6 Master's Thesis (NRE 599) credits can be applied toward the minimum 30 credit. Students also must pass a final oral thesis defense after completion of their thesis and submit the thesis approved by their committee to the School of Graduate Studies.

### Plant and Soil Science – Thesis

31 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

CORE COURSES	
NRE 502 Scientific Writing in Biological Sciences	3
NRE 529 Biostatistics	4
NRE 591 Graduate Seminar	1

ELECTIVES	17
<b>THESIS</b> Grade is Pass / Fail. MinHrs 6.	
NRE 599 Thesis	1-6
Oral Defense	

\*One grade of C allowed at graduation.

### Plant and Soil Science – Non-Thesis

33 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

CORE COURSES	
NRE 529 Biostatistics	4
ELECTIVES	
	25
<b>MASTER'S REPORT</b> Grade is Pass / Fail.	
NRE 598 Master's Report	4

\*One grade of C allowed at graduation.

### Concentrations, Specializations & Electives

THESIS AND NON-THESIS	
(SPS) PLANT AND SOIL SCIENCE ELECTIVES	
NRE 500 Tech for Teaching Horticulture in K-12	3
NRE 501 Floral & Garden Center Mgt	3
NRE 502 Scientific Writing in Biological Sciences	3
NRE 503 Techniques for Land Judging	3
NRE 505 Instrumental Techniques for SPS	3
NRE 506 Soil Microbiology	4
NRE 510 Forage Management	3
NRE 511 Weed Science & 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 & Construction	4
NRE 523 Ornamentals I – Trees & Shrubs	3
NRE 524 Horticulture Marketing & Management	3
NRE 525 Lawn & Turf Management	3
NRE 527 Ornamentals II – Flowers & Foliage Plants	3
NRE 528 Fruit & Vegetable Production	3
NRE 529 Biostatistics	4
NRE 530 Principles of Experimentation	4
NRE 531 Principles of Plant Breeding	3
NRE 532 Plant Disease Diagnosis	4
NRE 533 Introduction to Molecular Genetics	3
NRE 533 Introduction to Molecular Genetics Lab	1
NRE 534 Cytogenetics	4
NRE 535 Intro to Bioinformatics	4
NRE 536 Regression Analysis	3
NRE 537 Plant Tissue Culture Methods and Appls	3
NRE 538 Plant Genetics	2
NRE 539 SAS Programming	3
NRE 540 Seed Production Practices	4
NRE 541 Phytophysiology	4

NRE 545 Bioinformatics Applications	3
NRE 550 Earth Science	3
NRE 551 Environmental Toxicology	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 Plant Nutrition & Water Relations	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, Water and Air Pollution	3
NRE 573 Air Pollution: Theory and Techniques	3
NRE 574 Quant Approaches in Remote Sensing	3
NRE 575 Principles of Wetlands	3
NRE 576 Remote Sensing of the Environment I	4
NRE 577 Insect Biology and Pest Management	3
NRE 578 GIS, Spatial Analysis, and Modeling	4
NRE 580 Natural Resource Policy	3
NRE 581 Hydrology and Watershed Management	3
NRE 583 Forest Resources Economics	3
NRE 584 Ecological Processes	3
NRE 586 Eco Restoration Hardwood Forest Ecosys	3
NRE 587 Landscape Ecology	3
NRE 588 Wildlife Techniques	3
NRE 589 Forest Ecological Management	3
NRE 590 Advanced Topics in SPS	1-3
NRE 593 Global Perspectives in Ag, Bio Sci and Env:	1-12
Int'l Exchange & Study Abroad	

## Doctor of Philosophy

Dr. Yong Wang, Program Coordinator  
145 Agricultural Research Center (ARC)  
Voice: (256) 372-4229, [yong.wang@aamu.edu](mailto:yong.wang@aamu.edu)

### GRADUATE FACULTY

#### PROFESSORS

Coleman, Tommy  
Mays, David  
Mentreddy, Srinivasa  
Nyakatawa, Ermson  
Senwo, Zachary  
Soliman, Khairy  
Wang, Yong

#### ASSOC. PROFESSORS

Cebert, Ernst  
Christian, Colmore  
Chen, Xiongwen  
Dimov, Luben  
Mankolo, Regine  
Mbila, Monday  
Naka, Kozma  
Stone, William  
Tadesse, Wubishet

#### ASST. PROFESSORS

Davis, Dedrick  
Garner, Karnita-Golson  
Lemke, Dawn  
Moss, Elicia  
Nyochembeng, Leopold  
Ranatunga, Thilini  
Tazisong, Irenus  
Ward, Rufina

### ADMISSION REQUIREMENTS

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 Master of Science degree in biology, agronomy, horticulture, plant science, soil science, forestry, wildlife biology, ecology, natural resource, environmental sciences, forestry, or closely related areas.
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). A minimum 153 for verbal reasoning and 144 for quantitative reasoning on the GRE (500/500 on old scale). Candidates with GRE scores below 153 and 144 but above 146 and 140, for verbal and quantitative, respectively, and a GPA above 3.0 may be admitted conditionally. \*
3. Three letters of reference indicating the student's academic background and ability to pursue the Ph.D. program.
4. A letter of application which includes a personal statement on career objectives and research interest.
5. Applicants must identify and contact an advisor for availability of graduate study opportunities and information about the research and assistantship opportunities before being formally admitted into the program. The application must include a letter with a statement from a faculty member in the applicant's area of study that the faculty agrees to serve as the major professor of the applicant.

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 recommended by the departmental graduate committee with a minimum GPA of 3.00, regular admission will be granted.

### DEGREE REQUIREMENTS

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:

2. Pass a qualifying exam taken during the first semester, administrated by student's committee.
3. Complete all core courses recommended by the Department's Graduate Committee.
4. 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 (NRE 799), must be completed at the 700 level. All courses must be from the approved course listing.
5. Students must successfully defend their dissertation research and submit the written proposal upon approval of their graduate committee to the School of Graduate Studies by the end of their first year in the program.
6. Complete an acceptable written dissertation which constitutes a significant contribution to current knowledge in the major areas.
7. Candidates must demonstrate proficiency in a foreign 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 languages (including SAS program languages) with a grade of B or above. Language requirements must be fulfilled before a student takes the Ph.D. project examinations described below.
8. Participate in a meaningful teaching experience after the completion of 75% of the required coursework for at least one semester as determined by the graduate committee.
9. Must 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.
10. Present a seminar of dissertation defense with the approval of the candidate's graduate committee and the School of Graduate Studies.

### Plant and Soil Science – Doctor of Philosophy

48-49 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree Ph.D.

#### CORE COURSES

NRE 502 Scientific Writing in Biological Sciences	3
NRE 529, 530, 730	3-4
NRE 591 Graduate Seminar	1

#### ELECTIVES

Minimum 9 hours at 7xx level

**\*\*29**

#### CANDIDACY EXAM

Pre-req – 80% of course work completed.

Written  
Oral

#### DISSERTATION

Grade is Pass / Fail. MinHrs 12.

NRE 799 Doctoral Dissertation  
Oral Defense

1-6

\*One grade of C allowed at graduation.

\*\*Courses to be determined by student's Graduate Committee.

## Psychology, Counseling

### Master of Science

Dr. Leatha Bennett, Program Coordinator  
105 Buchanan Hall

Voice: (256) 372-5491, [leatha.bennett@aamu.edu](mailto:leatha.bennett@aamu.edu)

#### GRADUATE FACULTY

PROFESSORS	ASSOC. PROFESSORS	ASST. PROFESSORS
McIntosh, Everton	Bennett, Leatha	Bailey, Jetaun
	Brown, Sharon	CARTER, JANELLE
	Holloway, Linda	DAVIS, TONYA
		ETHRIDGE, KAREN
		GERE, BRYAN
		UPCHURCH, DANIEL

#### PROGRAM DESCRIPTION

The Master of Science program in Counseling Psychology offers three concentrations – Clinical Psychology, Counseling & Guidance, and Rehabilitation Counseling.

The Clinical Psychology concentration 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 and offers the framework necessary for graduates to apply for master's level licensure as a professional counselor in the State of Alabama. The program requires 48 credits of course work with 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.

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

The Rehabilitation Counseling concentration prepares its graduates to be professional practitioners in a variety of community settings and institutions: hospitals, schools, rehabilitation agencies, career planning centers, employee assistance programs, clinics, residential treatment facilities, and other mental health agencies.

#### ADMISSION REQUIREMENTS

The GPA requirement to be admitted to the Psychology & Counseling Program is 2.80.

#### DEGREE REQUIREMENTS

##### Psychology, Counseling – Non-Thesis

48 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

CORE COURSES	
PSY 502 Descriptive & Inferential Behavioral Statistics	3
PSY 514 Life Span Developmental Psychology	3
PSY 555 Personality & Counseling Theories	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 & Counseling	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
5xx-6xx Electives	9

#### COMPREHENSIVE EXAM

Grade is Pass / Fail.

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

\*One grade of C allowed at graduation

##### Psychology, Counseling – Clinical Psychology – Thesis

48 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

CORE COURSES	
PSY 502 Descriptive & Inferential Behavioral Statistics	3
PSY 556 Group Dynamics	3
PSY 559 Counseling Techniques	3
PSY 585 Research in Psychology & Counseling	3
PSY 597 Counseling Practicum	3
CONCENTRATION	
PSY 530 Individual & Family Therapy	3
PSY 555 Personality & Counseling Theory	3
PSY 561 Individual Testing	3
PSY 590 Personality Assessment	3
PSY 592 Professional Orientation/Issues	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
THESIS	
Grade is Pass / Fail. MinHrs 6.	
PSY 599 Master's Thesis	1-3
Oral Defense	

\*One grade of C allowed at graduation.

##### Psychology, Counseling – Clinical Psychology – Non-Thesis

48 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

REQUIRED COURSES	
PSY 502 Descriptive & Inferential Behavioral Statistics	3
PSY 556 Group Dynamics	3
PSY 559 Counseling Techniques	3
PSY 585 Research in Psychology & Counseling	3
PSY 597 Counseling Practicum	3
CONCENTRATION	
PSY 530 Individual & Family Therapy	3

PSY 555 Personality & Counseling Theories	3
PSY 561 Individual Testing	3
PSY 590 Personality Assessment	3
PSY 592 Professional Orientation/Issues	3
PSY 605 Psychopharmacology	3
PSY 610 Psychopathology	3
PSY 622 Clinical Internship I	3
PSY 623 Clinical Internship II	3
5xx-6xx Electives	6
<b>COMPREHENSIVE EXAM</b>	
Grade is Pass / Fail.	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	

\*One grade of C allowed at graduation.

**Psychology, Counseling – Rehabilitation Counseling – Track****III – General – Thesis**

54 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

<b>CORE COURSES</b>	
PSY 502 Descriptive & Inferential Behavioral Statistics	3
PSY 556 Group Dynamics	3
PSY 559 Counseling Techniques	3
PSY 585 Research in Psychology & Counseling	3
PSY 597 Counseling Practicum	3
<b>CONCENTRATION</b>	
PSY 507 Intro to Rehabilitation Counseling	3
PSY 508 Job Development and Placement	3
PSY 509 Vocational Assessment	3
PSY 510 Rehabilitation High & Low Technology	3
PSY 553 Case Management for Rehabilitation	3
PSY 554 Medical Aspects/Adjustments in Rehab	3
PSY 560 Occupational Psychology	3
PSY 591 Psychosocial Aspects of Disabilities	3
PSY 616 Internship in Vocational Counseling I	3
PSY 617 Internship in Rehab Counseling II	3
Elective	3
<b>THESIS</b>	
Grade is Pass / Fail. MinHrs 6.	
PSY 599 Master's Thesis	1-3
Oral Defense	

\*One grade of C allowed at graduation.

**Psychology, Counseling – Rehabilitation Counseling – Track****III – General – Non-thesis**

45 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

<b>CORE COURSES</b>	
PSY 502 Descriptive & Inferential Behavioral Statistics	3
PSY 556 Group Dynamics	3
PSY 559 Counseling Techniques	3
PSY 585 Research in Psychology & Counseling	3
PSY 597 Counseling Practicum	3
<b>CONCENTRATION</b>	
PSY 507 Intro to Rehabilitation Counseling	3
PSY 508 Job Development and Placement	3

PSY 509 Vocational Assessment	3
PSY 553 Case Management for Rehabilitation	3
PSY 554 Medical Aspects/Adjustments in Rehab	3
PSY 560 Occupational Psychology	3
PSY 591 Psychosocial Aspects of Disabilities	3
PSY 616 Internship in Vocational Counseling I	3
PSY 617 Internship in Rehab Counseling II	3
Elective	3
<b>COMPREHENSIVE EXAM</b>	
Grade is Pass / Fail.	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	

\*One grade of C allowed at graduation.

**Psychology, Counseling – Rehabilitation Counseling – Track****II – Deafness – Non-thesis**

51 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

<b>CORE COURSES</b>	
PSY 502 Descriptive & Inferential Behavioral Statistics	3
PSY 556 Group Dynamics	3
PSY 559 Counseling Techniques	3
PSY 585 Research in Psychology & Counseling	3
**PSY 597 Counseling Practicum	3
<b>CONCENTRATION</b>	
PSY 507 Intro to Rehabilitation Counseling	3
PSY 508 Job Development and Placement	3
PSY 509 Vocational Assessment	3
PSY 553 Case Management for Rehabilitation	3
PSY 554 Medical Aspects/Adjustments in Rehab	3
PSY 560 Occupational Psychology	3
PSY 591 Psychosocial Aspects of Disabilities	3
Univ of Tennessee – Orientation to Deafness	6
PSY 616 Internship in Vocational Counseling I	3
PSY 617 Internship in Rehab Counseling II	3
SPE 524 Sign Language	3
<b>COMPREHENSIVE EXAM</b>	
Grade is Pass / Fail.	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	

\*One grade of C allowed at graduation.

\*\*PSY 597 fulfills two of the six credit hours of elective requirements.

**Psychology, Counseling – Rehabilitation Counseling – Track****I – Blindness – Non-thesis**

48 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.

<b>CORE COURSES</b>	
PSY 502 Descriptive & Inferential Behavioral Statistics	3
PSY 556 Group Dynamics	3
PSY 559 Counseling Techniques	3
PSY 585 Research in Psychology & Counseling	3
PSY 597 Counseling Practicum	3
<b>CONCENTRATION</b>	
PSY 507 Intro to Rehabilitation Counseling	3
PSY 508 Job Development and Placement	3

PSY 509 Vocational Assessment	3
PSY 553 Case Management for Rehabilitation	3
PSY 554 Medical Aspects/Adjustments in Rehab	3
PSY 560 Occupational Psychology	3
PSY 591 Psychosocial Aspects of Disabilities	3
Mississippi State – Orientation to Blindness	6
PSY 616 Internship in Vocational Counseling I	3
PSY 617 Internship in Rehab Counseling II	3

**COMPREHENSIVE EXAM****Grade is Pass / Fail.**

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

\*One grade of C allowed at graduation.

**Psychology, Counseling – School Counseling P-12 – Class A**  
**– Non-thesis**

51 Credit Hours

**MinGPA cumulative 3.25. MinGrade C\*. Degree M.S.****REQUIRED COURSES**

Advisor-approved Electives	6
<sup>1</sup> SPE 501 Intro to Study Exceptional Children OR FED	3
533 The Urban Context of Education OR FED 521	
Foundations of Multicultural Education	

**PRACTICUM**

PSY 597 Counseling Practicum	3
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**INSTRUCTIONAL SUPPORT AREA**

PSY 502 Descriptive & Inferential Behavioral Statistics	3
PSY 514 Life Span Developmental Psychology	3
PSY 555 Person & Counseling Theories	3
PSY 556 Group Dynamics	3
PSY 557 Organizational/Admin Guidance	3
PSY 558 Use & Interpretation of Tests	3
PSY 559 Counseling Techniques	3
PSY 560 Occupational Psychology	3
PSY 585 Research in Psychology & Counseling	3
PSY 592 Prof Orientation/Issues	3
PSY 660 Consultation	3

**INTERNSHIP**

PSY 612 School Counseling Internship I	3
PSY 613 School Counseling Internship II	3

**COMPREHENSIVE EXAM****Grade is Pass / Fail.**

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

**CERTIFICATION APPLICATION**

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.

**Psychology, Counseling – School Psychometry P-12 – Class**  
**A – Non-thesis**

33 Credit Hours

**MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.****REQUIRED COURSES**

<sup>1</sup> SPE 501 Intro to Study Exceptional Children OR FED	3
533 The Urban Context of Education OR FED 521	
Foundations of Multicultural Education	

**INSTRUCTIONAL SUPPORT AREA**

PSY 502 Descriptive & Inferential Behavioral Statistics	3
PSY 514 Life Span Developmental Psychology	3
PSY 555 Person & Counseling Theories	3
PSY 558 Use & Interpretation of Tests	3
PSY 559 Counseling Techniques	3
PSY 561 Individual Testing	3
PSY 587 Cognitive Behavior Psychology	3
PSY 590 Personality Assessment	3
PSY 592 Professional Orientation/Issues	3

**INTERNSHIP**

PSY 618 School Psychometry Internship I	3
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**COMPREHENSIVE EXAM****Grade is Pass / Fail.**

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

**CERTIFICATION APPLICATION**

\*One grade of C allowed at graduation.

<sup>1</sup>Required if not previously completed.

## Reading

### Doctor of Philosophy

Dr. Gwendolyn Williams, Program Coordinator  
222-C Carver Complex North – Hollings Wing  
Voice: (256) 372-5524, [gwendolyn.williams@aamu.edu](mailto:gwendolyn.williams@aamu.edu)

#### GRADUATE FACULTY

<u>ASSOC. PROFESSORS</u>	<u>ASST. PROFESSORS</u>
Bigenho, Frederick	Williams, Gwendolyn

#### PROGRAM DESCRIPTION

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 must:

1. Have completed three years of P-12 teaching
2. Have an overall GPA of 3.5 on a 4.0 scale at the Master level.
3. Submit a completed Graduate School application of admission.
4. Submit all official transcripts.
5. Submit three letters of recommendation that address the applicant's academic and professional work.
6. Submit writing samples in the form of a term paper, thesis, or published journal article.
7. Submit A philosophy paper related to the applicant's goals for personal and professional growth.
8. Have a Graduate Record Examination (GRE) composite score of 290.

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.

#### DEGREE REQUIREMENTS

### Reading – Doctor of Philosophy

60 Credit Hours

**MinGPA cumulative 3.0. MinGrade C\*. Degree Ph.D.**

#### CORE COURSES

PSY 502 Descriptive & Inferential Behavioral Statistics	3
RDG 700 Trends & Issues in Reading/Literacy	3
RDG 701 Assessment in Reading/Literacy	3

#### INTERVIEW WITH READING FACULTY

RDG 704 Curriculum in Reading/Literacy	3
RDG 709 Adv Study in Content Area Reading	3

#### CANDIDATES TAKE QUALIFYING EXAM

#### REQUIRED COURSES

RDG 702 Quant Res Methods in Reading/Literacy	3
RDG 703 Qualit Res Methods 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 Dev	3
RDG 713 Family Literacy	3
RDG 720 New Literacies, Digital Tech & Learning	3
RDG 721 Theory & Research in Literacy	3
Foreign Language Requirement	3

#### COMPREHENSIVE EXAM

**Grade is Pass / Fail.**

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

#### DISSERTATION

**Grade is Pass / Fail. MinHrs 18**

RDG 710 Doctoral Diss Resrch in Reading/Literacy	1-6
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\*One grade of C allowed at graduation.

## Social Work

### Master of Social Work

Cathy McElderry, Program Coordinator

Voice: (256) 372-5474, [cathy.mcelderry@aamu.edu](mailto:cathy.mcelderry@aamu.edu)

#### GRADUATE FACULTY

PROFESSORS	ASSOC. PROFESSORS	ASST. PROFESSORS
Perry, Tonya	Kapoor, Jitendra	Harris, Donna
		McLinn, JoAnne
		Plummer, Pamela
		Robinson, Rachel

#### 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. 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.
4. 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.

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.

Note: Admission deadlines to the Graduate program will occur thrice annually – in the summer (Feb 15), in the fall (Mar 01), in the spring (Nov 30).

#### 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.

#### DEGREE REQUIREMENTS

Students obtaining Advanced Standing must complete the degree program in three (3) consecutive semesters. Qualified applicants for Advanced Standing must complete 39 semester hours, of which 8 semester hours are in field instruction, to finish the degree program.

#### Social Work – Family/Child Welfare – Advanced Standing Program – Thesis

45 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.W.

CORE COURSES	
SWK 522 Race, Ethnicity, Gender & Diversity	3
SWK 523 Rural Urban Social Work	2
SWK 587 Social Work Empowerment	3
CONCENTRATION	
SWK 600 Social Work Intervention Strategies	3
SWK 601 Social Work Practice w/ Groups	3
SWK 610 Family & Child Welfare Policy	3
SWK 621 Family Theories & Processes	3
SWK 630 Needs Assessment/Prgm Evaluation	3
SWK 660 Assessment of Individuals	3
SWK 680 Field Practicum & Seminar II	4
SWK 681 Field Practicum & Seminar III	4
SWK 689 Integrative Seminar	3
SWK Elective	2
THESIS	
Grade is Pass / Fail. MinHrs 6.	
SWK 631 Research Project/Thesis	1-3
SWK 632 Thesis Option	1-3
Oral Defense	

\*One grade of C allowed at graduation.

#### Social Work – Family/Child Welfare – Advanced Standing Program – Non-thesis

39 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.W.

CORE COURSES	
SWK 522 Race, Ethnicity, Gender & Diversity	3
SWK 523 Rural Urban Social Work	2
SWK 587 Social Work Empowerment	3
CONCENTRATION	
SWK 600 Social Work Intervention Strategies	3
SWK 601 Social Work Practice w/ Groups	3
SWK 610 Family & Child Welfare Policy	3
SWK 621 Family Theories & Processes	3
SWK 630 Needs Assessment/Prgm Evaluation	3
SWK 660 Assessment of Individuals	3
SWK 680 Field Practicum & Seminar II	4
SWK 681 Field Practicum & Seminar III	4

SWK 689 Integrative Seminar	3
SWK Elective	2

**COMPREHENSIVE EXAM**

Grade is Pass / Fail.

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

\*One grade of C allowed at graduation.

### Social Work – Community Mental Health – Advanced Standing Program – Thesis

45 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.W.

**CORE COURSES**

SWK 522 Race, Ethnicity, Gender & Diversity	3
SWK 523 Rural Urban Social Work	2
SWK 587 Social Work Empowerment	3

**CONCENTRATION**

SWK 601 Social Work Practice w/ Groups	3
SWK 602 SWK Practice in Hlth & Mental Hlth	3
SWK 616 Issues & Policies in Comm Mental Hlth	3
SWK 621 Family Theories & Processes	3
SWK 630 Needs Assessment/Prgm Evaluation	3
SWK 660 Assessment of Individuals	3
SWK 680 Field Practicum & Seminar II	4
SWK 681 Field Practicum & Seminar III	4
SWK 689 Integrative Seminar	3
SWK Elective	2

**THESIS**

Grade is Pass / Fail. MinHrs 6.

SWK 631 Research Project/Thesis	1-3
SWK 632 Thesis Option	1-3
Oral Defense	

\*One grade of C allowed at graduation.

### Social Work – Community Mental Health – Advanced Standing Program – Non-thesis

39 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.W.

**CORE COURSES**

SWK 522 Race, Ethnicity, Gender & Diversity	3
SWK 523 Rural Urban Social Work	2
SWK 587 Social Work Empowerment	3

**CONCENTRATION**

SWK 601 Social Work Practice w/ Groups	3
SWK 602 SWK Practice in Hlth & Mental Hlth	3
SWK 616 Issues & Policies in Comm Mental Hlth	3
SWK 621 Family Theories & Processes	3
SWK 630 Needs Assessment/Prgm Evaluation	3
SWK 660 Assessment of Individuals	3
SWK 680 Field Practicum & Seminar II	4
SWK 681 Field Practicum & Seminar III	4
SWK 689 Integrative Seminar	3
SWK Elective	2

**COMPREHENSIVE EXAM**

Grade is Pass / Fail.

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

\*One grade of C allowed at graduation.

### Social Work – Family/Child Welfare – Two-Year Program – Thesis

66 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.W.

**CORE COURSES (1<sup>st</sup> yr)**

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

**CONCENTRATION (2<sup>nd</sup> yr, fall/spring)**

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

**THESIS**

Grade is Pass / Fail. MinHrs 6.

SWK 631 Research Project/Thesis	1-3
SWK 632 Thesis Option	1-3
Oral Defense	

\*One grade of C allowed at graduation.

### Social Work – Family/Child Welfare – Two-Year Program – Non-thesis

60 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.W.

**CORE COURSES (1<sup>st</sup> yr)**

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

**CONCENTRATION (2<sup>nd</sup> yr, fall/spring)**

SWK 600 Social Work Intervention Strategies	3
SWK 601 Social Work Practice w/ Groups	3
SWK 610 Family & Child Welfare Policy	3
SWK 621 Family Theories & Processes	3

SWK 630 Needs Assessment/Prgm Evaluation	3
SWK 660 Assessment of Individuals	3
SWK 680 Field Practicum & Seminar II	4
SWK 681 Field Practicum & Seminar III	4
SWK 689 Integrative Seminar	3
SWK Elective	2

**COMPREHENSIVE EXAM**

Grade is Pass / Fail.

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

\*One grade of C allowed at graduation.

### Social Work – Community Mental Health – Two-Year Program – Thesis

66 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.W.

**CORE COURSES (1<sup>st</sup> yr)**

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

**CONCENTRATION (2<sup>nd</sup> yr, fall/spring)**

SWK 601 Social Work Practice w/ Groups	3
SWK 602 SWK Practice in Hlth & Mental Hlth	3
SWK 616 Issues & Policies in Comm Mental Hlth	3
SWK 621 Family Theories & Processes	3
SWK 630 Needs Assessment/Prgm Evaluation	3
SWK 660 Assessment of Individuals	3
SWK 680 Field Practicum & Seminar II	4
SWK 681 Field Practicum & Seminar III	4
SWK 689 Integrative Seminar	3
SWK Elective	2

**THESIS**

Grade is Pass / Fail. MinHrs 6.

SWK 631 Research Project/Thesis	1-3
SWK 632 Thesis Option	1-3
Oral Defense	

\*One grade of C allowed at graduation.

### Social Work – Community Mental Health – Two-Year Program – Non-thesis

60 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.W.

**CORE COURSES (1<sup>st</sup> yr)**

SWK 500 Social Work Practice I	3
SWK 501 Social Work Practice II	3
SWK 510 Social Work Policy I	3
SWK 511 Social Work Policy II	2
SWK 520 Human Behavior in Social Env I	3
SWK 521 Human Behavior in Social Env II	3
SWK 522 Race, Ethnicity, Gender & Diversity	3

SWK 523 Rural Urban Social Work	2
SWK 530 Applied Social Work Research	3
SWK 581 Field Practicum & Seminar I	4

**CONCENTRATION (2<sup>nd</sup> yr, fall/spring)**

MinGPA \_\_\_\_\_. MinGrade \_\_\_\_\_.

SWK 601 Social Work Practice w/ Groups	3
SWK 602 SWK Practice in Hlth & Mental Hlth	3
SWK 616 Issues & Policies in Comm Mental Hlth	3
SWK 621 Family Theories & Processes	3
SWK 630 Needs Assessment/Prgm Evaluation	3
SWK 660 Assessment of Individuals	3
SWK 680 Field Practicum & Seminar II	4
SWK 681 Field Practicum & Seminar III	4
SWK 689 Integrative Seminar	3
SWK Elective	2

**COMPREHENSIVE EXAM**

Grade is Pass / Fail.

Written exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

\*One grade of C allowed at graduation.

### Social Work – Family/Child Welfare – Three-Year Program – Thesis

66 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.W.

**CORE COURSES (1<sup>st</sup> yr)**

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

**CONCENTRATION (2<sup>nd</sup> yr)**

SWK 600 Social Work Intervention Strategies	3
SWK 601 Social Work Practice w/ Groups	3
SWK 610 Family & Child Welfare Policy	3
SWK 630 Needs Assessment/Prgm Evaluation	3
SWK 660 Assessment of Individuals	3
SWK Elective	2

**CONCENTRATION (3<sup>rd</sup> yr)**

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

**THESIS**

Grade is Pass / Fail. MinHrs 6.

SWK 631 Research Project/Thesis	1-3
SWK 632 Thesis Option	1-3
Oral Defense	

\*One grade of C allowed at graduation.

**Social Work – Family/Child Welfare – Three-Year Program**  
**– Non-thesis**  
 60 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.W.

CORE COURSES (1 <sup>st</sup> yr)	
SWK 500 Social Work Practice I	3
SWK 501 Social Work Practice II	3
SWK 510 Social Work Policy I	3
SWK 511 Social Work Policy II	2
SWK 520 Human Behavior in Social Env I	3
SWK 521 Human Behavior in Social Env II	3
SWK 522 Race, Ethnicity, Gender & Diversity	3
SWK 523 Rural Urban Social Work	2
SWK 530 Applied Social Work Research	3
SWK 581 Field Practicum & Seminar I	4
CONCENTRATION (2 <sup>nd</sup> yr)	
SWK 600 Social Work Intervention Strategies	3
SWK 601 Social Work Practice w/ Groups	3
SWK 610 Family & Child Welfare Policy	3
SWK 630 Needs Assessment/Prgm Evaluation	3
SWK 660 Assessment of Individuals	3
SWK Elective	2
CONCENTRATION (3 <sup>rd</sup> yr)	
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
COMPREHENSIVE EXAM	
Grade is Pass / Fail.	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	

\*One grade of C allowed at graduation.

**Social Work – Community Mental Health – Three-Year Program – Thesis**  
 66 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.W.

CORE COURSES (1 <sup>st</sup> yr)	
SWK 500 Social Work Practice I	3
SWK 501 Social Work Practice II	3
SWK 510 Social Work Policy I	3
SWK 511 Social Work Policy II	2
SWK 520 Human Behavior in Social Env I	3
SWK 521 Human Behavior in Social Env II	3
SWK 522 Race, Ethnicity, Gender & Diversity	3
SWK 523 Rural Urban Social Work	2
SWK 530 Applied Social Work Research	3
SWK 581 Field Practicum & Seminar I	4
CONCENTRATION (2 <sup>nd</sup> yr)	
SWK 601 Social Work Practice w/ Groups	3
SWK 602 SWK Practice in Hlth & Mental Hlth	3
SWK 616 Issues & Policies in Comm Mental Hlth	3
SWK 630 Needs Assessment/Prgm Evaluation	3
SWK 660 Assessment of Individuals	3
SWK Elective	2

CONCENTRATION (3 <sup>rd</sup> yr)	
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
THESIS	
Grade is Pass / Fail. MinHrs 6.	
SWK 631 Research Project/Thesis	1-3
SWK 632 Thesis Option	1-3
Oral Defense	

\*One grade of C allowed at graduation.

**Social Work – Community Mental Health – Three-Year Program – Non-thesis**  
 60 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.W.

CORE COURSES (1 <sup>st</sup> yr)	
SWK 500 Social Work Practice I	3
SWK 501 Social Work Practice II	3
SWK 510 Social Work Policy I	3
SWK 511 Social Work Policy II	2
SWK 520 Human Behavior in Social Env I	3
SWK 521 Human Behavior in Social Env II	3
SWK 522 Race, Ethnicity, Gender & Diversity	3
SWK 523 Rural Urban Social Work	2
SWK 530 Applied Social Work Research	3
SWK 581 Field Practicum & Seminar I	4
CONCENTRATION (2 <sup>nd</sup> yr)	
SWK 601 Social Work Practice w/ Groups	3
SWK 602 SWK Practice in Hlth & Mental Hlth	3
SWK 616 Issues & Policies in Comm Mental Hlth	3
SWK 630 Needs Assessment/Prgm Evaluation	3
SWK 660 Assessment of Individuals	3
SWK Elective	2
CONCENTRATION (3 <sup>rd</sup> yr)	
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
COMPREHENSIVE EXAM	
Grade is Pass / Fail.	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	

\*One grade of C allowed at graduation.

**Social Work – Family/Child Welfare – Four-Year Program – Thesis**  
 68 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.W.

CORE COURSES (1 <sup>st</sup> yr)	
SWK 500 Social Work Practice I	3
SWK 501 Social Work Practice II	3
SWK 510 Social Work Policy I	3
SWK 511 Social Work Policy II	2
SWK 522 Race, Ethnicity, Gender & Diversity	3
SWK 523 Rural Urban Social Work	2

<b>CORE COURSES</b> (2 <sup>nd</sup> yr)	
SWK 520 Human Behavior in Social Env I	3
SWK 521 Human Behavior in Social Env II	3
SWK 530 Applied Social Work Research	3
SWK 581 Field Practicum & Seminar I	4
<b>CONCENTRATION</b> (3 <sup>rd</sup> yr)	
SWK 600 Social Work Intervention Strategies	3
SWK 601 Social Work Practice w/ Groups	3
SWK 610 Family & Child Welfare Policy	3
SWK 621 Family Theories & Processes	3
SWK 630 Needs Assessment/Prgm Evaluation	3
SWK 680 Field Practicum & Seminar II	4
<b>CONCENTRATION</b> (4 <sup>th</sup> yr)	
SWK 615 Grant Writing	2
SWK 660 Assessment of Individuals	3
SWK 681 Field Practicum & Seminar III	4
SWK 689 Integrative Seminar	3
SWK Elective	2
<b>THESIS</b>	
<b>Grade is Pass / Fail. MinHrs 6.</b>	
SWK 631 Research Project/Thesis	1-3
SWK 632 Thesis Option	1-3
Oral Defense	

\*One grade of C allowed at graduation.

### **Social Work – Family/Child Welfare – Four-Year Program – Non-thesis**

62 Credit Hours

**MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.W.**

<b>CORE COURSES</b> (1 <sup>st</sup> yr)	
SWK 500 Social Work Practice I	3
SWK 501 Social Work Practice II	3
SWK 510 Social Work Policy I	3
SWK 511 Social Work Policy II	2
SWK 522 Race, Ethnicity, Gender & Diversity	3
SWK 523 Rural Urban Social Work	2
<b>CORE COURSES</b> (2 <sup>nd</sup> yr)	
SWK 520 Human Behavior in Social Env I	3
SWK 521 Human Behavior in Social Env II	3
SWK 530 Applied Social Work Research	3
SWK 581 Field Practicum & Seminar I	4
<b>CONCENTRATION</b> (3 <sup>rd</sup> yr)	
SWK 600 Social Work Intervention Strategies	3
SWK 601 Social Work Practice w/ Groups	3
SWK 610 Family & Child Welfare Policy	3
SWK 621 Family Theories & Processes	3
SWK 630 Needs Assessment/Prgm Evaluation	3
SWK 680 Field Practicum & Seminar II	4
<b>CONCENTRATION</b> (4 <sup>th</sup> yr)	
SWK 615 Grant Writing	2
SWK 660 Assessment of Individuals	3
SWK 681 Field Practicum & Seminar III	4
SWK 689 Integrative Seminar	3

SWK Elective	2
<b>COMPREHENSIVE EXAM</b>	
<b>Grade is Pass / Fail.</b>	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	

\*One grade of C allowed at graduation.

### **Social Work – Community Mental Health – Four-Year Program – Thesis**

66 Credit Hours

**MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.W.**

<b>CORE COURSES</b> (1 <sup>st</sup> yr)	
SWK 500 Social Work Practice I	3
SWK 501 Social Work Practice II	3
SWK 510 Social Work Policy I	3
SWK 511 Social Work Policy II	2
SWK 522 Race, Ethnicity, Gender & Diversity	3
SWK 523 Rural Urban Social Work	2
<b>CORE COURSES</b> (2 <sup>nd</sup> yr)	
SWK 520 Human Behavior in Social Env I	3
SWK 521 Human Behavior in Social Env II	3
SWK 530 Applied Social Work Research	3
SWK 581 Field Practicum & Seminar I	4
<b>CONCENTRATION</b> (3 <sup>rd</sup> yr)	
SWK 601 Social Work Practice w/ Groups	3
SWK 602 SWK Practice in Hlth & Mental Hlth	3
SWK 616 Issues & Policies in Comm Mental Hlth	3
SWK 621 Family Theories & Processes	3
SWK 630 Needs Assessment/Prgm Evaluation	3
SWK 680 Field Practicum & Seminar II	4
<b>CONCENTRATION</b> (4 <sup>th</sup> yr)	
SWK 660 Assessment of Individuals	3
SWK 681 Field Practicum & Seminar III	4
SWK 689 Integrative Seminar	3
SWK Elective	2
<b>THESIS</b>	
<b>Grade is Pass / Fail. MinHrs 6.</b>	
SWK 631 Research Project/Thesis	1-3
SWK 632 Thesis Option	1-3
Oral Defense	

\*One grade of C allowed at graduation.

### **Social Work – Community Mental Health – Four-Year Program – Non-thesis**

60 Credit Hours

**MinGPA cumulative 3.0. MinGrade C\*. Degree M.S.W.**

<b>CORE COURSES</b> (1 <sup>st</sup> yr)	
SWK 500 Social Work Practice I	3
SWK 501 Social Work Practice II	3
SWK 510 Social Work Policy I	3
SWK 511 Social Work Policy II	2
SWK 522 Race, Ethnicity, Gender & Diversity	3
SWK 523 Rural Urban Social Work	2
<b>CORE COURSES</b> (2 <sup>nd</sup> yr)	
SWK 520 Human Behavior in Social Env I	3

SWK 521 Human Behavior in Social Env II	3
SWK 530 Applied Social Work Research	3
SWK 581 Field Practicum & Seminar I	4
<b>CONCENTRATION (3<sup>rd</sup> yr)</b>	
SWK 601 Social Work Practice w/ Groups	3
SWK 602 SWK Practice in Hlth & Mental Hlth	3
SWK 616 Issues & Policies in Comm Mental Hlth	3
SWK 621 Family Theories & Processes	3
SWK 630 Needs Assessment/Prgm Evaluation	3
SWK 680 Field Practicum & Seminar II	4
<b>CONCENTRATION (4<sup>th</sup> yr)</b>	
SWK 660 Assessment of Individuals	3
SWK 681 Field Practicum & Seminar III	4
SWK 689 Integrative Seminar	3
SWK Elective	2
<b>COMPREHENSIVE EXAM</b>	
<b>Grade is Pass / Fail.</b>	
Written exam composed jointly by Advisory Committee.	
To be taken after ≥ 66% completion of required course work.	

\*One grade of C allowed at graduation.

## Systems & Materiel Engineering

### Master of Engineering

Dr. F. Michael Ayokanmbi, Program Coordinator  
319 Bond Engineering & Technology Building  
Voice: (256) 372-4312, [michael.ayokanmbi@aamu.edu](mailto:michael.ayokanmbi@aamu.edu)

#### GRADUATE FACULTY

##### PROFESSORS

Ahmed, Nesar  
Alim, Mohammad  
Chowdhury, Showkat  
Deng, Zhengtao  
Glenn, Jr., Chance  
Heidary, Kaveh  
Seif, Mohamed

##### ASSOC. PROFESSORS

Ayokanmbi, F. Michael  
Mobasher, Amir  
Qian, Xiaoqing  
Scott, Andrew  
Xiao, Zhigang

##### ASST. PROFESSORS

Acharya, Anil  
Bhattacharjee, Sudip  
Gadalla, Mohamed  
Kucuksari, Sadik

##### ADJUNCT FACULTY

Barnes, Dilcu H.  
Lord, Robert  
Vance, Larry

#### PROGRAM DESCRIPTION

The Department of Civil and Mechanical Engineering, and the Department of Electrical Engineering and Computer Science collectively offer a graduate program leading to the Master of Engineering (M.ENG.) degree in Systems and Materiel Engineering.

The Master of Engineering in Systems and Materiel Engineering program provides students with enhanced opportunities for professional development and career advancement and provide employers with better skilled, more adaptable, and satisfied career employees.

The systems and material engineering program is an interdisciplinary professional master's degree that focuses on creating processes and strategies for developing and managing complex systems over their lifecycles. It involves the analysis, design, development, integration, test and evaluation, and disposal of complex operational systems.

#### ADMISSION REQUIREMENTS

The Master of Engineering in Systems and Materiel Engineering program is intended for students from varied undergraduate backgrounds, including engineering, sciences, mathematics, management, business, or computer science. The program provides great flexibility for students to choose electives that align with their interests and goals.

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 61 IBT, or 500 PBT on the Test of English as a Foreign Language (TOEFL).

##### Regular Admission

This program is intended for individuals holding a bachelor's degree from a regionally accredited institution in any area of engineering, mathematics, physics, or related sciences. Students without an undergraduate degree in engineering will

be required to successfully complete GEN 500, Engineering Systems Analysis.

This program is intended for individuals holding a bachelor's degree from a regionally accredited institution in any area of engineering, mathematics, physics, or related sciences. Students without an undergraduate degree in engineering will be required to successfully complete GEN 500, Engineering Systems Analysis.

1. Two letters of recommendation must be written by someone who knows the applicant professionally, has supervised him/her in a job or internship environment, or has academically evaluated him/her in a course related to engineering, technology, mathematics, or the sciences.
2. One-page statement of intent should outline personal career goals and reasons for interest in the Systems Engineering program at AAMU. This statement should include information about how the Master of Engineering degree in Systems and Materiel Engineering program may help in achieving them.
3. Resume.

##### Conditional Admission

Applicants who do not meet the requirements for regular admission may be granted conditional admission. Students who are conditionally admitted must fulfill specific requirements stipulated in their letter of admission. Conditional admission status may be granted to applicants with an undergraduate degree in physics, mathematics, computer science, chemistry, or other fields closely related to engineering. Students admitted under this provision will be required to successfully complete GEN 500, Engineering Systems Analysis.

##### GRE Waiver

Eligibility for the GRE waiver is based on undergraduate cumulative GPA of 3.0 or above on a 4.0 scale, and a minimum of three years of relevant professional experience. A resume is required in order to be considered for the GRE waiver. The resume should include applicant's employment history, professional accomplishments, and three references, one of which must be a supervisor who is familiar with the applicant's professional experience.

#### DEGREE REQUIREMENTS

The Master of Engineering degree in Systems and Materiel Engineering is a professional degree and does not require a thesis, but requires a capstone project. The program requires a minimum of 30 semester hours of graduate-level courses with a cumulative grade-point-average of 3.0. Students may, upon departmental approval, transfer a maximum of twelve semester hours of approved graduate credits from an accredited institution.

**Systems & Materiel Engineering – Non-Thesis**

30 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.Eng.

**CORE COURSES**

GEN 601 Life-Cycle Design Engineering	3
GEN 603 Analysis and Simulation Methods	3
GEN 604 Test and Evaluation Engineering	3
GEN 690 Materiel Engineering Project	3
SYE 560 Engineering Project Management	3

**ELECTIVES** 15**CAPSTONE PROJECT****COMPREHENSIVE EXAM**

Grade is Pass / Fail.

Exam composed jointly by Advisory Committee.

To be taken after ≥ 66% completion of required course work.

\*One grade of C allowed at graduation.

**(MAT) SYSTEMS ENGINEERING ELECTIVES**

Choose 15 hours.

GEN 602 Product Assurance Engineering	3
SYE 523 Statistical Methods for Engineers	3
GEN 606 Fund of Systems Engineering	3
SYE 532 System Safety	3
SYE 534 Quality Management for Engineers	3

**(MAT) LOGISTICS & SUPPLY CHAIN MANAGEMENT ELECTIVES**

LSM 536 Logistics & Supply Chain Management	3
LSM 571 Adaptive Supply Chain Management	3
LSM 572 Logistics & Supply Chain Risk Mgt	3
LSM 599 Strategic Supply Chain Planning	3

**Concentrations, Specializations & Electives****(MAT) GENERAL ENGINEERING ELECTIVES**

Choose 15 hours

CE 501 Structural Steel Design	3
CE 502 Reinforced Concrete Design	3
CE 504 Hydraulic Engineering & Design	3
CE 508 Foundation Design	3
CE 510 Transportation Engineering & Design	3
CE 512 Pavement Systems	3
CE 515 Transport Material: Characteristics/Design	3
CE 555 Wastewater Treatment	3

**(MAT) ELECTRICAL ENGINEERING ELECTIVES**

Choose 15 hours

EE 503 Feedback System Analysis & Design	3
EE 504 Communication Theory	3
EE 510 Microwave Engineering	3
EE 513 Rocket Propulsion	3
EE 520 Power Systems I	3
EE 525 High Performance Computing/Networks	3
EE 531 Advanced Semiconductor Engineering	3
EE 541 Digital Signal Processing	3
EE 551 Integrated Circuit Fabrication	3
EE 552 Semiconductor Instrumentation	3

**(MAT) MECHANICAL ENGINEERING ELECTIVES**

Choose 15 hours

ME 512 Anal/Synthesis of Gas Turbines/ Components	3
ME 513 Rocket Propulsion	3
ME 516 Gas Dynamics	3
ME 541 Renewable Energy	3
ME 542 Solar Thermal Engineering	3
ME 572 Economic Evaluation of Design	3
ME 581 Quality and Reliability Assurance	3
ME 582 Operations Planning and Scheduling	3

## Urban and Regional Planning

### Master of Urban and Regional Planning

Bernece Herbert, Program Coordinator  
308-H Dawson Building

Voice: (256) 372-4988, [bernece.herbert@aamu.edu](mailto:bernece.herbert@aamu.edu)

#### GRADUATE FACULTY

<u>PROFESSORS</u>	<u>ASST. PROFESSORS</u>
Oluwoye, Jacob	Herbert, Berniece
	Pressley, Joyce-Ann

#### 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 Urban and Regional Planning (DCRP) 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 2.8 (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 (146 on verbal and 140 quantitative portions of the GRE and a 2.8 GPA) can select the thesis option.

#### DEGREE REQUIREMENTS

The MURP program consists of a total of 46 credit hours (42 credit hours for a student with an undergraduate degree in Planning from an accredited planning program). The 46 credit hours consists of 28 hours of core courses; 12 hours of concentration electives, and 6 hours of thesis OR 3 hours of either a terminal research or a terminal project, as well as 3 hours of elective and take a written Comprehensive Examination for non-thesis.

A student with an undergraduate degree in Planning may be granted a waiver of 4 hours of the required 28 hours of core courses but must complete a total of 42 credit hours to graduate from the program. Students who demonstrate competencies in

specific subject areas such as Geographic Information Systems (GIS), Computer Applications in Planning or Quantitative Methods as well as students who have documented experience in planning practice may be granted a waiver of related courses by the program faculty. Upon exemption, the students must substitute approved electives to make up the 46 credit hours required for graduation.

#### Statute of Limitations

A student enrolled in the MURP program must complete all requirements for the MURP Degree within a time period of seven (7) years.

#### Urban & Regional Planning – Thesis

46 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.U.R.P.

REQUIRED COURSES	
URP 500 Fundamentals of Planning	1
URP 510 Theory and History of Planning	3
URP 511 Quantitative Methods	3
URP 520 Legal Basis of Planning	3
URP 521 Planning Research II	3
URP 525 Planning Studio I	3
URP 526 Computer Applications in Planning	3
URP 527 Planning Studio II	3
URP 529 Professional Practice	3
URP 531 Econ & Population Anal for Planners	3
<b>CONCENTRATION</b>	<b>12</b>
<b>THESIS</b>	
Grade is Pass / Fail. MinHrs 6.	
URP 599 Thesis	1-3
Oral Defense	

\*One grade of C allowed at graduation.

#### Urban & Regional Planning – Non-Thesis

46 Credit Hours

MinGPA cumulative 3.0. MinGrade C\*. Degree M.U.R.P.

REQUIRED COURSES	
URP 500 Fundamentals of Planning	1
URP 510 Theory and History of Planning	3
URP 511 Quantitative Methods	3
URP 520 Legal Basis of Planning	3
URP 521 Planning Research II	3
URP 525 Planning Studio I	3
URP 526 Computer Applications in Planning	3
URP 527 Planning Studio II	3
URP 529 Professional Practice	3
URP 531 Econ & Population Anal for Planners	3
URP 555 Terminal Research Proposal	1
URP 557 Terminal Research OR	
URP 559 Planning Project	2
URP Elective	3
<b>CONCENTRATION</b>	<b>12</b>

**COMPREHENSIVE EXAM****Grade is Pass / Fail.**

Written exam composed jointly by Advisory Committee.

To be taken after  $\geq 66\%$  completion of required course work.

\*One grade of C allowed at graduation.

**Concentrations, Specializations & Electives****(MUP) ENVIRONMENTAL PLANNING CONCENTRATION**

URP 542 Environmental Planning	3
URP 545 Environmental Policy	3
And Any <b>TWO COURSES</b> of the following:	
SPS 553 Hazardous Waste Management	3
SPS 580 Natural Resource Mgt Policy	3
SPS 775 Advanced Principles of GIS	3
URP 523 Site Planning	3
URP 533 Land Use Planning	3
URP 556 Independent Research	3

**(MUP) HOUSING & COMMUNITY DEVELOPMENT CONCENTRATION**

URP 506 Urban Economics	3
URP 543 Housing Issues in Planning	3
And Any <b>TWO COURSES</b> of the following:	
ECO 530 Economic Development	3
SWK 630 Needs Assessment & Program Eval	3
URP 544 Historic Preservation	3
URP 553 Community Development Process	3
URP 556 Independent Research	3

**(MUP) TRANSPORTATION PLANNING CONCENTRATION**

URP 535 Transportation Planning	3
URP 538 Transportation Plan Modeling	3
And Any <b>TWO COURSES</b> of the following:	
SPS 775 Advanced Principles of GIS	3
URP 539 Transportation Planning & Admin	3
URP 556 Independent Research	3

**(MUP) INTERNATIONAL DEVELOPMENT PLANNING CONCENTRATION**

URP 564 Urban Planning in Developing Nations	3
URP 566 Global Env and Population Issues in Plan	3
And Any <b>TWO COURSES</b> of the following:	
AGB 606 Methods & Tech of Rural Development	3
URP 515 Regional Development Theory	3
URP 561 Seminar on Econ Development Planning	3
URP 556 Independent Research	3

## Course Descriptions

All courses are not offered EVERY semester and session. Please check with the originating department for actual times offered.

Click on a course subject to be linked directly to that section.														
<a href="#">ACC</a>	<a href="#">AGB</a>	<a href="#">AMD</a>	<a href="#">ART</a>	<a href="#">BED</a>	<a href="#">BIO</a>	<a href="#">CE</a>	<a href="#">CHE</a>	<a href="#">CS</a>	<a href="#">CSD</a>	<a href="#">CSP</a>	<a href="#">ECE</a>	<a href="#">ECH</a>	<a href="#">ECO</a>	<a href="#">EDL</a>
<a href="#">EE</a>	<a href="#">EET</a>	<a href="#">ELE</a>	<a href="#">ENG</a>	<a href="#">FAS</a>	<a href="#">FCS</a>	<a href="#">FED</a>	<a href="#">FIN</a>	<a href="#">GEN</a>	<a href="#">GEO</a>	<a href="#">GS</a>	<a href="#">HDF</a>	<a href="#">HEA</a>	<a href="#">HIS</a>	<a href="#">INT</a>
<a href="#">LSM</a>	<a href="#">MBA</a>	<a href="#">ME</a>	<a href="#">MGT</a>	<a href="#">MKT</a>	<a href="#">MTH</a>	<a href="#">MUS</a>	<a href="#">NHM</a>	<a href="#">NRE</a>	<a href="#">OSM</a>	<a href="#">PED</a>	<a href="#">PHY</a>	<a href="#">PSC</a>	<a href="#">PSY</a>	<a href="#">RDG</a>
<a href="#">SED</a>	<a href="#">SPE</a>	<a href="#">SWK</a>	<a href="#">SYE</a>	<a href="#">TEL</a>	<a href="#">URP</a>									

### Accounting

- ACC 512     Accounting Analysis for Management – 3 credit 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 (ACC 203 and 204).
- ACC 571     Tax & Business Decision-Making – 3 credit 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. Prerequisite: ACC 351, 451, 512.
- ACC 572     Accounting Information Systems – 3 credit 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 lab fee. Prerequisite: ACC 512.
- ACC 577     Special Topics in Accounting – 3 credit hours.

### Agribusiness

- AGB 502     Advanced Rural Electrification – 3 credit 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 – 3 credit hours. Special methods and techniques of teaching vocational education to the disadvantaged with emphasis on the sociological, psychological and physiological factors that influence learning. Prerequisite: None.
- AGB 508     Planning, Organizing and Teaching Agribusiness Mechanics – 3 credit hours. Selection of teaching materials, tools, training aids, methods, and techniques of teaching Agribusiness Mechanics. Prerequisite: None.
- AGB 509     Advanced Studies – 1-3 credit hours. Individual field study in partial fulfilment of needs for research experience. Prerequisite: None.
- AGB 510     Vocational Guidance – 3 credit hours. Need for and the nature of vocational guidance; their duties and relations; programs and evaluation of results.
- AGB 512     Small Gasoline Engines – 3 credit hours. This course deals with the maintenance, overhauling and troubleshooting of 2 and 4 cycle gasoline engines.
- AGB 515     Agricultural Surveying – 3 credit 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 – 3 credit 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 – 3 credit hours. Principles, theories and practices in planning, developing and evaluating state and local programs in vocational education.

- AGB 522 Adult Vocational Education – 3 credit 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 – 3 credit hours. Advanced study of power units, designs, principles of operation, economic applications and adaptation of field machines.
- AGB 524 Advanced Wood and Machine Technology – 3 credit 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 – 3 credit 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. Prerequisite: None.
- AGB 531 Agricultural Economics – 3 credit 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. Prerequisite: None.
- AGB 532 Advanced Farm Management – 3 credit 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. Prerequisite: None.
- AGB 533 Advanced Agricultural Marketing – 3 credit 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. Prerequisite: None.
- AGB 540 Vocational Education for Special Needs Students – 3 credit 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 – 3 credit 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 – 3 credit hours. Principles and techniques appropriate for planning, designing, conducting and reporting research in Agribusiness.
- AGB 595 Agribusiness Internship – 3 credit hours.
- AGB 599 Master's Thesis – 1-6 credit hours. Thesis credit only.
- AGB 600 Computer Applications in Agribusiness – 2 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 Agribusiness Education – 3 credit 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 – 3 credit hours. Principles and techniques for directing the laboratory experience of student-teachers in Agribusiness Education.
- AGB 606 Methods and Techniques of Rural Development – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 Education – 2-6 credit 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 – 2 credit 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 – 2 credit 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 - 1 credit hr. 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 – 2 credit 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 – 2 credit 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 – 2 credit 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 – 2 credit 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 – 2 credit 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 – 2 credit 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 – 3 credit 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 – 3 credit 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 Advanced Agricultural Policy – 3 credit 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 & Design**

- AMD 527 Consumer Textiles – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 534L Advanced Costume Design – 3 credit 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 535L Advanced Tailoring – 3 credit 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 – 1-3 credit 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 – 3 credit hours. A study of the social, psychological, and economic aspects of clothing for the elderly.
- AMD 618 Textile Economics – 3 credit 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 Textiles & Clothing – 3 credit 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 – 3 credit hours. The historic and philosophical development of art education in public schools and the role of art in education is examined.
- ART 501 Advanced Drawing – 3 credit hours. Continued study in drawing for advanced students, students who have fulfilled basic drawing requirements. Prerequisite: One undergraduate course in drawing.

- ART 502 Advanced Painting – 3 credit 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 Advanced Sculpture – 3 credit hours. Continued study in sculpture for advanced students. Prerequisite: One undergraduate course in sculpture.
- ART 504 Advanced Printmaking – 3 credit hours. Continued study in lithography, intaglio, or relief printing. Prerequisite: One undergraduate course in desired area.
- ART 505 Advanced Ceramics – 3 credit hours. Continued study in ceramics for advanced students. Prerequisite: One undergraduate course in ceramics.
- ART 506 Advanced Fibers – 3 credit 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 Advanced Photography – 3 credit hours. Continued study in photography for advanced students. Prerequisite: One undergraduate course in photography.
- ART 508 Advanced Jewelry – 3 credit hours. Continued study in jewelry for advanced students. Prerequisite: One undergraduate course in jewelry.
- ART 511 Advanced Drawing – 3 credit hours. Continued study in drawing for advanced students, students who have fulfilled basic drawing requirements. Prerequisite: One undergraduate course in drawing.
- ART 512 Advanced Painting – 3 credit 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 513 Advanced Sculpture – 3 credit hours. Continued study in sculpture for advanced students. Prerequisite: One undergraduate course in sculpture.
- ART 514 Advanced Printmaking – 3 credit hours. Continued study in lithography, intaglio, or relief printing. Prerequisite: One undergraduate course in desired area.
- ART 515 Advanced Ceramics – 3 credit hours. Continued study in ceramics for advanced students. Prerequisite: One undergraduate course in ceramics.
- ART 516 Advanced Fibers – 3 credit 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 517 Advanced Photography – 3 credit hours. Continued study in photography for advanced students. Prerequisite: One undergraduate course in photography.
- ART 518 Advanced Jewelry – 3 credit hours. Continued study in jewelry for advanced students. Prerequisite: One undergraduate course in jewelry.
- ART 520 Art Survey – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 Graduate Art – 3 credit 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 – 6 credit 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.

#### **Business Education**

- BED 501 Principles of Teaching Business Education – 3 credit 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 – 3 credit 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/Marketing Education – 3 credit 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 – 3 credit 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/Marketing Education – 3 credit 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 Education Programs – 3 credit hours. Program planning, organization, and implementation, curriculum construction, and evaluation in business and office education.
- BED 526 Improvement of Instruction in General Business Subjects – 3 credit hours. Objectives, teaching procedures, instructional materials, and curricular organization of basic business courses.
- BED 527 Improvement of Instruction in Information Processing - 3 credit 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 – 3 credit 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 – 3 credit 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 – 6 credit 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/Marketing Education – 3 credit 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/Marketing Education – 3 credit 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 – 3 credit 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 – 3 credit 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.

### Biology

- BIO 500 Current Concepts in Biology – 3 credit hours. The course is designed for beginning graduate students, requires brief reviews of modern biological concepts. Topics may include: Bio-membranes, Stem Cells reviews, Community interactions and Biodiversity, Molecular Genetics, Enzymes, Bioenergetics, Genetics, Evolution, Concepts of Disease and Aging, Conservation Biology and Developmental Biology.
- BIO 510 Radiation Biology – 4 credit hours. Characteristics of radioisotopes; detection and counting techniques and instrumentation; tracer techniques, health and safety system. Prerequisite: instructor consent.
- BIO 511 Biological Control – 4 credit 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 – 3 credit hours. Microscopic study of the various tissues and organs of the animal system.
- BIO 513 Research Ethics – 1 credit hr.
- BIO 522 [UAH & AAMU] Microbial Physiology – 3 credit 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. Prerequisite: Microbiology, Organic Chemistry, and Biochemistry.
- BIO 523 Principles of Virology – 3 credit hours. 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 – 3 credit 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 – 5 credit hours (3 clock hour lab period x2 per week). The protozoa and helminthes parasitic for humans and their laboratory identification are discussed. Arthropods are studied in relation to their roles as vectors. Lab fee: Level 4. Prerequisite: BIO 221.
- BIO 526 Microbial Ecology – 3 credit hours. The relationship of soil and aquatic microorganisms and their importance in ammonification, nitrification, and other biological processes. Prerequisite: BIO 221.
- BIO 531 [UAH & AAMU] Plant Physiology – 4 credit hours (3 clock hour lab period per week). 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. Lab Fee: Level 3.
- BIO 533 Advanced Physiology I (Human Physiology) – 3 credit 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) – 3 credit 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 – 4 credit hours. Current developments of anatomy, physiology, chemistry, and regulations of major endocrine glands. Laboratory sessions in biological and chemical assays of hormones.
- BIO 540 Molecular Biology – 4 credit hours. Study of structure behavior and function of the larger biological molecules, including biological oxidations, metabolism of carbohydrates, lipids, amino acids, and the genetic aspects of metabolism. Prerequisite: CHE 301.
- BIO 541 Cell Physiology – 4 credit hours (3 clock hour lab period per week). Study the interconversions and functions of biomolecules in cells, including the major metabolic pathways, bioenergetics, interrelations of various pathways, and various mechanisms of metabolic regulation. Prerequisite: BIO/CHE 361 and 362 or instructor consent.
- BIO 542 Analytical Biochemistry Lab – 4 credit hours. Advanced laboratory course dealing with modern techniques of molecular biology and biochemistry.
- BIO 543 [UAH] Cellular and Development Biology – 4 credit 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. Prerequisite: BIO 113, 114, 319, CH 101, 105, 113 or CH 123, 126 and 331 May be taken concomitantly.
- BIO 544 [UAH] Cellular and Development Biology – 4 credit hours. Continuation of BIO 543. 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.
- BIO 546 Cytogenetics – 4 credit hours. Detail analysis of composition, morphology and behavior of genes, especially as they relate to function, development and heredity.
- BIO 551 Insect Physiology – 4 credit 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. Prerequisite: General Entomology or equivalent and Advanced Biochemistry.
- BIO 552 Insect-Pest Management – 4 credit 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 [UAH & AAMU] Insect Taxonomy and Morphology – 4 credit 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 – 3 credit 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 [UAH] Physiological Ecology – 4 credit hours (3 clock hour lab period per week). Physiological and behavioral responses of organisms to natural changes in their chemical and physical environment. Lab Fee: Level 3. Prerequisite: BY 312 or instructor consent. Recommended: BIO 361 or 532.
- BIO 562 [UAH] Community Ecology – 4 credit hours (4 clock hour lab period per week). Detailed consideration of ecological principles and concepts, as well as biotic and abiotic factors relative to the development of plant communities and ecosystems. Lab Fee: Level 3. Field trips required. Prerequisite: BIO 312 and Taxonomy.
- BIO 563 [UAH] Population Ecology – 4 credit hours (4 clock hour lab period per week). Distribution, population dynamics, and behavior of animal population in relation to environmental factors. Lab Fee: Level 3. Field trips required. Prerequisites: BIO 312 and Organic Chemistry.
- BIO 564 [UAH] Limnology – 4 credit hours (4 clock hour lab period per week). Fresh-water environments and organisms exemplified by lakes, ponds, and streams in North Alabama. Includes laboratory and required field trips. 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 instructor consent.
- BIO 565 Phycology – 4 credit 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 – 4 credit hours. History nonparasitic and parasitic diseases incited by bacteria, fungi, plasmodiophorales, nematodes, and viruses will be discussed. Disease control through exclusion, eradication, protection, and post resistance will be mentioned. Prerequisites: BIO 344.
- BIO 571 Plant Anatomy and Physiology– 3 credit hours (3 clock hour lab period x2 per week). 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. Prerequisites: BIO 372 or instructor consent.
- BIO 572 Plant Taxonomy – 4 credit 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 [UAH] Advanced Invertebrate Zoology – 4 credit 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. Prerequisites: Invertebrate Zoology or instructor consent.
- BIO 590 Problems in Biological Sciences – 3 credit 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 Toxicology (Toxicology) – 4 credit 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: instructor consent.
- BIO 621 [UAH] Pathogenic Bacteriology – 5 credit hours. (3 clock hour lab period x2 per week). Detailed study of bacteria that cause infections in humans. Mechanisms of pathogenicity and host-parasite relationships are emphasized. Prerequisites: BIO 361, 421, 430 or instructor consent.

- BIO 622     Applied Industrial Microbiology – 3 credit 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. Prerequisites: Microbiology.
- BIO 623     Advanced Virology – 4 credit hours. Outline of field of virology stressing the molecular biology of virus replication. Topics include immunology, genetics, and epidemiology. Emphasis on bacterial and vertebrate viruses, although plant and insect viruses may be discussed.
- BIO 624     Immunology – 4 credit hours (4 clock hour lab period per week). Theoretical and practical aspects of immunology. Current areas of immunology that are controversial will be discussed in detail. Lab Fee: Level 4. Prerequisites: BIO 361 and 430 or instructor consent.
- BIO 625     [UAH & AAMU] Medical Mycology Lecture – 3 credit hours (1 clock hour lab period x2 per week). 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. Lab fee: level 4. Prerequisites: BIO 421, 430.
- BIO 631     Pharmacology – 3 credit 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 – 3 credit 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 – 3 credit 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 instructor consent.
- BIO 641     Advanced Cell Biology – 4 credit 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.
- BIO 642     Advanced Cell Physiology – 4 credit 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.
- BIO 643     [UAH] Microscopy – 4 credit hours. Introduction to the various methods of preparation for transmission electron microscopy and an analysis of electromicrographs. Attention will also be given to supporting techniques such as phase microscopy, autoradiography, scanning electron microscopy, negative staining, and cytochemistry. Prerequisites: instructor consent.
- BIO 644     [UAH] Topics in Cell and Development Biology and Biological Fine Structure – 2 credit 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 instructor consent.
- BIO 645     Human Cytogenetics and its Clinical Application – 3 credit hours. Review of normal human chromosome structure and normal chromosome segregation and morphology with clinical considerations.
- BIO 646     [UAH AAMU] Molecular Genetics – 3 credit 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, CHE 361.
- BIO 647     [UAH] Enzymology – 3 credit hours. Detailed study of enzymes including protein synthesis, the 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 instructor consent.

- BIO 648 [UAH] Enzymology Laboratory – 2 credit hours. Techniques of isolation, purification, and characterization of enzymes. Prerequisites: BIO 647.
- BIO 649 Advanced Genetics I – 4 credit hours. Three hour 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 651 [UAH] Medical Entomology – 4 credit 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. Prerequisites: BIO 361 and 455 or instructor consent.
- BIO 652 Advanced Applied Entomology – 4 credit hours. Economic thresholds, economic injury levels, population dynamics, residues in food crops, chemical control, insect transmission of plant and livestock diseases. Prerequisites: General Entomology.
- BIO 653 [UAH & AAMU] Taxonomy of the Immature Insect – 4 credit 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. Prerequisites: BIO 455 or instructor consent.
- BIO 660 [UAH] Ecosystem Dynamics – 4 credit hours. (4 clock hour lab period per week). 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. Field trips required. (Prerequisites BIO 564, 565)
- BIO 661 [UAH] Advanced Population Ecology – 4 credit hours (4 clock hour lab period per week). Interaction of population structure, genetic properties, and ecology factors in controlling the dynamics and evolutionary character of natural populations. Lab Fee: Level 3. Prerequisites: BIO 312, 564, or 565 or approval of instructor.
- BIO 690 [UAH & AAMU] Seminar – 1 credit hr. Students report on current journal articles and research.
- BIO 691 [UAH & AAMU] Special Topics – 1-4 credit hours. Literature search relative to topics of special interest under direct supervision of an instructor. For graduate students.
- BIO 692 [UAH & AAMU] Research – 1-4 credit 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 [UAH & AAMU] Master's Thesis – 1-3 credit hours. Individual research towards completing the thesis requirement for the M.S. degree in Biology.

### Civil Engineering

- CE 501 Structural Steel Design– 3 credit 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. Prerequisites: undergraduate course in structural analysis.
- CE 502 Reinforced Concrete Design– 3 credit 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. Prerequisites: undergraduate course in structural analysis.
- CE 504 Hydraulic Engineering and Design – 3 credit 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 508 Foundation Design – 3 credit 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. Prerequisites: undergraduate course or experience in soil mechanics.

- CE 509 Public Health Engineering – 3 credit 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. Prerequisites: undergraduate course or experience in environment analysis.
- CE 510 Transportation Engineering and Design – 3 credit 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. Prerequisites: undergraduate course or experience in transportation systems.
- CE 512 Pavement Systems – 3 credit 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 515 Transport Material: Characteristics/Design – 3 credit hours.
- CE 555 Wastewater Treatment – 3 credit 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.

### Chemistry

- CHE 508 Chemistry in the Secondary Schools – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 1 credit hr. Laboratory to accompany CHE 612. Radiation safety orientation, measurement of half-life, pulse height analyzers, and liquid scintillation counting techniques will be presented.

### Computer Science

CS 511 Design and Analysis of Algorithms – 3 credit 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. Prerequisites: CS 215.

CS 513 Management Information Systems – 3 credit 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. Prerequisites: instructor consent.

CS 515 Numerical Analysis – 3 credit 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. Prerequisites: CS 109 or 204.

CS 517 Applications of Statistical Methods – 3 credit 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. Prerequisites: MTH 237.

CS 521 Object Oriented Programming and Design – 3 credit 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: CS 215.

CS 523 Compiler Design – 3 credit 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. Prerequisites: CS 215.

CS 525 Advanced Data Structures – 3 credit 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. Prerequisites: CS 215.

CS 531 Computer Architecture – 3 credit 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: CS 380.

CS 533 Cyber Security Fundamentals – 3 credit hours. This course will provide an overview of cyber physical system security. Students will be exposed to the spectrum of security activities, methods, methodologies, and procedures with emphasis on practical aspects of cyber physical system security. Topics include: security principles, threats, attacks, security models, security policies, authentication, detection. Prerequisites: CS 485.

CS 535 Introduction to Bioinformatics – 4 credit 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. Prerequisites: instructor consent.

CS 541 Operating System Principles – 3 credit 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: CS 215, 381.

CS 543 Computer Communications – 3 credit 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: instructor consent.

CS 550 Artificial Intelligence – 3 credit 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: CS 203, CS 109 or CS 206.

- CS 551 Database Management Systems – 3 credit 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. Prerequisites: CS 203.
- CS 554 Neural Networks – 3 credit hours. Introduction to neural networks, supervised and unsupervised learning, neural network architectures, training algorithms, black board architecture, and other general concepts. Prerequisites: CS 109 or 206.
- CS 555 Advanced Database Systems – 3 credit 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: CS 488.
- CS 561 Software Engineering Methodology – 3 credit 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. Prerequisites: CS 215.
- CS 562 Multimedia Systems and Applications – 3 credit 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. Prerequisites: instructor consent.
- CS 563 Image Processing – 3 credit hours. General concept of image processing, sensing, sampling and quantization, image segmentation and edge detection, image sequence analysis, image enhancement and restoration, image understanding systems, applications of mathematical morphology. Prerequisites: MTH 203.
- CS 570 Computer Graphics and Animation – 3 credit 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: CS 203, CS 109 or CS 206.
- CS 577 Fuzzy and Expert Systems – 3 credit 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. Prerequisites: CS 203, CS 109 or CS 206.
- CS 582 Wireless and Mobile Computing – 3 credit hours. This course is to provide an in depth understanding of the fundamental concepts of wireless networking and communication, data transmission and communication, protocols and problems of mobile computing and study the existing and proposed solutions for these problems from both research and development perspective. Some advanced topics include location management and mobility tracking, location-aware information services, security infrastructure, malware detection, mobile agents and mobile forensics will be covered in this course. Prerequisites: CS 215.
- CS 591 Cooperative Educational Work Experience – 3 credit 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. Prerequisites: Completion of all the core courses.
- CS 593 Advanced Topics in Computer Science – 3 credit hours. This course is based upon the topic to be addressed and the instructor consent. Topics will be those of mutual interest to faculty and students and not currently available in the graduate program. Prerequisites: Graduate standing and instructor consent.
- CS 597 Independent Study – 3 credit 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.

CS 599 Thesis – 1-3 credit hours. This course consists of individual research towards completing the thesis requirement for M.S. degree in Computer Science.

### **Communicative Sciences & Disorders**

CSD 500 Introduction to Communication Disorders – 3 credit hours. An overview of the various disorders and current research and trends in the field of speech-language pathology and audiology.

CSD 501 Business & Professional Communication – 3 credit hours. This course emphasizes the importance of effective communication between individuals and large groups in business settings. Types of professional presentations will be examined as well as how to create them. Prerequisites: None.

CSD 502 Voice and Diction – 3 credit hours. This course is designed to present specialized knowledge relevant to the understanding of speech communication. It will assist students in developing the ability to discriminate the sounds used in Standard American English and how the sounds are represented symbolically according to the International Phonetic Alphabet (IPA). Prerequisites: None.

CSD 503 Communication in Corporate America – 3 credit hours. This course emphasizes the importance of effective communication between individuals and large groups in business settings. Types of professional presentations will be examined as well as how to create them. Prerequisites: None.

CSD 504 Advanced Evaluation and Assessment of Communicative Disorders – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit hours. Exploration of the nature of language disorders and their effects on the total child.

CSD 522 Voice Disorders – 3 credit hours. Designed to promote understanding of the etiology, diagnosis, and intervention strategies/treatment of voice disorders.

CSD 525 Case Management in Speech-Language Pathology – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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.

### **Communications Specialist**

- CSP 500     Survey of Communication Studies 3 credit hours. An introductory communication course designed to present the basics of human communication and an overview of the skills needed to become a competent communicator. The communication process is examined in its many forms, elements, functions and effects.
- CSP 501     Rhetorical Theory – 3 credit hours. The study and practice of persuasion, including the basic precepts of rhetorical theory, the structures and strategies of arguments, and the analysis and study of symbol use. The course offers an introduction to the scholarly study of rhetoric to facilitate students' interpretive and critical thinking in culture, business, politics and life in general.
- CSP 502     Theory/Research Communication – 3 credit hours. A study of theory and research methods used in the communication discipline. Participants will be exposed to an overview of methods and techniques used for the systematic, theoretical observation of communication behavior. Prerequisites: None.
- CSP 503     Professional Ethics & Communication – 3 credit hours. Focus on ethical theory, research, and application and how a knowledge of language and critical thinking can make better communicators as well as consumers of communication. Various aspects of classical and contemporary ethical theory are covered, applying it to various forms of communication: politics, journalism, public relations, advertising, the internet, etc. Prerequisites: None.
- CSP 504     Managing Workplace Diversity & Inclusion – 3 credit hours. Examines theories, research and principles on intercultural communication, with the intent of enhancing cultural sensitivity and ability to recognize, accept and adapt to cultural diversity. The purpose is to improve one's ability as a leader in the communications field to address diversity in organizations. Prerequisites: None.

- CSP 505 Leadership & Communication – 3 credit hours. Exploration of the role communication plays in successful leadership and management strategies. Communication theory and skill development in organizational settings will be discussed with an emphasis on interpersonal skill development, team and meeting facilitation, informational interviewing, team presentation and self-assessment. Prerequisites: None.

### **Pre-Elementary & Elementary Education**

- ECE 503 Learning Styles – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 Problems in Improving Science Teaching – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit hours. This course is designed for Educational Specialist degree candidates in pre-elementary 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 – 3 credit 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 – 3 credit 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 Reading and Research in Elementary and Early Childhood – 3 credit 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.

#### **Pre-Elementary Education**

- ECH 502 Workshop in Early Childhood Education – 3 credit hours. This course is designed to allow graduate candidates the opportunity to study or work on topics or projects of collective concern. Topics vary.
- ECH 506 Curriculum Design – 3 credit 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 to Learning – 3 credit 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 – 3 credit 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 519 Home, School, Community Collaboration – 3 credit hours. This course will address family systems theory, family involvement models, and the family support approach. Focus will be given to engaging families in their child's learning and development and the multiple influences on a young child's development. Consideration will be given to best strategies to include the community in the early childhood classroom. The connection that exists between home, school, and the community will be examined. Prerequisites: Admission to graduate studies, EPP, and advisor approval.
- ECH 595 Internship in Early Childhood Education – 6 credit hours. This course engages the candidate to practice learned proficiencies in an educational setting by providing supervised teaching experiences. Candidates will demonstrate competencies to develop and implement instructional strategies under the supervision of a certified teacher of children in a setting of service delivery designed to maximize children's learning potential. Weekly on-campus seminars are a required part of the course.
- ECH 602 Strategies of Parent Involvement – 3 credit 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 – 3 credit hours. Candidates will complete the proposed thesis.

ECH 699 Thesis II – 3 credit hours. Candidates will complete the thesis.

### **Economics**

ECO 500 Survey of Economic Analysis – 3 credit hours. This course is designed for students with limited or no background in economic theory at the undergraduate level.

ECO 503 Macroeconomic Theory – 3 credit 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. Prerequisites: ECO 500 or its equivalent.

ECO 509 International Economics – 3 credit 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 – 3 credit 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). Prerequisites: ECO 500 or an undergraduate two-course sequence in principles of economics.

### **Educational Leadership**

EDL 530 Data Driven Decision Making – 3 credit hours. Students in this course will learn to collect and interpret various types of data that increase student achievement. Both formative and summative evaluative concepts in interpreting test data and program implementation will be analyzed. The importance of developing a learning community focused on continuous school improvement will be studied.

EDL 543 Legal and Ethical Aspects of School Operations – 3 credit hours. This course will review the interrelationships of the national, state, and local governments as contributors to educational policy. The federal constitution and statutes, and state statutes and policies will be studied to gain knowledge about system and individual liability for constitutional violations, torts, and contracts. State board and local policies are studied in light of statutory and judicial mandates pertaining to student classifications, employment and contractual rights of teachers, and methods of program administration. Local school policies and operations pertaining to due process, tenure, transfer, suspension, and termination are critiqued in light of federal legislation, state statutes and guidelines, and relevant court decisions. The ethical considerations required by the Professional Standards Commission are an integral part of this course. Further, this course will review the Alabama Educator Code of Ethics which magnifies the professional behavior and responsibility of educators in Alabama and serves as a guide to ethical conduct. The code protects the health, safety and general welfare of students and educators; outlines objective standards of conduct for professional educators; and clearly defines actions of an unethical nature for which disciplinary sanctions are justified.

EDL 547 Education Finance – 3 credit hours. This course will help candidates gain an understanding of why education and school finance are important and why current practices exist. The course will explain what is contained in a strategic financial plan, the accounting and budgeting systems, financial framework, and examine how school leaders prepare and administer strategic financial plans. This course will also examine sources of public revenue and their appropriateness in financing education, and stimulate creative/reflective thinking in relation to the role of finance in American education. Also, the course will help candidates to gain an understanding of concepts and principles of school finance and their application to school support programs. Candidates will examine the economic efforts of expenditures for education. And, become familiar with characteristic patterns of state support and their effects on local school districts. Finally, students will gain a basic understanding of the current system of financing public education in Alabama, through the 1995 Foundation Program.

EDL 563 Curriculum Development, Improvement and Assessment – 3 credit hours. This course will review the curriculum and instructional program of the school. Emphasis will be on the planning, developing, implementing, managing, and evaluating aspects of curriculum instruction.

- EDL 564 School Community Relations – 3 credit hours. This course is designed to aid prospective and current school administrators in understanding the importance of studying, designing and implementing programs to address the needs and problems of the school and its specific publics.
- EDL 566 Management of School Operations – 3 credit hours. This course is designed to aid school administrators in resolving managerial problems associated with duties and responsibilities of school personnel, facilities, fiscal management, transportation, load services, athletic operations, and scheduling.
- EDL 567 Instructional Leadership – 3 credit hours. This course will examine the work a learning-centered school leader does—which is to work with teachers in ways that promote lifelong learning skills that include inquiry, reflection, collaboration, and a dedication to professional growth and development. The course will also focus attention on how a learning-centered school leader must help teachers improve their skills so they can help students achieve more.
- EDL 569 Collaboration, Mentoring, and Human Resource Development – 3 credit hours. This course will help candidates gain an understanding of personnel functions and responsibilities of school leaders. Students develop skills in forecasting personnel needs and in recruiting, selecting, orienting, mentoring, assigning, developing, compensating, and evaluating personnel. These and other personnel decisions should be made with attention to their potential effect on instruction and student learning. Attention is given to major federal and state legislation, executive orders and court decisions that provide direction in the development of human resource programs that address the rights of diverse groups within the work force.
- EDL 596 Residency/Internship in Instructional Leadership – 3 credit hours. This is a field laboratory, supervised experience in which advanced graduate students will be involved in actual working situations to gain experience in structural organization, administrative or supervisory behavior and practices, and related problems. The residency will include experiences where the candidate will be observing, participating and leading activities that mirror the role of the k-12 administrator.
- EDL 636 Advanced Education Law and Policy – 3 credit hours. This course will explore Legal and Political issues associated with p-12 schools. By examining case law associated with educational institutions and fed, state, and local policies, it will provide school leaders with the knowledge necessary to understand and prevent legal problems and reflect on educational policy. Candidates will gain an understanding of legal principles, interpretations of the laws, and policy creation and implementation. Further, there is a focus on district and school based decision making.
- EDL 637 Strategic Organizational Leadership – 3 credit hours. This course is designed to develop the leadership knowledge and skills required to lead collaborative learning processes. Major emphasis is placed on developing the required leadership skills required to transform schools into true learning organizations where teachers, administrators, and community work collaboratively to improve student achievement and provide a positive diverse learning culture for student populations with ever-changing needs.
- EDL 638 Mentor Training & Ethics of School Leaders – 3 credit hours. This course will provide insight into the nature and focus on the process of mentoring, so that the learning of the mentor can be facilitated in ways that enrich, enable, enliven, and engage the learning and development of the mentee. Additionally, the course will focus on leading the teacher mentoring & induction program and examine the role of the mentor in improving teacher performance based on EDUCATE Alabama. Further, the ethical considerations required by the Professional Standards Commission are an integral part of this course. This course will review Ethics in Education and the Alabama Educator Code of Ethics which magnifies the professional behavior and responsibility of educators in Alabama and serves as a guide to ethical conduct. The code protects the health, safety and general welfare of students and educators; outlines objective standards of conduct for professional educators; and clearly defines actions of an unethical nature for which disciplinary sanctions are justified.
- EDL 639 Educational Facilities Development and Management – 3 credit hours. This course is designed to help future administrators understand how to plan school facilities which will best serve the needs of a changing and diverse student population. Further, this course explores the role of the district personnel in management, evaluation, and improvement of policies and programs related to school operations and facilities management and design.
- EDL 641 Adult Learning Theory – 3 credit hours. This course is designed for principals and other instructional leaders to help them understand current adult learning theories and approaches to teaching and learning as well as the practical curriculum applications. School administrators must foster a cohesive culture of learning and a resistance to change in order to meet the needs of faculty and students. Further, this course will address the critical aspects of the teaching-

learning process-student differences, learning, student motivation, facilitating and monitoring teaching and learning, classroom management, assessing student learning, and assessing and changing school climate and culture.

- EDL 643 Seminar in Instructional Leadership – 3 credit hours. This course will explore processes and systems used in promoting positive school culture by engaging stakeholders to achieve the schools vision. Further, the course will explore programs and services that focus on special programs such as special education; English language learners; career and technical education programs; pre-K; as well as adolescent literacy programs. The course will also focus on issues associated with the learning community; building school culture and change; managing the organization; and school improvement.

### **Electrical Engineering**

- EE 503 Feedback System Analysis and Design – 3 credit 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. Prerequisites: undergraduate course in electrical signal analysis.
- EE 504 Communication Theory – 3 credit hours. Same as EE 404\*. A study of communication signals and systems; AM and FM methods; pulse code modulation; multiplexing, and digital communications. Prerequisites: undergraduate course in electrical signal analysis.
- EE 510 Microwave Engineering – 3 credit 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. Prerequisites: undergraduate course in electromagnetic theory.
- EE 513 Rocket Propulsion – 3 credit hours.
- EE 520 Power Systems I – 3 credit 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. Prerequisites: undergraduate course or experience in energy conversion.
- EE 521 (EE 421) Power Systems II – 3 credit hours. The intent of the course is to reinforce the fundamental concepts of Power Systems I and build upon them including the ongoing modernization and restructuring of the electric utility industry. It is intended to cover the following topics: Renewable energy sources including micro-grids, photovoltaic and wind generation, transmission line parameters, steady-state operation of transmission lines, power flow, economic dispatch and optimal power flow, three phase, steady-state, normal operating condition. It would also explain the role of state of the art transformers in power transmission and distribution systems. High voltage DC, distribution systems, synchronous generators, voltage stability, transient stability, power system controls, including generator voltage control, etc. Prerequisites: EE 202, 301, 420.
- EE 522 (EE 422) Smart Grid Cyber Security – 3 credit hours. SMI & CS is intended for senior EE students who have completed introductory and intermediate courses in circuits, signals, and power systems. The scope of the course covers the two distinct aspects (a) smart metering infrastructure, and (b) security and privacy challenges that come along from the backdoor. Topics will include: Fundamentals of smart grids; smart metering infrastructure (SMI); SMI and security aspects at subscriber end and at the utility end; SMI and security aspects in smart metering communication/sensors networks; SMI and subscribers' privacy aspects; SMI, and attack detection and recovery. Prerequisites: EE 202, 301, 420.
- EE 526 (EE 426) Next Generation Mobile Networks – 3 credit hours. Architecture, applications, and services is intended for senior EE students and graduate students. The scope of the course covers the architecture, application, and service aspects of 5G mobile networks. Topics include: Radio aspects of 5G telecommunication system; evolved packet core which is based on modern IP-based architecture designed to provide flexible platform and standard mechanisms to interwork with other IP-based systems; Internet of Things (IoT), which is the second wave of wireless communication revolution that began with the widespread adoption of smart phones; smart grid networks; public safety services based on 5G broadband networks; cloud services and cloud computing; hypervisor and virtual machines. Prerequisites: EE 301, 404.
- EE 531 Advanced Semiconductor Engineering – 3 credit 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. Prerequisites: undergraduate course or experience in semiconductor engineering.

- EE 541 Digital Signal Processing – 3 credit 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. Prerequisites: undergraduate course or experience in signal processing.
- EE 551 Integrated Circuit Fabrication – 3 credit 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. Prerequisites: undergraduate course or experience in semiconductor devices.
- EE 552 Semiconductor Instrumentation – 3 credit 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. Prerequisites: undergraduate course or experience in semiconductor devices.

### **Electrical Engineering Technology**

- EET 501 Computer Telephony Integration – 3 credit 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 – 3 credit 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). Prerequisites: EET 501.
- EET 516 Automatic Control Systems I – 3 credit 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 – 3 credit 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. Prerequisites: EET 516.
- EET 518 Robotics – 3 credit 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. Prerequisites: graduate standing.
- EET 612 Special Problems – 3 credit hours. Individualized research and investigation into areas not covered in other classes.
- EET 699 Master's Thesis (Same as INT 699) – 3 credit 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. Prerequisites: Completion of 15 semester hours.

### **Elementary Education**

- ELE 509 Evaluation in Elementary Schools – 3 credit 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 – 3 credit 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 – 3 credit 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 – 6 credit hours. This course engages the candidate to practice learned proficiencies in an educational setting by providing supervised teaching experiences. Candidates will demonstrate competencies to develop and implement instructional strategies under the supervision of a certified teacher of children in a setting of service delivery designed to maximize children's learning potential. Weekly on-campus seminars are a required part of the course.
- ELE 614 Teaching Strategies for the Affective Dimension of Reading – 3 credit 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 – 3 credit hours. Candidates will complete the proposed thesis.
- ELE 699 Thesis II – 3 credit hours. Candidates will complete the thesis.

### English

- ENG 500 Writing for Graduate Students – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit hours. A study of at least eight plays with occasional attention to the poems.
- ENG 509 Chaucer – 3 credit hours. A study of The Canterbury Tales and other major works.
- ENG 510 Milton – 3 credit hours. A study of Paradise Lost and other major works.
- ENG 511 Tennyson – 3 credit hours. A study of In Memoriam and other major works.
- ENG 512 Sixteenth Century English Literature – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 520 Structural English Grammar – 3 credit hours. A study of the structures of the English language with emphasis on the forms and functions of its components. Prerequisites: None.
- ENG 601 American Literature Before 1900 – 3 credit hours. A survey of American literature from its beginning through the nineteenth century, concluding with Stephen Crane.
- ENG 602 Romantic Movement – 3 credit 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 603 Composition Theory and Rhetoric – 3 credit 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 – 3 credit 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 & Animal Science**

- FAS 503 Food Microbiology – 4 credit 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. Prerequisites: BIO 330, 330L.
- FAS 504 Animal Hygiene and Parasitology – 3 credit 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. Prerequisites: BIO 103, 103L.
- FAS 505 Meat Science and Technology – 3 credit 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.
- FAS 507 Food Chemistry – 4 credit 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, 301L) or instructor consent.
- FAS 508 Food Analysis – 4 credit 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. Prerequisites: FAS 507 or instructor consent.
- FAS 521 Poultry Products Technology – 3 credit 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.

- FAS 528     Physiology of Reproduction – 4 credit 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.
- FAS 538     Fruits, Vegetables and Cereal Products Technology – 3 credit 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.
- FAS 540     Research Methods in Biosciences – 3 credit hours. Principles associated with research analysis in bioscience. To understand various research methods using practical applications. Data collection, management and organization with emphasis in population inferences, hypothesis testing, experimental units, scientific process and an introduction to experimental designs in Bio-Health Sciences. Prerequisites: None.
- FAS 550     Regulation of Food Safety and Quality – 3 credit 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. Prerequisites: instructor consent.
- FAS 552     Food Quality Assurance – 3 credit 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.
- FAS 553     Agricultural Biochemistry – 4 credit 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).
- FAS 560     Animal Anatomy and Physiology – 3 credit hours. Fundamental aspects of anatomy and physiology in a wide range of domestic species. Provides in-depth information on the guiding principles of this key area of study for animal science students, fostering a thorough understanding of the complex make-up of domestic animals. Incorporates practical information, with descriptions of anatomic or physiological events in companion or domestic animals to demonstrate everyday applications. Prerequisites: None.
- FAS 561     Food Engineering – 4 credit 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, PHY 103).
- FAS 572     Food Processing – 4 credit 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. Prerequisites: FAS 461L, FAS 561).
- FAS 605     Special Problems – 1-3 credit hours. Involves a detailed experimental study of a chosen problem in food science or animal science. Prerequisites: instructor consent. Note: Can be taken twice as an independent study course for Food Science Ph.D. students.
- FAS 610     Sensory Science – 3 credit hours. This course is designed provide a study of the advanced principles, methodologies, theories and formal analyses of sensory science. Sensory methods continue to evolve, as sensory science is one of the newest and rapidly growing areas of food science. This course will provide students with an in-depth view into the more complex sensory methodologies and theories. Appreciation and understanding of the core sensory principles is the key to effective applications of sensory testing procedures. The students will be introduced to sophisticated sensory testing parameters, settings, and logical, measurable outcomes thus providing applicable, understandable, and usable information for student transition into industry
- FAS 611     Food Toxicology – 3 credit 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.

- FAS 615 Food Enzymes – 3 credit 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.
- FAS 617 Food Flavors and Pigments – 3 credit 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.
- FAS 622 Advanced Livestock Judging – 2 credit 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. Prerequisites: FAS 355 or instructor consent.
- FAS 623 Quantitative Genetics – 3 credit 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.
- FAS 626 Food Ingredient Technology – 3 credit hours. This course is designed provide a study of the advanced principles, methodologies, theories and formal analyses of ingredient technology. Food ingredients and additives, including natural ingredients, FDA approved artificial ingredients, and compounds used in food processing will be evaluated. Hands-on learning will be emphasized in efforts to cover functionality, chemical properties, applications and usage limits of food ingredients. The students will be introduced to the latest as well as tried and tested food ingredients from all functions and areas, thus providing applicable, understandable, and usable information for student transition into industry
- FAS 630 Advanced Reproductive Physiology of Vertebrates – 3 credit 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. Prerequisites: FAS 430 or instructor consent.
- FAS 632 Monogastric Nutrition and Metabolism – 3 credit 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.
- FAS 640 Product Development and Research – 3 credit 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.
- FAS 642 Minerals and Vitamins in Foods and Nutrition – 3 credit 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.
- FAS 644 Proteins in Foods and Nutrition – 3 credit 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.
- FAS 646 Carbohydrates and Lipids in Foods and Nutrition – 3 credit hours. Physical and chemical structures; analytical methods applicable to research; and reactions, interactions and metabolism of carbohydrates and lipids in food industry and diseases.
- FAS 654 Food Microbiological Techniques – 3 credit hours. An advanced laboratory techniques course stressing analytical examination of microorganisms in food systems. Prerequisites: FAS 503, 507.
- FAS 657 Analytical Techniques and Instrumentation – 3 credit hours. Review of modern techniques and instrumentation used in analyzing and characterizing food components.
- FAS 658 Food Microstructure – 3 credit 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.

- FAS 659 Food Systems Biosecurity and Bioterrorism – 3 credit hours. This course is designed to provide students information and practices in order to increased their knowledge and understanding of basic concepts in biological terrorism directed at the nation's agriculture infrastructure. A particular emphasis will be made toward terrorist acts utilizing food and animal through demonstrations and exercises. Topics covered in this course will include: terrorism defined, biological agents, economic/social impacts of terrorism, response by regulatory agencies and government to terrorist acts. Scenarios will be presented from previous acts and potential acts to incorporate critical thinking and thoughtful discussions.
- FAS 662 Food Rheology – 3 credit 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.
- FAS 671 Introduction to Biotechnology – 3 credit 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.
- FAS 676 Food Processing and Nutrients – 3 credit 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.
- FAS 678 Applied Nutrigenomics – 3 credit hours. The goal of this course is to stimulate critical thinking and discussion among graduate students about techniques and current research findings in nutrigenomics. Students will gain some practical knowledge to apply Nutrigenomics in laboratory settings. Prerequisites: Any advanced food science course.
- FAS 686 Advanced Topics in Animal Science – 1-3 credit 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.
- FAS 697 Seminar – 1 credit hr. A review and discussion of current literature in food science and animal science. Students will prepare a presentation to students, colleagues and faculty.
- FAS 698 Master's Report - Research Paper – 1-4 credit hours.
- FAS 699 Research for Master of Science – 1-6 credit hours.
- FAS 701 Advanced Food Microbiology – 3 credit 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.
- FAS 707 Advanced Food Chemistry – 3 credit hours. Recent advances in chemistry and biochemistry of foods including chemical reactions occurring during food processing, storage and utilization by man.
- FAS 711 Advanced Food Toxicology – 3 credit hours. Review of recent advances in food toxicology including methodology of evaluation of toxicants, detoxification mechanisms, biological activities and regulatory and legal considerations.
- FAS 736 Advanced Sensory Evaluation – 3 credit 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.
- FAS 741 Advances in Nutrition – 3 credit hours. Discussion topics in this course will encompass advances in nutritional methodologies (heavy isotopes, non-invasive techniques), current aspects of impact of food processing on nutrition and health, and other topics of interest to the students.
- FAS 761 Advanced Food Engineering – 3 credit 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.

- FAS 771     Advanced Food Biotechnology – 3 credit 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.
- FAS 772     Advanced Food Processing – 3 credit 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.
- FAS 780     Functional Foods & Nutraceuticals in Health Disease – 3 credit 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. Advanced topics in food science and technology, from basic to applied research, including current issues in food science and technology and critical analysis of current research literature.
- FAS 782     Advanced Food Packaging – 3 credit hours. Advanced Food Packaging and Quality Control course addresses the interrelationship between foods and packaging, and how it impacts shelf life, and food quality and safety. Technical content includes the intrinsic and extrinsic complex factors in food packaging system design and overall quality and safety assessment of packaged products.
- FAS 796     Advanced Topics in Food Science – 3 credit 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. Note: Can be taken twice as an independent study course for Food Science Ph.D. students.
- FAS 797     Seminar – 1 credit hr. 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 798     Teaching Experience for Doctoral Students – 3 credit hours. This course will enable Ph.D. students to learn how to teach including the opportunity to design and implement course modules with a faculty mentor. In this course, each Ph.D. student will draft at least one course syllabus that may be used to teach an independent course. Course topics will include methods of course design, syllabus construction, critical thinking, student learning outcomes, formative and summative evaluation methods, analytic vs. holistic grading rubrics, and practical steps to propose and teach a new course. Research on college students and successful new faculty will be discussed. The products created in this course will form a vital part of any teaching portfolio. This course is designed to provide training and experiential learning in teaching for Ph.D. students.
- FAS 799     Research for Ph.D. – 1-3 credit hours. Individual research work towards dissertation requirements.

#### **Family & Consumer Sciences**

- FCS 505     Curriculum Planning and Development in Family and Consumer Sciences – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 1 credit hr. 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 – 3 credit 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 – 6 credit hours. Thesis credit only.
- FCS 599 Master's Thesis – 1-6 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit hours. A study of the theoretical and conceptual bases of Family and Consumer Sciences.
- FCS 610 Internship – 3 credit hours. Supervised work experience.
- FCS 699 Action Research II – 3 credit hours. An investigation of research problems for the Specialist degree.

#### **Education Foundation**

- FED 500 Professional Seminar – 3 credit hours. This course will introduce candidates to a variety of fundamental questions about education, immerse candidates in seminal works in the educational literature, and give candidates ways of framing and analyzing educational issues which candidates may draw on during their professional career. This courses' literature focuses on teaching and learning in elementary and secondary classrooms and the connection between these classrooms and the larger social context. Candidates will learn how to think, analyze, argue, and write – about teaching and learning, schools and society, teachers, students, and the public – using graduate level discourse, research, theory, imagination and discipline.
- FED 501 Foundations of Education – 3 credit hours. This course provides a thorough understanding of the teaching profession and balanced discussion of controversial issues with emphasis on : professional development; school-based management; the history of education in China, globalization, legal protection regarding teachers and students; problems with and prospects for No Child Left Behind legislation, the role of technology in schools and classrooms, school choice and charter schools, curriculum and testing standards, promising instructional innovations and intervention and many other topics that affects schools, and education in general.
- FED 503 Introduction to Educational Research – 3 credit hours. This course provides a survey of typical research methods used in conducting research in a teaching and learning environment. Relevant concepts and issues involved in conducting educational research are also explored. Additionally, a brief review of common statistical operations is presented.
- FED 504 Evaluation of Teaching and Learning – 3 credit hours. This course offers a complete exploration into the pertinent theories, research, procedures, and problems that are tied to the processes of teaching and learning. It provides an overview of the various strategies that are involved in assessing instruction and improving student learning. Education candidates will take in an in-depth look at the procedures involved in planning, designing, and critically evaluating various assessment measures. A field experience is required. Prerequisites: Admission to the Educator Preparation Program.
- FED 521 Foundation of Multicultural Education – 3 credit 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 – 3 credit hours. This course provides knowledge and hands-on training of the current and emerging instructional technologies for the graduate pre-service teacher candidates and the in-service teachers. Students will learn the technology skills, the theoretical foundation of the technology-assisted learning, and various techniques for designing and delivering instruction by integrating technology. This class provides mostly a

hands-on learning experience, plus the theories and issues of the current emerging technology in education. The hands-on work includes the commonly-used programs like Microsoft Word, PowerPoint, Excel, database, and instructional web page development; multimedia production includes sound editing, basic graphics design and image editing; the software evaluation includes the educational software evaluation, learning resources evaluation, searching and integrating adequate informational resources for the K-12 school settings. For this course, the cooperative learning and student-centered constructivist learning are highly valued within and out of the class. Blackboard will be the networked learning place for the students and the teacher to communicate and collaborate on the issues of the technology-assisted learning and the hands-on projects. The theories of educational technology include learning theories and technology integration issues in education. After this course, the students will be developed professionally in terms of knowledge, skills, and disposition relating to the integration of current and emerging technology in education.

- FED 531 Current and Emerging Instructional Technology – 3 credit hours. The course is designed to help educators develop skills in using desktop publishing, computer graphics, hypermedia environments, telecommunications, and optical technology. Prerequisites: ELE 530 or an equivalent graduate level course.
- FED 532 Curriculum Integration of Instructional Technology – 3 credit 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 533 The Context of Urban Education – 3 credit hours. This survey course is designed to enhance candidates' knowledge of urban schooling, especially as related to dynamics of race, class, and culture. This course includes a residency component in Huntsville urban schools and allows candidates the opportunity to gain knowledge and analyze the historical, socioeconomic, and political factors influencing urban education in an authentic environment. This course also allows candidates, in the context of an urban school environment, to analyze the distribution of opportunity in cities and their schools; effective instructional and organizational practices that close the achievement gap, including multicultural education, the development of positive school cultures, and the use of community services and resources.
- FED 534 Educational Leadership & Technology – 1 credit hour. This course is designed to support educational leaders in understanding and utilizing technology to impact overall instructional leadership and school improvement. In this course, participants will examine the importance and role of instructional technology in the 21st century school, the instructional technology competencies needed by educational leaders, strategies to build and sustain to become a more effective instructional leader.
- FED 601 Advanced Philosophy of Education – 3 credit hours. The course examines selected educational theories and philosophies of education, their relationships and implication for teaching and educational leadership. It is designed to provide advanced graduate students an opportunity to critically reflect on their own teaching and leadership, clarify their understanding of the teaching and educational profession, and examine solutions to educational problems through critical and reflective thought. Additionally, this course is intended to provide graduate students with the knowledge base necessary for serious inquiry into educational problems.
- FED 603 Advanced Educational Research. – 3 credit hours. This course provides a survey of typical research methods used in conducting research in a teaching and learning environment. Relevant concepts and issues involved in conducting educational research are also explored. Additionally, a brief review of common statistical operations is presented.
- FED 604 Advanced Evaluation of Teaching and Learning – 3 credit hours. An in-depth study of the theories, processes and procedures relating to the evaluation of teaching and student learning.
- FED 606 Culture and Language Diversity – 3 credit hours. This course examines the broad range of cultural competence focusing on implication in language diverse education, including ethnicity, socioeconomic level and gender. It explores ethical issues in language diverse education, including ethnicity, socioeconomic level and gender. It explores ethical issues in language diverse education and invites students to develop a personal ethical stance regarding educational practice.
- FED 696 Action Research I – 3 credit hours. 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 schools, and school leadership. Additionally, the 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.

- FED 697 Action Research II – 3 credit hours. 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 assess the results.

### **Finance**

- FIN 511 Financial Management and Policy – 3 credit 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. Prerequisites: MBA 506 or an undergraduate course in principles of finance.
- FIN 541 Security Analysis and Portfolio Management – 3 credit 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. Prerequisites: FIN 511.
- FIN 542 Money and Capital Markets – 3 credit 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. Prerequisites: FIN 511.
- FIN 543 International Finance – 3 credit 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. Prerequisites: FIN 511.

### **Materiel Engineering Systems**

- GEN 590 Special Topics – 3 credit 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 – 3 credit 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 – 3 credit 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. Prerequisites: bachelor's degree in engineering or admission to Materiel Engineering graduate program.
- GEN 602 Product Assurance Engineering– 3 credit 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. Prerequisites: bachelor's degree in engineering or admission to Materiel Engineering graduate program; basic knowledge of statistics.
- GEN 603 Analysis and Simulation Methods– 3 credit 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. Prerequisites: bachelor's degree in engineering or admission to Materiel Engineering graduate program; capability in computer programming.
- GEN 604 Test and Evaluation Engineering – 3 credit 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. Prerequisites: bachelor's degree in engineering or admission to Materiel Engineering graduate program; basic knowledge of statistics and electronic instrumentation.
- GEN 690 Materiel Engineering Project– 3 credit 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.

### **Geography**

- GEO 503** Geography of Asia – 3 credit 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 – 3 credit 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.

### **Graduate Studies**

- GS 699** Continuing Registration (CR) for Graduate Study – 1 credit hr. This course is intended for students who have completed course requirements for their graduate degree to meet the continuous enrollment policy. There is no limit on the number of times a student can enroll. Continuing Registration (CR) students will be charged a CR fee of \$25 per term. Students completing the course will receive the final grade of “NA” which will not count toward student’s graduation or GPA. Also, GR 699 cannot be used to meet credit requirements for the purposes of financial aid awards. Prerequisites: graduate standing.

### **Human Development & Family Study**

- HDF 500** Family Development and Culture – 3 credit 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 – 3 credit 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 – 3 credit hours. Topics will include facts important to individuals as purchasing agents.
- HDF 518** Parenting Perspectives – 3 credit 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 – 3 credit 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 – 3 credit hours. Explores the principles and methods of managing family resources. The analysis, planning and management of resources will be studied.
- HDF 521** Youth Programs – 3 credit 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 – 3 credit hours. Analysis of the stages of adulthood and relationships during those years.
- HDF 526** Multi-Sensory Approaches to Learning – 3 credit hours. The development of the sensory avenues and concomitant processes in infancy and childhood, including concept information.
- HDF 530** Special Problems in Child Development – 3 credit hours. An investigation of problems related to family and individual child development.
- HDF 544** Support Systems for the Elderly – 3 credit hours. A study of ways to involve family and community organizations in meeting the needs of the elderly.
- HDF 604** Readings in the Profession – 3 credit hours. This course provides a study of all facets of child growth, development and learning.
- HDF 610** Strategies of Parent Involvement – 3 credit 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.

### Higher Education

- HEA 622 Program Development in Higher Education – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit hours. Financial aspects of the operation of junior colleges, colleges, and universities.
- HEA 635 The Community College Curriculum – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit hours. A detailed analysis of the origin and development of American democracy, including economic and social institutions.
- HIS 512 History of the South – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – \_\_\_\_ hours. 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 – 3 credit 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. Prerequisites: HIS 501.
- HIS 609 Selected Topics in Afro-American History – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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.

#### **Industrial Technology**

- INT 500 Manufacturing and Design Problems – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit hours. Analysis of advanced statistical quality control techniques for achieving product quality and process improvements. Prerequisites: INT 512.
- INT 525 Management of Technology and Operations – 3 credit hours. Principles of operations and managements as related to technical resources.
- INT 530 Industrial Plant Operations and Management – 3 credit 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 – 3 credit hours. Tools and techniques to control quality of products and services and improve business performance by ensuring quality of processes, systems, organization, and leadership. Prerequisites: INT 512.
- INT 535 Leadership and Supervision in Technology Management – 3 credit 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 Safety Standards of Industry – 3 credit 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 – 3 credit 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 – 3 credit 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. Prerequisites: INT 512.
- INT 543 Lean-Six Sigma – 3 credit hours. Systems improvement and design based on philosophies and principles for identifying and eliminating wastes or non-value-added activities in technological operations. Prerequisites: INT 512.
- INT 550 Research Techniques for Applied Engineering & Technology Mgt. – 3 credit 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 – 3 credit 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 – 3 credit hours. Theory and practice of managing projects including the application of modern project management software.
- INT 570 Internship/Co-operative Education – 3 credit 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 – 3 credit 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 – 3 credit 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– 3 credit hours. Individualized research and investigation into areas not covered in other classes. Prerequisites: Graduate standing.
- INT 699 Master's Thesis II – 3 credit 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. Prerequisites: Completion of 15 semester hours.

#### **Logistics & Supply Chain Management**

- LSM 536 Logistics and Supply Chain Management – 3 credit 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 571 Adaptive Supply Chain Management – 3 credit hours.
- LSM 572 Logistics and Supply Chain Risk Management – 3 credit 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. Prerequisites: LSM 536.

LSM 599 Strategic Supply Chain Planning – 3 credit hours.

### **Master in Business Administration**

MBA 503 Quantitative Methods for Business – 3 credit 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. Prerequisites: Pre-calculus algebra.

MBA 506 Foundations of Accounting and Finance – 3 credit 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 – 3 credit 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 – 3 credit 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. Prerequisites: ACC 512, ECO 514, FIN 511, MGT 515, MKT 514.

MBA 550 Independent Research in Business – 3 credit hours. 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.

### **Mechanical Engineering**

ME 512 Analysis and Synthesis of Gas Turbines and Components – 3 credit 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. Prerequisites: ME 511 or the equivalent.

ME 513 Rocket Propulsion – 3 credit hours.

ME 516 Gas Dynamics – 3 credit 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 541 Renewable Energy – 3 credit hours. A study of the fundamentals of renewable energy technologies and their applications. Emphasis will be placed on energy sources such as active and passive solar energy, photovoltaic systems, hydropower, wind energy, biomass, geothermal energy, and ocean energy. Technological readiness, efficiency and sustainability of renewable energy alternatives will be discussed. Prerequisites: ME 310 Thermodynamics or consent of instructor.

ME 542 Solar Thermal Engineering – 3 credit hours.

ME 571 Systems Engineering – 3 credit 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 – 3 credit 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 instructor consent.

ME 581 Quality and Reliability Assurance – 3 credit 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. Prerequisites: undergraduate course or experience in system design.

ME 582 Operations Planning and Scheduling – 3 credit 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. Prerequisites: undergraduate course or experience in concurrent engineering.

### **Management**

MGT 510 Operations Management – 3 credit 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. Prerequisites: MBA 503 or equivalent.

MGT 515 Organizational Theory and Behavior – 3 credit 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. Prerequisites: MBA 507 or an undergraduate introductory course in management.

MGT 516 Strategic Management – 3 credit 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 545 Foundation of Database Management Systems – 3 credit 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 instructor consent.

MGT 554 Training and Development – 3 credit 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. Prerequisites: MGT 515.

MGT 564 Human Resource Management – 3 credit 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. Prerequisites: MGT 515.

MGT 565 Entrepreneurship/Small Business Management – 3 credit 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. Prerequisites: MGT 515.

MGT 566 Management and Labor Relations – 3 credit 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. Prerequisites: MGT 515.

**MGT 580** Emerging Information Technologies – 3 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. Prerequisites: MGT 545 or equivalent, or instructor consent.

**MGT 595** Leadership in Organizations – 3 credit hours. In this course the student explores, expand, and improve their personal and practical approach to leadership and management. The course is intended to allow students to study and understand major theories and models of leadership, evaluate the effectiveness of these theories in an applied experiential context, and apply different leadership styles through a case study format. Students will examine, model, and adjust their own personal style and ethics for real-world useful applications. Prerequisites: None.

### **Marketing**

**MKT 514** Management of Marketing Activities – 3 credit 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. Prerequisites: MBA 507 or an undergraduate introductory course in marketing.

**MKT 532** Consumer Behavior – 3 credit 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. Prerequisites: MKT 514.

**MKT 538** (LOG 538) International Marketing and Logistics – 3 credit hours. This course is an in-depth 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. Prerequisites: MKT 514.

### **Mathematics**

**MTH 500** Quantitative Review for Graduate Students – 3 credit hours. This course is designed to develop basic understanding of college algebra, usage of concepts of quantification: arithmetic computation, linear and quadratic equations, inequalities, the geometry of elementary figures and similarity, measurement, set operations, coordinate systems, probability, and data analysis, including frequency distributions and descriptive statistics. Credit for this course may not be counted toward any degree requirement. Placement in this course is determined by performance on a standardized test instrument.

**MTH 501** Mathematics Seminar I - 1 credit hr. Investigation and discussion of problems related to mathematics instruction and/or special topics in mathematics.

**MTH 504** A Survey of Higher Mathematics – 3 credit hours. Concepts of sets, logic, probability, abstract algebra, and elementary function theory.

**MTH 505** Selected Topics in Calculus and Analytic Geometry – 3 credit hours. Principal ideas and techniques of calculus and analytic geometry from a contemporary point of view.

**MTH 506** Computers and the Teaching of Mathematics – 3 credit 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 – 3 credit hours. Elementary theory of groups, rings, fields, vector spaces, and linear transformations. Prerequisites: MTH 504 or instructor consent.
- MTH 508 Linear Algebra – 3 credit hours. Systems of linear equations, vector spaces, matrices, linear transformations, change of basis, determinants, characteristic roots and vectors. Prerequisites: (MTH 504, 507) or instructor consent.
- MTH 525 Computer Theory and Programming – 3 credit 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 – 3 credit hours. Euclidean geometry, non-Euclidean geometry, analytic geometry, finite geometry, and similarity in Euclidean space.
- MTH 552 Analysis I – 3 credit hours. Functions, sequences, limits, continuity, uniform continuity, derivatives, intermediate value theorem. Prerequisites: MTH 505 or instructor consent.
- MTH 553 Analysis II – 3 credit hours. Integration, bounded variation, series, convergences, elementary functions, and sequences and series of functions. Prerequisites: MTH 552.
- MTH 620 Topology – 3 credit hours. The topology of the real line; Euclidean, metric, and topological spaces; connectedness; compactness; and continuity. Prerequisites: MTH 552 or instructor consent.
- MTH 651 Mathematical Logic – 3 credit hours. Principles of logic and the elementary structure of mathematics; connectives and quantifiers, sets and relations; negation; inductive and deductive reasoning. Prerequisites: MTH 504 or instructor consent.
- MTH 665 Theory of Numbers – 3 credit hours. Divisibility, congruencies, residues, Diophantine analysis, sieve methods, and geometry of numbers. Prerequisites: MTH 507 or instructor consent.
- MTH 673 Probability and Statistical Analysis – 3 credit hours. Algebra of sets; empirical frequency distributions; combinatorics; mathematical expectation; discrete and continuous probability distributions; probability densities; hypothesis testing; and estimation. Prerequisites: MTH 504 or instructor consent.
- MTH 681 Mathematics Seminar II – 1 credit hr. 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 – 1 credit hr. A study, using research methods, of current topics in mathematics and/or mathematics education.

### Music

- MUS 503 Advanced Keyboard Techniques – 3 credit hours. This course is designed to improve technical proficiency, pedagogical skill and strategies for accompanying on keyboard instruments, acoustic and electric.
- MUS 512 Advanced Percussion Techniques – 3 credit hours
- MUS 517 Graduate Conducting – 2 credit 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 – 3 credit 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 – 3 credit hours. A course in the development and implementation of the music education curriculum.
- MUS 533 Applied Music I, Violin – 1 credit hr.
- MUS 534 Applied Music II, Violin – 1 credit hr.
- MUS 541 Applied Music I, Piano – 1 credit hr.
- MUS 542 Applied Music II, Piano – 1 credit hr.

- MUS 551 Applied Music I, Voice – 1 credit hr.
- MUS 552 Applied Music II, Voice – 1 credit hr.
- MUS 553 Advanced Vocal Diction – 2 credit hours. A survey course dealing with the pronunciation and enunciation of English, Italian, French, German, Latin and Afro-American Dialects.
- MUS Advanced Vocal Diction – 2 credit hours. A survey course dealing with the pronunciation and enunciation of English, Italian, French, German, Latin and Afro-American Dialects.
- MUS 563 Advanced Brass Techniques – 2 credit hours.
- MUS 571 Applied Music I, Clarinet – 1 credit hr.
- MUS 572 Applied Music II, Clarinet – 1 credit hr.
- MUS 573 Advanced Woodwind Techniques – 2 credit hours.
- MUS 581 Applied Music I, Percussion – 1 credit hr.
- MUS 582 Applied Music II, Percussion – 1 credit hr.
- MUS Advanced String Techniques – 3 credit hours. Each of these courses is designed to instruct and strengthen instrumental teachers in performance, pedagogical skills, acoustics and literature.
- MUS 595 Internship in Music – 6 credit hours.
- MUS 610 Survey of Music Theory – 3 credit 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 – 3 credit hours. An intensive examination of how musical elements and concepts of sonata form are used in Classical and Romantic compositions. Prerequisites: MUS 610.
- MUS 612 Analytical Techniques – 3 credit hours. An intensive examination of how musical elements and concepts of sonata form are used in Classical and Romantic compositions. Prerequisites: MUS 610.
- MUS 620 Survey of Music History – 3 credit hours. A general survey of the History of music from antiquity to the present.
- MUS 621 History of Musical Styles – 3 credit hours. An in-depth examination of music from 1600 to 1860. Prerequisites: MUS 620.
- MUS 535-536 – Viola – 1 credit hr.
- MUS 537-538 – Cello – 1 credit hr.
- MUS 539-540 – Double Bass – 1 credit hr.
- MUS 545-546 – Flute – 1 credit hr.
- MUS 547-548 – Oboe – 1 credit hr.
- MUS 547-548 – Saxophone – 1 credit hr.
- MUS 559-560 – French Horn – 1 credit hr.
- MUS 561-562 – Trumpet – 1 credit hr.
- MUS \_\_\_\_ & 584 – Tuba – 1 credit hr.

MUS 589-590 –Trombone – 1 credit hr.

### **Nutrition & Hospitality Management**

- NHM 501 Advanced Maternal and Child Nutrition – 3 credit 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 Foods – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 1-3 credit hours. An investigation of problems in nutrition or on issues and problems related to food and/or nutrition and family well-being.
- NHM 548 Food and Nutrition Workshop – 3 credit 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 – 3 credit hours. Critical evaluation of research in food and nutrition.
- NHM 612 Adolescent and Geriatric Nutrition – 3 credit 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.

### **Natural Resources & Environmental Sciences**

- NRE 500 Techniques for Teaching Horticulture in K-12 – 3 credit 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.
- NRE 501 Floral and Garden Center Management – 3 credit 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. Prerequisites: NRE 101 or instructor consent.
- NRE 502 Scientific Writing in Biological Sciences – 3 credit 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 Prerequisites: ENG 304.
- NRE 503 Techniques for Land Judging – 3 credit 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.
- NRE 505 Instrumental Techniques for Plant and Soil Science – 3 credit hours (1 clock hour lecture and 4 clock hour lab period per week). 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. Prerequisites: instructor consent.

- NRE 506 Soil Microbiology – 4 credit 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. Prerequisites: BIO 101, 102, 330.
- NRE 510 Forage Management – 3 credit 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. Prerequisites: NRE 101 or (BIO 203, 204).
- NRE 511 Weed Science and Herbicide Technology – 3 credit 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. Prerequisites: NRE 101 or (BIO 204, BIO 204L).
- NRE 512 Field Research Techniques in Agronomy – 2 credit 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. Prerequisites: instructor consent.
- NRE 514 Crop Production Technology – 3 credit hours. Emphasis on techniques for different soil, climate, moisture, and temperature requirements for successful crop production. Prerequisites: NRE 101, 310.
- NRE 515 Seed Biology – 4 credit 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 instructor consent.
- NRE 517 Sustainable Crop Production – 3 credit 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. Prerequisites: None.
- NRE 520 Vegetable Crop Production – 3 credit hours.
- NRE 521 Plant Propagation – 3 credit hours. Principles, processes, methods and materials involved in sexual and asexual propagation of plants. Prerequisites: NRE 101 or instructor consent.
- NRE 522 Landscape Design and Construction – 4 credit hours. Advanced landscape design, including finished drawings, selection and arrangement of plants, design of construction features, preparation of bills of materials, and cost estimates. Prerequisites: NRE 423.
- NRE 523 Ornamentals I – Trees and Shrubs – 3 credit 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. Prerequisites: NRE 101 or instructor consent.
- NRE 524 Horticulture Marketing and Management – 3 credit 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." Prerequisites: instructor consent.
- NRE 525 Lawn and Turf Management – 3hrs. 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.
- NRE 527 Ornamentals II – Flowers and Foliage Plants – 3 credit 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 instructor consent.
- NRE 528 Fruit and Vegetable Production – 3 credit hours. Commercial fruit and vegetable culture, including site selection and preparation, classes of vegetables, species of fruits, establishment, pest control, and harvesting are emphasized. Prerequisites: SPS 101 or instructor consent.

- NRE 529 Biostatistics – 4 hrs. For biology and agriculture related majors, emphasizes the application of statistical ideas and methods to the experimental and comparative studies by addressing descriptive statistics, probabilities, statistical inference, hypothesis testing and related errors, power and sample size, applications of statistical tests (e.g., chi-square, analysis of variance, regression, correlation, and nonparametric approaches), statistical assumptions, and statistical software applications. Prerequisite: MTH 112 or higher level.
- NRE 530 Principles of Experimentation – 4 hrs. Introduction of experimental designs used in biology and agriculture related fields, emphasizing error variance minimization and estimation, bias avoidance, confounding control, temporal and spatial dimensions, qualitative and quantitative variables, restrictions on randomization, nesting, fixed and random factors, and mixed models. Applications of related statistical software are included. Prerequisite: NRE 529.
- NRE 531 Principles of Plant Breeding – 3 credit hours. Principles, methods and techniques involved in plant breeding and its application to field crops. Prerequisites: BIO 203, 204, 311.
- NRE 532 Plant Disease Diagnosis – 4 credit hours. General principles and methods in identification, epidemiology, etiology and control of major plant diseases. Prerequisites: instructor consent.
- NRE 533 Introduction to Molecular Genetics – 3 credit hours. Prokaryotic DNA structure and replication, restriction analysis, sequencing, transcription, translation, gene regulation, and gene expression. Co-requisite: must be taken with NRE 533L. Prerequisites: At least one course each in biology and genetics or instructor consent.
- NRE 533L Introduction to Molecular Genetics Laboratory – 1 credit hr. 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.
- NRE 534 Cytogenetics – 4 credit 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. Prerequisites: A course in genetics.
- NRE 535 (CS 535) Introduction to Bioinformatics – 4 credit 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.
- NRE 536 Regression Analysis – 3 credit 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. Prerequisites: NRE 529 or equivalent.
- NRE 537 Plant Tissue Culture Methods and Applications – 3 credit hours. Application of tissue culture techniques for the improvement of economic plants; hands-on laboratory procedures will be emphasized. Prerequisites: CHE 102, BIO 204 and instructor consent.
- NRE 538 Plant Genetics – 2 credit 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. Prerequisites: A course in genetics.
- NRE 539 SAS-Programming – 3 credit 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. Prerequisites: NRE 430 or 529.
- NRE 540 Seed Production Practices – 4 credit 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. Prerequisites: NRE 101 or 310.
- NRE 541 Phytophysiology – 4 credit hours. A study of the environment-plant growth interaction in the physiology of plants with emphasis on whole plant processes. Prerequisites: NRE 101.
- NRE 545 Bioinformatics Applications – 3 credit 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.

- NRE 550 Earth Science – 3 credit 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. Prerequisites: None.
- NRE 551 Environmental Toxicology – 3 credit 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. Prerequisites: (CHE 102, 302) or instructor consent.
- NRE 552 Soil Fertility and Fertilizers – 3 credit 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. Prerequisites: CHE 102 and NRE 251.
- NRE 553 Hazardous Waste Management – 3 credit 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. Prerequisites: instructor consent.
- NRE 554 Tropical Soils – 3 credit hours.
- NRE 555 Micronutrients in Plant Soil Systems – 3 credit hours.
- NRE 556 Soil Clay Mineralogy – 3 credit hours.
- NRE 560 Soil Chemistry – 3 credit hours. Chemical and mineralogical composition of soils, fundamental chemical properties of soils, soil colloids, exchange phenomena in soils, and soil reactions. Prerequisites: CHE 102 and NRE 251.
- NRE 561 Soil Physics – 4 credit hours. Study of physical make-up and properties of soil, including structure, thermal relationship, consistency, plasticity, water, and how they are related. Prerequisites: PHY 103 and NRE 251.
- NRE 562 Plant Pathology Techniques – 4 credit hours. General principles and methods of isolation, culture and inoculation of plant pathogens (bacteria, fungi, nematodes, and plant viruses). Prerequisites: NRE 101 or BIO 204.
- NRE 563 Plant Nutrition and Water Relations – 3 credit 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. Prerequisites: NRE 101, 251.
- NRE 564 Plant Growth and Development – 3 credit hours. A study of recent developments related to growth regulation and plant development as influenced by auxins, gibberellins, cytokines, ethylene, inhibitors, and environmental factors. Prerequisites: NRE 441.
- NRE 565 Applications of Geostatistics – 3 credit 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, 113, (NRE 430 or equivalent).
- NRE 567 Plant Virology – 3 credit hours. Principles and methods of detection, isolation, chemical constitution, replication, transmission, and control of plant viruses. Prerequisites: NRE 432 or 562.
- NRE 568 Allelopathy – 3 credit hours.
- NRE 570 Soil, Plant and Water Analysis – 4 credit 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, 202, NRE 251).
- NRE 571 Aerial Photo-Interpretation – 3 credit 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. Prerequisites: instructor consent.

- NRE 572 Soil, Water and Air Pollution – 3 credit 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. Prerequisites: CHE 102, NRE 251.
- NRE 573 Air Pollution: Theory and Techniques – 3 credit hours.
- NRE 574 Quantitative Approaches in Remote Sensing – 3 credit 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. Prerequisites: NRE 476.
- NRE 575 Principles of Wetlands – 3 credit 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. Prerequisites: instructor consent.
- NRE 576 Remote Sensing of the Environment I – 4 credit 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. Prerequisites: instructor consent.
- NRE 577 Insect Biology and Pest Management – 3 credit 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. Prerequisites: instructor consent.
- NRE 578 GIS, Spatial Analysis and Modeling – 4 credit 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.
- NRE 580 Natural Resource Policy – 3 credit hours. Evaluation of land and forest problems and policies in the United States; analysis of current social and resource characteristics that have shaped policy Prerequisites: instructor consent.
- NRE 581 Hydrology & Watershed Management – 3 credit 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. Prerequisites: instructor consent.
- NRE 582 Forest Tree Improvement – 3 credit hours. Practical problems, concepts and techniques to genetic improvement of forest trees Prerequisites: instructor consent.
- NRE 583 Forest Resource Economics – 3 credit hours. Discussion of the market, price, and cost affecting factors as they relate to timber harvesting techniques for determining the best economic alternative Prerequisites: instructor consent.
- NRE 584 Ecological Processes – 3 credit hours. Review of ecological concepts and processes. Investigations into the ecological role of fire and wetlands. Prerequisites: NRE 374 or instructor consent.
- NRE 586 Ecological Restoration of Hardwood Forest Ecosystems – 3 credit hours. Introduces students to broad range of methods and equipment used by wildlife professionals to gather information on wild animals and their habitats.
- NRE 587 Landscape Ecology – 3 credit 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.
- NRE 588 Wildlife Techniques – 3 credit hours. Introduces students to a broad range of methods and equipment used by wildlife professionals to gather information on wild animals and their habitats.
- NRE 589 Forest Ecological Management – 3 credit 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. Prerequisites: NRE 373 or instructor consent.

- NRE 590 Advanced Topics in Soil and Plant Science – 1-3 credit 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 instructor consent.
- NRE 591 Graduate Seminar – 1 credit hr. Prerequisites: instructor consent.
- NRE 593 Global Perspectives in Agriculture, Biological Sciences and Environment: International Exchange & Study Abroad – 1-12 credit hours. A study abroad program. Students will register at AAMU, but actually take a load equivalent to the credit hours at one of the cooperating international institutions. Travel and additional fees required.
- NRE 594 Irrigation Drainage – 4 credit hours. Students will learn designing and construction of irrigation and drainage structures. This course integrates soil and water physics; irrigation development; crop water requirements & scheduling; irrigation planning and design; drainage criteria; design discharges; surface/sub-surface drainage systems design; irrigation drainage structures; land grading and excavation; lab and field exercises and measurements. Prerequisites: For NRES students - NRE 351. For Civil Engineering students - (EGC 305; CE 305) or instructor consent.
- NRE 598 Master's Report – 4 credit hours. A literature review, survey or a report of experimentation. A requirement for all non-thesis majors.
- NRE 599 Master's Thesis – 1-6 credit hours. Research work towards completing the thesis requirements for M.S. in Plant and Soil Science.
- NRE 701 Applied Forest Ecology – 3 credit 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.
- NRE 710 Plant Ecology – 3 credit 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, 310.
- NRE 715 Seed Biology – 4 credit 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 instructor consent.
- NRE 716 Modeling Natural Resources Management – 3 credit hours. This course is designed to use computer models in managing natural resources. Experience in model development and validation will be provided Prerequisites: instructor consent.
- NRE 724 Horticulture Marketing and Management – 3 credit 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." Prerequisites: instructor consent.
- NRE 725 Stress Physiology of Crops – 3 credit 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. Prerequisites: NRE 541.
- NRE 730 Applied Multivariate Analysis – 3 credit hours. Use of MANOVAs, canonical correlation, discriminate analysis, principal component analysis, and factor analysis. Emphasis on applications and interpretation of computer outputs. Prerequisites: NRE 529, 530.
- NRE 731 Advances in Ecological Research – 3 credit 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.
- NRE 733L Advanced Molecular Genetics Laboratory – 2 credit 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, 663.
- NRE 734 Cytogenetics – 4 credit 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. Prerequisites: A course in genetics.

- NRE 735    Advanced Soil Classification – 3 credit 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. Prerequisites: NRE 350.
- NRE 738    Plant Genetics – 2 credit 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. Prerequisites: A course in genetics.
- NRE 750    Advanced Soil Chemistry – 4 credit 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, CHE 401, 402.
- NRE 751    Advanced Soil Physics – 4 credit 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. Prerequisites: instructor consent.
- NRE 763    Advanced Molecular Genetics – 3 credit 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. Prerequisites: instructor consent.
- NRE 767    Plant Virology – 3 credit hours. Principles and methods of detection, isolation, chemical constitution, replication, transmission, and control of plant viruses. Prerequisites: NRE 432 or 562.
- NRE 774    Quantitative Approaches in Remote Sensing – 3 credit 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. Prerequisites: NRE 476.
- NRE 775    Advanced Principles of Geographic Information Systems – 4 credit 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. Prerequisites: (CS 409, URP 526) or their equivalent.
- NRE 778    Remote Sensing of the Environment II – 3 credit 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. Prerequisites: NRE 476, 576.
- NRE 779    Advanced Environmental Geostatistics – 3 credit 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 465, 529, 565.
- NRE 781    Advanced Hydrology – 4 credit hours. 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 793    Global Perspectives in Agriculture, Biological Sciences and Environment: International Exchange & Study Abroad – 1-12 credit hours. A study abroad program. Students will register at AAMU, but actually take a load equivalent to the credit hours at one of the cooperating international institutions. Travel and additional fees required.
- NRE 798    Teaching Experience for Doctoral Students – 2 hrs. This course is designed to provide experiential learning in teaching for PhD students. PhD students will assist teaching faculty in teaching courses, preparing lectures, and show proficiency in utilizing teaching aids and developing innovative means of teaching science subjects. The students gain one semester of teaching experience in the subject of their specialization. Prerequisites: NRE 502, 591.
- NRE 799    Doctoral Dissertation – 1-6 credit hours. Individual research work towards completing the dissertation requirements for the Ph.D. in Plant and Soil Science.

**Office Systems Management**

- OSM 519 Managerial Communications – 3 credit 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.

**Physical Education**

- PED 501 Sociology of Sport and Physical Education – 3 credit 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. Prerequisites: none.
- PED 502 Fitness/Research Application and Evaluation – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 Biomechanics of Exercise & Sports – 3 credit 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 515 Legal Issues in Physical Education and Sports – 3 credit hours.
- PED 595 Internship in Physical Education – 6 credit 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 – 3 credit 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

### **Physics**

- PHY 500** Analytical Mechanics – 3 credit 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. Prerequisites PHY 321 or equivalent.
- PHY 501** Concepts of Modern Physics – 3 credit 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 – 3 credit 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 – 3 credit 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. Prerequisites PHY 303 or equivalent.
- PHY 504** Physics in Modern Technology – 3 credit 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. Prerequisites: PHY 201 or equivalent.
- PHY 505** Electromagnetic Theory I – 3 credit hours. Maxwell's equations, electrostatics, magnetostatics, wave propagation, radiation, waves in transparent and conducting media, resonant cavities, electrodynamic potentials, multi-pole expansions, covariant formulation of electrodynamics. Prerequisites PHY 331 or equivalent.
- PHY 506** Electromagnetic Theory II – 3 credit 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. Prerequisites: PHY 505.
- PHY 518** Thermodynamics and Statistical Mechanics – 3 credit hours. A survey of thermodynamics from classical and statistical mechanics point of view. Prerequisites PHY 341 or equivalent.
- PHY 519** Advanced Statistical Mechanics – 3 credit hours. Foundations of classical and quantum statistical mechanics, kinetic theory of gases, Liouville and Boltzmann H theorems, ensembles, quantum statistical mechanics, statistics of independent particles, applications to magnetic phenomena and cooperative interactions, non-equilibrium statistical mechanics. Prerequisites: PHY 518.
- PHY 521** Quantum Mechanics I – 3 credit hours. Postulates of quantum mechanics. Schrödinger equation. Simple systems, elementary scattering theory, potential wells and tunneling, bound states, Hilbert's Space, matrix mechanics. Prerequisites: PHY 421 or equivalent.
- PHY 522** Quantum Mechanics II – 3 credit hours. Angular momentum, coupling, Wigner-Eckart theorem, Application to atomic spectra, elementary quantum theory of electromagnetic fields; elementary perturbation theory. Prerequisites: PHY 521.
- PHY 525** Solid State Physics I – 3 credit 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. Prerequisites PHY 451 or equivalent.

- PHY 531 Mathematical Methods in Applied Physics I – 3 credit 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. Prerequisites PHY 503 or equivalent.
- PHY 532 Mathematical Methods in Applied Physics II – 3 credit 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. Prerequisites PHY 503 or equivalent.
- PHY 537 Advanced Laboratory – 3 credit hours. Selected experiments in optics, atomic and nuclear and solid-state physics, high vacuum and machine shop experience.
- PHY 552 Problems in Physical Science – 3 credit hours. Physics of particles and aggregate physics of fields, wave physics, quantum physics.
- PHY 600 Solid State Physics II – 3 credit 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. Prerequisites PHY 451 or equivalent.
- PHY 601 Seminar/Colloquium – 0 credit hours.
- PHY 610 Introduction to Solar-Terrestrial Physics – 3 credit hours. 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 – 3 credit hours. 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 – 3 credit hours. 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 – 3 credit hours. 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 – 3 credit hours. 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 – 3 credit hours. 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 – 3 credit 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. Prerequisites: PHY 451 or equivalent.
- PHY 633 Physical Metallurgical Principles – 3 credit 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. Prerequisites: PHY 632.
- PHY 634 Crystal Physics and Crystal Growth – 3 credit hours. Description and determination of atomic arrangement in perfect and imperfect crystals, binding forces elastic waves in solids, photons and lattice vibration, Brillouin 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. Prerequisites: PHY 632.
- PHY 635 Magnetic and Optical Properties of Materials – 3 credit 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. Prerequisites: PHY 632.
- PHY 636 Semi-conductor Physics – 3 credit 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. Prerequisites: PHY 632.
- PHY 637 Special Topics in Materials Science – 3 credit hours. Topics will be selected in accordance with the special interest of students. Prerequisites: instructor consent.
- PHY 638 Imperfection in Solids – 3 credit 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. Prerequisites: PHY 632.
- PHY 639 Electron Spectroscopy and Electron Diffraction – 3 credit 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. Prerequisites: PHY 632 or equivalent.
- PHY 640 Mechanical Behavior of Solids – 3 credit 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. Prerequisites: PHY 632.
- PHY 642 Materials for Energy Production Devices – 3 credit 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. Prerequisites: PHY 632 or equivalent.
- PHY 644 Modern Composite Materials – 3 credit 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. Prerequisites: PHY 632.
- PHY 648 Advanced Laboratory in Material Science – 3 credit 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 – 3 credit hours. Review of image formation, ray tracing, optical invariants, monochromatic and chromatic aberrations, geometrical image evaluation. Prerequisites: PHY 401 or equivalent.
- PHY 650 Instrumental Optics – 3 credit hours. Optical systems design, testing optical components, fabrication, coating, mirrors and prisms, introduction of Fourier Optics. Prerequisites: PHY 401 or equivalent.

- PHY 651 Spectroscopy – 4 credit hours. Spectra of atomic and molecular systems, energy levels, vibrational and rotation levels, lifetimes, Raman spectra, molecular and atomic lasers. Prerequisites: PHY 401 or equivalent.
- PHY 655 Optics Laboratory – 4 credit hours. Selected experiments in interference, diffraction, optical imaging systems, holography, lasers, detectors, UV, visible and IR spectroscopy.
- PHY 657 Physical Optics and Interferometry – 4 credit 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. Prerequisites: PHY 649.
- PHY 660 Quantum Optics – 3 credit 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. Prerequisites: PHY 521 or equivalent.
- PHY 663 Electro-Optical Systems – 4 credit 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. Prerequisites: PHY 657 or equivalent.
- PHY 665 Lens Design – 4 credit hours. Paraxial Optics, aberration theory, image assessment, Fourier optics, merit function, mathematical methods, least squares, damped least squares, decent methods, metric. Prerequisites: PHY 649 or equivalent).
- PHY 667 Ambient Energy Harvesting – 3 credit hours. The objectives of the course are to make students conversant with various forms of ambient energy harvesting and their applications. Topics include overview of global energy demand, various energy sources and types of energy and the transformation mechanisms among them. Basic concepts of ambient energy sources and harvesting: advantages and disadvantages of ambient energy harvesting, photovoltaic energy harvesting, piezoelectric energy harvesting, piezoelectric effects and materials, thermal energy harvesting, thermoelectric, ferroelectric and pyroelectric effects and materials, electrostatic (capacitive) energy harvesting, and applications of electric energy harvested and future directions. Prerequisites: PHY 632.
- PHY 670 Non-Linear Optics – 3 credit hours. Photon echo, self-induced transparency, self-focusing, scattering of light, parametric amplification, harmonic generation, damage effects. Prerequisites: PHY 657 or equivalent.
- PHY 671 Laser Physics I – 4 credit hours. Density matrix-formulation of interaction of radiation with matter, laser threshold condition, optical resonators, pressure effects, survey of laser types and mechanisms. Prerequisites: PHY 657 or equivalent.
- PHY 672 Laser Physics II – 4 credit hours. Density matrix-formulation of interaction of radiation with matter, laser threshold condition, optical resonators, pressure effects, survey of laser types and mechanisms. Prerequisites: PHY 657 or equivalent.
- PHY 675 Thin Films and Integrated Optics I – 4 credit 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. Prerequisites: PHY 671 or equivalent.
- PHY 680 Holography – 3 credit hours. The Gabor hologram, hologram as a zone plate, Fresnel image, Fourier-transform and reflection holograms, applications to interferometry, information storage, and optical processing. Prerequisites: PHY 657 or equivalent.
- PHY 690 Introduction to Biophotonics – 4 credit 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 – 3 credit 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 Master's Thesis – 1-3 credit hours. Research work towards completing the thesis requirement.
- PHY 701 Applied Solid State Electronics I – 3 credit 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. Prerequisites: PHY 451 or equivalent.
- PHY 703 Laser Systems – 4 credit 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. Prerequisites: PHY 671 or equivalent.
- PHY 705 Solid State Diffusion – 3 credit hours. Fundamentals of diffusion in the solid state. Special emphasis to diffusion kinetics for atoms and crystals. Prerequisites: PHY 634.
- PHY 710 Thermodynamics of Materials – 3 credit 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. Prerequisites: PHY 518 or equivalent.
- PHY 712 Optical Phase Conjugation I – 3 credit 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 Brillouin scattering, wave front reversal, and phase conjugation under stimulated scattering. Prerequisites: PHY 670 or equivalent.
- PHY 714 Optical Phase Conjugation II – 3 credit 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. Prerequisites: PHY 712 or equivalent.
- PHY 715 Fiber Optics – 3 credit 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. Prerequisites: PHY 657 or equivalent.
- PHY 720 Radiation Effects in Crystalline Solids – 3 credit 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. Prerequisites: PHY 632 or equivalent.
- PHY 725 Optical Fiber Communications – 4 credit 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 light wave systems, multichannel communication systems, multiplexing and demultiplexing, crosstalk, optical amplifiers, soliton communication systems, communication systems of future. Prerequisites: PHY 715 or equivalent.
- PHY 730 Solidification Process – 3 credit 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. Prerequisites: PHY 634.
- PHY 735 Materials for Radiation Detectors – 3 credit 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. Prerequisites: PHY 632 or equivalent.
- PHY 750 Laser Spectroscopy – 3 credit hours. Tunable 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. Prerequisites: PHY 651 or equivalent.

- PHY 755 Optics Laboratory II (Sample List) – 3 credit 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 I<sub>2</sub> using N<sub>2</sub> 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 761 Fabrication and Characterization of Nanostructures in Glasses – 1 credit hour. For students pursuing research. The course deals with preparation of oxide glasses embedded with inorganic ions. The student will be exposed to/learn the details involved in the calculation of amounts required of different chemicals based on the glass composition including molar concentrations. Students will be taught glass making by the melt quenching technique and polishing the glasses using different grit size powders. Student will learn the methods used in the glass characterization using optical and other methods. The student has to submit a paper at the end of the semester to receive the grade. Prerequisites: none.
- PHY 762 Fabrication and Characterization of Heterostructures – 1 credit hour. The course deals with preparation and characterization of oxide and semiconductor multi-and single thermoelectric thin films. The student will be exposed to/learn the details of the preparation of the efficient thermoelectric devices from the suitable thermoelectric materials. Students will be taught thin film deposition techniques, preparation of the substrates, and coating of the different layers by DC/RF sputtering deposition technique. Student will learn the methods used in the thermoelectric thin film characterization using thermoelectrical methods including Seebeck coefficient, van der Pauw 4 probe Hall effect-Electrical resistivity measurement and laser supported thermal conductivity measurements. The student has to submit a paper at the end of the semester to receive the grade. Prerequisites: none.
- PHY 763 Fabrication and Characterization of Composite Thin Films – 1 credit hour. The objectives of the course are to make students conversant with introductory knowledge of various forms of electronic composites and their fabrication techniques in thin film form, and applications. Topics include overview of science of composite materials science, various types of composites, and their fabrication techniques in the thin films; characterization techniques will be for nanocomposite films for their use in ambient energy harvesting, piezoelectric energy harvesting, and pyroelectric energy harvesting, and energy storage. Prerequisites: PHY 451.
- PHY 764 Amorphous Organic Thin Films – 1 credit hour. This course provides hands-on experience and theoretical understanding to students. The students will make pure and nano-particle doped amorphous solid organic thin films from homogeneous mixtures of raw materials (such as from distilled water, polyvinyl alcohol, and multi-walled carbon nano-tubes). Moreover, the student will deposit the solutions into drying vessels and remove films from the same, measure film dimensions, film resistivity and low-frequency dynamic dielectric. Prerequisites: PHY 421 and 451.
- PHY 771 Signal Processing – 3 credit hours. Fourier analysis and two dimensional line, a systems-scalar diffraction theory, Fresnel 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. Prerequisites: PHY 505 or equivalent.
- PHY 775 Thin Film and Integrated Optics II – 3 credit 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. Prerequisites: PHY 675 or equivalent.
- PHY 791 Applied Solid State Electronics II – 3 credit 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. Prerequisites: PHY 451 or equivalent.
- PHY 792 Selected Topics – 3 credit hours.
- PHY 793 Selected Topics – 1-3 credit hrs. This is a selected topic course in physics. Students will select four to five topics and pursue focused studies and research. The course covers Schrodinger equation, Dirac equation, Pauli equation, Klein-Gordon equation, solitons and other nonlinear differential equations, UV-Visible Spectrometer, Atomic Force Microscope, Scanning Electron Microscope, Fourier Transform Infrared Spectroscopic, thin film physics and other topics on instrumentations and their usage. Prerequisite: Consent of instruction

- PHY 794 Selected Topics – 1-3 credit hours.
- PHY 796 Selected Topics in Materials Science – 3 credit hours. Prerequisites: instructor consent.
- PHY 797 Advanced Topics in Materials Science – 3 credit hours. Prerequisites: instructor consent.
- PHY 799 Dissertation – 1-12 credit hours. Individual research towards completing dissertation requirements.

### **Political Science**

- PSC 502 International Relations – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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.

### **Psychology**

- PSY 502 Descriptive & Inferential Behavioral Statistics – 3 credit 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 – 3 credit 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 – 3 credit 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 509 Vocational Assessment – 3 credit hours. 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 – 3 credit 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 – 3 credit 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 Life Span Developmental Psychology – 3 credit hours. Study of the physical, mental, emotional and social growth of the individual and their relation to the learning process.

- PSY 515 Experimental Psychology – 3 credit hours. Scientific investigation of motor learning, verbal learning, psychophysics, and individual differences.
- PSY 516 Physiological Psychology – 3 credit hours. A functional investigation of basic neural and endocrine processes and their correlation with behavior.
- PSY 530 Individual & Family Therapy – 3 credit hours. Application of major theoretical approaches and models of treating individuals and families with problems.
- PSY 553 Case Management for Rehabilitation – 3 credit hours. 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 – 3 credit hours. 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 & Counseling Theory – 3 credit hours. Major theories of psychology and counseling, their tenants of personality development, psychopathological personality development, and therapeutic intervention.
- PSY 556 Group Dynamics – 3 credit hours. Basic understanding of group development, dynamics, and counseling theories; group structure, group leadership styles, and group counseling methods and skills. Prerequisites: PSY 559.
- PSY 557 Organization and Administration of Guidance Services – 3 credit 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 – 3 credit 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 – 3 credit hours. Intensive study of basic theories and techniques of counseling and psychotherapy, and their application in the counseling and psychotherapy settings. Prerequisites: PSY 555.
- PSY 560 Occupational Psychology – 3 credit 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 – 3 credit 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. Prerequisites: instructor consent.
- PSY 563 Learning Theory – 3 credit hours. A study of the various learning theories and their application in counseling and education.
- PSY 564 Independent Study – 3 credit 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 – 3 credit hours. Study of behavioral disorders classified in the Diagnostic and Statistical Manual.
- PSY 585 Research in Psychology & Counseling – 3 credit 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. Prerequisites: PSY 502.

- PSY 587 Cognitive Behavioral Psychology – 3 credit 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. Prerequisites: PSY 502.
- PSY 590 Personality Assessment – 3 credit hours. Develop assessment capabilities of the student in the clinical setting and provide a basis for clinical intervention in the patient's emotional.
- PSY 591 Psychosocial Aspects of Disabilities – 3 credit hours. 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 Counseling Practicum – 3 credit 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. Prerequisites: PSY 559.
- PSY 599 Master's Thesis – 1-3 credit 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 – 3 credit 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 – 3 credit hours. An introduction of the psychologist to the school setting. The cognitive role will be a major focus of attention.
- PSY 605 Psychopharmacology – 3 credit 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 – 3 credit hours. An intensive study of the physiological, psychological, sociological, and ethical considerations of human sexuality.
- PSY 610 Psychopathology – 3 credit 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 Intern I – 3 credit 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 613 School Counseling Intern II – 3 credit hours.

- PSY 614 Introduction to Vocational Rehabilitation Counseling – 3 credit 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 – 3 credit 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 617 Internship in Rehabilitation Counseling II – 3 credit 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 I – 3 credit 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. Prerequisites: instructor consent.
- PSY 620 Counseling Internship I – 3 credit 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. Prerequisites: instructor consent.
- PSY 621 Counseling Internship II – 3 credit 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. Prerequisites: instructor consent.
- PSY 622 Clinical Internship I – 3 credit 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. Prerequisites: instructor consent.
- PSY 623 Clinical Internship II — 3 credit 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. Prerequisites: instructor consent.
- PSY 625 Personnel Psychology – 3 credit hours. The principles of employee selection, retention, promotion, and compensation are covered in this course.
- PSY 626 Seminar in Personnel Psychology – 3 credit 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 – 3 credit 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 646 Internship in School Psychology – 6 credit hours. Supervised experiences in the school in actual professional situations as a school psychologist.
- PSY 653 Counseling the Elderly – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit hours. Dealing with the problem of administering a guidance service in educational or community agencies. Problems of leadership program evaluation and planning. Prerequisites: Course in Organization and Administration of Guidance Services. Open to AA students only.
- PSY 686 Advanced Social Psychology – 3 credit 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 I – 3 credit 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 Thesis – 1 to 6 credit hours. An original research of sufficient magnitude to warrant the conclusion that candidates show evidence of mastery of research tools, techniques, and understanding.

### Reading

- RDG 512 Language Arts Across the Curriculum – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 6 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 1-6 credit 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.
- RDG 713 Family Literacy – 3 credit hours. The course is intended to introduce the student to concepts in Family literacy from a multidisciplinary perspective. A variety of topics will be explored such as theoretical perspectives related to family literacy, specific practice and strategies used and strategies used to promote family literacy in collaboration with schools and communities, explore diverse family literacy.
- RDG 720 New Literacies, Digital Technologies and Learning – 3 credit hours. This course is designed to develop educators who are able to use a range of digital technologies as a seamless part of literacy instruction.
- RDG 721 Theory & Research in Literacy – 3 credit hours. Doctorial seminar provides an in-depth exploration of literacy theory, research, and practice.

### **Secondary Education**

- SED 515 Reading in the Content Area – 3 credit hours. This course stresses the relationship between achievement in reading and success in the content area. The course focuses upon the content teacher's responsibility for the development of reading skills in each content area.
- SED 521 English Language Arts in the Secondary School – 3 credit 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 Mathematics in the Secondary School – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit hours. Basic principles and techniques of learning as related to the various fields and levels of Secondary Education.
- SED 530 The Secondary School Curriculum – 3 credit 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 595 Internship – 6 credit 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.
- SED 699 Thesis – 1-3 credit hours.

### **Special Education**

- SPE 500 Teaching Secondary Students with Disabilities in General Classrooms – 3 credit 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. A practicum is required.
- SPE 501 Introduction to the Study of Exceptional Children – 3 credit hours. This course provides an overview of the various exceptionalities and an introduction to basic special education services and procedures.
- SPE 515 Language Development – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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. A practicum is required.
- SPE 524 Sign Language – 3 credit 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 – 3 credit 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 530 Management of Classroom Behavior – 3 credit hours. This course represents a performance-based approach designed to enable the teacher candidate and other school personnel to become an educational service professional with knowledge, skills, and dispositions required by institutional, state, regional, and national standards. Through a constructivist design, learning will be facilitated by the advance candidate's participation in activities that will involve the intellect as well as dispositions. Creativity in learning will be facilitated by collaboration that should result in continual reflection and self-

assessment. The ultimate outcome of this course is the further development of a skilled, highly proficient, advance-level educational practitioner.

- SPE 540 Teaching Elementary Students with Disabilities in Elementary Schools – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 Seminar in Early Childhood Special Education – 3 credit 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 Special Education – 6 credit hours. This course engages the candidate to practice learned proficiencies in an educational setting by providing supervised teaching experiences. Candidates will demonstrate competencies to develop and implement instructional strategies under the supervision of a certified teacher of children with disabilities in a setting of service delivery designed to maximize children's learning potential. Weekly on-campus seminars are a required part of the course.
- SPE 609 Seminar in Special Education – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 credit hours. 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 – 3 credit 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 – 3 credit 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 of all students in the 60-hour degree program. Prerequisites: SWK 500.

**SWK 510** Social Work Policy & Services I – 3 credit 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 Work Policy & Services II – 2 credit hours. Continuation of SWK 510 - Social Work 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 – 3 credit 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 – 3 credit 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, 510.

**SWK 522** Race, Ethnicity, Gender and Diversity – 3 credit 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 – 2 credit 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 – 3 credit 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 an 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 – 4 credit 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, 530. Co-requisites: SWK 501, 511, 521, 523).
- SWK 587** Social Work Empowerment – 3 credit 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 – 3 credit 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 instructor consent.
- SWK 601** Social Work Practice with Groups – 3 credit 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 instructor consent.
- SWK 602** Social Work Practice in Health & Mental Health – 3 credit 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 instructor consent. This course is a requirement for all students in the Community Mental Health specialization.
- SWK 604** Theory and Practice of Social Welfare Administration & Planning – 3 credit 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 – 3 credit 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 an 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 & Marketing (MBA 515). As a concentration course, prerequisites include all the foundation year courses or consent of the instructor.

- SWK 610 Family & Child Welfare Policy – 3 credit 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 instructor consent).
- SWK 613 Budgeting and Financial Management – 3 credit 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 instructor consent.
- SWK 614 Principles of Planning and Program Implementation – 3 credit 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 instructor consent).
- SWK 615 Grant Writing – 2 credit 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 instructor consent).
- SWK 616 Issues & Policies in Community Mental Health – 3 credit 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 instructor consent).
- SWK 621 Family Theories and Processes- 3 credit 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 instructor consent.
- SWK 630 Needs Assessment and Program Evaluation – 3 credit 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 instructor consent.

- SWK 631 Research Project/Thesis – 1-3 credit 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 632 Thesis Option – 1-3 credit 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 – 2 credit 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 instructor consent.
- SWK 642 Sexual Abuse: Assessment & Intervention – 2 credit 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 instructor consent.
- SWK 643 Interventions with Children and Adolescents – 2 credit 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 instructor consent.
- SWK 644 HIV/AIDS: Critical Issues in Social Work – 2 credit hours. This course focuses on the biological, social and psychological dynamics of HIV/AIDS. It is designed to prepare social work majors and students majoring in other disciplines to be knowledgeable of HIV/AIDS and its disproportionate impact on African-Americans and people of color.
- SWK 652 Social Work and Law – 2 credit 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: (SWK 500, 501, 510, 511, 520, 521) or instructor consent.
- SWK 658 International Social Welfare and Social Work – 2 credit 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 instructor consent.

- SWK 660 Assessment of Individuals – 3 credit 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 instructor consent.
- SWK 663 Substance Abuse – 2 credit 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 instructor consent.
- SWK 667 Social Work Practice with Aging – 2 credit 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 instructor consent.
- SWK 680 Field Practicum & Seminar II – 4 credit 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 – 4 credit hours. This is the last course in the three-part practicum sequence. Prerequisites: SWK 680.
- SWK 689 Integrative Seminar – 3 credit 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 – 1- 3 credit 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.

### **Systems Engineering**

- SYE 523 Statistical Methods for Engineers – 3 credit hours. Application of problem-solving tools and procedures for statistical analysis and interpretation of research data. Introduction to probability, descriptive data analysis, distribution functions, interval estimation, test of hypothesis, regression models, and analysis of variance.
- SYE 530 Fundamentals of Systems Engineering – 3 credit hours. Fundamental analysis of the system engineering life-cycle process. Emphasis is placed on analysis models and techniques used in that process, and the concepts of reliability and robustness.
- SYE 532 System Safety – 3 credit hours. Theories, concepts, applications, and practices of system safety, including accident analysis, hazard analysis, design for safety, human factors and safety, controlling safety during operations, and management of projects and systems. Integration of safety skills and resources into all phases of a project's or system's life cycle is emphasized.
- SYE 534 Quality Management for Engineers – 3 credit hours. Tools and techniques for quality management and performance excellence, including fundamental principles, criteria, and historical foundations in the management and measurement of quality and productivity. Topics include a review of basic statistics and probability; process variation; statistical process control charting and capability analysis for process, product, and management systems; Six Sigma; an introduction to design of experiments (DOE) in business and industry.
- SYE 560 Engineering Project Management – 3 credit hours. Theory and practice of managing technical projects, including the application of modern project management software to efficiently plan, schedule, and control project activities. Topics include selecting project alternatives, managing project teams, risk management, work breakdown structures, precedence grids, precedence node diagrams, analytical methods for network solutions, resource scheduling, leveling and allocation, financial analysis of projects, and project-scheduling simulation.

- SYE 570 Systems Verification, Validation and Testing – 3 credit hours. This course covers the techniques and tools for the verification, validation, and testing (VV&T) of complex systems throughout their life cycle. It emphasizes an understanding of quality assessment; inspection; proof-of-correctness; traceability; writing verification, validation, and test plans; and relevant VV&T standards. Students will be engaged in projects in systems engineering design and formal approaches to system verification, validation and testing. Prerequisites: SYE 530.

### **Communications Media**

- TEL 501 Digital Media Theory and Culture – 3 credit hours. Examines the central role digital media technologies play in culture and society. Digital media provide the structures, in which individual identity is formed, social relations, manifest, political discourse occurs, and economic power flows. These technologies are such pervasive and integral parts of society it can be difficult to even distinguish social structure from forms of digital communication. As a result, the course investigates these tense relationships, and our focal point will be the claim that in the age of Web 2.0, the user is at the center and in charge of digital media. Readings and case studies question and complicate this claim and will help students to understand their own relationships to digital media. Prerequisites: None.
- TEL 502 Political Communication and Social Change – 3 credit hours. Investigates the degree to which political opinions and actions are influenced by the mass media, particularly television and new media, as well as the influence of the mass media on public policy. Topics to be covered include the history of the mass media, recent trends in the new media, theories of attitude formation and change, an social change communication. Prerequisites: None.
- TEL 511 Strategic Communication – 3 credit hours. Introduction to the fundamental theories, concepts, and applications of strategic communication to meet a variety of organizational goals. Provides an overview of practices in communication management, integrated marketing communication, and public relations. The course's purpose is to describe how these elements can be combined to create seamless programs that affect the various publics of business and not-for-profit organizations; and how such programs increase organizational value and effectiveness. Prerequisites: None.
- TEL 512 Gender and Communication – 3 credit hours. Explores gender and communication issues through a range of feminist and cultural perspectives, both within the North American and other national contexts. Attention will be given to how the academic study of gender relates to real-life situations going on in the world at this moment. The course will emphasize mediated communication – news, television, film, and other popular culture – and the ways that language, culture and representation enter into these mediums. Prerequisites: None.

### **Urban & Regional Planning**

- URP 500 Fundamentals of Planning – 1 credit hr. 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 – 3 credit 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. Prerequisites: six (6) semester hours earned in the MURP program.
- URP 506 Urban Economics – 3 credit 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. Prerequisites: ECO 232 or 231.
- URP 510 Theory and History of Planning – 3 credit 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 Quantitative Methods (Quantitative Analysis) – 3 credit 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 – 3 credit 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 – 3 credit 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.
- URP 520 Legal Basis of Planning – 3 credit 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 II (Applied Research Methodology) – 3 credit 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 consent's approval required).
- URP 523 Site Planning – 3 credit hours.
- URP 525 Planning Studio I – 3 credit 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. Prerequisites: instructor consent.
- URP 526 Computer Applications in Planning – 3 credit 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. Prerequisites: instructor consent.
- URP 527 Planning Studio II – 3 credit 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. Prerequisites: instructor consent
- URP 529 Professional Practice – 3 credit 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 practitioner 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. Prerequisites: (URP 500, 510, 520; 525, 527) or instructor consent.
- URP 531 Economic and Population Analysis for Planners – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 – 3 credit 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 Plan Modeling – 3 credit 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. Prerequisites: URP 535.
- URP 539    Transportation Planning & Administration – 3 credit 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 – 3 credit 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 – 3 credit 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. Prerequisites: URP 506.
- URP 544    Historic Preservation and Neighborhood Conservation – 3 credit 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 Policy – 3 credit 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 – 3 credit 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 – 1 credit hr. 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 – 3 credit 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 – 2 credit 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, 521, 555.
- URP 559     Planning Project – 2 credit 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, 521, 555.
- URP 560     International Program Management and Evaluation – 3 credit 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 – 3 credit 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 564     Urban Planning in Developing Nations – 3 credit hours.
- URP 566     Global Environment and Population Issues in Planning – 3 credit 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 – 3 credit 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, 521, 555 and departmental faculty approval.
- US 519     Seminar of Social Policy Issues – 3 credit 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.

## Academic Administrative Personnel

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### College Deans

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### Department Chairpersons

Aggarawal, Manmohan	..... Physics, Chemistry & Math
Barnes, Paula	..... English & Cultural Studies
Carney, Horace	..... Visual, Performing & Communication Arts
Davis, Derrick	..... Teacher Education and Leadership
Heidary, Kaveh	..... Electrical Engineering & Computer Science
Herbert, Berneece	..... Community & Regional Planning
McDaniel, Larry	..... Management, Marketing & Logistics
Tadesse, Wubishet (Interim)	..... Biological & Environmental Sciences
Patton, Craig	..... Social Sciences
Perry-Mitchell, Tonya	..... Social Work, Psychology & Counseling
Robbani, Mohammad	..... Accounting & Finance
Seif, Mohamed	..... Civil & Mechanical Engineering and Construction Management
Smith, Cynthia	..... Family and Consumer Sciences
Verghese, Martha	..... Food and Animal Sciences
Whittle, Rodney	..... Health Sciences, Human Performance & Communicative Disorders

### Program Coordinators

Jones, Jeanette	..... Biology
Shen, Qian	..... Business Mgt & Administration
Williams, Melvin	..... Communications Specialist
Deakin, Carol	..... Communicative Disorders
Fu, Jian	..... Computer Science
Davis, Derrick	..... Education, Elementary
Davenport, Lydia	..... Education, Instructional Leadership
Davis, Derrick	..... Education, Pre-Elementary
Davenport, Lydia	..... Education, Secondary
Davis, Derrick	..... Education, Special
Smith, Cynthia	..... Family and Consumer Sciences
Verghese, Martha	..... Food Science
Whittle, Rodney	..... Kinesiology
Guggilla, Padmaja	..... Physics
OR	
Edwards, Vernessa	
Wang, Yong	..... Plant and Soil Science
Bennett, Leatha	..... Psychology, Counseling
Davis, Derrick	..... Reading
Chacha, Christopher	..... Social Work (main campus)
Gibson-McCrary, Donna	..... Social Work (off-site)
Ayokanmbi, F. Michael	..... Systems and Materiel Engineering
Herbert, Berneece	..... Urban and Regional Planning