

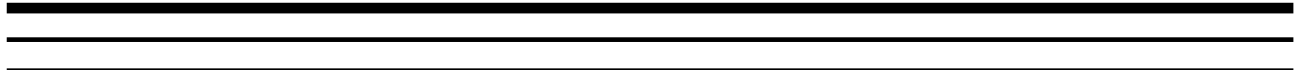
# **Undergraduate Bulletin of North Carolina Agricultural and Technical State University**

**2017 – 2018**

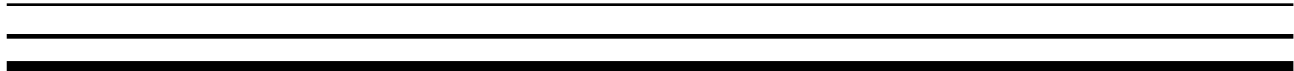
**UNDERGRADUATE BULLETIN OF NORTH CAROLINA  
AGRICULTURAL AND TECHNICAL STATE UNIVERSITY**  
NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY  
1601 East Market Street, Greensboro, North Carolina 27411

This Bulletin is also available on the world wide web at  
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**Version 1 ~ August 23, 2017**



**Undergraduate Bulletin**  
**of**  
**NORTH CAROLINA**  
**AGRICULTURAL AND TECHNICAL**  
**STATE UNIVERSITY**  
**GREENSBORO, NORTH CAROLINA**  
**UNDERGRADUATE PROGRAMS**  
**2017 – 2018**



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**NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY  
2017 – 2018 UNIVERSITY ACADEMIC CALENDAR**

**FALL SEMESTER 2017**

July 31	Monday	Last day to apply for Readmission Last day to submit appeal for academic suspension or dismissal
August 2	Wednesday	Registration Resumes
August 9 – 22	Wednesday – Tuesday	Late Registration (\$50.00 late fee applies)
August 11	Friday	Faculty/Staff Institute – Faculty Report
August 12	Saturday	Residence Halls open (9:00 a.m. – 3:00 p.m.) for new students
August 13	Sunday	Residence Halls open (9:00 a.m. – 3:00 p.m.) for continuing students
August 16	Wednesday	Classes Begin
August 22	Tuesday (11:59 pm)	Last day to add courses (including tuition waivers) Last day to switch course sections Last day to drop course and receive financial credit
August 29	Tuesday	Last day to receive book allowance
September 1	Friday	Last day to apply for graduation without the \$20 late application fee
September 4	Monday	University Holiday (Labor Day)
September 8	Friday	Last day to apply for graduation with the \$20 late application fee
September 27	Wednesday	Last day to remove incomplete(s) assigned spring or summer 2017
October 2 – 6	Monday – Friday	Final Comprehensive Exam Week (Graduate Students)
October 5	Thursday	Fall Convocation (classes suspended 10:00 a.m. – 12 noon)
October 7	Saturday	Homecoming
October 9 – 10	Monday – Tuesday	Fall Break
October 13	Friday (11:59 pm)	Undergraduate mid-term grades due
October 16	Monday	Advisement period begins for spring and summer 2018
October 20	Friday	Last day to defend Thesis/Dissertation
October 23	Monday	Last day to withdraw from a course without a grade evaluation Defended and approved Thesis/Dissertation due in Graduate College Office
November 1	Wednesday	Last day to withdraw from the University without a grade evaluation
November 6 – December 4		Registration period for spring and summer 2018
November 20	Monday	Last day to submit approved Thesis/Dissertation to Graduate College Office for binding
November 22 – 24	Wednesday – Friday	University Holiday (Thanksgiving)
November 30	Thursday	Last Day of Classes
December 1	Friday	Reading Day
December 4 – 8	Monday – Friday	Final Examinations
December 8	Friday	Waste Management, Global Studies Certificate Awards Program ROTC Officer Commissioning Ceremony
December 9	Saturday	Commencement Residence Halls close for Non-Graduating Students at 12 noon Residence Halls close for Graduating Students at 5:00 p.m.
December 11	Monday (11:59 pm)	Final Grades Due

**NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY  
2017 – 2018 UNIVERSITY ACADEMIC CALENDAR**

**SPRING SEMESTER 2018**

December 13	Wednesday	Last day to apply for readmission Last day to submit appeal for academic suspension or dismissal
December 26	Tuesday	Registration resumes
January 1 – 12	Monday – Friday	Late registration (\$50.00 late fee)
January 3	Wednesday	Faculty report
January 6	Saturday	Residence halls open (6:00 am – 12:00 noon) for continuing and new students
January 8	Monday	Classes Begin
January 12	Friday (11:59 pm)	Last day to add courses (including tuition waivers) Last day to switch course sections Last day to drop a course and receive financial credit
January 15	Monday	Martin Luther King Jr. Community Service Day (No Classes; University Offices Closed)
January 22	Monday	Last day to receive a book allowance
January 26	Friday	Last day to apply for graduation without the \$20 late application fee
January 29	Monday	Ronald E. McNair Memorial Day
February 1	Thursday	February One Celebration
February 2	Friday	Last day to apply for graduation with the \$20 late application fee
February 19	Monday	Last day to remove incomplete(s) assigned the fall 2017
February 26 – Mar. 2	Monday – Friday	Final comprehensive exam week (Graduate Students)
March 3	Saturday	Residence halls close at 1:00 p.m.
March 5 – 9	Monday – Friday	Spring Break
March 11	Sunday	Residence halls re-open 9:00 a.m.
March 12	Monday	Advisement period begins for fall 2018
March 14	Wednesday (11:59 pm)	Undergraduate mid-term grades due
March 22	Thursday	Founder's Day (Classes are suspended from 10:00 a.m. – 12 noon)
March 23	Friday	Last day to defend Thesis/Dissertation
March 26	Monday	Last day to drop a course without a grade evaluation Defended and approved Thesis/Dissertation due in Graduate College Office
March 30	Friday	University Holiday (Good Friday)
April 2 – 23		Registration period for Fall 2018
April 5	Thursday	Last day to withdraw from the University without a grade evaluation
April 11	Wednesday	Honor's Convocation (Classes are suspended from 10:00 a.m. – 12 noon)
April 16	Monday	Last day to submit approved Thesis/Dissertation to Graduate College for binding
May 3	Thursday	Last day of classes
May 4	Friday	Reading Day
May 7 – 11	Monday – Friday	Final Examinations
May 11	Friday	Waste Management and Global Studies Certificate Awards Program ROTC Officer Commissioning Ceremony
May 12	Saturday	Commencement Residence Halls close for non-graduating students at 12:00 noon Residence Halls close for graduating students at 5:00 p.m.
May 14	Monday (11:59 pm)	Final Grades Due

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## GENERAL INFORMATION

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### North Carolina Agricultural and Technical State University

[www.ncat.edu](http://www.ncat.edu)

### HISTORICAL STATEMENT

Since 1891, North Carolina Agricultural and Technical State University (A&T) has maintained a tradition of excellence in education and continues to thrive as it sustains its rich history. A&T was established as a “mechanical college” for the “Colored Race” under the Second Morrill Act, passed by the United States Congress on August 30, 1890. The First Morrill Act, passed in 1862 and also known as the Land Grant College Act, ceded land to each state to establish institutions of higher learning to educate people primarily in agriculture, home economics and mechanical arts. A&T and the other 1890 land-grant institutions were created by the Second Morrill Act, which expanded the system of land-grant colleges and universities to include an historically black institution in those states where segregation denied minorities’ access to the land-grant institution established by the First Morrill Act.

So as not to forfeit federal money for A. and M. College (now North Carolina State University), the North Carolina General Assembly created a college for its black citizens as an annex of Shaw University in Raleigh. On March 9, 1891, the General Assembly established A. and M. College for the Colored Race and sought a permanent home. The board of trustees, whose members performed the duties of the president, made it known that they were looking for a permanent site for the college. Six North Carolina cities, including Greensboro, made a bid for A. and M. The trustees selected Greensboro based on a proposal promising 14 acres of land and \$11,000 in cash to be used for building and organizing the A. and M. College. Today, N.C. A&T is a public land-grant university that is ranked by the Carnegie Classification System as “doctoral/research university.” It is located in Greensboro, North Carolina, on over 200 beautiful acres (and 600-acre farm) and has an enrollment of nearly 11,200 students and workforce of over 1,900 employees.

The university is a learner-centered community that develops and preserves intellectual capital through interdisciplinary learning, discovery, engagement and operational excellence. The institution is committed to fulfilling its fundamental purposes through exemplary undergraduate and graduate instruction, scholarly and creative research and effective public service. A&T offers 54 undergraduate degree programs with 97 concentrations, 29 master’s degree programs with 66 concentrations, and nine doctoral (Ph.D.) degree programs in computational science and engineering, electrical engineering, mechanical engineering, energy and environmental systems, industrial and systems engineering, leadership studies, computer science, rehabilitation counseling and rehabilitation counselor education, and nanoengineering. The academic programs are offered through the College of Agriculture and Environmental Sciences; College of Arts, Humanities and Social Sciences; College of Business and Economics; College of Education; College of Engineering; College of Health and Human Sciences; College of Science and Technology; Joint School of Nanoscience and Nanoengineering; and The Graduate College. With funding from a \$161 million bond project, A&T has been transformed into one of the premier 21<sup>st</sup> century campuses in the United States with modernized state of the art academic buildings and residence halls.

A&T enrolls some of the best and the brightest students and is proud of its over 55,000 alumni of record, who maintain leadership positions throughout the world, strive for excellence and make their imprint in society. Among A&T's well-known alumni are the late Dr. Ronald E. McNair, astronaut; the Rev. Jesse Jackson Sr., civil rights activist; Alma Adams (D-NC), U.S. Representative; Edolphus Towns (D-NY) and Jesse Jackson Jr. (D-IL), former U.S. Representatives; Clara Adams-Ender, author and retired brigadier general, U.S. Army; Hawthorne L. Proctor, retired major general, U.S. Army; Henry E. Frye Sr., former North Carolina Supreme Court Chief Justice; Lawrence McSwain, retired district court judge; John W. Mack, retired president, Los Angeles Urban League; the late Ralph Shelton, founder, Southeast Fuels; Joe Dudley Sr., founder, Dudley Products Inc.; Alvin Attles, former NBA player/vice president, Golden State Warriors; Elvin Bethea, NFL Hall of Famer; Terrence “Terrence J” Jenkins, actor and television personality; and The Greensboro Four (A&T Four), Jibreel Khazan (formerly Ezell Blair Jr.), Joseph A. McNeil and the late Franklin E. McCain and David Richmond.

The primary strength of the university is its outstanding student body, carefully selected from thousands of applicants annually. Once on campus, the students are taught and mentored by an excellent faculty, the majority of whom have earned doctoral or other terminal degrees from some of the nation's most prestigious graduate and professional schools.

A&T is the nation’s leader in graduating the largest number of African-American engineers at the baccalaureate level. Through its nationally AACSB-accredited College of Business and Economics, the institution is among the largest producers of African-American certified public accountants. True to its heritage, A&T is home to the largest agricultural college among HBCUs and the second largest producer of minority agricultural graduates. The institution was recently awarded a prestigious National Science Foundation Engineering Research Center (NSF ERC) grant for biomedical engineering and nano-bio applications research.

The university has advanced to the forefront in the area of research. It has consistently ranked third in the UNC System for sponsored programs and research funding for more than 10 years and, since fiscal year 2008-09, A&T has generated over \$50 million in sponsored programs each year, including more than \$6 million in appropriations for agricultural research and cooperative extension. It also generates contracts with major international companies, foundations, and federal agencies to secure funding to enhance academic programs and to provide student scholarships.

The research enterprise continually demonstrates its strength and potential by sustaining major programs in nanotechnology, biotechnology, computational science and engineering, energy and environment, information sciences and technology, leadership and community development, logistics and transportation systems and public health.



Twelve presidents/chancellors have served this historic university since it was founded: Dr. John O. Crosby (1892–1896); Dr. James B. Dudley (1896–1925); Dr. Ferdinand D. Bluford (1925–1955); Dr. Warmoth T. Gibbs (1956–1960); Dr. Samuel DeWitt Proctor (1960–1964); Dr. Lewis C. Dowdy (1964–1980); Dr. Cleon Thompson Jr., (1980–1981, interim); Dr. Edward B. Fort (1981–1999); Dr. James C. Renick (1999–2006); Dr. Lloyd V. Hackley (2006–2007); Dr. Stanley F. Battle (2007–2009); and alumnus Dr. Harold L. Martin Sr. (2009–present).

### **MISSION OF THE UNIVERSITY**

North Carolina Agricultural and Technical State University is an 1890 land-grant doctoral research university dedicated to learning, discovery, and community engagement. The university provides a wide range of educational opportunities from bachelor's to doctoral degrees in both traditional and online environments. With an emphasis on preeminence in STEM and a commitment to excellence in all its educational, research, and outreach programs, North Carolina A&T fosters a climate of economic competitiveness that prepares students for the global society.

### **POLICY GOVERNING PROGRAMS AND COURSE OFFERINGS**

All provisions, regulations, degree programs, course listings, etc., in effect when this catalogue went to press are subject to revision by the appropriate governing bodies of North Carolina Agricultural and Technical State University. Such changes will not affect the graduation requirements of students who enroll under the provisions of the catalogue.

### **NONDISCRIMINATION POLICY AND INTEGRATION STATEMENT**

North Carolina Agricultural and Technical State University is committed to equality of educational opportunity and does not discriminate against applicants, students, or employees based on race, color, national origin, religion, gender, age, or disability. Moreover, North Carolina Agricultural and Technical State University is open to people of all races and actively seeks to promote racial integration by recruiting and enrolling a larger number of white students.

North Carolina Agricultural and Technical State University supports the protections available to members of its community under all applicable Federal and state laws, including Titles VI and VII of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Sections 799A and 845 of the Public Health Service Act, the Equal Pay and Age Discrimination Acts, the Rehabilitation Act of 1973, and Executive Order 11246.

### **THE UNIVERSITY OF NORTH CAROLINA**

In North Carolina, all the public educational institutions that grant baccalaureate degrees are part of the University of North Carolina. North Carolina Agricultural and Technical State University is one of the 16 constituent institutions of the multi-campus state university.

The University of North Carolina, chartered by the N.C. General Assembly in 1789, was the first public university in the United States to open its doors and the only one to graduate students in the eighteenth century. The first class was admitted in Chapel Hill in 1795. For the next 136 years, the only campus of the University of North Carolina was at Chapel Hill.

In 1877, the NC General Assembly began sponsoring additional institutions of higher education, diverse in origin and purpose. Five were historically black institutions, and another was founded to educate American Indians. Several were created to prepare teachers for the public schools. Others had a technological emphasis. One is a training school for performing artists.

In 1931, the NC General Assembly redefined the University of North Carolina to include three state-supported institutions: the campus at Chapel Hill (now the University of North Carolina at Chapel Hill), North Carolina State College (now North Carolina State University at Raleigh), and Woman's College (now the University of North Carolina at Greensboro). The new multi-campus University operated with one board of trustees and one president. By 1969, three additional campuses had joined the University through legislative action: the University of North Carolina at Charlotte, the University of North Carolina at Asheville, and the University of North Carolina at Wilmington.

In 1971, the General Assembly passed legislation bringing into the University of North Carolina the state's ten remaining public senior institutions, each of which had until then been legally separate: Appalachian State University, East Carolina University, Elizabeth City State University, Fayetteville State University, North Carolina Agricultural and Technical State University, North Carolina Central University, the North Carolina School of the Arts (now the University of North Carolina School of the Arts), Pembroke State University (now the University of North Carolina at Pembroke), Western Carolina University, and Winston-Salem State University. This action created the current 16-campus University. In 1985, the North Carolina School of Science and Mathematics, a residential high school for gifted students, was declared an affiliated school of the University; and in July 2007 became a constituent institution of the University by legislative action.

The UNC Board of Governors is the policy-making body legally charged with "the general determination, control, supervision, management, and governance of all affairs of the constituent institutions." It elects the president, who administers the University. The 32 voting members of the Board of Governors are elected by the General Assembly for four-year terms. Former board chairmen and board members who are former governors of North Carolina may continue to serve for limited periods as non-voting members emeriti. The president of the UNC Association of Student Governments, or that student's designee, is also a non-voting member.

Each of the constituent institutions is headed by a chancellor, who is chosen by the Board of Governors on the president's nomination and is responsible to the president. Each institution has a board of trustees consisting of eight members elected by the Board of Governors, four appointed by the governor, and the president of the student body, who serves ex-officio. (The UNC School of the Arts has two additional ex officio members; and the NC School of Science and Mathematics has a 27-member board

as required by law.) Each board of trustees holds extensive powers over academic and other operations of its institution on delegation from the Board of Governors.

**ORGANIZATION OF THE UNIVERSITY**

**Board of Governors**

**The University of North Carolina**

**W. Louis Bissette, Jr., Chairman**

Darrell Allison	H. Frank Grainger	R. Doyle Parrish
Kellie Hunt Blue	James L. Holmes, Jr.	David M. Powers
Robert P. Bryan III	Joe Knott	Randall "Randy" Ramsey
Pearl Burris-Floyd	W. Marty Kotis III	Robert A. Rucho
C. Philip Byers	Steven B. Long	O. Temple Sloan III
Carolyn L. Coward	Ann Maxwell	Harry L. Smith, Jr.
N. Leo Daughtry	J. Alex Mitchell	William Webb
Walter C. Davenport	Wendy F. Murphy	Michael Williford
Thomas H. Fetzer	Anna S. Nelson	
Thom Goolsby		

Tyler Hardin, *Ex Officio*

**THE UNIVERSITY OF NORTH CAROLINA**

**OFFICERS OF ADMINISTRATION**

(Sixteen Constituent Institutions)

MARGARET SPELLINGS	JONATHAN PRUITT	ANDREW KELLY
<i>President</i>	<i>Senior Vice President for Finance and Budget</i>	<i>Senior Vice President for Strategy and Policy</i>
JUNIUS J. GONZALES	THOMAS SHANAHAN	MEREDITH DIDIER
<i>Senior Vice President for Academic Affairs</i>	<i>Senior Vice President Governance, Legal, and Risk and General Counsel</i>	<i>Chief of Staff</i>
KEVIN HOWELL	VACANT	
<i>Senior Vice President for External Affairs</i>	<i>Senior Vice President and Chief Operating Officer</i>	

**GOVERNANCE OF NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY**

North Carolina Agricultural and Technical State University is a constituent institution of The University of North Carolina. It functions under the jurisdiction of a thirty-two member Board of Governors of The University of North Carolina elected by the General Assembly of North Carolina. Policies of the Board of Governors are administered by the President of the University and his/her staff. They constitute the General Administration and are located in Chapel Hill.

The Board of Trustees of North Carolina Agricultural and Technical State University consists of thirteen members. Eight members are appointed by the Board of Governors, four are appointed by the Governor of the State, and the President of the Student Government Association serves as an ex officio member. The Board of Trustees receives its authority by delegation from the Board of Governors.

The Chancellor is the chief administrative officer of each University.

**NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY BOARD OF TRUSTEES**

Mr. John Bluford	Mrs. Donna James	Mrs. Laura Meagher
Mr. Calvin Brodie	Honorable Paul Jones	Mr. Joe Parker
Mr. Toby Brodie	Mr. Timothy King	Mrs. Hilda Pinnix-Ragland
Mr. Venessa Harrison	Mr. George Mainor	Mr. Tim Rice

**Ex Officio Member**

President, Student Government Association

## OFFICERS OF ADMINISTRATION

### Cabinet

HAROLD L. MARTIN, SR.  
B.S., M.S., Ph.D.

*Chancellor*

BERYL McEWEN  
B.E., M.S., Ph.D.

*(Interim) Provost and Vice*

*Chancellor for Academic Affairs*

ROBERT POMPEY, JR.  
B.S., M.B.A.

*Vice Chancellor for Business and Finance*

KENNETH E. SIGMON, JR.  
B.S., M.B.A.

*Vice Chancellor for University Advancement*

BARRY L. BURKS  
B.S., M.S., Ph.D.

*Vice Chancellor for Research & Economic Development*

MELODY C. PIERCE  
B.S., M.S., Ed.S., Ph.D.

*Vice Chancellor for Student Affairs*

HENRY THOMAS JACKSON  
B.S., M.S., M.B.A.

*Vice Chancellor for Information Technology Services/CIO*

ERICKA M. SMITH  
B.S., M.Ed., Ph.D.

*Vice Chancellor for Human Resources*

NICOLE PRIDE  
B.A., M.A.

*Chief of Staff*

CHARLES WALDRUP  
B.S., J.D., M.A., Ph.D.

*General Counsel*

EARL HILTON, III  
J.D.

*Director of Athletics*

### Division of Academic Affairs

BERYL McEWEN  
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*(Interim) Provost and Vice*

*Chancellor for Academic Affairs*

G. SCOTT JENKINS  
B.S., M.S., Ph.D.

*Vice Provost for Academic Affairs and Undergraduate Programs*

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*Vice Provost for Strategic Planning and Institutional Effectiveness Effectiveness (and SACS Liaison) and Director, Institutional Assessment*

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*Vice Provost for Research, Graduate Programs and Extended Learning and Dean, The Graduate College*

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CRAIG RHODES  
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*(Interim) Dean, College of Arts, Humanities and Social Sciences*

KEVIN JAMES  
B.B.A., M.B.A., Ph.D.

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*Dean, College of Education*

ROBIN N. COGER  
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*Dean, College of Engineering*

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*Dean, Library Services*

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B.A., M.A., Ph.D.

*Assistant Provost for Student Success and Academic Support*

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B.S., Ph.D.

*(Interim) Director, Honors Program*

LOREATHA GRAVES  
B.S., M.S.

*Director, Office of International Affairs*

SHERRI AVENT  
B.S., M.B.A.

*Director, Financial Aid*

KELLY ROWETT-JAMES  
B.A., M.S., Ed.D.

*University Registrar*

SHARON NEAL  
B.A., M.A., Ph.D.

*Director, EPA Salary and Budget Administration*

VACANT

*Director, Office of Undergraduate Admissions*

JACQUELINE POWERS  
B.S., M.S.

*Director, Orientation and New Student Programs*

PAUL M. STANIFER  
B.S., M.S.

*Professor, Aerospace Studies*

MICHAEL TEAGUE  
B.S., M.A.

*Professor, Military Science*

### Division of Student Affairs

MELODY C. PIERCE  
B.S., M.S., Ed.S., Ph.D.  
*Vice Chancellor for Student Affairs*  
MARC J. WILLIAMS  
B.A., J.D.  
*Associate Vice Chancellor for  
Student Affairs / Dean of Students*  
DAWN FORBES MURPHY  
B.A., M.S., Ed.D.  
*Assistant Vice Chancellor for  
Student Development*  
JACOB TEAGLE  
A.A., B.S., M.S.  
*Executive Director for  
Administration*  
JOYCE EDWARDS  
B.S., M.S.  
*Executive Director, Career  
Services and Experiential  
Learning*  
DAVID H. WAGER  
B.S., M.D.  
*Executive Director, Student  
Health Services*  
VACANT  
*Executive Director, Student  
Activities*  
SHARON HOARD  
B.S., M.Ed.  
*Assistant Director of Leadership/  
Engagement*

LINDA INMAN  
B.S., M.S.  
*Executive Director, Housing and  
Residence Life*  
CARL BAKER  
A.S., B.S., M.S.  
*Executive Director, Student Center*  
VIVIAN BARNETTE  
B.S., M.S., Ph.D., ABPP  
*Executive Director, Counseling  
Services*  
BERTRAND G. HAYNES  
B.S., M.Ed., Ph.D.  
*Executive Director, TRIO  
Programs, Director*  
ROBERT JOHNSON  
B.S., M.S.  
*Associate Director for University  
Events Center*  
DONNA BLUE  
B.S., M.S.  
*Director, Student Conduct*  
XAVIER CARRINGTON  
B.A., M.A.  
*Director, Intramural Sports  
Program*  
TIFFANY FREEMAN  
B.A., M.Ed.  
*Assistant Director, SUAB Advisor*

CHANTAL FLEMING  
B.S., M.A.  
*Director, Student Support Services*  
SHAUNA Y. IRWIN-MCNEIL  
B.S., M.Ed.  
*Associate Director, Student  
Organizations/Greek Life*  
ROBERT MCNAIR  
B.S., M.S.  
*Director, Campus Recreation*  
LTC (R) JOSHUA T. JONES  
B.S., M.S.A., D.M.  
*Director, Veteran and Disability  
Support Services*  
KENNETH RUFF  
B.S., M.S., M.S., Ed.D.  
*Director, University Bands*  
GERALD SPATES  
B.S., M.Ed.  
*Director, Multicultural Student  
Center*  
JUDY C. WILSON  
B.S., M.S.  
*Director, Upward Bound Math and  
Science*  
VERONICA HARRISON  
B.S., M.Ed.  
*Assistant Director, SGA Advisor*  
KELLIE M. DIXON  
A.A.S, B.S., M.S., C.P.C  
*Assessment Coordinator, Office of  
Student Affairs Assessment*

### Division of Business and Finance

ROBERT POMPEY, JR.  
B.S., M.B.A., C.P.A.  
*Vice Chancellor for Business and  
Finance*  
P. SCOTT HUMMEL  
A.B., M.A.T., M.B.A, C.P.A.  
*Associate Vice Chancellor for  
Business and  
Finance/Comptroller*  
CHARLES E. WILSON  
B.S., M.S.  
*Associate Vice Chancellor for  
Police and Public Safety /  
Chief of Police*

ANDREW PERKINS, JR.  
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*Associate Vice Chancellor for  
Business and Finance/Facilities*  
ANGELA PETERSON  
B.A  
*Associate Vice Chancellor for  
Campus Enterprises*  
CHARTARRA JOYNER  
B.S.  
*Assistant Vice Chancellor  
for Budget and Planning*

HELEN R. BUCK  
B.S., M.S., C.P.A.  
*Director, Accounting*  
MARTINIQUE WILLIAMS  
B.S.  
*Director, Procurement Services*  
ANGELA DUBOSE  
B.S.  
*Treasurer*  
KATHERINE BURCKLEY  
B.S., C.P.A.  
*Director, Financial Reporting*

### Division of University Advancement

KENNETH E. SIGMON, JR.  
B.S., M.B.A.  
*Vice Chancellor for  
University Advancement*  
SHELLEY L. CLAYTON  
B.A., M.P.A.  
*Associate Vice Chancellor for  
Advancement Services*  
TERESA M. DAVIS  
B.S., M.B.A.  
*Associate Vice Chancellor for*

ALANA V. ALLEN  
B.S.  
*Director of Alumni  
Communications*  
CRYSTAL W. BOYCE  
B.S., M.S.  
*Director of Alumni Programs*  
LaSHAWNDRRA T. WHITE  
B.A., M.S.  
*Director of Annual Giving*  
SHINIKA M. McKIEVER

G. CARLETTA SIMMONS  
B.S., M.N.M.  
*Director of Development*  
BRIDGETT H. WILLIAMS  
B.S., M.P.A  
*Director of Development*  
TAMERA T. ZIGLAR  
B.S., M.S.  
*Director of Development*  
VACANT  
*Director of Donor Relations &*

*Alumni Relations & Executive  
Director, Alumni Association*  
RALISHA M. MERCER  
B.A.  
*Associate Vice Chancellor for  
Development*  
P. KEVIN WILLIAMSON  
B.A.  
*Assistant Vice Chancellor for  
Major Gifts & Annual Giving*

B.A., M.P.A.  
*Director of Corporate and  
Foundation Relations*  
COURTNEY H. DABNEY  
B.A.  
*Director of Development*  
JUSTIN M. LEWTER  
B.A., M.B.A.  
*Director of Development*

*Stewardship*  
AL BARNETT JR.  
B.S.  
*Director of Gift Planning*  
CRAIG J. CASKIE  
*Director of Prospect & Campaign  
Management*

#### **Division of Information Technology**

HENRY THOMAS JACKSON  
B.S., M.S., M.B.A.  
*Vice Chancellor for Information  
Technology Services/CIO*

#### **Division of Research and Economic Development**

BARRY L. BURKS  
B.S., M.S., Ph.D.  
*Vice Chancellor for Research  
& Economic Development*

MITZI BOND  
B.A., M.A., Ed.D.  
*Associate Vice Chancellor for  
Research Administration*

#### **COLLEGES OF NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY**

North Carolina Agricultural and Technical State University includes the following colleges: the College of Agriculture and Environmental Sciences, the College of Business and Economics, the College of Education, the College of Engineering, the Graduate College, the College of Health and Human Sciences, the College of Arts, Humanities and Social Sciences, the Joint School of Nanoscience and Nanoengineering, and the College of Science and Technology.

#### **ACCREDITATION AND INSTITUTIONAL MEMBERSHIPS**

North Carolina Agricultural and Technical State University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award baccalaureate, masters, and doctorate degrees. Contact the Commission on Colleges at 1866 Southern Lane, Decatur, Georgia 30033-4097 or call (404) 679-4500 for questions about the accreditation of North Carolina Agricultural and Technical State University.

*A listing of programs and their accrediting agencies follows:*

American Chemical Society Certification Program – American Chemical Society  
Applied Engineering – Association of Technology, Management, and Applied Engineering  
Business and Accounting programs – AACSB International – The Association to Advance Collegiate Schools of Business  
Child Development, Early Education and Family Studies – National Council for Accreditation of Teacher Education  
Computer Science – Computing Accreditation Commission of ABET, <http://www.abet.org>  
Construction Management – American Council for Construction Education, and Association of Technology, Management, and Applied Engineering  
Electronics Technology – Association of Technology, Management, and Applied Engineering  
Engineering: Architectural, Biological, Chemical, Civil, Computer, Electrical, Industrial and Systems, and Mechanical  
Engineering programs – Engineering Accreditation Commission of ABET, <http://www.abet.org>  
Environmental Safety and Health – Association of Technology, Management, and Applied Engineering  
Family and Consumer Sciences – American Association of Family and Consumer Sciences  
Geomatics – Applied Science Accreditation Commission of ABET, <http://www.abet.org>  
Graphic Communication Systems – Association of Technology, Management, and Applied Engineering  
Human Development and Services – Council on Accreditation for Counseling and Related Educational Programs, and Council on Rehabilitation Education  
Instructional Technology – National Council for Accreditation of Teacher Accreditation  
Journalism and Mass Communication – Accrediting Council on Education in Journalism and Mass Communication  
Landscape Architecture – American Society of Landscape Architects  
Media Program – Association of Educational Communications and Technology  
Motorsports Technology – Association of Technology, Management, and Applied Engineering  
Music – National Association of Schools of Music  
School of Nursing – Accreditation Commission for Education in Nursing (ACEN)  
Social Work – Council on Social Work Education  
Teacher education programs – National Council for Accreditation of Teacher Education, and North Carolina State Department of Public Instruction  
Theater Arts Program in Acting and Theatre Technology – National Association of Schools of Theater

*Below is a listing of professional organizations that the University is a member:*

Academy of Nutrition and Dietetics  
Accreditation Board for Engineering and Technology  
Accrediting Council on Education in Journalism and Mass Communications (ACEJMC), [www.acejmc.org](http://www.acejmc.org)  
American Association of Colleges of Nursing  
American Association of Colleges for Teacher Education  
American Association of Collegiate Registrars and Admission Officers  
American Association of Family and Consumer Sciences  
American Association of University Women (graduates are eligible for membership)  
American Chemical Society  
American College Public Relations Association  
American Council for Construction Education  
American Council on Education  
American Library Association  
American Personnel and Guidance Association  
American Public Welfare Association  
American Society for Engineering Education  
American Society of Landscape Architects  
American Society of Mechanical Engineers  
Association of Educational Communications and Technology  
Associated Schools of Construction  
Association to Advance Collegiate Schools of Business International  
Association of American Colleges  
Association of College Unions International  
Association of Collegiate Deans and Registrars  
Association of Collegiate Schools of Architecture  
Association of Public and Land Grant Universities  
Association of Technology, Management, and Applied Engineering  
College Board on Human Sciences  
Conference of Southern Graduate Schools  
Council on Accreditation for Counseling and Related Educational Programs  
Council of Graduate Schools  
Council of Historically Black Graduate Schools  
Council on International Education Exchange  
Council on Rehabilitation Education  
Council on Social Work Education  
National Association of Business Teacher Education  
National Association of College and University Business Officers  
National Association of College and University Food Service  
National Association of Schools of Music  
National Association of Schools of Theatre  
National Association of Student Personnel Administrators  
National Commission on Accrediting  
National Consortium for Graduate Degrees for Minorities in Engineering and Science  
National Council for Accreditation of Teacher Education  
National Institutional Teacher Placement Association  
National League for Nursing  
National Retail Federation  
North American Colleges and Teachers of Agriculture  
North Carolina Association for Colleges and Teacher Educators  
North Carolina Association of Colleges and Universities  
North Carolina League of Nursing  
North Carolina Library Association  
North Carolina State Department of Public Instruction  
North Carolina Technology Association  
Southeastern Library Association  
Southern Association of Schools and Colleges, Commission on Colleges  
Southern Regional Education Board Council on Collegiate Education for Nursing  
Southern Universities Research Association

### **THE OFFICE OF INTERNATIONAL AFFAIRS (OIA)**

<http://www.ncat.edu/academics/isso/>

The Office of International Affairs is the new name for the recently merged International Students and Scholars office and Office of International Programs. The OIA will work closely across divisions, departments and programs to ensure accurate and timely responses for information, assistance and support. Charged with coordinating internationalization strategies, supporting faculty research agendas, and implementing strategic growth plans for education abroad, the Office will serve exchange scholars, domestic and foreign national students. The Office of International Affairs supports academic exchange programs for students and faculty, coordinates and provides student opportunities for education abroad, manages agreements with overseas institutions, works with faculty to develop new international programs including faculty-led study abroad. As well, in collaboration with the Liberal Studies Department, OIA helps administer the nationally recognized Global Studies Certificate Program. The office supports the enrollment of international students (F-1) and exchange visitors (J-1) and is responsible for maintaining the university's formal approval and privilege to recruit, admit, enroll, matriculate, graduate and employ international students and scholars. OIA also supports the development of programs and activities designed to promote international student success in academics, research, English language skills and the social and cultural adjustment to the North Carolina A&T campus. Services also includes guidance with international admissions, non-immigrant visa requirements, and orientation sessions for both international students and scholars. Furthermore, the Office provides global awareness activities through various cultural and educational activities throughout the year to create a campus-wide global perspective. To achieve its goals and promote a greater international presence on campus, the Office of International Affairs makes students aware of cultural differences while at the same time prepares them to successfully interact in the global workplace. The new infrastructure will support the increasing needs of institutional internationalization initiatives. The Office of International Affairs is located in room 213 of the Academic Classroom Building, Greensboro, NC 27411, (336) 334-7104, and reports to the Vice Provost for Academic Affairs and Undergraduate Programs.

### **THE HONORS PROGRAM**

<http://www.ncat.edu/academics/honors/>

The University Honors Program offers highly talented and motivated students a four-year, student-centered experience of academic enhancement, cultural enrichment, leadership training, and professional development that drives them to reach their full potential. Every aspect of the University Honors Program provides special opportunities for qualified students to grow intellectually through contact with a community of Honors students and supportive Honors faculty and staff. Students that graduate from the program will be intellectually and socially engaged individuals well-positioned to find success in their future endeavors.

No matter what a student plans to do in the future, those who participate in the University Honors Program will find that it gives them a competitive edge and prepares them for success in the nation's best graduate schools and in their future careers. Through Honors, students can get the best education that NC A&T State University has to offer.

#### **Admission and Eligibility for the Honors Program**

Entering freshmen are invited to join the Honors Program if they have earned a cumulative weighted high school GPA of 3.75 and SAT scores (verbal and math only) totaling 1160 (1230 redesign SAT) or above or a 26 or greater on the ACT. Students that are close on both requirements or may meet one but not the other will be required to send in two letters of recommendation and an essay detailing why they should be considered to be a member of the honors program.

Students already enrolled at NC A&T State University may join Honors if they have a cumulative GPA of at least 3.5 and have completed at least 15 credit hours of classes. To remain in the University Honors Program, students must maintain a cumulative GPA of 3.5 and complete additional extra-curricular activities.

All students awarded the Lewis and Elizabeth Dowdy Scholars Program Scholarship are required to participate in the Honors Program.

#### **Program Description**

**Benefits:** Members of the University Honors Program receive numerous benefits as rewards for taking on the challenges of an Honors education. Honors students are eligible to be members of the University Honors Living Learning Community (LLC), and live in Joseph McNeil Hall, the all-Honors residence hall. Our LLC helps Honors provide a community of student scholars with a place where it is easy to make friends and work in study groups. Our LLC, the largest on campus, is known for the strong sense of support that students and related programming give to its members. Our students often choose to remain for all four years.

Honors students register before all other students, allowing Honors students more flexibility in their class schedules. The University Honors Program also sponsors trips to local cultural events and travel to conferences at little or no cost to students. Recent short-term international study tours have included Ghana, Japan, France, Italy, Spain, and Costa Rica. These study-tours have enabled students to better understand and appreciate cultural differences within global communities. Honors also sponsors leadership development workshops to help members develop skills they will need after graduation.

**Academic Program Options:** Incoming freshmen who join the University Honors Program are required to take a minimum of 12 semester hours of Honors credit during the first year. After that, members are required to take just one course for Honors credit each semester.

In order to graduate from the University Honors Program students must complete 18 hours of Honors coursework plus an additional six hours of Honors Seminars (three of these six hours must be classes sanctioned by the University Honors Program as seminars). Twelve of the total 24 hours must be taken as Honors courses and not satisfied by contracts.

Students who complete the Honors course of study will receive notification on their college transcripts.

Students must earn a minimum grade of “B” in any course taken for Honors credit for it to count towards program requirements.

For more information, contact: The Honors Program, 110 Academic Classroom Building, North Carolina Agricultural and Technical State University, Greensboro, North Carolina 27411. The Director can be reached by phone at (336) 285-2030.

### ACADEMIC DEGREE PROGRAMS

*Degree Program.* A program of study with a concentration (or major) in some specified discipline that leads to a degree in that discipline specialty, or in some designated subdivision of the specialty at a particular level of instruction.

All four year degree programs at the University require a minimum of 120 semester hours and a maximum of 128 semester hours, excluding deficiency courses and remedial work for the bachelor’s degree. Semester hour requirements beyond 128 must be approved by the Board of Governors.

Students who complete one or more of the courses of study offered by the University will be awarded the degree indicated.

#### College of Agriculture and Environmental Sciences

<b>Program Title</b>	<b>Concentrations</b>
Agricultural and Environmental Systems	(Agribusiness and Food Industry Management)
Agricultural and Environmental Systems	(Environmental Studies)
Agricultural and Environmental Systems	(Sustainable Land Management)
Agricultural and Environmental Systems	(Urban and Community Horticulture)
Agricultural Education	(Agricultural Professional Service)
Agricultural Education	(Secondary Education)
Animal Science	
Animal Science	(Animal Industry)
Biological Engineering*	
Child Development and Family Studies	(Child Development and Family Relations)
Child Development and Family Studies	(Early Education and Family Studies, B-K)
Family and Consumer Sciences	(Consumer Sciences)
Family and Consumer Sciences	(Fashion Merchandising and Design)
Food and Nutritional Sciences	(Human Nutrition)
Food and Nutritional Sciences	(Food Science)
Laboratory Animal Science	
Landscape Architecture	

#### College of Arts, Humanities and Social Sciences

<b>Program Title</b>	<b>Concentrations</b>
Criminal Justice	
English	
English	(African-American Literature)
English	(Creative Writing)
English	(Secondary Education)
English	(Technical Writing)
History	
History	(Secondary Education)
Journalism and Mass Communication	(Mass Media Production)
Journalism and Mass Communication	(Multimedia Journalism)
Journalism and Mass Communication	(Public Relations)
Liberal Studies	(African-American Studies)
Liberal Studies	(Applied Cultural Thought)
Liberal Studies	(Interdisciplinary)
Liberal Studies	(Pre-Law)
Political Science	
Music	(General)
Music	(Performance)
Music	(Secondary Education)
Professional Theatre	
Professional Theatre	(Dance)
Visual Arts, Design	
Visual Arts, Design	(Secondary Education)



Visual Arts, Design

(Visual Media Design)

**College of Business and Economics**

**Program Title**

**Concentrations**

Accounting  
Business Administration  
Business Education  
Business Education  
Economics  
Economics  
Economics  
Finance  
Management  
Management  
Management  
Management  
Marketing  
Marketing  
Supply Chain Management

(Information Technology)  
(Business Teacher Education)  
  
(Business)  
(Law)  
  
(Entrepreneurship and Innovation)  
(International Management)  
(Management Information Systems)  
  
(Sales)

**College of Education**

**Program Title**

**Concentrations**

Elementary Education  
Speech  
Speech

(Communications)  
(Speech Pathology/Audiology)

**College of Engineering**

**Program Title**

**Concentrations**

Architectural Engineering  
Bioengineering  
Chemical Engineering  
Civil Engineering  
Computer Engineering  
Computer Science  
Electrical Engineering  
Industrial and Systems Engineering  
Mechanical Engineering

**College of Health and Human Sciences**

**Program Title**

**Concentrations**

Psychology  
Nursing  
Nursing  
Nursing  
Nursing  
Social Work  
Sociology  
Sport Science and Fitness Management

Accelerated BSN Program  
RIBN Program  
RN-BSN Completion

**College of Science and Technology**

**Program Title**

**Concentrations**

Applied Engineering Technology  
Atmospheric Sciences and Meteorology  
Biology  
Biology  
Chemistry  
Chemistry  
Construction Management  
Electronics Technology  
Information Technology  
Environmental Health and Safety

(Secondary Education)  
  
(Secondary Education)

Geomatics  
 Graphic Communication Systems  
 Information Technology  
 Mathematics  
 Mathematics (Applied Mathematics)  
 Mathematics (Secondary Education)  
 Mathematics (Statistics)  
 Motorsports Technology  
 Physics  
 Physics (Engineering Physics)  
 Physics (Interdisciplinary Physics)  
 Physics (Secondary Education)  
 \*Collaborative between the College of Agriculture and Environmental Sciences and College of Engineering

### **FERDINAND DOUGLASS BLUFORD LIBRARY**

<http://www.library.ncat.edu/>

The mission of F.D. Bluford Library is to support and advance academic scholarship and research at N.C. A&T through services, collections, technologies, staff expertise and spaces. The library is committed to ensuring access to global information resources that inspire exploration, discovery and personal growth. The physical facility offers wireless access throughout four levels, individual study spaces, technology and media-enhanced collaboration spaces, public computers, tutoring and workshops for help with class assignments and research, and a snack lounge. The library maintains a balanced collection of circulating print and non-print materials, with an ever growing collection of electronic resources available for local and remote access or for download to mobile devices. Archival collections documenting the rich history of the University and the region are also available.

During the regular academic year, the library opens on Sunday at 2:00 p.m. with 24-hour service until Friday at 8:00 p.m. and on Saturday from 10:00 a.m. to 7:00 p.m. Variations in this schedule are posted on the library's website under "Hours".

### **OFFICE OF SUMMER SESSIONS**

The Office of Summer Sessions is committed to providing exemplary services to fulfill the educational and professional development needs of a diverse community of learners. The Office of Summer Sessions additionally provides a unique opportunity for the University to expand its capacity to offer courses for traditional and non-traditional students by offering educational opportunities during the summer in compact sessions.

Summer Sessions helps bridge the academic year by creating a continuous flow of learning opportunities for the university and the community-at-large while serving as a catalyst for the advancement and enhancement of lifelong learning. Consequently, students may optimize their efforts to remain on schedule for projected degree completion thus promoting higher graduation rates.

The Office of Summer Sessions features several convenient sessions of varying lengths: two five-week sessions; one two-week intersession; and one 10-week dual session. Students may enroll in a maximum of seven credit hours in each five-week session and the dual session, and one three-credit hour course during the intersession. These sessions facilitate study aimed at meeting a wide range of educational, career, and personal enrichment goals. Sessions are specifically designed for community-wide accommodation through courses, study abroad experiences, internships, and other programs that promote diversity among populations.

### **OFFICE OF CONTINUING EDUCATION AND PROFESSIONAL DEVELOPMENT**

The Office of Continuing Education and Professional Development (OCEPD) offers certificate programs, courses, workshops and seminars for the working adult. The purpose of OCEPD is to extend the resources of the university to the community in accessible formats, and to assist the professional community stay abreast of cutting edge knowledge and practice. In collaboration with the academic departments, schools and colleges of the university, OCEPD offers professional development programming through industry partnerships, high tech training seminars, short courses, workshops, conferences, camps and pre-college activities for youth that supports learning, discovery and engagement.

The Office of Continuing Education and Professional Development sponsors both non-credit and contract credit programming. Continuing Education Units (CEU) may be awarded for successful completion of non-credit activities. OCEPD maintains permanent transcripts of all CEU earned.

### **INSTRUCTIONAL TECHNOLOGY AND DISTANCE EDUCATION (ITSDE)**

The Instructional Technology and Distance Education (ITSDE) office supports the use of educational technologies to enhance the teaching, learning, and research experiences of the faculty, students, and staff at the University. The ITSDE office provides support and infrastructure services to assist faculty with the development and continued maintenance of fully online, hybrid, and traditional face-to-face courses. The overall goal of the office is to enhance faculty-student interactions, increase student engagement with course materials, foster communication and collaboration, and increase opportunities for students to develop their skills for the workforce and lifelong learning.

The following units report to this office: Learning Management Systems, Instructional Design Services, Classroom Technology Services, Technology Training, Multimedia Support, and Program and Student Support for Distance Education.

ITSDE works in close cooperation with the academic colleges to administer online courses, certificates, and degree programs to students seeking convenient and cost-efficient opportunities to complete their education. All online courses at the University

are delivered through an online Learning Management System (LMS) that allows the University to deliver quality instruction in a web-based format that mirrors instruction offered in traditional face-to-face settings. Students and faculty interact via online group discussion sessions, interactive video classrooms, streamed videos, and web conferencing sessions. Students are required to log into the LMS using a secured username and password to gain access to course materials, assignments, and other important items related to their classes.

Effective Fall 2016, the University offers 15 Distance Education (DE) programs including eight (8) undergraduate degree programs (offering 13 concentrations), five (5) master's degree programs (offering 10 concentrations), and two certificate programs as listed below:

*Undergraduate degree programs:*

- i. BS, Agricultural Education
  - o Professional Service
  - o Secondary Education
- ii. BS, Business Education
  - o Business Teacher Education
  - o Information Technology
- iii. BS, Electronics Technology
- iv. BS, Environmental Health and Safety
- v. BS, Geomatics
- vi. BS, Information Technology
- vii. BA, Liberal Studies
  - o Individualized Studies
  - o African American Studies
  - o Cultural Change
  - o Women's Studies
- viii. BSN, Nursing (RN-BSN Completion Option)

*Graduate degree programs:*

- i. MS, Agricultural Education
  - o Prof Licensure
  - o Prof Service
- ii. MS, Information Technology
- iii. MS, Instructional Technology
- iv. MS, Technology Management
  - o Construction Science and Management
- v. MAT Teaching
  - o Business Education
  - o Elementary Education
  - o Family and Consumer Sciences Education
  - o Technology Education

*Certificate programs:*

- i. Environmental Health and Safety (undergraduate)
- ii. Family and Consumer Science (post baccalaureate).

### **INFORMATION TECHNOLOGY SERVICES (ITS)**

<http://www.ncat.edu/divisions/its/>

Information Technology Services (ITS) supports the use of technology to enhance the university's mission of exemplary teaching and learning, scholarly and creative research, and effective engagement and public service. ITS manages the technology infrastructure used throughout the University. Services include educational technology support, instructional design, network and server management, academic and residential lab management, client and help desk support, administrative applications support and development, web development, and technology procurement. Our purpose is to employ technology to meet the vision and strategic goals of North Carolina Agricultural and Technical State *University*. ITS consists of the following departments:

#### **Academic and Instructional Technology**

This department focuses on the academic and instructional needs of faculty and students. It provides technology training and development, instructional design, learning management and multimedia development services. The department works with deans and their department chairpersons to plan and assess the use of instructional and computer lab spaces, and ensure that academic requirements are addressed during annual upgrades of classrooms, computer labs and faculty computers.

#### **Client Technology Services**

The department of Client Technology Services provides support for client-facing technologies such as desktops, laptops, tablets, printers, scanners, etc. It supports desktop software such as web browsers, office applications, and collaboration and communication tools, audio/visual, classroom automation, presentation and instructional hardware, and video conferencing systems. The department manages the desktop and laptop environment used throughout the university, creates and manages

desktop and laptop images, manages the installation of equipment, ensures that user device operating systems and applications are patched in a timely manner, and manages the upgrade of classroom, computer lab, and faculty and staff equipment. The department provides first level identity management services and telephony support. The department also supports special events, and staffs some general use computer labs.

#### **Data Governance and Intelligence**

The Data Governance and Intelligence department focuses on the management of data across the entire university to ensure the quality and integrity of data and its value to support decisions. The department provides expertise in the use of Banner and other applications, facilitates the design and development of efficient business processes, coordinates updates in business processes and data systems, and provides support for enterprise reporting environments and business intelligence platforms.

#### **IT Business Operations**

This department manages the business operations and project portfolio of the division. This includes managing budgets, contracts, communications, technology acquisitions, and oversight of project management. This oversight includes working with committees to manage the project review and prioritization process, working with project stakeholders to identify goals, objectives, and create charters, working with functional and technical resource managers to schedule projects and plan implementations, and managing active projects. This department provides project managers, trains other staff members in project management methodology, and assists staff operating in a project management role.

#### **Enterprise Application Services**

The department of Enterprise Application Services provides support for Banner and other applications used throughout the university, including the university's website and SharePoint site. These services include installation, configuration, hosting, troubleshooting, technical testing, updates and integration. In addition, the department provides technical leadership and planning for the implementation or upgrade of applications, and the design and development of new applications or interfaces. The department serves as second level support for staff members who are the principal subject matter experts for these applications.

#### **Network and Server Administration**

The department of Network and System Administration is responsible for managing the university's network, server and storage infrastructure. This includes managing the deployment and operation of switches, routers, firewalls, access points, servers, storage, backup and related equipment. It also includes managing network access control (NAC), backup, traffic and device monitoring, intrusion detection and prevention, configuration management and similar software systems as well as campus virtual computer and cloud infrastructure-as-a-service (IaaS) solutions. The department provides core network services such as Domain Name Service (DNS), Network Time Protocol (NTP) and Dynamic Host Configuration Protocol (DHCP). The department also manages the university's infrastructure application services including email, collaboration, communication, database, directory, middleware and related software systems. This includes managing the deployment, provision and operation of the systems along with the support of user access and security. It includes managing cloud platform-as-a-service (PaaS) solutions and those software-as-a-service (SaaS) systems that fit within the infrastructure applications realm.

#### **Information Security Services**

The department of Information Security Services works with campus leaders to assess and manage risk, ensure that technology is managed in accordance with the ISO 27002 security standard, and ensure compliance with various federal and state regulations as well as university and required industry standards. Information Security Services reviews network, server, application and user device configurations to ensure compliance, leads the response to security incidents, and investigates misuse of technology resources. Information Security Services works with leaders across the campus to ensure the security of technology and data and manages the campus cyber security awareness program. Information Technology Services also works with internal and external auditors to complete audits and reviews, and manage the response to issues cited.

### **CENTER FOR ACADEMIC EXCELLENCE**

<http://www.ncat.edu/divisions/academic-affairs/cae/>

The Center for Academic Excellence (CAE) is a full-service learning support unit designed to assist all university students in reaching high levels of academic success. The CAE mission is to equip students with success skills and learning support by helping them to: chart efficient learning paths, achieve their academic goals and become productive citizens and global contributors to society. The primary goal of CAE is to increase the retention of all freshmen, sophomores and student athletes by providing quality academic support programs and intrusive advising. The services provided by the Center for Academic Excellence include: academic coaching and walk-in advising services, freshman seminar College Success Course (FRST 101), tutorial services (group & individual appointments), supplemental instruction (structured learning assistance), early alert campaign outreach (academic progress reporting), "Aggies Help" online help request and mentoring programs. The Academic Coaches are instructors for the College Success Course and serve as leaders and organizers for academic skills workshops, mentoring programs for two living learning communities, and retention initiatives for special populations of students.

### **WASTE MANAGEMENT INSTITUTE**

<http://www.ncat.edu/divisions/academic-affairs/wmi/>

The Interdisciplinary Waste Management Institute (WMI) was founded on the belief that "waste management" is the key to innovation and creativity. The WMI coordinates the waste management efforts of the University. The goal of the Waste Management Institute is to help raise public consciousness of environmental security and waste management issues. Waste Management activities are conducted through faculty members and facilities of the participating departments. The Waste Management Institute administers an undergraduate and graduate certificate programs. The Waste Management Certificate

highlights the training of A&T students in environmental security and waste management issues. The Certificate adds value to degree programs.

### **THE DIVISION OF UNIVERSITY ADVANCEMENT**

<http://www.ncat.edu/divisions/advancement/>

The Division of University Advancement is one of seven administrative divisions at North Carolina A&T State University. The mission of the division is to support the university through the enhancement and management of private resources by expanding opportunities for engagement and increasing the University's resources.

Organizationally, University Advancement is made up of four units – Alumni Relations, Development, Advancement Services and N.C. A&T University Foundation, Inc. Alumni Relations serves to strengthen the bonds of loyalty and enthusiasm between the university and its alumni; Development creates and maintains funding opportunities through prospect research, cultivation and stewardship; Advancement Services is responsible for all strategic development services activities and infrastructure support; and the Foundation, a 501(c)3 associated entity, assists in soliciting gifts, grants and contributions from public and private sources for student scholarships, faculty development, library resources, specialized equipment and cultural and public service programs.

Advancement Services and Development are located in Dowdy Administration Building, Suite 400. Alumni Relations and the Foundation are located in the Alumni-Foundation Event Center at 200 North Benbow Road.

### **DIVISION OF RESEARCH AND ECONOMIC DEVELOPMENT**

<http://www.ncat.edu/research/overview/administration.html>

The Division of Research & Economic Development administers and manages research and sponsored programs as well as technology transfer and commercialization for the University.

Headed by the Vice Chancellor for Research & Economic Development, the division is made up of the Vice Chancellor's management team, the Office of Sponsored Programs, the Office of Technology Transfer and Outreach, the Office of Research Compliance and Ethics, the Office of Research Services and Project Management, the Office of Undergraduate Research, the Office of Financial Compliance and the Office of Contracts & Grants.

The Division manages all aspects of the research enterprise including identification of funding opportunities, proposal preparation, budget preparation, proposal submittal, compliance oversight, project setup, monitoring, invoicing, and closeout, intellectual property protection and commercialization. The Division also coordinates interdisciplinary projects, centers and institutes that engage two or more of the University's colleges and schools.

### **CAMPUS ENTERPRISES**

<http://www.ncat.edu/divisions/business-and-finance/ce/>

Campus Enterprises is a visible support unit on the campus providing essential services to students, faculty, staff, parents and visitors. Organizationally, Campus Enterprises resides in the Division of Business and Finance. The Associate Vice Chancellor reports to the Vice Chancellor for Business and Finance. The department serves a vast and diverse customer base. Campus Enterprises services include Parking and Transportation Services, Dining Services, Aggie OneCard, Bookstore, Aggie C-Store, Ticket Office, Mail Center, Concessions, Vending, and Laundry Services. We strive to provide the highest quality and service in each facet of our organization. Follow us on Instagram and Twitter @campusent for important information and updates for all of our units.

### **AGGIE C-STORE**

The Aggie C-Store is a full-service convenience store, which provides a limited number of consumable products. It is temporarily located in the Aggie Dome. Students can purchase a variety of items such as groceries, snack foods, candy, toiletries, beverages and much more.

### **AGGIE ONECARD**

The Aggie OneCard is the official identification card for N.C. A&T students, faculty, staff and affiliates. In addition to proving your affiliation to the university, this multi-functional card gives you controlled access to residence halls, buildings on campus and parking gates, making our campus a safer place to live and work. The card provides access to many campus services, including meal plans dining locations, access to athletic and cultural events, general spending accounts, laundry services, access to the campus recreation center, University Bookstore, vending machines, fare to ride on the city H.E.A.T. Bus System. Also, your Aggie OneCard can deposit funds, manage and keep track of card activity with the GET online tool at <http://ncat.managemyid.com>.

The Aggie OneCard Center staff is located in Hines Hall, Room 109 and the Aggie Dome. If your card is lost or stolen, please report it to the Aggie OneCard Center immediately at (336) 334-7114. This is for your protection and it will prevent others from using your card fraudulently. The Aggie OneCard Center is open Monday through Friday from 8:00 AM to 5:00 PM. If your card is lost/stolen/damaged, there will be a \$25 replacement fee.

### **UNIVERSITY BOOKSTORE**

Located on the corner of Laurel and Bluford Streets in Brown Hall, Barnes and Noble at North Carolina A&T State University provides the best solutions for our students as it pertains to learning resources, competitive prices and cutting-edge technology. Your one stop shop for all your campus needs! You can pre-order your books online through course registration or online at [ncat.bncollege.com](http://ncat.bncollege.com). Your books will be packed and reserved for your convenience within the store for pick-up. The Bookstore has an extensive selection of course materials, school supplies, computer products, software, laptops, dorm essentials, snacks and

Aggie apparel. For store hours or other information, please call (336) 334-7593 or visit our website. For discounts and promotions, fan us at facebook.com/NCATBookstore and follow us on Twitter @ncatbookstore.

### **DINING SERVICES**

Aggie Dining provides an exciting and innovative dining program for the entire University community. From early morning to late at night, Dining Services offers places of retreat across campus to relax with friends, refuel with a healthy meal or snack.

All students assigned to University Housing must have a meal plan. Meal plans can be changed by the first day of classes each semester. Meal plans are designed to provide students with flexibility, variety of meals and flex dollars. Weekly meals can be used in Williams Dining Hall or Simply to Go and flex dollars can be used at any Aggie Dining location. Commuter Meal Plans are available for students living off-campus and designed to fit your needs. A variety of restaurants to choose from which are conveniently located within walking distance of on-campus housing, labs, classrooms and many off-campus apartments. Aggie Dining has something for everyone! Follow us on Instagram and Twitter @aggie\_dining for updates, discounts and promotions.

### **TICKET OFFICE**

The University Ticket Office is located in Brown Hall at the corner of Bluford and Laurel Streets. The mission of the Ticket Office is to support the campus and external community by managing and promoting ticket sales for Athletics and other University events. Patrons may use our online ticketing service for most event ticket purchases. All athletic events are free for students with your Aggie OneCard. Normal operating hours are Monday through Friday 9:00 a.m. until 5:00 p.m.; hours may vary depending on season and other events. For more information or to purchase tickets visit our website at <http://www.ncat.edu/divisions/business-and-finance/ce/ticket-office/index.html> or contact us by phone at (336) 334-7749.

### **MAIL CENTER**

The University Mail Center is located on the lower level of Brown Hall on Laurel Street. The Mail Center processes inbound and outbound mail/packages for all students residing in campus housing. We are able to handle all types of U.S. Postal Service mail including Express, Certified, and Insured as well as many other USPS services. Campus mailboxes are assigned to residential students during the first three weeks of each semester and during the first week of each summer session. The dates and location issuing keys will be posted at the beginning of each semester/summer session. An annual non-refundable key deposit of \$25.00 (included in tuition) is required. All student mailboxes are located in the Mail Center. Students will be notified via their University e-mail or text-alert for package pick-up. Sign-up is required for this service. Students must present their Aggie OneCard ID to receive their packages. Mail Center service hours are Monday through Friday, 9:00 a.m. – 5:00 p.m. During summer and holiday periods hours of operation are subject to change. The Mail Center staff may be contacted at (336) 334-7544 or by email at [mailcente@ncat.edu](mailto:mailcente@ncat.edu).

### **PARKING AND TRANSPORTATION SERVICES**

Parking and Transportation Services manages the University's parking resources by providing campus access to the campus community, visitors and our guests. We are committed to a safe and orderly parking environment through enforcement of parking rules and regulations. A valid parking permit or a visitor's permit is required to park on campus. You must park according to your permit for designated parking lots. Transportation facilitates the use of alternative transportation methods including shuttle services in and around campus. To track campus shuttles, you may download DoubleMap by [clicking here](#). We have also partnered with Greensboro Transit Authority to allow students free access to the Higher Education Area Transit (HEAT) Shuttle Service and public transportation when using their Aggie OneCard. For more information on the HEAT Shuttle Services please [click here](#). The Parking and Transportation Services Office is located in the Obermeyer Parking Deck. More information on Parking and Transportation Services can be found on our website at <http://www.ncat.edu/divisions/business-and-finance/ce/parking/index.html>, or by phone at (336) 285-2027.

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## STUDENT LIFE

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### DIVISION OF STUDENT AFFAIRS

<http://www.ncat.edu/student-affairs/>

The Division of Student Affairs shoulders the major responsibility for Student Life and Student Services. The Vice Chancellor for Student Affairs is the Chief Student Affairs Officer. The Division of Student Affairs is organized to provide services that complement the academic program and contribute to the social, emotional, spiritual, environmental, occupational, intellectual, and physical development of students. Furthermore, programs and services provided within the Division support the community of learners and are broadly categorized into four major areas: (1) Academic Support, (2) Personal Growth and Diversity, (3) Professional Development, and (4) Health & Wellness. Specifically, the Division of Student Affairs plays a vital role in the personal growth, diversity, wellness, academic achievement, and the intellectual and professional development of each individual student by:

- Fostering a campus culture that encourages each student to articulate his or her own goals for success;
- Enhancing the learning environment and expanding learning opportunities for all students inside and outside of the classroom;
- Promoting a campus climate to value, accept and learn from our rich diversity by expanding opportunities for student to acquire local, regional and international experiences; and
- Developing leaders who believe in and lead others toward supporting civility, mutual respect and diversity in our society through expanding workplaces that include global experiences, advance technology and physical resources to develop students' full potential.

The Division of Student Affairs is a student-centered partner in the learning community of North Carolina Agricultural and Technical State University. *"Building on our comparative educational advantages and our unique civil rights heritage,"* we provide *interdisciplinary* services that complement the academic colleges within the University. Education is enhanced both inside and outside of the classroom, through quality support services and programs that advance student *intellectual, cognitive, social, personal, and physical competencies*. The Division contributes to academic and personal success, encourages independent civic responsibility, provides skill sets that can be applied globally, and promotes the welfare of all students. Student Affairs helps to connect students to the University and to their future, building alliances that foster recruitment, retention and loyalty beyond graduation.

Student Affairs professionals assist students in areas of counseling, leadership development, student housing, student activities, student governance and community service. Such activities assist students in finding "a sense of belonging, responsibility, and achievement." The Division carries out its purpose through providing leadership development opportunities for student leaders, the Student Government Association, the Student University Advisory Board, the Council of Presidents, the Residence Hall Association, the Pan-Hellenic Counsel, service organizations and other non-Greek organizations and the Graduate Student Advisory Council.

Consistent with the overall goals of the University, the Division of Student Affairs include the following array of programs and activities within the following units: (1) Counseling Services, (2) Career Services, (3) Student Government Association, (4) Student Activities and Involvement, (5) Health Services, (6) Intramural Sports, (7) Veteran and Disability Support Services, (8) Student Support Services, (9) Housing & Residence Life, (10) Student Center, (11) Upward Bound Program, (12) Student Development, (13) Multicultural Student Center, (14) Judicial Affairs, (15) University Event Center, (16) Administration, (17) Blue & Gold Marching Band, (18) Ayantee Yearbook, (19) Student Clubs & Organizations/Greek Life, (20) Student University Advisory Board, and (21) the Graduate Student Advisory Council. Some of the specific services are described as follows:

#### OFFICE OF STUDENT AFFAIRS ASSESSMENT

The Office of Student Affairs Assessments is deemed responsible for the cultivation of a positive culture of assessment for the campus community at North Carolina A&T State University. Other responsibilities of this office includes: consultations, instrument development, data analysis, and training or workshops for professional faculty and staff (e.g., Qualtrics, Taskstream, Assessment 101, etc.). The data collected in the Office of Student Affairs Assessment is used to improve student affair practices and increase student and employment engagement in co-curricular settings. For more information, please contact Kellie Dixon, Assessment Coordinator for the Division of Student Affairs at (336) 285-2727 or via email [kmdixon@ncat.edu](mailto:kmdixon@ncat.edu).

#### COUNSELING SERVICES

<http://www.ncat.edu/student-affairs/student-services/counseling/>

Counseling Services offers a variety of services to help all currently enrolled North Carolina A&T State University students address challenges and difficulties they may face during college. Our services are designed to help students understand themselves better, create and maintain healthy relationships, improve academic performance and make satisfying career and life choices.

We are dedicated to helping our students by providing brief counseling from a wide spectrum of services. Those include individual and group counseling, outreach and consultation, training and supervision, teaching, psychological testing, recovery, and research. If more intensive or specialized care is needed, we will assist with making referrals to healthcare providers in the community. All counseling is voluntary, free of charge, and confidential.

The following services are available through the Counseling Services:

1. Personal counseling in individual and group sessions

2. Academic skills training and career/vocational assessments
3. Outreach counseling programs and activities, Life Skills, Resilience, and Personal Growth Programs
4. Collegiate Recovery Programs and Sexual Violence Prevention
5. Graduate student internship training for psychology, social work, and counseling students
6. Individual test administration and interpretation covering the areas of intelligence, aptitude, personality, interest, and achievement, as well as other areas required by special needs
7. College Level Examination Program (CLEP) for course credit by examination and Psychological Assessments for Learning Disabilities (LD) and Attention-Deficit / Hyperactivity Disorder (ADHD)
8. Consultations for students withdrawing from the University for psychological reasons
9. Referrals (University and Community Resources)

### **HEALTH SERVICES**

<http://www.ncat.edu/student-affairs/student-services/health-services/index.html>

The Director of Health Services manages the Student Health Center. Medical services are available to all students in the student health center if they pay a student health fee as part of their general university fee.

The basic components of the Health Service Program are as follows:

1. **Medical Services:** The Clinicians are in attendance in the Health Center Monday – Friday from 8:00 a.m. – 7:00 p.m. For medical emergencies after 7:00 p.m., students may call 911 for assistance.
2. **Nursing Services:** Registered nurses, under the direction of the Nurse Supervisor, are in attendance Monday – Friday from 8:00 a.m. – 7:00 p.m. to evaluate and treat students' health needs and to answer questions pertaining to health concerns.
3. **Laboratory Services:** A Certified Medical Technologist is on duty daily, Monday – Friday from 8:00 a.m. – 7:00 p.m. to perform various laboratory tests as ordered by the clinician(s) to diagnose a variety of medical conditions.
4. **Medical Records:** The Medical Records Director is responsible for maintaining a physically secure and confidential file of all student health records in the Health Center. Additionally, the North Carolina State Immunization Law stipulates required vaccines must be on file in the medical records department of the Health Center 30 days after registration.
5. **Pharmacy Services:** A registered pharmacist is available Monday – Friday from 8:00 a.m. – 7:00 p.m. to dispense medication and provide patient education on all prescriptions filled.
6. **Health Education Services:** Prevention education is available through the health educators on a variety of health conditions. The Health Educators are available Monday – Friday from 8:00 a.m. – 7:00 p.m. to assist students with any health issues or concerns. Many programs and seminars are conducted during the evening hours by the Health Educators when requested.
7. **Student Health Insurance:** The Student Health Insurance Plan works in partnership with the University health fee to provide quality health care at a reasonable cost to the students. The Student Insurance Plan is based on a Primary Care Provider. Primary care is provided by the Student Health Center.
8. **Alternate Lifestyle Services:** Acupuncture and Massage are offered as alternative options to the patients.

The Health Center provides up-to-date and emerging information on health related issues and concerns on a continuing basis for the University community.

### **Drug and Alcohol Education Policy**

N.C. A&T strives to provide an educational environment that enhances and supports the intellectual process. Academic communities, including students, faculty and staff, have the collective responsibility to ensure that the environment is conducive to healthy, intellectual growth. Illegal use of harmful and addictive chemical substances poses a threat to the educational environment. Each member of the university family is reminded that, in addition to being subject to university regulations and sanctions regarding illegal drugs and chemicals, they are also subject to state and national laws. This policy has been developed in accordance with the UNC Policy on Illegal Drugs, adopted by the board of governors on January 15, 1988. It established the framework for programs designed to educate the campus community on the harmful effects of illegal substances and assist persons in their efforts to become rehabilitated. It also provided guidance for punishing violators. The link to the Drug and Alcohol Education Policy can be found here: <http://www.ncat.edu/hr/documents/policies/emp-prov/drug-alc.pdf>.

University policies concerning the possession and consumption of alcoholic beverages do not contravene federal, state, or municipal law regarding their purchase. A summary of certain sections of the North Carolina State statute and local ordinances of alcoholic use is included below:

#### **North Carolina Law**

North Carolina Alcoholic Beverage Control laws make it unlawful for any person under twenty-one years of age to purchase, possess, or consume any alcoholic beverage. Below are excerpts from applicable statutes.

- A. It is unlawful for any person to aid or abet an underage person in the purchase, attempted purchase, and/or possession of alcoholic beverages. *General Statute 18B-302(c)*.
- B. It is unlawful for any person to knowingly sell or give alcoholic beverages to an underage person. *General Statute 18-B-302 (a) (1)*.
- C. It is unlawful for any underage person to falsify a driver's license or other identification document in order to obtain alcoholic beverages. *General Status 18-B-302(e)*.
- D. It is unlawful for any person to permit use of his/her driver's license or any other identification document by an underage person to purchase or attempt to purchase alcoholic beverages. *General Statute 18B-302(f)*.
- E. It is unlawful for any person to consume any alcoholic beverage in or on any public street, right-of-way, sidewalk, alley, or property located inside or outside the Greensboro corporate limits. *Greensboro Code Sec. 4-13*.



## UNIVERSITY GUIDELINES ON ALCOHOL

All usages of alcoholic beverages will conform to existing state, local and University laws and policies.

1. There will be no consumption of alcoholic beverages in a motor vehicle while on University property or streets.
2. There will be no public display of alcoholic beverages.
3. Consumption of alcoholic beverages is restricted to students' rooms in residence halls only for those students of legal age.
4. Anyone who drinks alcoholic beverages will be held accountable for his/her behavior. Irresponsible drinking will not be accepted as an excuse for irresponsible behavior. Such behavior will result in conduct action and/or notification to parent or guardian.

## ZERO TOLERANCE FOR DRUGS POLICY

Any student who is found in violation, as a first offense, with the possession of marijuana (or any other illegal drug or chemical) on campus will immediately lose campus housing privileges.

The following minimum penalties to be imposed by the university shall be:

### Trafficking Illegal Drugs

For the illegal manufacture, sale, delivery, or possession, with intent to manufacture, sell or deliver, of any controlled substance identified in Schedule I, N.C.G.S. § 90-89 or Schedule II, N.C.G.S. § 90-90 (including, but not limited to, heroin, mescaline, lysergic acid, diethylamide, opium, cocaine, amphetamine, methaqualine), any student shall be expelled.

For a first offense involving the illegal manufacture, sale or delivery, or possession with intent to manufacture, sell or deliver, of any controlled substance identified in Schedules III through VI, N. C. G. S. § § 90-91 through 90-94 (including, but not limited to marijuana, Phenobarbital, codeine) the minimum penalty shall be suspension from enrollment or from employment for a period of at least one semester or its equivalent. For a second offense, any student shall be expelled.

### Illegal Possession of Drugs

For a first offense involving the illegal possession of any controlled substance identified in Schedule I, N. C. G. S. § 90-89, or Schedule II, N. C. G. S. § 90-90, the minimum penalty shall be suspension from enrollment for a period of at least one semester or its equivalent.

For a first offense involving the illegal possession of any controlled substance identified in Schedules III through VI, N. C. G. S. §§ 90-91 through 90-94, the minimum penalty shall be probation for a period to be determined on a case-by-case basis. A person on probation must agree to participate in a drug education and counseling program, consent to regular drug testing, and accept such other conditions and restrictions, including a program of community service, as the chancellor, or the chancellor's designee deems appropriate. Refusal or failure to abide by the terms of probation shall result in suspension from enrollment.

For second or other subsequent offenses involving illegal possession of controlled substances, progressively more severe penalties shall be imposed, including ultimately expulsion of students. A second offense will result in immediate suspension from the University.

Felony possession of marijuana (or any illegal drug or chemical) will result in immediate suspension from the University.

Pursuant to the 1974 FERPA law, parents or guardians/sponsors may be sent written notification, without the student's consent' regarding students under the age of 18 who are in violation of campus and/or state alcohol and drug policies.

## Educational and Rehabilitation Programs

The University shall establish and maintain a program of education designed to help all members of the University community avoid involvement with illegal drugs. This program shall emphasize these subjects:

1. The incompatibility of the use or sale of illegal drugs with the goals of the University.
2. The legal consequences of involvement with illegal drugs.
3. The medical implications of the use of illegal drugs.
4. The ways in which illegal drugs jeopardize an individual's present accomplishments and future opportunities.

The University shall provide information about drug counseling and rehabilitative services (campus-based or community-based) available to students and employees.

Persons who voluntarily avail themselves of these university services or programs are assured that applicable professional standards of confidentiality will be observed.

## DRUG USE AND INELIGIBILITY FOR FEDERAL FINANCIAL AID

Any student convicted of possession or sale of a controlled substance under federal or state law may lose eligibility for Student Financial Aid assistance.

Be advised that a student who is convicted of an offense under any federal or state law involving the possession or sale of a controlled substance, while enrolled in an institution of higher education and receiving any federal financial aid (e.g., grant, loan or work assistance) will lose his/her eligibility for such assistance according to the following schedule:

If convicted of an offense involving the possession of a controlled substance, the ineligibility period is:

First Offense = 1 year

Second Offense = 2 years

Third Offense = Indefinite

If convicted of an offense involving the sale of a controlled substance, the ineligibility period is:

First Offense = 2 years

Second Offense = Indefinite

## HOUSING AND RESIDENCE LIFE

<http://www.ncat.edu/student-affairs/housing/>

Housing and Residence Life (HRL) provides services and programs to compliment the academic environment by offering a comfortable, affordable, and inclusive community to promote a holistic experience for residential students. HRL desires to stimulate and challenge residents to fulfill their educational goals and ambitions through quality education, social, and cultural programs that promote community within residence halls. Our goal is to build a foundation of service, scholarship, and leadership as both undergraduate and graduate students of the university embracing their campus living experience. HRL provides student employment, living and learning community/theme house opportunities that allow them to build professional skills, embrace diversity, and develop lifelong relationships.

## STUDENT CENTER

<http://www.ncat.edu/student-affairs/student-services/student-center/index.html>

The Student Center functions as the “Community Center” for the University and its constituency by providing a variety of services and activities. Due to the number of students who continue to select North Carolina A&T as their #1 choice for higher education, we have outgrown the old Memorial Student Union facility. In conjunction with our Business & Finance colleagues, the construction of the new Student Center is well underway. We anticipate it opening in 2018.

During construction, we have relocated the Office of Student Activities and Involvement, Student Government Association (SGA), Student University Activities Board (SUAB), Greek Life/Campus Clubs and Organizations, and Student Center Administration/Staff to the north side of Moore Gymnasium. For your convenience, a lounge/seating area, recreation room, and information center will be located in this transitional space.

A primary goal of the Student Center is to promote an involved community through its various services, facilities, and programs. The fitness and recreational activities of the Campus Recreation Center (CRC) have a unique focus on the health and wellness of the campus community. The Recreation Center has the “state of the art” cardio and weight training equipment with an aerobics/dance studio. For scheduling and event logistics, the University Event Center (UEC) serves as the office through which all on-campus major events and activities will be scheduled and executed. The office services student organizations, faculty, staff, administrators and university divisions and offices as well as the outside community with events including lectures, receptions, performances, press conferences, concerts, conferences, and athletic events, as scheduled.

## STUDENT DEVELOPMENT

<http://www.ncat.edu/student-affairs/student-services/development/index.html>

The purpose of the Office of Student Development (OSD) is to promote an environment at North Carolina A&T that provides for the overall growth and development of students. OSD facilitates programs which assist students in defining who they are, building relationships and determining what to do with their lives. Social, cultural, educational, professional and leadership development, plus service experiences, fosters capacity building through intellectual discussion, building communities, character development and working towards the greater good.

Our mission is to foster **student** growth and **development** and facilitate **student** success and retention.

OSD promotes purposeful involvement of students by:

- Fostering an environment where students share ideas freely and work collaboratively.
- Providing a safe and inclusive community.
- Supporting the growth and development of an informed citizenry.
- Promoting student engagement as viable resources for the University and Greensboro Communities.

### Leadership and Engagement

As a compliment to the established mission of the Division of Student Affairs, this unit provides leadership and professional development. A variety of capacity building and leadership development programs are available to all students. iLEAD, a self directed leadership program, in which students earn designations completing a series of leadership development activities. Live\*Learn\*Lead, a series of workshops that incorporates diverse topics aligned with building relationships and strengthening a student’s leadership and professional development. Leadership Synergy Program, a series of mini conferences, lunch and learns, leadership certifications and participation in conferences locally, in state and nationally.

The primary goals of the unit include:

- Coordinating and facilitating workshops, seminars, programs and conferences geared towards personal and professional growth, human relations, and civility.
- Utilizing the entire Aggie community, to develop our 5 C’s of Leadership: Character, Congruence, Commitment, Collaboration, and Citizenship, in the student body.
- The Office of Student Development, fosters an environment where students share ideas freely and work collaboratively with faculty, staff and other students; while promoting them as ambassadors to the global community.

## STUDENT ORGANIZATIONS AND ACTIVITIES

<http://www.ncat.edu/student-affairs/index.html>

The University provides a well-balanced program of activities for moral, spiritual, cultural and physical development of its students. Religious, cultural, social and recreational activities are sponsored by various committees, departments, and organizations of the University. Outstanding artists, lecturers and dramatic productions are brought to the campus as well.

The Council of Presidents (COP) of North Carolina A&T State University serves as the governing body of student organizations. After student organization leaders have registered their organizations, they are then eligible to use all campus facilities and many resources at no cost to the organization.

The Executive Director of Student Activities provides interpretation of the University's policies as they relate to organizational community. All events must reflect the interest of the University community. Permission to use University facilities may be denied or revoked for non-compliance with the Guidelines and Implementing Procedures for the use of University facilities.

Approximately one hundred twenty-five (125) organizations are registered and approved on the campus. Categorically, the organizations include, National Honor Societies, College/Academic/Departmental Clubs, Club Sports, Special Interest groups, Cultural Awareness/International groups, Fraternities, Sororities, Hometown Clubs, Service Organizations, Faith Based organizations, Residence Hall Councils, the Student University Advisory Board, and Class Organizations. Other University sponsored organizations include the University and Gospel Choirs, University Band and the Student Government Association.

Descriptions and membership requirements for all University recognized and registered organizations are printed in the *Student Organizations Handbook*. The Office of Student Activities publishes a listing online of student organizations, their purposes, objectives, chief officers, and advisors annually. Please contact the Office of Student Activities on the 3<sup>rd</sup> Floor of the Moore Gym or by email at [osa@ncat.edu](mailto:osa@ncat.edu).

### STUDENT CONDUCT

Students enrolled at North Carolina Agricultural and Technical State University are expected to conduct themselves properly at all times. They are expected to observe standards of behavior and integrity that will reflect favorably upon themselves, their families, and the University. They are further expected to abide by the laws of the city, state, and nation, and by all rules and regulations of the University.

Accordingly, any student who demonstrates an unwillingness to obey the rules and regulations that are prescribed or that may be prescribed to govern the student body will be placed on probation, suspended or expelled from the institution.

#### Sanctions

Sanctions of expulsion and suspension affect the student's academic status at the University. In order that students under suspension not contravene the terms of penalty, the Offices of Admissions, Financial Aid, Graduate School, Registrar, Residence Life and University Police (as well as other University Officials) will be notified in writing. During the suspension period, records remain flagged and transcripts held until students have complied with University-imposed sanctions until the period ends. In addition, a suspension or expulsion precludes matriculation at any UNC constituent institution. No credit earned at another institution during the suspension period shall be transferred to North Carolina Agricultural and Technical State University. A student under expulsion or suspension is subject to arrests for trespassing if found on University property. **Students suspended or expelled from the University, for disciplinary reasons, are not eligible for refunds and forfeit any funds previously paid.**

Students who lose campus-housing privileges for disciplinary reasons, and have concerns about the financial ramifications, should contact the Office of Housing and Residence Life for guidelines and shall be governed by them.

#### Failure of Accused to Appear at a Hearing

Scheduled University Judicial Hearings will be held in absentia if a student or organization fails to present himself/herself or an organization representative. The Administrative Hearing Body will convene and make a decision based on the evidence at the hearing.

Should sanctions result from a student's failure to present himself/herself or an organization's failure to present for adjudication of a charge, the Offices of Admissions, Financial Aid, Graduate School, Registrar, Residence Life and University Police (as well as other University Officials) will be notified in writing and the student's and/or organization's records will be flagged. In addition, transcripts will not be released to persons outside the University until the student answers the charges.

Any one of the following sanctions or combinations may be imposed upon students and/or organizations:

- **Expulsion** permanently severs the relationship of a student or organization with the University. With recommendation of a hearing panel, it will be imposed by the Chancellor, and can only be rescinded by the Board of Trustees. This penalty will likely prevent a student's admission to any other institution of higher education;
- **Indefinite suspension** severs the relationship of a student or organization with the University with no date established for the student or organization to return. A date at which time the student or organization may request reinstatement can be established or may be contingent on a student or organization fulfilling one or more stipulations (e.g. resolution of criminal matters pending in the courts, psychological evaluation);
- **Interim separation** calls for the immediate removal of a student or organization from the University when there is reasonable cause to believe that the alleged misconduct is of such a serious nature that his/her or its continued presence at the University is potentially dangerous to the health and safety of the University community, its property or educational mission. (In cases of violations of the Student Conduct Regulations, to invoke an interim separation, the Vice Chancellor for Student Affairs, or his/her designee, conducts a preliminary investigation and hearing with the student or organization, if possible. In cases of academic dishonesty, the Provost/Vice Chancellor for Academic Affairs, or his/her designee, conducts an investigation. At the appropriate time, the student is informed of the charges and given an opportunity to explain the circumstances);
- **Suspension** severs the relationship of a student or organization with the university for a finite period, the terminal date of which coincides with the official ending of an academic semester or summer session;

- **Disciplinary Probation** is a period of close scrutiny of a student or organization by the university during which his/her conduct is under review. Disciplinary probation is imposed for a specified period of time, the terminal date of which coincides with the official ending of an academic semester or summer session. Failure to meet the requirement of the probation or further infractions of university policy may result in more severe sanctions, including suspension or expulsion from the university. Individuals on disciplinary probation are not eligible to hold office or membership in any student group or organization; and may not be eligible for certain employment positions or participation in other campus programs.
- **Warning** is an official reprimand, which by formal written communication, gives official notice to a student or organization that any subsequent offense against the Student Conduct Regulations will likely result in more serious consequences. In cases involving violations of the Student Conduct Regulations, a copy of the letter is contained in the student's file in the Division of Student Affairs or, in the case of academic dishonesty, with the Vice Chancellor for Academic Affairs, and will be available as evidence of relevant past behavior to hearing panels;
- In addition to the above, any one or a combination of the following may be recommended by a student conduct hearing board and/or imposed by the Vice Chancellor for Student Affairs or the Dean of Students or, in cases of academic dishonesty, the Provost/Vice Chancellor for Academic Affairs:
  - a) requirement of participation in community service
  - b) restitution, where applicable
  - c) loss of campus housing
  - d) official notice that any other violation of the **Student Conduct Regulations** will result in suspension
  - e) prohibited from participating in organized groups or activities
  - f) counseling
  - g) Judicial Educator online modules

The sanctions listed above are examples only and do not limit the discretion of conduct officers. Students placed on suspension or expulsion are placed in the UNC statewide database, per state requirements.

Sanctions against an organization for hazing shall be those penalties described in Section III of the N.C. A&T Student Handbook.

Students who are suspended must apply for re-admission. After proper review of submission of all items specified in the sanction letter, the student will be notified when to contact the Office of Admissions about the process if he/she desires to return to N.C. A&T. Re-admission rules, regulations and decisions are governed by the Office of Admissions; neither the Division of Student Affairs nor the Office of the Dean of Students re-admits students.

Please note: During the suspension period, records will remain flagged and transcripts will be held until students have complied with University imposed sanctions and until the suspension period is over. In addition, suspensions and expulsions are uploaded to the UNC database. A suspension or expulsion precludes matriculation at any UNC constituent institution.

### **COMPUTER USE POLICY STATEMENT**

Students of North Carolina A&T State University are authorized to use computer networks, equipment and related resources pursuant to administrative regulations established and promulgated by the Chancellor or his/her designee. All students are expected to follow the computer use policy and related University rules, regulations and procedures for computer usage and work produced on computing equipment, systems, and networks of the university. Students may access these technologies for personal use on a restricted basis.

Please refer to the Computing and Networking Usage Policy and Lab Usage Policy at the [www.ncat.edu/~cit/policies/](http://www.ncat.edu/~cit/policies/) for permissible use. Any violation of these policies is considered "misconduct" subject to the University's disciplinary procedures. Sanctions for violation of this policy may include revocation or suspension of computer access privileges in addition to any other sanction permitted under student conduct and academic policies. Violations of state or federal laws may also be referred to the appropriate authorities for criminal or civil action. Students are encouraged to contact the Client Services Department or the Aggie Helpdesk for information regarding any computer usage matters.

### **VETERAN AFFAIRS**

<http://www.ncat.edu/student-affairs/student-services/ovdss/index.html>

North Carolina Agricultural and Technical State University is an approved site for veterans and veteran dependents wishing to attend and receive educational benefits.

Admission to the University is done through normal admissions procedures. The issuing of a Certificate of Eligibility by the Veterans Administration does not automatically assure a student of admission to the University.

The Office of Veterans Affairs located at The Aggie Student V.E.T.S Center at the Oaks is established to assist veterans and veteran dependents with enrollment and adjustment to college life. Upon enrolling at the University, the veteran or eligible person should report to the Office of Veterans Affairs so that verification of enrollment can be sent to the Veterans Administration. If a Certificate of Eligibility has not been issued, the veterans or the eligible person should see the University Certifying Official.

The Office also provides counseling and tutorial services as necessary.

### **DISABILITY SUPPORT SERVICES**

<http://www.ncat.edu/student-affairs/student-services/ovdss/index.html>

The Office of Disability Support Services assures ready accessibility of all academic programs, services, and activities to any person with a documented disability matriculating at the University. Likewise, services focus on facility accessibility and safety.

The office staff serves as a liaison for students with disabilities as they participate in programs and activities enjoyed by all students. The office staff arranges for any necessary reasonable accommodations or academic adjustments. Documentation is required for all disabilities.

All information and services for persons with disabilities is confidential. The office is located in Suite 01 Murphy Hall. Students needing academic adjustments or accommodations must be registered with this office.

### **OFFICE OF CAREER SERVICES**

<http://www.ncat.edu/student-affairs/student-services/career-services/index.html>

The primary mission of the Office of Career Services (OCS) is to provide centralized, comprehensive and progressive inter-disciplinary programs, services and resources to prepare A&T students (undergraduates and graduates) for the achievement of successful personal and professional career development to meet the needs of a global society. Services are also available to alumni of the university.

All students are encouraged to register with the OCS and actively take advantage of the services offered. The office is adamant about providing students with the best services possible, using the latest technology and the most current industry information. As such, OCS partners with employers, the community, alumni, students, and the colleges to assist with service delivery. Services are provided throughout campus in the classroom, residence halls, online, evenings, weekends, and through distance methods (phone, email, webinars, and Skype), which makes it convenient for students to engage in activities and utilize the resources 24/7.

### **Cooperative Education Program**

Cooperative Education Program (Co-op) is an optional, counseling-centered program that offers students the opportunity to alternate periods of academic study with periods of work closely related to their major field of study. The combination of academic study and work produces an overall learning experience that gives greater meaning to students' studies and more direction to career development.

Any undergraduate or graduate student enrolled in a degree-granting program at North Carolina A&T State University can participate. Participants must establish and maintain at least a 2.5 overall grade point average. Freshmen must complete their first academic year prior to the first work assignment and transfer students must complete one semester. To maintain a current student status while on assignment, students must be registered with the Office of Career Services and enrolled in the Career Services co-op course. The course will allow students to stay active and in good standing with the university, and receive a co-op notation on the official transcript. The university will charge a fee of \$300.00. Payment is due by the first day of class of each semester. This co-op course is for zero credit which students will receive a pass or fail notation. Failure to submit all forms/documents could result in an "I" for incomplete.

Typically, a co-op assignment lasts a full fall or spring semester (12-16 weeks). Usually an employer will require at least two sessions, which can include one summer session.

Academic credit is awarded by the department chairperson in respective colleges. Discuss plans to participate in a co-op and how this relates to your discipline with the department chair. If the department decides to award academic credit, complete the Academic Credit Form and get appropriate signatures. Please contact the assistant Director of Career Services for Experiential Learning with inquiries and questions.

### **Career Opportunities**

The Office of Career Services provides access to thousands of positions for students which include on-campus student employment, internships, co-op, part-time, and full-time opportunities. These positions are located primarily in Agguelink, the OCS online job listing portal. Other opportunities can be found in MyPlan and the career resource links provided on the OCS website. Upon acceptance of employment (i.e., internship, co-op, part-time, or full-time), it is important to notify Career Services immediately.

### **On-Campus Interviewing and Career Fairs**

On-campus Recruitment is available to students formally enrolled in a degree-granting program as well as alumni of North Carolina Agricultural and Technical State University. Opportunities are available in the local, state, national and international arenas. October 1 through November 30 is the official on-campus recruiting period for the fall semester. During the spring semester, interviews can be scheduled between late January and mid-April. On-campus interview information is available online ([www.ncat.edu/careerservices](http://www.ncat.edu/careerservices)) in the Agguelink Student Job Portal. Students/Alumni must be registered with the Office of Career Services in order to interview. The present graduating class has priority on all interview schedules.

In addition to the recruitment function, the Office of Career Services is actively involved in exposing A&T students to career opportunities and professionals in various career fields. This is accomplished through annual career fairs, workshops and meet-ups (formally information sessions). The office brings over 700 employers to campus and provides more than 15,000 position announcements yearly. The annual programs include the following:

**Career Awareness Fair** – held in September to give students an opportunity to network with more than 200 employers about full-time, co-op, and summer internship opportunities as well as learn what skill sets are in demand.

**Graduate & Professional School Fair** – held in November and allows students to broaden their knowledge of postgraduate programs as well as learn about application information, scholarship and financial assistance. This career fair is attended by graduate and professional schools from across the United States.

**Spring Career Fair** – held in February, is open to all majors and enables students to talk with employers about full-time, co-op, and summer opportunities.

**Education/Arts & Sciences Expo (EASE)** – held in March and is specifically designed to assist education and arts and human/social sciences majors.

### **MULTICULTURAL STUDENT CENTER**

<http://www.ncat.edu/student-affairs/student-services/multicultural/index.html>

The Multicultural Student Center (MSC) is an integral part of the University. Located in 204 Murphy Hall, the Office provides programs and services that support the academic mission of the University by enhancing the educational, personal, cultural and social development of our diverse student population. The MSC exists to promote understanding, respect and the appreciation of all diverse communities on the campus of North Carolina A&T State University. The Multicultural Student Center offers leadership and cultural opportunities, diversity training, social and service activities, often in cooperation with other campus organizations. Numerous programs and services are available at the MSC to address the academic, cultural and personal needs of our diverse population to ensure that each student in the N.C. A&T community receives the best education possible. Supporting the Multicultural Student Center is one way in which the University has dedicated itself to building bridges of knowledge, cooperation and understanding between persons of all diverse backgrounds (i.e.; racial, ethnic, cultural, religious, sexual orientation, political, social, etc.).

The Center is open from 8:00 a.m. – 5:00 p.m. daily and is staffed by the Director, an Office Manager, SLI Coordinator, Graduate Assistant and the MSC Student Ambassadors.

### **STUDENT SUPPORT SERVICES**

<http://www.ncat.edu/student-affairs/student-services/trio/student-support-services/index.html>

The purpose of the Student Support Services Program (SSSP) at North Carolina A&T State University is to increase the retention and graduation rates of disadvantaged students enrolled in the University. The program identifies, selects and serves two hundred (200) low-income, first-generation and disabled college students annually who are enrolled or accepted for enrollment in the University, and provides them with the support necessary to persist successfully in a program of study leading to a post-secondary degree.

The SSSP has been designed to provide optimum benefits for its participants. In order to achieve this goal, SSSP personnel coordinate with relative faculty as well as various academic and student services departments within the University to create a supportive academic climate and the provision of the following services:

1. Academic Counseling and Assistance in Course Selection
2. Tutorial Services in Math, Science, English, Physics and Foreign Languages

### **UNIVERSITY EVENTS CENTER**

<http://www.ncat.edu/student-affairs/student-services/university-events/index.html>

The University Event Center serves as the center through which all on-campus activities will be scheduled and executed. The Center services students, faculty, staff, administrators and university divisions as well as the outside community in assisting with guest lectures, receptions, performances, conferences, concerts, fairs, athletic events and any other scheduled activities.

The purpose of the Center is to assist in the selection of venues, securing logistical support, audio/visual services, event conversions, floor-plan design, and marketing. The Center will operate to ensure that each and every event that takes place on University grounds will be executed efficiently and within the give timeframe.

For more information on the University Events Center or to schedule an event, please call (336) 285-2580 or email any questions to [uec@ncat.edu](mailto:uec@ncat.edu).

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## EXPENSES AND FINANCIAL AID

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### GENERAL INFORMATION

North Carolina Agricultural and Technical State University is a publicly supported institution. Tuition payments and other required student fees meet only a part of the total cost of the education of students enrolled. On the average, for each full-time student enrolled in an institution of the University of North Carolina, the State of North Carolina appropriated \$12,859 per year in public funds to support the educational programs offered.

The University of North Carolina Board of Governors adopted a plan to make tuition and fee rates for undergraduate North Carolinians predictable and affordable. Pursuant to the Plan, the maximum rate of annual increase for campus-initiated tuition and general fees (Athletics, Health Services, Student Activities, and Educational and Technology Fees) for undergraduate resident students is 6.5%. Specific information, including maximum allowable increases in tuition and fees per academic year by UNC campus is available at <http://intranet.northcarolina.edu/docs/finance/reports/6.5%increase3years.pdf>.

Students and parents can also find detailed information concerning the total cost of college at [www.cfnc.org](http://www.cfnc.org).

The University reserves the right to increase or decrease all fees and charges as well as add or delete items of expense without advance notice as circumstances, in the judgment of the administration, may require.

Boarding and lodging fees are based on the actual number of days school is in session and do not include holidays, breaks, or any other University vacations.

Students' property in dormitories and other University buildings is at the sole risk of the owner, and the University is not responsible for loss, theft, or damage to such property arising from any cause.

Students are required to pay for any loss or damage to University property at replacement cost due to abuse, negligence, or malicious action, in addition to being subject to disciplinary action.

The University converted to a book purchase system effective fall semester, 1991. All undergraduate and graduate students are required to purchase all textbooks. This includes hard cover and paperback textbooks. The cost will vary according to academic discipline. Other policies and procedures governing the book purchase system can be obtained from the Bookstore.

Personal spending money should be sent directly to and made payable to the student in the form of money orders or certified checks. As a policy, the University does not cash personal checks for students in any amount.

Diplomas and transcripts are withheld until the student has paid in full all fees and charges due the University. A student in debt to the University in any amount will not be permitted to register for any subsequent semester until his or her obligations are paid. If special financial arrangements have been made, failure to comply with these arrangements as stipulated may result in the termination of the student's boarding and lodging privileges. Additionally, the student will no longer be able to receive alternative payment arrangements.

#### **Special Notice to Veterans**

Veterans attending school under the provisions of Public Law 89-358 receive a monthly subsistence allowance from the Veterans Administration. Therefore, veterans are responsible for meeting all of their required fee obligations.

Veterans attending school under the provision of Public Law 894 (Disabled Veterans) receive a monthly subsistence allowance from the Veterans Administration and also the Veterans Administration pays directly to the school the cost of the veteran's tuition and required fees. All other fees are the responsibility of the veteran.

Veterans may contact the Veteran and Disability Support Services Office on Campus for any special consideration which may be available.

### REQUIRED DEPOSITS, CHARGES AND FEES

All registration fees and charges are due and payable in full before or at the beginning of registration for each semester. Payments made by mail must be postmarked 5 days before the due date for each semester.

ALL PAYMENTS MUST BE MADE BY PERSONAL CHECK, CERTIFIED CHECK, BANK WIRE, MONEY ORDER, or CASH. American Express, Mastercard and Visa are accepted by paying on-line at [www.ncat.edu](http://www.ncat.edu) and clicking on Aggie Access On-Line. You must have a Personal Identification Number (P.I.N.) to pay on-line. Checks, drafts, and money orders must be made payable to North Carolina Agricultural and Technical State University, and sent directly to:

**Treasurer's Office**

**Dowdy Administration Building**

**North Carolina Agricultural and Technical State University**

**1601 East Market Street**

**Greensboro, NC 27411**

**PLEASE DO NOT SEND CASH PAYMENTS BY MAIL!  
A \$55 NON-REFUNDABLE APPLICATION FEE IS REQUIRED  
OF ALL APPLICANTS.**

### HOUSING DEPOSIT

Housing and Residence Life at North Carolina Agricultural and Technical State University provides a reasonably priced, attractive, comfortable, clean, and safe environment.

Residency options include: single and double occupancy, with co-educational and single gender facilities.

The interdisciplinary living and learning community is composed of traditional residence halls and planned living and learning communities. This provides a setting where students find a sense of identification, belonging, responsibility and achievement that will prepare them for future roles of leadership and service.

Students interested in living on-campus should complete a Housing Application indicating hall preference and include a \$150 non-refundable programming/processing fee. The application and fee should be returned to Office of Housing and Residence Life, North Carolina A&T State University, 1601 Market Street, Greensboro, NC 27411. Applications will not be processed without the \$150 fee attached.

**Charge Category - Undergraduate Day Student (Student Living Off Campus)**

*Payment – Each Semester*

**Residence Status:**

In-State (Cohort Year 2016 – 2017) – \$4,498.16

In-State (Cohort Year 2017 – 2018) – \$4,533.16

Out-of-State – \$10,978.16

**Charge Category - Graduate Day Student (Student Living Off Campus)**

*Payment – Each Semester*

**Residence Status:**

In-State – \$5,135.66

Out-of-State – \$11,338.16

**Charge Category - Undergraduate Boarding Only Student (Student Living Off Campus but taking meals on campus)**

*Payment – Each Semester*

**Residence Status:**

In-State (Cohort Year 2016 – 2017) – \$6,198.71

In-State (Cohort Year 2017 – 2018) – \$6,233.71

Out-of-State – \$12,678.70

**Charge Category - Graduate Boarding Only Student (Student Living Off Campus but taking meals on campus)**

*Payment – Each Semester*

**Residence Status:**

In-State – \$6,836.21

Out-of-State – \$13,038.71

**Charge Category – Boarding and Lodging Student** (Student Living On Campus. NOTE: All Residence Hall Students must take meals in the University Dining Hall and participate in the student accident insurance program, however, the cost of this insurance is covered by our current lodging fee.)

*Payment – Each Semester*

**Undergraduate Student**

**Residence Status:**

In-State (Cohort Year 2016 – 2017) – \$8,128.21

In-State (Cohort Year 2017 – 2018) – \$8,163.21

Out-of-State – \$14,608.21

**Graduate Student**

**Residence Status:**

In-State – \$8,765.71

Out-of-State – \$14,968.21

**MAILBOX KEY DEPOSIT**

The centralized Mail Center houses mailboxes for all lodging students. Box numbers are assigned and are retained during the length of time students reside in residence halls. No fee is charged for this service; however, a key deposit of \$25 is required and is non-refundable when the key is returned at the end of the enrollment period or upon withdrawal from campus housing. This \$25 mailbox key deposit is included in the fee schedule for lodging students.

**REGULAR SESSION CHARGES FOR PART-TIME STUDENTS  
NORTH CAROLINA STUDENT RATES  
UNDERGRADUATE STUDENTS  
COHORT YEAR 2016 – 2017**

No. of Hrs.	Tuition	Other Required Fees	Total
1-5	\$433.75	\$593.43	\$1,027.18



6-8	\$867.50	\$2,163.34	\$3,030.84
9-11	\$1,301.25	\$2,763.16	\$4,064.41
12 or more	\$1,735.00	\$2,763.16	\$4,498.16

**NORTH CAROLINA STUDENT RATES  
UNDERGRADUATE STUDENTS  
COHORT YEAR 2017 – 2018**

1-5	\$442.50	\$593.43	\$1,035.93
6-8	\$885.00	\$2,163.34	\$3,048.34
9-11	\$1,327.50	\$2,763.16	\$4,090.66
12 or more	\$1,770.00	\$2,763.16	\$4,533.16

**GRADUATE STUDENTS**

<b>No. of Hrs.</b>	<b>Tuition</b>	<b>Other Required Fees</b>	<b>Total</b>
1-2	\$593.13	\$593.43	\$1,186.56
3-5	\$1,186.25	\$893.34	\$2,079.59
6-7	\$1,779.38	\$2,463.26	\$4,242.64
8	\$1,779.38	\$2,763.16	\$4,542.54
9 or more	\$2,372.50	\$2,763.16	\$5,135.66

**OUT-OF-STATE STUDENT RATES  
UNDERGRADUATE STUDENTS**

<b>No. of Hrs.</b>	<b>Tuition</b>	<b>Other Required Fees</b>	<b>Total</b>
1-5	\$2,053.75	\$593.43	\$2,647.18
6-8	\$4,107.50	\$2,163.34	\$6,270.84
9-11	\$6,161.25	\$2,763.16	\$8,924.41
12 or more	\$8,215.00	\$2,763.16	\$10,978.16

**GRADUATE STUDENTS**

<b>No. of Hrs.</b>	<b>Tuition</b>	<b>Other Required Fees</b>	<b>Total</b>
1-2	\$2,143.75	\$593.43	\$2,737.18
3-5	\$4,287.50	\$893.34	\$5,180.84
6-7	\$6,431.25	\$2,463.26	\$8,894.51
8	\$6,431.25	\$2,763.16	\$9,194.41
9 or more	\$8,575.00	\$2,763.16	\$11,338.16

(Boarding and Lodging Per Semester) – \$3,626.67

**INCIDENTAL FEES, DEPOSITS, AND CHARGES**

Accident Insurance (Optional)	\$ 55.00	Motor Vehicle Registration - Regular Student	242.00
Application Fee (Non-Refundable) No	55.00	Practice Teaching, Practicum Internship	100.00
Credit on Account	35.00	Regalia Fee - Graduate	80.00 & 148.00
Bowling Course Fee	11.00	Regalia Fee - Undergraduate	58.00
Chemistry Laboratory Breakage Fee	7.00	ROTC Uniform Deposit	25.00
Breakage Deposit	10.00	Air Force (Refundable)	25.00
Cooperative Education Adm. Fee	30.00	ROTC Uniform Deposit-Army (Refundable)	25.00
Graduation Fee – Undergraduate	60.00	Room Application Fee	150.00
Graduation Fee – Graduate	60.00	Parking Fee Violations (Varies)	50.00
Identification Card Replacement Fee	25.00	Transcript Fee	5.00 & 10.00
Key Replacement Fee	25.00	USAID Sponsored Student Adm. Fee	
Late Registration Fee	50.00	Per Semester	200.00
Master's Thesis Binding Fee	40.00	Visiting Auditor Course Fee	25.00
Motor Vehicle Registration - Evening Student	124.00	Orientation Fee – New Freshmen & New Transfer	200.00
ANSC Fee	60.00	Mail Box Key Deposit (Non-Refundable)	25.00
Student Praxis Fee	135.00	NARS- LDAR Fee	350.00
NCLEX Prep Traditional	250.00	Nursing Lab Fee	50.00
NLN Exam	35.00	NCLEX Prep Accelerated	450.00

**TUITION SURCHARGE**

The 1993 Regular Session of the General Assembly enacted a special provision directing the Board of Governors to impose a twenty-five percent (25%) tuition surcharge on students who take more than 140 degree credit hours to complete a baccalaureate

degree in a four year program or more than 110% of the credit hours necessary to complete a baccalaureate degree in any program officially designated by the Board as a five-year program. Effective for Fall 2010, the tuition surcharge will increase to fifty percent (50%) as amended by Section 9.10.(a) of Session Law 2009-451. Effective with the fall 1994 semester, all new undergraduates seeking a baccalaureate degree at North Carolina Agricultural and Technical State University are subject to this tuition surcharge. The surcharge cannot be waived for out-of-state students and does not apply to required fees. The calculation of these credit hours taken at the University or transferred from a constituent institution of the University of North Carolina shall exclude hours earned through the College Board's Advanced Placement or CLEP examinations, through institutional advanced placement or course validation, through summer term or extension programs, or excess hours taken during 8 semesters for a four year or excess hours taken during 10 semesters for a five year program.

### **REGISTRATION FOR THESIS COURSES**

Students who have completed all of their course work and have already registered for the total number of credit hours provided for the thesis in a previous semester are required to register for "thesis only" if they need to be at the University to complete their thesis or to engage in a research project.

Tuition charge for the 2016-2017 academic year for an in-state graduate student registered for thesis only is \$1,151.03. The charge for an out-of-state graduate student is \$2,701.65.

### **RETURN OF TITLE IV FUNDS WITHDRAWAL FROM SCHOOL REFUND POLICY**

Students who leave the University prior to the end of the semester should follow the University guidelines for withdrawing from school. An Official Withdrawal Form must be obtained from the Counseling Center, completed, signed by the respective offices and submitted to the Registrar's Office before a student is considered officially withdrawn. Students who stop attending all of their classes but fail to complete the withdrawal process are considered as unofficially withdrawn. The U.S. Department of Education has established guidelines for institutions to follow for students who withdraw (officially or unofficially). The policy listed below applies to students who officially and unofficially withdraw from the University.

Federal student aid recipients who begin attending classes during a semester, who cease attending or performing academic activities prior to the end of the semester, and never complete an Official Withdrawal Form are considered by the federal government to have Unofficially Withdrawn. The University will consider the Unofficial Withdrawal date to be the midpoint of the semester (unless documentation exists of an earlier date of academic activity by the student).

When a federal financial aid recipient withdraws (officially or unofficially) after attending at least the first class day, the University will return, and the financial aid recipient will be required to repay a prorated portion of funds received based upon a federally required calculation (see Return of Title IV Funds section below). The Student Financial Aid Office is required to calculate the amount of federal Title IV financial aid students have earned and the amount that is unearned. The unearned portion of Title IV financial aid must be returned to the appropriate financial aid programs according to federal and institutional guidelines.

Students who withdraw on or before the 60% point of the semester will have a percentage of their financial aid calculated as earned and unearned. If a student is enroll beyond the 60% of the semester, all financial aid is considered earned. The percentage of the period that a student remains enrolled is determined by dividing the number of calendar days the student attended by the number of days in the semester or term. Breaks of five (5) or more days are excluded from the calculation.

Example: If there are 117 days in the semester, you withdraw on day 25 your earned and unearned financial aid would be calculated as follows:

$$\frac{\text{Calendar days completed in the period of enrollment}}{\text{Total calendar days in the period of enrollment}} = \frac{25 \text{ days}}{117 \text{ days}} = 21.4\% \text{ earned percentage}$$

(Excluding scheduled breaks of 5 days or more)

If University records show a federal student aid recipient never attended a class and/or never performed an academically related activity for a semester or term, then the recipient never established eligibility for any funds that may have been disbursed for the semester. In addition, any student aid recipient who withdraws, drops all classes prior to the first day of class for a semester did not establish eligibility for any aid funds that may have been disbursed for that semester or term. In either case, the student aid recipient must repay the entire amount of aid disbursed for that semester or term.

If a student did not receive any federal student aid but did receive other types of aid funds, and subsequently officially withdraws, refunds or repayments will be based upon the University's refund policy.

When the amount of Title IV funds disbursed is greater than the amount of the Title IV funds earned by the student, a return of Title IV funds is necessary. Both the University and the student are responsible for returning a percentage of the unearned aid.

The Unearned Amount of aid must be returned to the applicable Title IV aid programs in the following order:

1. Unsubsidized Federal Loan
2. Subsidized Federal Loan
3. Federal Perkins Loan
4. Federal PLUS Loan
5. Federal Pell Grant
6. Academic Competitiveness Grant (ACG)
7. National Smart Grant (SMART)
8. Federal Supplemental Educational Opportunity Grant
7. Other Title IV Aid Programs

If the student is required to repay funds through the federal grant program, the student will be required to return no more than 50% of the federal grant amount that was originally received. If a balance is due the University, a bill will be sent to the student's permanent home address and will be due upon receipt.

With the exception of any amount owed to the school, students and/or parents who are required to return a portion of all of their loan proceeds, are allowed to repay the unearned amount according to the terms of the loan.

Students who are withdrawn from the University must complete Exit Counseling. The student may complete Exit Counseling in The Student Financial Aid Office or on-line at [www.ncat.edu](http://www.ncat.edu). Select financial aid, Direct Loan and then Exit Counseling.

Note: The information contained in this section is subject to change, without notice, in order to comply with federal, state, or university requirements.

#### WITHDRAWAL FROM COURSES

In order to receive financial credit for withdrawal from courses, a student must withdraw from course(s) within the official "add/drop" period. Students are financially liable for all courses that they are registered in after the last day to drop with a refund.

THE UNIVERSITY RESERVES THE RIGHT TO INCREASE OR DECREASE ALL FEES AND CHARGES, AS WELL AS ADD OR DELETE ITEMS OF EXPENSE WITHOUT ADVANCE NOTICE AS CIRCUMSTANCES IN THE JUDGMENT OF THE ADMINISTRATION MAY REQUIRE.

#### SUMMER SCHOOL CHARGES PER CREDIT HOUR IN-STATE UNDERGRADUATE

No. of Credit	Tuition	Other Required Fees	Total
1	\$131.00	\$80.40	\$211.40
2	\$262.00	\$135.80	\$397.80
3	\$393.00	\$191.20	\$584.20
4	\$524.00	\$246.60	\$770.60
5	\$655.00	\$302.00	\$957.00
6	\$786.00	\$357.40	\$1,143.40
7	\$917.00	\$412.80	\$1,329.80
8	\$1,048.00	\$468.20	\$1,516.20
9 or more	\$1,179.00	\$523.60	\$1,702.60

#### OUT-OF-STATE UNDERGRADUATE

No. of Credit	Tuition	Other Required Fees	Total
1	\$569.00	\$80.40	\$649.40
2	\$1,138.00	\$135.80	\$1,273.80
3	\$1,707.00	\$191.20	\$1,898.20
4	\$2,276.00	\$246.60	\$2,522.60
5	\$2,845.00	\$302.00	\$3,147.00
6	\$3,414.00	\$357.40	\$3,771.40
7	\$3,983.00	\$412.80	\$4,395.80
8	\$4,552.00	\$468.20	\$5,020.20
9 or more	\$5,121.00	\$523.60	\$5,644.60

#### IN-STATE GRADUATE

No. of Credit Hrs.	Tuition	Other Required Fees	Total
1	\$185.00	\$80.40	\$265.40
2	\$370.00	\$135.80	\$505.80
3	\$555.00	\$191.20	\$746.20
4	\$740.00	\$246.60	\$986.60
5	\$925.00	\$302.00	\$1,227.00
6	\$1,110.00	\$357.40	\$1,467.40
7	\$1,295.00	\$412.80	\$1,707.80
8	\$1,480.00	\$468.20	\$1,948.20
9 or more	\$1,665.00	\$523.60	\$2,186.60

#### OUT-OF-STATE GRADUATE

No. of Credit Hrs.	Tuition	Other Required Fees	Total
1	\$633.00	\$80.40	\$713.40
2	\$1,266.00	\$135.80	\$1,401.80
3	\$1,899.00	\$191.20	\$2,090.20
4	\$2,532.00	\$246.60	\$2,778.60
5	\$3,165.00	\$302.00	\$3,467.00
6	\$3,798.00	\$357.40	\$4,155.00
7	\$4,431.00	\$412.80	\$4,843.80

8	\$5,064.00	\$468.20	\$5,532.20
9 or more	\$5,697.00	\$523.60	\$6,220.60
Boarding and Lodging - (Double Occupancy) – \$1,440.60			

**DETAIL OF FEES, DEPOSITS AND CHARGES**

	<b>Per Semester</b>	<b>Per Year</b>
<b>Required Fees - N.C. Student Tuition</b>		
Tuition	\$1,735.00	\$ 3,470.00
Other Required Fees	<u>2,763.16</u>	<u>5,526.32</u>
Total – N.C. Day Student*	\$4,498.16	\$ 8,996.32
<b>Boarding and Lodging</b>		
Board and Lodging	\$3,630.05	\$ 7,260.10
Reserve for Construction and/or Renovation of Dormitories	\$ 35.00	\$ 70.00
Mail Box Key (Non-Refundable)	<u>25.00</u>	<u>50.00</u>
Total Boarding and Lodging	\$3,690.05	\$ 7,380.10
Total N.C. Boarding and Lodging Student	\$8,128.21	\$ 16,256.42
Out-of-State Student Tuition	\$8,215.00	\$ 16,430.00
Other Required Fees	<u>\$2,763.16</u>	<u>\$ 5,526.32</u>
Total Out-of-State Student*	\$10,978.16	\$ 21,956.32
Boarding and Lodging	<u>\$3,630.05</u>	<u>\$ 7,260.10</u>
Total Out-of-State Boarding and Lodging	\$14,608.21	\$ 29,216.42

\*In-state graduate students should add \$537.50 to the per semester totals and \$1,075.00 to the per year totals. Out-of-state graduate students should add \$360.00 to the per semester totals and \$720.00 to the per year totals.

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## STUDENT FINANCIAL AID

<http://www.ncat.edu/admissions/financial-aid/fin-aid-staff.html>

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The Office of Student Financial Aid makes every effort to assure that no qualified student will be denied the opportunity to attend because of a lack of funds. Financial aid is funds awarded to assist students in covering their educational expenses without regard to a student's race, religion, ethnicity, national origin, gender, or disability. The University provides financial aid for students from four basic sources: grants, scholarships, loans, and employment.

The University student aid funds are administered in conjunction with a nationally established policy and philosophy of financial aid for education. The basis of this philosophy is the belief that parents are the primary and responsible resource for helping to meet educational costs, and financial aid is available for filling the gap between the student's resources and expenses. We understand that funding your education is a significant financial investment for you and your family. The Office of Student Financial Aid is available to assist you in providing options to secure funding to attend the University.

The amount of the contribution expected from parents is related to consideration of a family's net income, number in household, number in college and other financial information. The federal methodology is used to determine the student's and parents' expected family contribution (EFC). In order to be considered for federal, state and some institutional and private assistance, students must complete the Free Application for Federal Student Aid (FAFSA). Students are encouraged to apply online by the priority date of December 1<sup>st</sup> each year at [www.fafsa.ed.gov](http://www.fafsa.ed.gov).

The University utilizes the "packaging concept" for financial aid. Students who apply early with great need may expect assistance through a variety of sources, which may include loans, employment, scholarship and/or grants.

### Typical Sources of Financial Aid

Federal Pell Grant

Federal Supplemental Educational Opportunity Grant (SEOG)

Federal Work-Study Program

State Tuition Grant (Need Based)

Campus Based Grant

Federal Direct Student Loans

Federal Direct Parent Loans to Undergraduate Students (PLUS)

Detailed information pertaining to federal and state programs may be found on the web at

<http://www.ncat.edu/admissions/financial-aid/index.html>.

The University offers several types of Departmental and Institutional Scholarships. The majority of these scholarships are administered within the academic and athletic departments. Students interested in these scholarships should contact the academic departments or respective athletic coach.

A student seeking consideration for financial assistance must submit the Free Application for Federal Student Aid to the Federal processor. We encourage you and your parent to use the IRS Data Retrieval option when completing the FAFSA to download IRS data into the FAFSA. You should submit copies of income information or other documents, if requested.

A student who completes the Free Application for Federal Student Aid will be considered for all financial assistance at the University for which he/she is eligible provided funding is available. The priority deadline to file your FAFSA is December 1<sup>st</sup>. Students attending summer sessions must complete a summer school application generally available in mid-March.

An award will not be made until a student has been admitted to the University. Therefore, it is important that the admission process be completed as soon as possible. Any student who is admitted to the University as a "Special or Non-Degree" student is not eligible to receive financial assistance unless he/she is working on completing "Teacher Certification".

*Graduate Students.* A graduate student who applies for financial aid may be considered for loan assistance and Federal Work Study through the Office of Student Financial Aid. Information about graduate assistantships and fellowships may be obtained from the Graduate College Office or the academic department. To be considered and remain eligible for federal financial assistance, a graduate student must be admitted into a degree seeking program and maintain a 3.0 or higher cumulative grade point average and earn at least 67% of total attempted courses.

### Information about Other Financial Aid Programs

A student is encouraged to apply for sources external to the University. Any award from an external source must be reported to the Office of Student Financial Aid and is included as a part of the student's financial aid package. A student may be eligible for assistance from the following programs:

1. *The University of North Carolina Need Based Grant.* Grant funding is available to North Carolina residents who enroll at least half-time at one of the 16 campuses of the University of North Carolina system. The award amount varies. Eligibility is based on a calculation of need, using income data from the Free Application for Federal Student Aid.
2. *North Carolina Education Lottery Scholarship (NCELS).* Grant funds available to North Carolina residents who enroll at least half-time as an undergraduate student. The award amount varies. Eligibility is based on data calculated from the FAFSA.
3. *Vocational Rehabilitation.* Grants may be provided to students who have a mental or physical disability that is an impediment to employment. The amount of the grant is based on financial need and the type of program in which the student is enrolled. North Carolina students should contact the Vocational Rehabilitation Office nearest the student's home or the North Carolina Division of Vocational Rehabilitation Services in Raleigh, NC.

4. *North Carolina Veterans' Scholarship.* A four-year scholarship at an approved school may be awarded to children of certain class or category of deceased, disabled, combat or POW/MIA veterans. The veteran was a legal resident of North Carolina at the time of entry into the armed forces or the child must have been born and resided in North Carolina continuously since birth. Interested students should contact the North Carolina Division of Veterans Affairs in Raleigh, NC.
5. *Rehabilitation Assistance for Visually Handicapped.* Grants may be provided to full-time North Carolina residents who are blind or visually impaired. Students must attend a North Carolina post-secondary institution. The amount of assistance is based on need. Interested students should contact the Chief of Rehabilitation Services, Division of Services for the Blind in Raleigh, NC.
6. *ROTC Scholarships.* Air Force ROTC and Army ROTC scholarships are available on a competitive, merit basis to interested students. Interested students should contact the ROTC Offices on campus.
7. *The Quiester Craig Scholarship Fund.* An anonymous benefactor endowed this fund to provide academic scholarships for students majoring in Accounting. Named in honor of the School of Business and Economics' past Dean, Dr. Quiester Craig, the recipients are determined by the Dean of the School of Business and Economics in consultation with the Chairman of the Accounting Department.
8. *Sigmund Sternberger Scholarships.* Sigmund Sternberger scholarships are available to assist full-time undergraduate Guilford County students attending the University.
9. *The C.M. and M.D. Suther Scholarship Program.* This award is available to a full-time North Carolina resident undergraduates with a demonstrated financial need. The scholarship can be made either to a freshman who graduated in the top 25% of his/her high school graduating class or to an upper-class student with an academic average of at least a 3.0 cumulative grade point average. Only one award is made each year and is nonrenewable. The Director of Student Financial Aid chooses the recipient.
10. *Dr. A.P. and Frances Dickson Scholarships.* The A.P. Dickson scholarship is awarded annually to a full-time undergraduate student who currently resides in Hoke County, North Carolina. The Director of Student Financial Aid chooses the recipient on the basis of academic standing and financial need. The award may be renewed and vary in amount according to income available from the Trust.
11. *James Lee Love Scholarship.* The James Lee Love Scholarship is awarded annually to a full-time North Carolina resident undergraduate student. The recipient is selected by the Director of Student Financial Aid on the basis of academic standing and financial need. Awards are nonrenewable and vary in amount according to income available from the Trust.
12. *North Carolina Agricultural and Technical State National Alumni Scholarship.* The North Carolina Agricultural and Technical State University National Alumni Scholarship is a four-year scholarship awarded to four entering freshmen. The alumni chapters distribute the applications and other criteria to the area high schools. Applications may also be obtained from the Office of Student Financial Aid. To be considered for the scholarship, the applicant must have a 3.0 cumulative grade point average and a minimum SAT score of 1000 or a minimum ACT score of 24. The filing deadline for the scholarship application is January 15<sup>th</sup> of each year. The recipient must maintain at least a 3.00 cumulative grade point average each semester for continued eligibility. Interested students should contact the Office of Student Financial Aid or any N.C. A&T State University Alumni Chapter.
13. *UNC Campus Scholarship.* The UNC Campus Scholarship is intended to provide assistance to a diverse group of students at N.C. A&T State University. This scholarship is used to attract an academically prepared group of students, recruit a diverse group of students to the university and to retain current students. This scholarship will be used after all other need-based aid for which the student is also eligible has been included in the student's financial aid package. Some of the funds will be used for merit and retention not considering need. The total scholarship award under the program shall carry a maximum value not to exceed \$3,000.

#### **SATISFACTORY ACADEMIC PROGRESS**

The Higher Education Amendment Act of 1965, as amended, mandates institutions of higher education to establish a minimum standard of "Satisfactory Academic Progress" for students receiving federal financial aid. North Carolina A&T State University makes its standard applicable to all federal, state and some institutional funds. The satisfactory academic progress policy applies to all terms regardless of whether financial aid was received. Satisfactory academic progress will be evaluated for all students (full or part-time) annually (at the end of each spring semester). Students re-admitted under the "five year rule" must also meet the Satisfactory Academic Progress standards to receive financial aid.

#### **Undergraduate SAP Requirements**

To ensure Satisfactory Academic Progress (SAP) students must meet all of the following standards:

- Minimum cumulative grade point average (GPA) – 2.0 cumulative gpa
- Minimum completion standard for attempted credit hours – must earn .67% of attempted hours
- Maximum time frame for degree completion must not exceed 150% of attempted hours

#### **Graduate and Doctoral SAP Requirements**

All graduate and doctoral students must maintain the following minimum requirements to be in compliance with SAP:

- Must have a cumulative grade point average of 3.0 or higher

- Must earn .67% of attempted hours
- Must not exceed 150% of hours required for degree completion

### **Completion Standard for Attempted Credit Hours**

Students who receive financial aid must successfully complete a minimum of .67% of all attempted hours. If the number of completed hours drops below .67%, the student will no longer be eligible for financial aid. Attempted hours include all hours attempted at the University and transfer hours, whether or not the student earns a grade or receives credit. Successful completion of a course means that the students must obtain a grade of A, B, C or D excluding a grade of D for a graduate or doctoral student). Courses with grades of F, I, U and W will not qualify in meeting the minimum standard.

The successful completion of a course for a Graduate or Doctoral student is defined as an A, B, P and IP.

To calculate .67%, multiply the total number of attempted hours by .67 (rounded downward to the nearest whole number). As an example if a student attempts (registered for) 30 credit hours in an academic year, he or she must complete a minimum of 20 credit hours ( $30 \times .67 = 20$ ) in order to ensure SAP for the year with a 2.0 cumulative gpa.

### **Maximum Time Frame**

The number of credit hours a student attempts may not exceed 150% of the number of credit hours required for graduation in his or her program of study, as published in the University Bulletin. If the published number of hours required for graduation is 124, a student may not attempt more than 180 credit hours ( $120 \times 1.5 = 180$ ) and continue to receive financial aid. All periods of enrollment must be considered, even those for which the student did not receive financial aid as well as hours transferred from another school. If the number of attempted hours reaches 150% of the hours required for graduation, the student will no longer be eligible for financial aid.

### **Second Degree**

Students who have already earned a bachelor's degree and are pursuing another undergraduate degree must submit a completed Second Degree Form. Second-degree students cannot exceed the aggregate loan limit for an undergraduate student. Second-degree students must maintain a 2.0 annually and pass .67% of the hours attempted.

### **Teacher Certification**

Students must maintain a 2.0 grade point average annually and pass the required number of hours as all other students.

### **Dual Degree/Double Major**

Students must maintain progress in all degrees and as stated above. Students who are seeking a dual degree, must be maintaining SAP prior to declaring their dual/double degree and maintain a 2.0 cumulative gpa.

### **Withdrawal**

A"W" grade which is recorded on the student's transcript will be included as credits attempted and will have an adverse effect on the student's ability to maintain satisfactory academic progress. Students who officially withdraw from the University must make up the deficit hours and are encouraged to attend summer school.

### **Incomplete (I) Grade**

An incomplete grade indicates that a student has not finished all course-work required for a grade and is included in the cumulative credits attempted. An incomplete will count toward attempted hours but not as hours passed until a final grade is posted in the Registrar's Office.

### **Repeated Courses**

A student who has received a failing grade in a required course at this University must repeat and pass the course unless otherwise indicated. Students (undergraduate and graduate) may only receive federal financial aid for one repetition (repeat) of a previously passed course. Undergraduate students who have already passed a course with a grade of a D or better may only repeat the class one additional time and receive financial aid for that course. All repeated courses are included in the total attempted hours for SAP evaluation.

### **Change of Major**

A student may change from one major to another during attendance at the University. Students who change from one major to another are still expected to maintain satisfactory academic progress and complete the course work within the time frame or hours limitation stated unless an appeal is approved. All attempted hours from a prior major are included in the total attempted hours.

### **Audited Courses**

Courses audited do not count as either attempted or earned hours.

### **Hours Enrolled**

The number of credit hours in which the student is enrolled on the day following the published last day to add/drop a class will be used as official enrollment for financial assistance purposes; full-time status is 12 or more hours. If a student withdraws from classes after the last day to add/drop a course, the minimum number of hours to be earned in one academic year may not be met.

Readmitted students will be reviewed on their previous academic records in order to determine eligibility for assistance, whether or not financial aid was received. Re-admitted students not maintaining SAP must submit a letter of appeal.

Students who have been placed on Academic Suspension or Dismissal from the University must meet the Satisfactory Academic Policy (SAP) once they are re-admitted. Re-admitted students are not automatically eligible for Financial Aid, if they do not meet the standard, they have an option to submit an appeal.

#### **Financial Aid Termination**

Students who are not meeting the Satisfactory Academic Progress standards are not eligible for further financial aid including Summer I, Summer II and Dual sessions unless the student was granted continuation from the Spring semester and allowed a probationary period for the summer session. Students who are placed on probation for the summer may be eligible for financial assistance. Students will be notified by Office of Student Financial Aid of their financial aid termination at the end of the spring semester through a letter to their permanent home mailing address and to their University e-mail account.

Students whose financial aid is terminated must remove their academic deficiencies or have an appeal granted before their aid can be reinstated. Financial aid may be affected for students who withdraw from a class or classes after the add/drop period, receives all "F"s" for the semester or receive a grade of "Incomplete".

#### **Conditions for Reinstatement**

Students who are denied federal and/or state financial aid for failure to meet the SAP standards are advised by the Office of Student Financial Aid of their right to appeal the decision. Students may appeal in writing to the Office of Student Financial Aid if they had extenuating circumstance(s) that led to their unsatisfactory academic progress. The student will be notified in writing of the decision. If the student is not satisfied with the decision, then the final option is to appeal to the Financial Aid Appeals Committee.

Any student whose financial aid has been terminated may reestablish satisfactory academic progress by any of the following methods:

- Enroll in a course or courses for Summer I, Summer II and/or Dual Session.
- Repeat courses in which a grade of F was earned.
- Satisfy requirements for all incomplete grades.

#### **Appeal Procedure**

Students not meeting Satisfactory Academic Progress may appeal for consideration of financial aid. To appeal for the reinstatement of financial aid eligibility, students should complete and submit the Satisfactory Academic Progress appeal form to the Office of Student Financial Aid indicating the extenuating circumstance(s) (i.e. personal illness, injury, medical problems, undue hardship, death of parent or immediate family member, or other special circumstances) that may have prevented the student to perform at his/her academic best. Students must also submit an Academic Plan of Action from their academic department and complete the required financial literacy modules.

Students will be notified, in writing of the appeal decision. If an appeal is approved, the student must sign a Satisfactory Academic Progress Action Plan with the Office of Student Financial Aid. Students who are granted an appeal and do not meet the requirements are placed on financial aid suspension until satisfactory academic progress is achieved.

It is the student's responsibility to be aware of his or her academic standing each semester. The Office of Student Financial Aid will make every effort to promptly notify students of the cancellation of the award and their academic standings.



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## ADMISSIONS

<http://www.ncat.edu/admissions/undergraduate/>

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### POLICY

North Carolina Agricultural and Technical State University is an equal opportunity institution committed to the equality of educational opportunity and does not discriminate against applicants based on race, color, national origin, religion, gender, age or disability. Unless otherwise specified, admission to all undergraduate curricula is under the jurisdiction of the Director of Undergraduate Admissions.

### Department of Enrollment Management

The Department of Enrollment Management is dedicated in its commitment to provide quality support services to prospective and current students to ensure a seamless recruitment, enrollment, and retention and graduation process at North Carolina Agricultural and Technical State University. The Department of Enrollment Management encompasses the Offices of Undergraduate Admissions, Student Financial Aid, Office of New Student Programs, Transfer Articulation, and Registrar.

### PROCEDURES

#### Office of Undergraduate Admissions

The Office of Undergraduate Admissions upholds the University's high standard to recruit, admit, and enroll domestic and international first-time college bound freshmen and transfer students, who have an outstanding array of academic credentials and extracurricular endeavors; very diverse socioeconomic, geographic, athletic, religious, cultural, racial, ethnic, and international backgrounds; and wide-ranging interests, achievements, experiences, talents, and beliefs. It is the University's experience and judgment that this combination of students will foster a vibrant educational atmosphere and intellectual climate that provides the best educational experience for all students.

North Carolina Agricultural and Technical State University admits students at the beginning of the fall and spring terms. All individuals who desire to enroll as either a freshman or transfer student are encouraged to contact the Office of Undergraduate Admissions at North Carolina Agricultural and Technical State University, Webb Hall, 1601 East Market Street, North Carolina 27411 to obtain information about our admissions procedures and minimum admissions requirements. All interested persons are encouraged to visit our web site at: [www.ncat.edu/admissions/undergraduate/index.html](http://www.ncat.edu/admissions/undergraduate/index.html) or call us at (800) 443-8964.

The domestic freshman application for admissions deadline is June 30 for the fall semester and December 1 for the spring semester. The deadline for domestic transfer students is also June 30 for the fall semester and December 1 for the spring semester. International applicants are required to apply no later than June 1 for the fall semester and October 1 for the spring semester. All applications for admissions received after these deadline dates will be considered on a space available basis. Applications for admission and a non-refundable application fee of \$55.00 can be submitted electronically at: <https://aggiadmissions.ncat.edu/undergraduateadmissions/default.asp> or to the Office of Undergraduate Admissions.

#### Supporting Documentation

Applicants must submit the following supporting documentation along with their application for admissions:

1. Official high school transcript sent from the institution directly to the Office of Undergraduate Admissions
2. Official transcripts, if applicable, from all previously attended college(s) sent from the institution directly to the Office of Undergraduate Admissions
3. Official results of the Scholastic Aptitude Test (SAT) or American College Test (ACT) sent directly from aforementioned testing agency. The University's CEEB code for the SAT report is 5003 and the code for the ACT report is 3060.
4. The submission of a final or complete transcript from the last school attended is the responsibility of the student. Thus, the University reserves the right to withdraw any offer of admission if the applicant fails to satisfy all requirements prior to the beginning of the first semester of enrollment. Students who have not fulfilled minimum admission requirements will be withdrawn from the University.

#### Notice of Admission and Confirmation

The University practices "rolling admission". The Office of Undergraduate Admissions renders an admissions decision once the applicant file is complete and will timely notify the applicant in writing. Applicants who are granted admittance must notify the University by timely completion of their Intent to Enroll by May 1. The Intent to Enroll can be completed online via the admissions portal account at <https://aggiadmissions.ncat.edu/undergraduateadmissions/default.asp> or via phone at (800) 443-8964. Failure to comply with this phase of the admissions procedure may adversely affect the newly admitted student's capability to register for classes. Persons who are not granted admittance to the University are timely notified in writing.

Prior to initial registration, all new freshmen must submit a final official high school transcript that indicates date of graduation, and all transfer students must submit all final official college transcript(s) to the Office of Undergraduate Admissions.

All new freshman and transfer students must comply with the State of North Carolina immunization requirements to enroll at North Carolina A&T State University. Immunization requirements are set by the State of North Carolina. Your state or country of origin may have different requirements. North Carolina law requires the University to suspend students who have not satisfied immunization requirements within 30 days from the beginning of classes for that semester. To obtain more information about the mandatory immunization requirement visit <http://www.ncat.edu/student-affairs/healthservices/medical-records-files/index.html>.

## ADMISSIONS CRITERIA

### Freshman Applicant

An applicant for admission is considered individually in accordance with the following criteria:

1. Evidence of academic achievement and promise with considerable facility in the use of the English language.
2. Complete record from an accredited secondary or preparatory school with graduation based on UNC minimum undergraduate course requirements. **NOTE:** Students may be exempt from these tests if they are at least twenty-one years (21) old at the point of matriculation to the University.
3. Satisfactory scores on the Scholastic Assessment Test or the American College Test. **NOTE:** Students may be exempt from these tests if they are at least twenty-one (21) years old at the point of matriculation to the University.
4. Satisfactory grade point average. **NOTE:** All students must satisfy the University of North Carolina (UNC) minimum admissions requirements to be eligible for admissions.

The aforementioned and subsequent admissions criteria are applied flexibly to assure that individuals with unusual qualifications are not rejected in the admissions process.

**Out of State Capacity:** The University of North Carolina System has a policy that each constituent institution limit the proportion of out-of state students in the entering freshmen class to no more than 18% and North Carolina A&T State University adheres to this policy. The College of Engineering is exempt from this policy. Therefore, academic achievement and SAT/ACT scores must be competitive.

### Minimum Undergraduate Course Requirements

For admittance to all undergraduate programs, all freshman applicants under the age of twenty-one (21) must satisfy the following minimum high school course requirements for admission:

1. English – 4 units
2. Natural Sciences – 3 units: Biological science, Physical science, Science with a laboratory.
3. Social Sciences – 2 units: United States History is required as one of the social sciences.
4. Foreign Language – 2 units of the same.
5. Mathematics – 4 units: Algebra I, Geometry, Algebra II, and one of the following Advanced Mathematics courses:
  - Advanced Functions and Modeling
  - Discrete Mathematics
  - Pre-Calculus
  - Integrated Mathematics IV
  - AP Statistics
  - Essential for College Math
  - AP Calculus A/B
  - AP Calculus B/C

The following courses can be completed during the student's first semester to fulfill the fourth Math requirement but only when taken in concert with the associated lab course. **Both the classroom and lab courses must be presented together to be accepted.**

- MAT 141 Mathematical Concepts
- MAT 142 Mathematical Concepts II
- MAT 143 Quantitative Literacy
- MAT 152 Statistics Methods I
- MAT 167 Discrete Mathematics
- MAT 171 Pre-Calculus Algebra
- MAT 172 Pre-Calculus Trigonometry
- MAT 252 Statistics II
- MAT 263 Brief Calculus
- MAT 271 Calculus I
- MAT 272 Calculus II
- MAT 273 Calculus III
- MAT 280 Linear Algebra
- MAT 285 Differential Equations

**NOTE:** For freshman applicants that attend a non-public high school in North Carolina, the fourth math unit must be comparable to one of the courses listed above and must be approved by the Office of Undergraduate Admissions.

**NOTE:** For out-of-state freshman applicants, the fourth math unit must be comparable to one of the courses listed above and must be approved by the Office of Undergraduate Admissions.

### North Carolina Cooperative Innovative High School Applicants

Student graduating from a North Carolina Cooperative Innovative High School (CIHS) with an associate's degree will have the option to be evaluated using Minimum Admissions Requirements (MAR) or not using MAR. North Carolina A&T State University reserves the right to re-evaluate or rescind admissions to students who choose not to be evaluated using MAR and do not obtain an associate's degree prior to enrollment.

### **Transfer Applicant**

The University accepts qualified students by transfer from other accredited colleges. Applications for admission may be considered if the transfer applicant:

1. is in good standing with the last or current post-secondary institution of attendance and is eligible to return to that institution.
2. has a cumulative grade point average of at least a 2.0 or higher on a 4.0 scale from the transferring post-secondary institution.

Applications from transfer students cannot be considered until all credentials are received from the high school and all other post-secondary institutions previously attended. In order to be exempt from all new freshman requirements, transfer applicants who have attended a regionally accredited post-secondary institution must have earned twenty-four (24) transferable semester hours. Transfer for programs in the College of Engineering requires a 2.5 cumulative GPA and completion of Calculus I.

Transfer student applicants who fall under the following categories may be exempt from submitting high school transcripts and/or standardized test scores:

1. Applicants who are at least twenty-one years (21) old at the point of matriculation to the University.
2. Applicants who have earned the associate of arts (AA) or the associate of science (AS) degree from a North Carolina community college.
3. Applicants who have earned a degree under an articulation agreement.
4. Applicants who have earned twenty-four (24) transferable semester hours from a regionally accredited institution.

Transfer courses with a grade of "C" or higher are accepted as transferable course work. Accepted courses are recorded to the student's academic record, but grade points are not calculated on the transferred courses. The university does not accept transfer credit from challenge examinations or for course work where grades of P/F have been given. The maximum number of transferable credits is ninety (90) semester hours from a four-year institution and sixty-four (64) semester hours from a two-year institution. Students who have attended both a two-year and four-year institution can transfer in a maximum of ninety (90) semester hours.

The University of North Carolina System and the North Carolina Community College System have designed a Comprehensive Articulation Agreement (CAA) to facilitate the transfer of courses to most four-year colleges and universities in North Carolina. To be eligible for transfer credit under the CAA, the transfer student applicant must satisfactorily complete the courses with a grade of "C" or better. The CAA enables NC community college graduates of two-year Associate in Arts (AA) and Associate in Science (AS) degree programs who are admitted to constituent institutions of the university of NC to transfer with junior status. To obtain more information about the CAA visit: <http://www.ncat.edu/admissions/transfer-students/transfer-credits/index.html>. NC Community College transfer students who graduate with an Associate of Applied Science (AAS) who satisfactorily complete the degree program with a grade of "C" or better in all courses that are designated for college transfer will receive a course-by-course evaluation. Articulation of AAS degree programs will be handled on a bilateral articulation agreement rather than on a statewide basis. Transfer applicants who are not covered by the above stated policy are referred in the next section on special students.

For specific requirements, freshmen and transfer applicants should refer to the respective schools/colleges section and to departmental listings. However, the University reserves the right to change admission standards prior to the semester the student plans to enroll.

### **International Applicant**

In addition to the general freshman or transfer admissions requirements, international applicants are required to provide proof of English language proficiency. English language proficiency can be proven via one of the following options:

- Test of English as a Foreign Language (TOEFL);
- International English Language Testing System (ILETS);
- Scholastic Aptitude Test (SAT-1);
- American Language Academy (ALA);
- English Composition I and II; or
- Attend school in a country with English as the official language and language of instruction.

### **Special Students**

Special students are those who are not candidates for degree at the present time. This category includes (1) visiting students and (2) persons who have not enrolled for one academic year and are ineligible for admission as a transfer student.

The University welcomes into this admission status, enrollment of persons who are pursuing degrees elsewhere, who possess a baccalaureate degree, or who desire to earn prerequisites for graduate work. Such students may register upon the presentation of a signed statement from the appropriate official of his/her institution, or certifying agency, specifically listing and approving the courses to be taken. Such enrollment does not constitute regular admission to the University.

To apply for this category of admission, the applicant must submit the application for admissions, the \$55 application fee and provide supporting documentation as appropriate. Transcripts from all colleges and universities attended are required if the applicant plans to enter degree-seeking status at a later date.

Visiting students must submit a transient course study form from the home institution that has been approved by the department chairperson, school or college dean and the University Registrar. All others must provide evidence of readiness to

pursue the courses desired and a statement of objective and purpose related to the request for special student admission. Such persons may register for no more than 12 semester hours per academic term and may remain in this category until they have attempted a total of 24 semester hours.

Persons who are ineligible for admission as a transfer student must complete one semester of full-time study or its equivalent at the University to be eligible to petition the Office of Undergraduate Admissions to be admitted to the University as a regular degree seeking candidate on the basis of his/her academic accomplishments. All communications must be submitted to the Director of Undergraduate Admissions.

## **OTHER POLICIES AND PROCEDURES**

### **Submittal of Credentials**

All applicants must submit their official credentials to the Office of Undergraduate Admissions before the beginning of the semester in which they plan to enroll. The credentials may include official high school transcripts, college transcript(s) and other appropriate documents to complete the applicant's application for admissions file.

### **Campus Visits**

The Office of Undergraduate Admissions hosts campus tours for prospective students Monday through Friday at 10:00 a.m. and 2:00 p.m., and on select Saturdays at 9:00 a.m. only. For additional information about campus tours, including how to make a reservation, please visit <http://www.ncat.edu/admissions/undergraduate/visit-us/index.html> or call (800) 443-8964.

### **Permission to Take Courses At Another Institution**

North Carolina Agricultural and Technical State University undergraduate degree-seeking students who are in good standing (*cumulative grade point average of a "C" or higher*) may submit an online request through their Aggie Access Online account. The online request is located under the *Student Tab*. In order to receive transfer credit for coursework completed at another institution, a minimum grade of "C" is required on all approved undergraduate coursework and the institution has to be regionally accredited. Only the credit hours will transfer to North Carolina Agricultural and Technical State University and not the grade(s) earned. The University does not accept credit from proficiency examinations or grades of pass or fail (P/F). If you have any additional questions and/or concerns, the Office of Transfer Articulation located in 107 Dowdy Building.

### **Regulations for Veterans and Children of Deceased and Disabled Veterans**

Veterans and children of deceased and disabled veterans must meet regular admission requirements. All persons who have completed a minimum of three years active duty service will be considered transfer students in the admissions process. Preliminary application for any educational benefits due them should be made to the nearest regional office of the Veterans Administration well in advance of the desired admission date in order that the necessary information and documents may be obtained. Veterans who have a minimum of one year of active service may receive credit for Health Education, Physical Education, and military science electives. A copy of the DD-214 must be submitted along with your application for admission to the Office of Undergraduate Admissions. Applicants should submit relevant military transcripts for evaluation.

### **RESIDENCE STATUS FOR TUITION PURPOSES**

In compliance with state law effective February 20, 2017, the University of North Carolina system now requires undergraduate students to request a residency classification from the new Residency Determination Service (RDS). RDS is the entity responsible for all new classifications of residency in North Carolina.

The specific requirements for establishing residency for tuition purposes and for eligibility for State financial aid are prescribed by state law. A North Carolina resident for tuition purposes (and for State financial aid consideration) is a person, or a dependent person (dependent according to IRS tax code – not the FAFSA definition of dependency), whose parent or legal guardian has established and maintained legal residence in North Carolina for at least 12 months.

Residence in North Carolina must be legitimate and be a permanent situation rather than just for the purpose of maintaining a residence prior to enrollment at an institution of higher education.

Under North Carolina law, to qualify for in-state residency, you must show that you:

- Have established your legal residence (domicile) in North Carolina, and
- Have maintained that domicile for at least twelve (12) consecutive months before the beginning of the term, and
- Have a residentiary presence in the state, and
- Intend to make North Carolina your permanent home indefinitely (rather than being in North Carolina solely to attend college)

Persons not meeting the 12-month legal residence requirement may be classified as North Carolina residents for tuition purposes only if they fall within one of the limited "exception" categories authorized by the North Carolina Legislature. All others are ineligible for classification as a North Carolina "resident for tuition purposes" and will be charged out-of-state tuition and not be given consideration for State financial aid. To learn more about residency and complete a determination go to [www.NCresidency.org](http://www.NCresidency.org).

## OFFICE OF NEW STUDENT PROGRAMS

[www.ncat.edu/student-affairs/newstudents/](http://www.ncat.edu/student-affairs/newstudents/)

The Office of New Student Programs strives to assist new students and their families in making a successful academic and social transition to the university setting by providing accurate, relevant, and timely information that focuses on the resources the university offers as well as programming that impacts student success.

In order to achieve our primary goal of assisting first-year students in making a successful transition, the Office of New Student Programs utilizes a theoretical orientation and transitional programs that focuses specifically on college student development while incorporating best practices and research findings in the fields of orientation, transition, retention, and academic success.

For more information on the Office of New Student Programs, please visit Murphy Hall, Suite 102 or call (336) 256-2212.

### **Core Values**

Student Success | Dedicated to the success of each individual

Building Community | Encouraging responsibility and creating a sense of belonging

Collaboration | Strengthening our work by building internal and external relationships

Leadership | Developing the leader within each of us

Commitment to Excellence | Pursuing our work with professionalism, innovation, scholarship, and integrity

### **Operational Units**

- I. New Student Orientation
  - a) Spring and Summer
- II. Transitional Programs
  - a) New Student Institute
  - b) New Student Convocation
  - c) Student Success Series
  - d) Welcome Week
- III. Parent and Family Programs
  - a) Family and Friends Weekend
  - b) Parent /Guest Orientation
- IV. NSP Student Leaders Program
  - a) Aggie Success Leaders
  - b) Tau Sigma National Honors Society (for Transfer Students)

### **Publication**

- a) Aggie Journey – Resource Booklet

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## ACADEMIC INFORMATION AND REGULATIONS

<http://www.ncat.edu/registrar/>

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Each student is responsible for informing himself or herself of the academic regulations and requirements set forth in this Bulletin and for revisions of same as posted on campus bulletin boards or released in other official University publications. Failure to meet the requirements or comply with the regulations because of a lack of knowledge thereof does not excuse the student from meeting the academic regulations and requirements.

A student's program of study must be approved by his or her advisor, his or her academic department chairperson or a member of the faculty in his or her major department at the time of registration. Advisors will endeavour to give effective guidance to students in academic matters and to refer students to those qualified to help them in other matters. However, the final responsibility for meeting all academic requirements for a selected program rests with the student.

### ADVANCED PLACEMENT

North Carolina A&T State University participates in the [Advanced Placement Program](#) (AP) offered by the College Board to provide greater flexibility and opportunity for high school students to proceed with their education. Students must submit to the Office of Undergraduate Admissions an official Student Score Report from the College Board for scores to be considered. North Carolina A&T State University awards college credit for qualifying AP examination scores as determined by the Director of Transfer Articulation, in consultation with the chairperson of the appropriate academic department. Acceptance of AP tests and scores is subject to change without notice. AP credit is not granted if the student has already received transfer credit for the course or earned credit for the course at North Carolina A&T State University.

<b>AP EXAMINATION</b>	<b><u>SCORE REQUIRED</u></b>	<b><u>HOURS GRANTED</u></b>	<b><u>UNIVERSITY COURSES SATISFIED</u></b>
Art History	3	3	ART 124
Biology	3	4	BIOL 100
Calculus AB	3	4	MATH 131
Calculus BC	3	8	MATH 131,132
Chemistry	3	4	CHEM 106, 116
	4	8	CHEM 106, 116 CHEM 107, 117
Comparative Government & Politics	3	3	POLI 310
Computer Science A	3	3	COMP 120
English Language & Composition	3	3	ENGL 100
	4	6	ENGL 100, 101
English Literature & Composition	3	3	ENGL 100
	4	6	ENGL 100, 101
European History	3	6	HIST 308, 309
German Language & Culture	3	6	GERM 101, 102
Latin	3	6	Foreign Language Elective
French Language & Culture	3	6	FREN 101, 102
Environmental Science	3	3	ENVS 201
Macroeconomics	3	3	ECON 201
Microeconomics	3	3	ECON 200
Music Theory	3	6	MUSI 101, 102
Physics 1*	3	6	PHYS 225, 226
Physics C*	3	6	PHYS 241, 242
Psychology	3	3	PSYC 101
Spanish Language & Culture	3	6	SPAN 101, 102
Spanish Literature & Culture	3	6	SPAN 404, 405
Studio Art/Drawing	3	3	Art Elective
U.S. Government & Politics	3	3	POLI 110
United States History	3	6	HIST 104, 105

\*Proficiency exam(s) required to earn credit for corresponding lab courses.

### COLLEGE LEVEL EXAMINATION PROGRAM (CLEP)

#### GENERAL EXAMINATION

North Carolina A&T State University participates in the [College Level Examination Program \(CLEP\)](#) offered by the College Board to provide greater flexibility and opportunity for students to proceed with their education. Students must submit to the Office of Undergraduate Admissions an official transcript from the College Board for scores to be considered. North Carolina A&T State University awards college credit for qualifying CLEP examination scores as determined by the Director of Transfer Articulation, in consultation with the chairperson of the appropriate academic department. Acceptance of CLEP tests and scores is subject to change without notice. CLEP credit is not granted if the student has already received transfer credit for the course or earned credit for the course at North Carolina A&T State University.

<b><u>CLEP Subject Exam</u></b>	<b>Minimum Acceptable Score</b>	<b>Course(s) and Credits Awarded</b>	
English Composition with Essay	50	ENGL 100, 101	6
College Mathematics	50	MATH 101, 102	6
Accounting, Intro.	50	ACCT 221, 222	6
American Government	50	POLI 110	3
American History I 1600-1877	50	HIST 104	3
American History II 1865-Present	50	HIST 105	3
American Literature	50	ENGL 430, 431	6
Biology, General	50	BIOL 100	4
Calculus	50	MATH 112	4
Chemistry	50	CHEM 106, 116, 107, 117	8
College Algebra	50	MATH 101	3
French Language, Level 1	50	FREN 101, 102	6
French Language, Level 2	62	FREN 101, 102, 201, 202	12
German Language, Level 1	50	GERM 101, 102	6
German Language, Level 2	62	GERM 101, 102, 201, 202	12
Spanish Language, Level 1	50	SPAN 101, 102	6
Spanish Language, Level 2	66	SPAN 101, 102, 201, 202	12
Info. Sys. & Computer App.	50	MIS 241	3
Principles of Macroeconomics	50	ECON 201	3
Principles of Microeconomics	50	ECON 200	3
English Literature	50	ENGL 220, 221	6
Human Growth & Development	50	FCS 260 <i>or</i> PSYC 221	3
Psychology, Intro.	50	PSYC 101	3
Sociology, Intro.	50	SOCI 100	3

### **INTERNATIONAL BACCALAUREATE (IB) PROGRAM**

North Carolina A&T State University accepts the [International Baccalaureate \(IB\)](#) offered by the International Baccalaureate Organization to provide greater flexibility and opportunity for high school students to proceed with their education. Students must submit to the Office of Undergraduate Admissions an official transcript from the International Baccalaureate Organization for scores to be considered. North Carolina A&T State University awards college credit for IB examination scores as determined by the Director of Transfer Articulation, in consultation with the chairperson of the appropriate academic department. Acceptance of IB tests and scores is subject to change without notice. IB credit is not granted if the student has already received transfer credit for the course or earned credit for the course at North Carolina A&T State University.

Students who receive the IB Diploma are granted college credit for scores of four (4) or higher on both higher level and standard level examinations. Students who do not receive the IB diploma are granted college credits for scores of five (5) or above on IB higher level examinations only.

### **PROGRAM OF STUDY**

Students should refer to the requirements of his/her academic department or college/school regarding his/her program of study and confer with his/her advisor whenever problems arise. Students are expected to follow the program outlined as closely as possible. This is very important during the first two years when the student is satisfying basic degree requirements and prerequisites for advanced work.

### **DECLARATION OF A MAJOR**

Most students declare a major when accepted into the university or during orientation. Those students who enter the university with an "undecided" major must declare a major before completing 45 semester hours. Students should contact the department of the intended major for information. Students will not be allowed to register for the next semester if a major is not declared.

### **CHANGING A MAJOR**

Students planning to change their major should do so prior to the start of the next registration period. This will allow time for the assignment of a new advisor and to receive proper advising in the department of the new major. The proper forms on which to apply for such a change can be obtained from the Office of the Registrar. When such a transfer is made, students must satisfy the current academic requirements of the school/college and/or department to which the student is transferring.

### **DECLARATION OF A MINOR**

Effective Fall 2010, students who have completed a minimum of 24 semester hours with a minimum GPA of 2.00 may elect to declare a minor. Any student wishing to declare a minor should do so in consultation with his or her academic advisor in the major field of study prior to consultation with an advisor in the minor field of study. To declare a minor, a student must have the approval of the department chairperson and dean of the minor field of study as well as the department chair and dean of the major field of study. The declaration or change of a minor must be completed in the Office of the Registrar. An academic minor consists of at least 18 credits in an area apart from the major concentration of the student's baccalaureate degree program; a minimum of

12 of the 18 minor credits must be in courses at the 200-level or above; and a student may have no more than two minors regardless of the student's major. The minor will be printed on the official transcript, but not on the diploma.

### **REGISTRATION**

Dates for advising and registration periods for each semester are published in the University's Academic Calendar, which is on the university's website. It is the student's responsibility to be familiar with all advising and registration periods.

All students are required to meet each semester with their advisor for assistance with course selection and to obtain their registration PIN.

Any student who is enrolled in the University during the registration period is expected to register for the next semester during the period designated for this purpose. All students, by registering for classes, assume the responsibility for familiarizing themselves with and abiding by all University regulations, rules, policies and procedures.

### **OFFICIAL REGISTRATION**

In order for a student to receive credit for a course, he or she must be properly registered in that course. This means that the student must have gone through the registration process as outlined by the University. The payment of tuition and fees is part of the registration process. No student is eligible to attend classes until all tuition and fees have been paid.

### **LATE REGISTRATION**

Students who register for classes during the late registration period, as published in the University Calendar, will be assessed a late registration fee of \$50.00. This fee is not assessed to students who registered prior to the late registration period and who are making schedule adjustments.

### **AUDITING A COURSE**

Students who intend to register for a course for which they do not want credit may register as audit students. Students are not allowed to change from audit status to credit status, or from credit status to audit status, once the last day to drop/add has passed. Audit registration fees are the same as for credit. Audit students may participate in class activities, but are not required to prepare assignments, or take examinations and will not receive a grade or credit.

### **CLASS CANCELLATIONS**

The University attempts to honor its commitment to provide the classes scheduled for a given term. However, at times, usually due to low enrollment, it may be necessary to cancel a class. In such cases every effort will be made to find an appropriate alternate class for the student.

### **TIME TO DEGREE ATTAINMENT**

A baccalaureate degree at North Carolina Agricultural and Technical State University requires a minimum of 120 semester hours of course work. Students who satisfactorily complete an average of 15 – 16 hours per semester can complete the degree in four years (8 semesters). Factors that may increase the length of time for an individual student to complete a degree include: (1) taking less than the hours advised or averaging fewer than 15-16 credit hours per semester; (2) changing majors frequently; (3) withdrawing, failing, and repeating courses; (4) taking unnecessary or inappropriate courses; (5) adding a second major or a minor; and (6) withdrawing from school. As mandated by the North Carolina General Assembly, students enrolling in more than 140 semester hours for the first baccalaureate degree will be assessed a 50% tuition surcharge on the excess hours.

### **ACADEMIC COURSE LOAD**

For an undergraduate student, a full-time load is defined as 12 – 18 hours per semester or 6 – 7 hours in a five week summer term. Undergraduate students should take from 15 to 18 hours per semester to graduate in four years. To enroll in more than 18 hours in semester, or more than 7 hours in a five week summer term, students must obtain approval from his/her academic department chairperson.

### **DOUBLE MAJOR**

Students who desire to obtain a double major must file a double major form in the Office of the Registrar. Students who have double majors which involve two departments or two schools must satisfy the major requirements for each department or school. To graduate with a double major, students must complete requirements for both majors during the same semester or summer term.

### **PREREQUISITES**

A course which is designated as a prerequisite to another course indicates that the prerequisite is required before taking the next course.

Credit may be granted to indicate acceptable performance in the prerequisite course content by successful completion of standardized tests under the College Level Examination Program (CLEP) or successfully passing an examination adopted or prepared by the department granting the credit.

### **REPETITION OF COURSES**

An undergraduate student may only repeat a course in which they earned a grade of "C-" or lower if it is a prerequisite course requiring a minimum grade of "C", or if a minimum grade of "C" is a requirement in the student's declared major. Students will not receive additional credit hours for repeated courses in which they originally earned a passing grade. Students who do not receive a passing grade in a course may repeat that course. For courses repeated subsequent to the effective date of this policy,



during a student's academic career at the University a student may repeat any number of distinct courses totaling a maximum of sixteen (16) credit hours.

No single undergraduate course may be repeated more than two (2) times to include withdrawals (Ws), for a maximum of three (3) attempts. No single graduate course may be repeated more than (1) one time, to include withdrawals (Ws), for a maximum of two (2) attempts. However, students withdrawing from a course or courses with extenuating circumstances, the Ws will not count in the number of maximum attempts. Extenuating circumstances include serious medical and psychological difficulties and may include military deployment, unanticipated life events, or administrative reasons. All grades received will be recorded on the student's permanent academic record. For repeats of courses subsequent to the effective date of this policy, any undergraduate student who has exhausted their three (3) attempts or any graduate student who has exhausted two (2) attempts, and has not passed a required course in their major field of study will be dismissed from that major. The University may accept transfer credit for undergraduate General Education Core requirement courses.

Undergraduate students can repeat the same course only once for grade forgiveness. On a third attempt, the two (2) most recent grades will be used in computing the GPA.

The student must submit a completed course repeat form to the Office of the Registrar indicating which courses should be considered for grade forgiveness under this policy.

The course repeat for must be submitted no later than the last day of the final examination period during the semester in which the course is being repeated.

Financial aid implications for repeated courses should be discussed with the Office of Financial Aid.

### **COURSE CREDIT BY EXAMINATION**

Credit may be earned by examination for any undergraduate course for which a suitable examination has been adopted or prepared by the department granting the credit. The student receives the grade "CE" and regular credit for the number of hours involved. However, the credit hours are excluded in computing the student's grade point average.

Credit may also be granted for the successful completion of standardized tests under the College Level Examination Program (CLEP) as approved for specific courses by University departments. There is no maximum amount of credit that a student may earn, but a student must complete a minimum of three semesters as a full-time student in residence at the University. Fees for CLEP and other standardized examinations are determined externally, rather than by the University. These credits are treated as transfer credits. Questions about the program may be addressed to the Director of Transfer Articulation or the Director of Counseling Services.

### **Grading System**

Effective for fall 2014, North Carolina Agricultural and Technical State University will implement a plus/minus grading system. If a prerequisite course requires a minimum grade of "C", or if a minimum grade of "C" is a requirement in the student's declared major, a grade of C- will not fulfill the requirement. Grades are assigned and recorded as follows:

<b>Grade</b>	<b>Description</b>	<b>Quality Points</b>
A	Excellent	4.0
A-	Excellent	3.7
B+	Good	3.3
B	Good	3.0
B-	Good	2.7
C+	Average	2.3
C	Average	2.0
C-	Average	1.7
D+	Below Average, but passing	1.3
D	Below Average, but passing	1.0
F	Failing grade	0.0
U	Unsatisfactory failing grade	0.0
I	Incomplete – An "I" becomes an "F" or "U" if not removed within the designated time. An Incomplete is not given merely because assignments were not completed during the semester.	
IP	In Progress	
CE	Credit by examination	
AP	Advanced Placement	
S	Satisfactory passing grade	
AU	Audit	
W	Withdrew	
P	Passing	

### **Standards of Academic Standing**

Effective for fall 2014, to continue at North Carolina Agricultural and Technical State University in good academic standing, undergraduate students must earn a minimum cumulative grade point average (GPA) of 2.00.

Failure to earn a minimum cumulative GPA 2.00 will automatically place the student on **academic probation** during the subsequent semester. (Note: The cumulative GPA earned at NC A&T SU is computed ONLY on the basis of coursework taken at

NC A&T SU; i.e., grades earned on coursework transferred to NC A&T SU are not computed into the GPA at NC A&T SU, and therefore not used to determine academic standing.)

The University, on the recommendation of a student's major academic department, reserves the right to deny enrollment to any student, even if the grade point average meets the minimum standards listed above, if it is apparent from the student's academic record that the student is not making satisfactory academic progress toward meeting the required graduation requirements for their major.

#### **ACADEMIC WARNING**

The continued academic progress of students toward earning a degree in their respective major is important to overall academic success. An academic warning is issued at the end of a semester in which a student fails to earn, as defined by the curriculum of the student's major, a minimum of 67% of cumulative attempted and transferred hours. Students are expected to maintain an awareness of their academic standing and are responsible for knowing whether or not they are on academic warning.

##### **Terms of Academic Warning**

- a. In consultation with their academic advisor or academic advising unit, students on Academic Warning must develop an academic plan of action to accelerate their academic progress toward degree completion. The academic advisor or academic advising unit will retain a copy of the revised academic plan, and provide copies of the plan to the student, the academic unit's retention coordinator and the Office of Enrollment Management for information purposes and for monitoring compliance.
- b. Students on academic warning will not be able to change their class schedule once it has been set by their advisor, without prior approval of their advisor.
- c. Students on academic warning may be advised to enroll in the summer term to accelerate their academic progress toward degree completion. Students who are placed on academic warning and, as defined by the curriculum of the student's major, fail to meet the minimum hours earned towards their declared major will be placed on academic probation.

#### **ACADEMIC PROBATION**

A student will be placed on academic probation if he/she fails to earn a minimum cumulative GPA of 2.00 at the end of the semester. Students are expected to be aware of their academic standing at all times and are responsible for knowing whether or not they are on academic probation.

##### **Terms of Academic Probation:**

- a. Students on academic probation must earn a minimum 2.00 semester GPA each subsequent semester to be eligible to continue to enroll until good academic standing is restored. In consultation with their academic advisor or academic advising unit, students on academic probation must develop an academic plan of action for each semester they are on academic probation. The student, the academic advisor, and the Office of Enrollment Management will receive copies of the academic plan of action for information purposes and for monitoring compliance.
- b. Students on academic probation shall be limited to a maximum of 15 credit hours per semester in the fall and spring semesters. Students on academic probation may enroll in a maximum of 7 credit hours per session during summer school. Students who were placed on academic probation at the end of the spring semester may elect to attend one or more of the summer sessions. The student's probationary status will be removed, if he/she improves their cumulative GPA to 2.00 or above by completing coursework during the summer session. A student who completes coursework during the summer session and fails to earn a minimum cumulative GPA of 2.00 will be placed on academic suspension.

Students are expected to be aware of their academic standing at all times and are responsible for knowing whether or not they are on academic probation.

Students on academic probation must consult with their academic advisor in choosing classes and credit hour loads.

Students who are placed on academic probation and, as defined by the curriculum of the student's major, fail to meet the minimum hours earned towards their declared major or earn a minimum semester GPA of 2.00 will be placed on academic suspension.

#### **ACADEMIC SUSPENSION**

Students who are on academic probation will be placed on academic suspension for one semester if he/she fails to meet the following academic expectations:

- (1) earn a 2.00 semester GPA, or
- (2) earn, as defined by the curriculum of the student's major, a minimum of 67% of cumulative attempted and transferred hours.

Students placed on academic suspension are denied permission to enroll for the next regular fall or spring semester, whichever comes first. Any student who is placed on academic suspension at the end of the spring semester may elect to attend one or more of the summer sessions to remove academic deficiencies. Suspended students may enroll in the summer for a maximum of 7 credit hours per summer session. Students who elect this option must earn a minimum semester GPA of 2.00 during each summer session attended. Failure to earn a semester GPA of 2.00 or higher will result in academic dismissal.

After a one-semester academic suspension, students may apply for readmissions to the University and seek readmission approval by the student's academic department and college/school. Changes of major must be supported by the student's new academic department with approval shown on the change of major form. Students are advised to begin the readmission process/change of major with their academic department and college/school prior to the University's posted application deadline. Students who are readmitted to the University are placed on academic probation for at least one semester. In consultation with their academic advisor or academic advising unit, such students must develop an academic plan of action for each semester they

are on academic probation after suspension. The academic advisor or academic advising unit will retain a copy of the revised academic action plan, and provide copies of the plan to the student, and the Office of Enrollment Management for information purposes and for monitoring compliance.

Suspended students wishing to appeal their academic suspension may appeal in writing to the Dean of their academic unit (for undecided students, the Director for the Center for Academic Excellence). Appeals must be submitted by the readmission deadline as published in the academic calendar. Academic suspension appeals are considered where circumstances beyond a student's control have interfered with the student's academic progress. An appeal of academic suspension should include: a) academic term of academic suspension for which the appeal is being made; b) an explanation of the circumstances that interfered with academic performance; c) supporting documentation of the circumstances that merit the appeal; d) how the circumstances that generated the poor academic performance have been resolved; and e) the student's plans for ensuring satisfactory academic progress in the coming academic semester should the appeal be approved. Academic suspension appeals will be reviewed by the Dean's Office (or, in the case of undecided students, the Director's Office for the Center for Academic Excellence). Students will be notified of the decision of the appeal in writing. If an appeal of academic suspension is approved, the student will return on academic probation after suspension until the student achieves good academic standing.

An academically suspended student who has not been enrolled at North Carolina Agricultural and Technical State University for at least 3 years (consecutive fall and spring semesters) may be eligible for one readmission under the "Three Year Readmission Policy" described below.

### **ACADEMIC DISMISSAL**

Academic dismissal will occur when a student returns after serving the one semester suspension, or a successful appeal of the academic suspension, and fails to achieve a minimum 2.00 semester GPA while on academic probation after suspension. Students who have been academically dismissed cannot enroll at North Carolina Agricultural and Technical State University until they have served a minimum of one (1) academic year dismissal. However, the student may appeal to be considered for readmission to the University. Appeals must be submitted by the readmission deadline as published in the academic calendar. Appeals are to be addressed to the Committee on Admission and Academic Retention in care of the Office of the Provost and Vice Chancellor for Academic Affairs

- a. Students must seek acceptance into an academic department in order to be readmitted after dismissal. If the academic department and major are different from the prior major, the student must complete a change of major form. Either the student's current or new academic department must support the student's appeal and readmission. Students are advised to begin the readmission process with their department and school or college prior to the University's posted readmission deadline.
- b. In consultation with their academic advisor or academic advising unit, students on probation after academic dismissal must develop an academic plan of action for each semester they are on probation. The academic advisor or academic advising unit will retain a copy of the revised academic plan, and provide copies of the plan to the student, and the Office of Enrollment Management for information purposes and for monitoring compliance.

### **VETERANS AND PERSONS ELIGIBLE FOR VETERANS BENEFITS**

Veterans will be certified annually unless otherwise specified (per academic year). Continued certification is based on meeting the university's Academic Standards of Progress as well as the Veterans Administration guidelines. Certification for benefits is not automatic. Students must notify the Certifying Officer of their enrollment plans and the intent to use his/her benefits.

### **QUALITY POINTS**

Quality points are computed by multiplying the number of semester hour credits by 4 for courses in which a grade of A is earned; by 3.7 for a grade of A-; by 3.3 for a grade of B+; by 3 for a grade of B; by 2.7 for a grade of B-; by 2.3 for a grade of C+; by 2 for a grade of C; by 1.7 for a grade of C-; by 1.3 for a grade of D+; or by 1 for a grade of D. Zero (0) quality points are given for a grade of F or U.

### **GRADE POINT AVERAGE**

The grade point average is obtained by dividing the total number of quality points earned by the total number of semester hours included for quality points.

### **COURSE NUMBER AND CLASSIFICATION**

The University uses the department prefix to designate all course offerings. The first digit indicates the classification level of the course. The numbering system is as follows:

- 100-199 – level courses are intended primarily for freshmen.
- 200-299 – level courses are intended primarily for sophomores.
- 300-399 – level courses are intended primarily for juniors.
- 400-499 – level courses are intended primarily for seniors.
- 600-699 – level courses are primarily intended for graduate students. Undergraduate students may take these with senior status and a minimum 3.25 GPA or above, or in special cases as part of an accelerated bachelors-master's program.
- 700-799 – level courses are primarily intended for master's students only.
- 800-899 – level courses are intended primarily for graduate students.
- 900-999 – level courses are intended primarily for doctoral students only.

## COURSE SCHEDULING

To enhance the preparation of scheduling classes and the academic advisement process, each course section has a scheduling designation relative to the semester the course is offered. Fall Course Reference Numbers (CRN) begin with 1, Spring CRN's begin with 2, and Summer first session, dual and Intersession CRN's begin with 3, and Summer second session CRN's begin with 4.

## CLASSIFICATION OF STUDENTS

Undergraduate students are classified on the basis of semester hours completed excluding remedial and deficiency courses. The following classification scale applies to all students regardless of enrollment date:

<i>Classification</i>	<i>Semester Hours Completed</i>
Freshman	0-29
Sophomore	30-59
Junior	60-89
Senior	90 or more

## CHANGE OF GRADE

A change of grade is a change to an officially recorded grade. A request for a change of grade, except to correct clerical errors or to resolve an incomplete grade, must be made within one year following the date the original grade was assigned by the faculty member. The instructor who assigned the grade must initiate the change of grade process by submitting a Change of Grade form. The forms are available in the academic department. The change of grade must be approved by the academic department chairperson and the dean of the college/school.

## GRADE APPEAL

A student may appeal the final grade earned in a course. Initially, the student should attempt to resolve the matter informally through the instructor of the course, the department chair and/or dean of the academic unit in which the grade was assigned. If the matter is not resolved through this level of interaction, then the student should consult the individual school/college on its written grade appeal policy. A student wishing to pursue a written appeal of a grade must demonstrate a legitimate basis for the appeal. Grade appeals are final at the level of the school/college.

## CHANGES IN CLASS SCHEDULE

A change in a student's class schedule may be made during designated period for adding and/or dropping courses, with the consent of his or her advisor or department chairperson. No changes to a student's class schedule will be made after the end of the designated period for adding and/or dropping courses.

The student must obtain the Change of Schedule Form from the Office of the Registrar. The student must complete the form and obtain their advisor's signature. The form must be returned to the Office of the Registrar prior to the published deadline.

## WITHDRAWAL FROM AN INDIVIDUAL COURSE

A student may withdraw from any course or courses by submitting a Change of Schedule form to the Office of the Registrar on or before the last day to withdraw from an individual course, as published in the Academic Calendar. Change of Schedule forms are available at the Registrar's Office.

Students who withdraw from a course or courses on or before the last day to withdraw from an individual course are assigned a grade of "W". Failure to attend class does not constitute a withdrawal from that course or courses. For withdrawals done beginning fall 2014, students are limited to a maximum of two (2) withdrawals per course, up to a maximum of sixteen (16) credit hours during the student's academic career. Upon a third (3) attempt in a single course, the student is not permitted to withdraw from the course and must receive a grade for the course.

A student who does not officially withdraw from a course or courses will be assigned a final grade in each course in which he or she was enrolled during the semester in question. Withdrawing from a course or courses without extenuating circumstances may affect a student's financial aid status, will count toward the tuition surcharge threshold, and may affect the student's progress toward degree completion.

Students withdrawing from a course or courses with extenuating circumstances may affect a student's financial aid status and may affect the student's progress toward degree completion; however, the course or courses will not count in the tuition surcharge calculations. Extenuating circumstances may include military deployment, medical, psychological, unanticipated life events, or administrative reasons. Students seeking to withdraw from a course or courses do to extenuating circumstances must seek approval by completing the appropriate paperwork and providing appropriate documentation to the proper administrators specified in guidelines for course withdrawal for extenuating circumstances.

Students considering withdrawing from a courses or courses should consult their faculty advisor or academic unit advisor and the Office of Student Financial Aid.

Students cannot use a Change of Schedule form to withdraw from all of their classes or their remaining classes; in that instance, students must withdraw from the University.

### **WITHDRAWAL FROM THE UNIVERSITY**

Any student who is officially registered for classes and who wishes to withdraw from the University must complete a withdrawal form and submit it to the Registrar's Office on or before the last day to withdraw from the university as published in the academic calendar. Withdrawal forms are available at the Registrar's Office.

Students who withdraw from the University prior to the published withdrawal deadline shall receive a "W" in all classes in which they were enrolled. Failure to attend classes does not constitute a withdrawal from the University. A student who does not officially withdraw from the University will be assigned the final grade earned in each course in which he/she was enrolled during the semester in question.

The Registrar will not process withdrawal applications by students who have a pending judicial charge. Pending judicial charges must be cleared before a student may officially withdraw from the University.

Withdrawal from the University may have significant academic and/or financial aid implications. Students are strongly encouraged to seek advisement by their academic advisor or academic unit and financial aid officer before completing the withdrawal process.

### **RETROACTIVE WITHDRAWAL FROM THE UNIVERSITY**

A student who was unable to initiate the process for withdrawal from the University by the last day to withdraw as published in the academic calendar may request a retroactive withdrawal. Requests for a retroactive withdrawal shall be considered on a case-by-case basis, and shall be based on the following:

1. serious illness or documented medical condition;
2. death of an immediate family member;
3. involuntary call to active military duty;
4. documented change in conditions of employment;
5. newly documented learning disability;
6. other emergency circumstances, legal requirements, or extraordinary situations.

Written requests must be submitted prior to the end of the semester immediately following the semester for which the retroactive withdrawal is being requested. Before Sebastian Health Center or the Counseling Services approves a retroactive withdrawal, the health care provider shall consult (with the student's consent and without providing medical details) with the college dean in the student's field of study for the dean's input.

Except under extraordinary circumstances or to comply with legal requirements, for retroactive withdrawals subsequent to the effective date of this policy, students are limited to one (1) retroactive withdrawal during their academic career.

### **READMISSION OF FORMER AND ACADEMICALLY SUSPENDED OR ACADEMICALLY DISMISSED UNDERGRADUATE STUDENTS**

An undergraduate student who has not been enrolled for one or more semesters, or who is returning after academic or disciplinary suspension or academic dismissal must apply for readmission. Readmission applications, and the application processing fee, should be submitted no later than the deadline to apply for readmission as published in the academic calendar. A returning student should be aware that enrollment restrictions may be imposed at any time, which may affect his/her readmission.

A student who was eligible to continue at the time of leaving and who has a cumulative grade point average of at least 2.0 will be:

- a. Considered for readmission upon approval of the student's academic department and college/school as evidenced by submission of an approved Academic Plan of Action,
- b. Placed on Academic Probation Status for at least one semester, and
- c. Allowed, during the readmission process, to simultaneously seek and execute a change of major. The student's new academic department must support such a change of major and the student's readmission.

A student who was academically suspended will be:

- a. Considered for readmission upon serving the conditions of the academic suspension and receiving approval from the student's academic department and college/school as evidenced by submission of an Academic Plan of Action,
- b. Placed on Academic Probation after Suspension Status for at least one semester,
- c. Allowed, during the readmission process, to simultaneously seek and execute a change of major. The student's new academic department must support such a change of major and the student's readmission.

A student who was academically dismissed must:

- a. Serve a minimum one year academic dismissal and any other conditions of the dismissal action,
- b. Submit an appeal to the Committee on Admission and Academic Retention in the Office of the Provost and Vice Chancellor for Academic Affairs,
- c. If the Committee on Admission and Academic Retention approves the appeal, the student will be placed on Academic Probation after Dismissal Status for at least one semester,
- d. Gain acceptance into an academic department and major degree program. During the readmission process, a student may simultaneously seek and execute a change of major. The student's new academic department must support such a change of major, and the student's appeal and readmission.

A former student whose attendance at North Carolina Agricultural and Technical State University was interrupted by the University for disciplinary reasons must also apply to the Vice Chancellor for Student Affairs for approval to be readmitted. A returning student must be accepted into an academic major degree program; the individual may not be readmitted as an undeclared student.

### **THREE YEAR READMISSION AND FORGIVENESS POLICY**

Under the Three Year Readmission and Forgiveness Policy, an undergraduate student who has not been enrolled at North Carolina Agricultural and Technical State University for at least three (3) calendar years may request that NCAT coursework in which a grade of F was earned and that is three calendar years or older be excluded from GPA calculations and in determining graduation eligibility. To be eligible for this policy, a student must meet all readmission requirements.

Applicants must submit the Application for Readmission and other required documentation, along with a letter requesting readmission under the Three-Year Readmission and Forgiveness Policy. This policy may be used only one-time for consideration in a readmission decision, and once used is irrevocable.

If readmitted under this policy, a student will be placed on academic probation status for at least one semester. A notation stating that the Three-Year Readmission and Forgiveness Policy has been applied will be added to the student's transcript. All grades and courses remain on the student's transcript. This policy will not alter the student's original academic record. A student planning to continue his/her education at another college or university is cautioned that the receiving institution may use all grades earned when computing a GPA for admissions eligibility or for other purposes.

The Three-Year Readmission and Forgiveness Policy has no effect on the student's financial aid eligibility. A student should contact the Office of Student Financial Aid for additional information. The tuition surcharge calculation is not affected by this policy.

During the first semester in which a student is readmitted, the student is required to develop an academic plan of action. The academic plan of action is developed in consultation with the student's academic advising unit, and includes a listing of all courses required for degree completion. The student's advisor is responsible for distributing the plan to the student, the chairperson of the academic department, and the Office of Enrollment Management for information and compliance monitoring.

### **INCOMPLETES**

Students are expected to complete all requirements of a particular course during the semester in which they are registered. However, if at the end of the semester a small portion of the work remains unfinished and should be deferred because of some serious circumstances beyond the control of the student, an "I" may be submitted. The student should not reregister for the course to remove the incomplete. Along with the recording of the incomplete grade, the instructor must also file with the chairperson of the academic department the student's average grade and a written description of the work which must be completed before the incomplete is removed.

#### *Procedure for the Removal of an Incomplete*

The instructor must submit a Change of Grade within SIX WEEKS after the beginning of the next semester to remove the incomplete grade. If the incomplete grade is not removed within the time specified, the incomplete grade is automatically changed to an "F". Developmental, thesis and research courses are exempted from the six week time limit.

### **SEMESTER EXAMINATIONS**

A final examination will be required as a part of every course. An examination schedule showing the time and place of meeting of each course and section will be published each semester. Schedules so published will be followed without exception. Any changes in the examination schedule must be approved by the dean of the college/school.

### **DEAN'S LIST AND CHANCELLOR'S LIST**

**Dean's List:** To encourage academic excellence, the University publishes a Dean's List at the end of each fall and spring semester. A full-time undergraduate student, who has earned a minimum of 12 semester hours and whose semester GPA (grade point average) is 3.25 or higher shall be eligible for the Dean's List for that semester. A student is not eligible for the Dean's List in any semester in which he/she receives a grade of D or F. Dean's List recognition shall be noted on the student's permanent academic record.

**Chancellor's List:** In order to recognize undergraduate degree-seeking students with outstanding records of academic performance, the University publishes a Chancellor's List at the end of each fall and spring semester. To qualify for the Chancellor's List during the fall or spring semester, a full-time student must earn a semester grade point average (GPA) of at least 3.75 in 12 or more semester hours of credit. A student is not eligible for the Chancellor's List in any semester in which he/she receives a grade of D or F. Chancellor's List recognition appears on the student's permanent academic record.

### **CLASS ATTENDANCE**

The University is committed to the principle that regular and punctual class attendance is fundamental to the orderly acquisition of knowledge. Students should recognize the importance of regular and punctual class attendance and accept it as a personal responsibility. An absence, excused or unexcused, does not relieve the student of any course requirement.

#### ***Instructor's Responsibility***

- 1) Description of attendance requirements should be stated in the course syllabus and announced in class, particularly at the beginning of each term. If class attendance is to affect a student's course grade, then a statement to that effect must be a part of the course syllabus distributed to each student.

- 2) Instructors will keep attendance records in all classes. Each instructor has the right to prescribe procedures as to how and when attendance will be taken.

### ***Student's Responsibility***

It is the responsibility of each student to learn and comply with the requirements set by the instructor for each class in which he/she is registered. The student should:

- 1) have knowledge of each instructor's attendance and monitoring practices for class absences during the term,
- 2) become familiar with all materials covered in each course during absences and makeup any work required by the instructor, and
- 3) initiate the request to make-up work on the first day of class attendance after the absence.

### **MAKE-UP OF REQUIRED COURSE WORK**

The administration, faculty and staff recognize that there are circumstances and events which require students to miss classes and any required course work which may be performed or due on the day of the absence. Also, they recognize that required course work is needed to give each student an adequate performance evaluation. Therefore, whenever reasonable (and more specifically described below), students should be allowed to make up required work.

The following definitions will apply with respect to the make-up of missed course work:

- a. Required course work – All work which will be used in the determination of final grades, e.g. examinations, announced quizzes, required papers and essays, required assignments.
- b. Instructor – Person responsible for the course and providing instruction and evaluation.
- c. Permissible reasons for requesting make up of required work – Sickness; death of relatives (immediate family); participation in approved University related activities; acting in the capacity of a representative of the University (band, choir, sports related travel, etc.); and extraordinary circumstances (court appearance, family emergency, etc.).  
NOTE: Other reasons for requesting make up of required course work are not acceptable.
- d. Documentation – Verification of sickness requires a signed statement of a physician or a duly authorized staff member of the Sebastian Health Center. Verification of death requires a signed statement from the Minister or Funeral Director. Verification of participation in University related activities requires a signed statement from the appropriate University official. Verification of other reasonable circumstances; for example, court appearance, family emergency, etc. requires a signed statement from an appropriate official (e.g., Court Official, parent or guardian, etc.).

The make-up of required course work is as follows:

- (1) A student may petition an instructor to make up required course work whenever the student has a permissible reason for requesting make up of required course work.
- (2) A Student will be required to present documentation, which certifies absence constituting a permissible reason.
- (3) Whenever possible, a student should consult with the instructor prior to an absence which will involve the failure to do required course work. Arrangements for make up should be discussed and agreed upon at this time.
- (4) A student must petition for make up of required course work on the first day that he/she returns to class.
- (5) If permission is granted to make up required course work, the instructor and the student should agree on an acceptable date for completion of missed required course work.
- (6) Failure to comply with the item four (4) may result in denial to make up required course work.

**Instructors should schedule make up work at a time that is convenient to both the instructor and the student.**

### **GENERAL REQUIREMENTS FOR GRADUATION**

A candidate for a degree from North Carolina Agricultural and Technical State University must satisfy the following minimum requirements:

1. Choose a specific curriculum leading to a degree in one of the schools/colleges and complete the requirements of this curriculum;
2. Complete a minimum of 120 semester hours excluding deficiency courses and remedial work for the Bachelor's degree;
3. Complete all of the general education requirements of the University for the Bachelor's degree, please see General Education Requirements of the University for a complete listing of the general education requirements;
4. Earn an average of two (2) grade points for every semester hour undertaken including hours passed or failed and not repeated. After completing the number of credit hours required for graduation, if the student is deficient in grade points, he/she must take additional courses that have been approved by his or her academic dean to secure these points. The student must also obtain an average of 2.0 or more in his or her major field;
5. Complete a minimum of three semesters as a full-time student in residence at the University. This requirement includes the two semesters prior to the period when the student completes his/her requirements for graduation. At least one half of the credits in the student's major field must be earned at the University. Exception to either of these provisions may be made upon the recommendation of the chairperson of the student's major department with the approval of the school/college dean. Transfer students must complete a minimum of 25% of the required degree coursework at North Carolina Agricultural and Technical State University to graduate from North Carolina Agricultural and Technical State University with that degree.
6. Clear all academic conditions by the end of the semester preceding graduation.
7. Pay all University bills and fees; and submit an application for graduation to the Office of the Registrar prior to the established deadline, as published in the University Calendar.

8. Submit an application for graduation to the Office of the Registrar prior to the established deadline, as published in the Academic Calendar.

### **GRADUATING WITH HONORS**

Undergraduate degree candidates who complete all requirements for graduation in accordance with the following stipulations earn the following honors: (1) those students who maintain an adjusted GPA between 3.25 and 3.49 will receive recognition as CUM LAUDE, (2) those students who maintain an adjusted GPA between 3.50 and 3.74 will receive recognition as MAGNA CUM LAUDE, and (3) those students who maintain an adjusted between 3.75 and 4.00 will receive recognition as SUMMA CUM LAUDE.

All course hours attempted, excluding W (withdrawal grades), are included in the adjusted grade point average computation for honors. For example, if a course was repeated, both grades are used in the adjusted grade point average computation.

Undergraduate students must earn at least 48 semester hours of resident credit at North Carolina Agricultural and Technical State University to qualify for graduation honor designations. Publication of honors is made at commencement.

### **COMMENCEMENT PARTICIPATION**

Two commencement programs are scheduled each year, one in December for fall and summer graduates and one in May for spring graduates. Students must meet the following requirements to be eligible to participate in commencement:

- Have completed degree requirements the semester prior to the upcoming commencement ceremony for which they plan to participate; or
- Be enrolled in the final courses and/or academic activity necessary to complete degree requirements in the semester for which they plan to participate in the respective commencement.

In either scenario, all students must submit an application for graduation to the Registrar's Office prior to the commencement deadline for either May or December. The student must be "cleared" by the Registrar's Office to be approved to participate in the commencement activities.

Students who will complete degree requirements during the summer semester(s) will NOT be eligible to participate in the preceding May commencement activities. However, they will be eligible to participate in either the following December or May commencement provided they meet the respective requirements as stated above.

### **EFFECTIVE BULLETIN FOR GRADUATION**

The University Bulletin is the official document that describes the policies, academic programs and requirements for students attending North Carolina Agricultural and Technical State University. Students are responsible for knowing and adhering to the policies and requirements that affect them. A student's effective bulletin for graduation requirements is the bulletin in effect when the student first entered the University. This is provided that the courses are being offered. Moreover, the student must complete these requirements within six years. In addition, he/she may graduate under a bulletin published while he/she is a student. If a student elects to meet the requirements of a bulletin other than the one in force at the time of his/her original admission, he/she must meet all requirements of the bulletin he/she elects.

### **SECOND BACCALAUREATE DEGREE**

A student who has received a bachelor's degree from North Carolina Agricultural and Technical State University or another accredited college or university may enroll in a program leading to a second degree at the same level providing (1) the major field is different from that of the first degree and (2) the appropriate application for admission or re-admission is submitted and approved.

Students seeking a second baccalaureate degree and received the first degree must (1) complete a minimum of twenty-four (24) semester hours beyond those applied to the first or previous degree, excluding transfer credits or substitutions and dependent upon departmental requirements, (2) be in residence for a minimum of two (2) semesters as a full-time student if the first or previous degree was not earned at North Carolina Agricultural and Technical State University, and (3) achieve a cumulative minimum grade point average of 2.0 for all hours attempted for the degree.

### **GRADES**

Final course Grades are available at the end of each semester on AGGIE ACCESS On-line. Students can view and print copies of their final grades on Aggie Access On-line.

### **PRIVACY OF STUDENT RECORDS**

The University ensures students access to their official academic records but prohibits the release of personally identifiable information, other than "directory information," from these records without the student's permission, except as specified by public law 93-380. As of January 3, 2012, the U.S. Department of Education's FERPA regulations expand the circumstances under which student education records and personally identifiable information contained in such records – including your Social Security Number, grades, or other private information – may be accessed without your consent. First, the U.S. Comptroller General, the U.S. Attorney General, the U.S. Secretary of Education, or state and local education authorities ("Federal and State Authorities") may allow access to your records and personally identifiable information without your consent to any third party designated by a Federal or State Authority to evaluate a federal- or state-supported education program. The evaluation may relate to any program that is "principally engaged in the provision of education," such as early childhood education and job training, as well as any program that is administered by an education agency or institution. Second, Federal and State Authorities may allow access to your education records and personally identifiable information without your consent to researchers performing certain



types of studies, in certain cases even when the university objects to or does not request such research. Federal and State Authorities must obtain certain use-restriction and data security promises from the entities that they authorize to receive your personally identifiable information, but the Authorities need not maintain direct control over such entities. In addition, in connection with Statewide Longitudinal Data Systems, State Authorities may collect, compile, permanently retain, and share without your consent personally identifiable information from your education records, and they may track your participation in education and other programs by linking such personally identifiable information to other personal information about you that they obtain from other Federal or State data sources, including workforce development, unemployment insurance, child welfare, juvenile justice, military service, and migrant student records systems.

“Directory information” includes: Student’s name, address, E-mail address, telephone number, date and place of birth, school, major, dates of attendance, degree(s) received, honors received, institution(s) attended prior to admission to North Carolina Agricultural and Technical State University, past and present participation in officially recognized sports and activities, and physical factors. Public Law 93-380 further provides that any student may, upon written request, restrict the printing of such personal information relating to himself or herself as is usually included in campus directories. A student who desires to have “directory information” withheld must submit a written request to the Office of the Registrar prior to the end of the add/drop period for the semester in which he or she is enrolled.

### **ACCESS TO STUDENT RECORDS**

1. The policy for the administration of student academic records is in accordance with the Family Educational Rights and Privacy Act of 1974 as amended.
2. Students have the right to inspect and review any and all official records, files, and data directly related to them.
3. A student who believes that his or her record contains inaccurate or misleading information shall have an opportunity for a hearing to challenge the content of the record, to assure that the record is not inaccurate, misleading, or otherwise in violation of his or her privacy or rights, and to provide an opportunity for the correction or deletion of any such inaccurate, misleading, or otherwise inappropriate data contained therein or include the student’s own statement of explanation.
4. The University will comply with requests for records within a reasonable period of time and not later than (30) days after the request is received.
5. The release of academic records requires the written permission of the student, except as provided by Public Law 93-380. Transcripts are not issued to a student who has not met his or her financial obligations to the University.
6. Copies of the “University’s Statement” concerning access to student records are available in the Office of the Registrar as well as the office of each school dean and department chairperson.

### **CHANGE OF NAME AND ADDRESS**

It is the responsibility of every student to notify the Office of the Registrar of any change in name or address. Failure to do so can result in a delay in the handling of the student’s records and in sending official University notifications to the student’s home. To change a name a student must first have a legal court document.

### **TRANSCRIPTS OF RECORDS**

The Office of the Registrar provides official transcripts for undergraduate and graduate students upon request. Students needing an official transcript should request the transcript at least one week before the official transcript is needed. Transcript requests are not processed for any student or alumnus with an obligation to the University such as unpaid fees, overdue loans, library books, audiovisual equipment, or whose admission records are not complete.

Options for obtaining an official academic transcript are as follows:

#### **Online Requests:**

Order your transcript online via the [National Student Clearinghouse](#). In addition to the cost of the transcript, you will be assessed a \$2.25 Clearinghouse fee. You will be able to pay online using a credit card, track your order online, and receive email updates. Your card will not be charged until after your order has been completed. Request submitted online will be processed within 1-2 business days.

#### **In-Person Requests:**

You may fill out the transcript request form available in the Office of the Registrar, located in the Dowdy Administration Building Room 107, 1601 East Market Street, Greensboro, NC 27411. You must know your Banner ID in order to request a transcript. You can obtain your Student ID in the Office of the Registrar. A photo ID is required.

#### **Mail-In Request:**

You may print and fill out the [Official Transcript Request](#) form (<http://www.ncat.edu/registrar-office/forms/transcript-request.pdf>) and mail it to the Office of the Registrar at the address listed above. Make sure to sign the form and include the payment. Requests received through the mail will be processed within 3-5 business days.

Please note: Transcripts are sent through regular USPS mail only. If you would like your transcript sent via overnight or through priority mail, please include with your transcript request a pre-paid US Postal Service overnight or priority mail envelope. We do not use any other carriers (such as FED-EX, UPS or DHL) to mail transcripts.

Unofficial transcripts may be obtained via Aggie Access On-Line (<http://www.ncat.edu>).

## **INDEBTEDNESS TO THE UNIVERSITY**

No diploma, certificate or transcript of a student's academic record will be issued to a student who has not made a satisfactory settlement with the cashier for all indebtedness to the University. A student may not be permitted to attend classes or final examinations after the due date of any unpaid obligation.

## **ACADEMIC DISHONESTY POLICY**

North Carolina Agricultural and Technical State University is committed to academic integrity and honesty for all students. Examples of Academic Dishonesty include but are not limited to:

- Cheating or knowingly assisting another student in committing an act of academic dishonesty;
- Plagiarism (unauthorized use of another person's words or ideas as one's own) which includes but is not limited to submitting examinations, theses, reports, drawings, laboratory notes or other materials as one's own work when such work has been prepared by another person or copied from another person.
- Unauthorized possession of examinations or reserve library materials, destruction or hiding of source materials, library materials, or laboratory materials or experiments or any other similar action;
- Unauthorized changing of grades or marking on an examination or in an instructor's grade book, or such change of any grade record;
- Aiding or abetting in the infraction of any of the provisions anticipated under the general standards of student conduct; or
- Assisting another student in violating any of the above rules.

A student who has committed an act of academic dishonesty has failed to meet a basic requirement of satisfactory academic performance. Thus, academic dishonesty is not only a basis for disciplinary action but may also affect the evaluation of the student's level of performance. Any student who commits an act of academic dishonesty is subject to disciplinary action as defined below.

In instances where a student has clearly been identified as having committed an academic act of dishonesty, the instructor may take appropriate punitive action including a loss of credit for an assignment, an examination or project, or award a grade of "F" for the course subject to the review and endorsement of the chairperson and the dean. Repeated offenses can even lead to dismissal from the University.

## **STUDENT APPEALS OF ACADEMIC DISHONESTY**

A student who feels that he or she has been unfairly treated as a result of an academic dishonesty matter may appeal the action in writing to the University Judicial Tribunal. The written notice of appeal must be submitted within one week (seven calendar days) of the date of the incident. The student should refer to the section on Appellate Procedures in the *Student Handbook*.

## **DISRUPTIVE BEHAVIOR IN THE CLASSROOM**

*(UNC-GA Policies for Students-Adopted by BOG October 26, 1970)*

The instructor may withdraw a student from a course for behavior he deems to be disruptive to the class. The grade assigned will be "W" if the behavior occurs before the deadline for dropping a course without academic penalty, and the instructor has the option of giving a "W" or a "F" if the behavior occurs after the deadline.

### **I. BINDING PROCEDURES FOR INSTRUCTORS**

The instructor must provide an opportunity for the student to be heard. In providing this opportunity, the instructor must follow the procedure described below:

1. The student should be notified in writing at the next class attended that the instructor proposes to drop the student from the course for disruption of the class, and the instructor should provide the student with written instructions regarding the time and place for a meeting with the instructor. A copy of this written notification must be sent to the instructor's department head at the same time.
2. A time limit of five working days (M-F) from the time written notification is given for the student's opportunity to be heard by the instructor.
3. The date of notification establishes whether the withdrawn student will be given a "W" or "F." "W" is appropriate before the published withdrawal deadline and either "W" or "F" is appropriate after that date, at the instructor's discretion.
4. The instructor may suspend the student from class until the instructor takes final action to withdraw the student from class or to allow the student to continue in the class. The final decision to withdraw or continue the student is the instructor's.
5. Either party in the resolution of this dispute may invite one other person of the university community to be present as an observer.

### **II. STUDENTS' RIGHT TO APPEAL**

If the student wishes to appeal the instructor's decision to withdraw the student from class, he/she should follow the academic appeal procedures outlined in the section on grading in the *Undergraduate Bulletin*.

## **CONSORTIUM STUDY AGREEMENT**

The Greater Greensboro Consortium is a program designed to expand the course options available to degree seeking students from Bennett College, Elon University, Greensboro College, Guilford College, Guilford Technical Community College, High Point University, North Carolina A&T State University and the University of North Carolina at Greensboro (UNC-G).

North Carolina A&T students who wish to enroll in courses at one or more of the above named institutions may obtain the necessary forms from the Office of the Registrar. Approval of the department chairperson, Treasurer's Office and the Registrar's Office is required. North Carolina Agricultural and Technical State University's equivalent course must be listed on the consortium form for each course to be taken at the host institution. The student will then take the appropriate copies of the form to the host institution and adhere to their registration time line and course restrictions. Students who make changes in their schedules must satisfy the drop/add procedure at the host institution. Student from other institutions who wish to enroll at North Carolina Agricultural and Technical State University should present the approval forms to the Office of the Registrar, located on the first floor of the Dowdy Administration Building beginning on the date posted on the academic calendar for that corresponding semester.

**Key Points for NC A&T Students to Remember:**

1. You must be enrolled in more hours at NC A&T SU than the host institution.
2. All consortium credits apply towards your enrollment at NC A&T SU. This means the coursework effects your GPA and credits earned.
3. The Consortium Agreement operates the fall and spring semester for Bennett College, Elon University, Greensboro College, Guilford College, GTCC, High Point University and UNC-G\*. The summer sessions are with UNC-G ONLY.
4. All rules, regulations and dead-lines apply at the host institution.

*Students from other institutions who wish to enroll at A&T should present the approval forms at the Office of the Registrar located in the Dowdy Administration Building during registration.*

**\*\* Students taking classes at UNC-G must also fill out a UNC Inter-Institutional Approval Form \*\***

**Directions for students taking consortium classes at the Host Institution.**

1. Obtain a Consortium Form from the Office of the Registrar.
2. Obtain the signature of your academic chairperson on the consortium form.
3. *The form should also contain the equivalent course number at NC A&T SU to be added to the students' schedule. Your form will not be signed without the equivalent course listed.*
4. Bring the completed form to the Office of the Registrar for the signature of the Registrar. *(Please Note: Your bill must be validated to receive the Registrar's signature)*
5. Take 3 copies (yellow, pink and golden) of the approved form to the Office of the Registrar at the host campus during their add drop period.
6. If you are unable to register for the course, you must notify the Office of the Registrar at NC A&T SU.
7. If you drop a consortium course, you must adhere to the host institutions drop/add policy. You must also notify the Office of the Registrar at NC A&T SU.

**Host Institution**

**Where to Register**

Bennett College	Admissions Office, then to the Records Office located in 104 Black Hall
Elon University	Powell Building (to fill out a 'Special Student Application'; then to the Registrar's Office located in 102 Alamance Building
Greensboro College	Registrar's Office, Main Building
GTCC	Complete an admission application, indicate "Visiting Consortium Student". Take form to the Registrar's Office, Medlin Campus Center, Jamestown
Guilford College	
High Point University	Registrar's Office, 206 Roberts Hall
UNC-G	University Registrar's Office, 180 Mossman Building (You must have a copy of your class schedule with you.)

**CELL PHONE USE**

The use of cell phones inside the classroom during the classroom period is prohibited. Please be advised that sending or receiving text messages, placing or receiving calls as well as conversing on cell phones during the conduct of a class shall be considered as disruptive behavior for students and unprofessional behavior for faculty and staff.

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## COLLEGE OF AGRICULTURE AND ENVIRONMENTAL SCIENCES

<http://www.ncat.edu/caes/index.html>

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**Shirley Hymon-Parker, Interim Dean and Research Director**  
**Antoine J. Alston, Associate Dean for Academic Studies**  
**Valerie Giddings, Interim Associate Dean for Research**  
**Rosalind Dale, Associate Dean Cooperative Extension**

### OBJECTIVES

The College of Agriculture and Environmental Sciences (CAES) is organized in the land-grant university tradition where programs of resident instruction in the food, agricultural, family and environmental sciences, as well as closely related areas are offered. Agricultural Research and Cooperative Extension completes the land grant institution tripartite mission. Thus, the College is guided by the values that underlie the land-grant philosophy:

- Learning – creating a responsive learning environment and enhancing access to educational opportunities for all;
- Discovery – expanding knowledge through research;
- Engagement – putting that knowledge to work; and collaborating with diverse institutions, communities and people to improve their quality of life.

The hallmark of the College's work is the integration of these three values – learning, discovery and engagement – into programs that make a difference. Our teaching, research and Extension programs are part of a national system that maintains a statewide presence and links local, state, national and global issues.

The College is fundamentally interdisciplinary; we apply the biological, physical and social sciences to challenges in food, fiber, agricultural and environmental systems. Instructional programs provide a strong foundation in the natural sciences, social sciences and economics, which support curricula in agricultural, family and consumer sciences. These programs originate from a highly qualified faculty committed to academic excellence and the development of individuals to their personal and professional potential. Central to the College's goals is the cultivation of interdisciplinary problem-solving skills that serves as a foundation for continuing academic development, critical thinking and inquiry, life-long learning, assessment, and adaptation to change.

### MISSION

The College of Agriculture and Environmental Sciences provides opportunities for individuals from diverse backgrounds to achieve excellence in the food, agricultural, family and environmental sciences through exemplary and integrative instruction, and through scholarly, creative and effective research and Extension programs.

### VISION

The College of Agriculture and Environmental Sciences shall be a premiere learner-centered community that develops and preserves intellectual capital in the food, agricultural, family, and environmental sciences through interdisciplinary learning, discovery, and engagement.

### AGRICULTURAL RESEARCH PROGRAM

Organized research is conducted in the food, agricultural, family and environmental sciences by research faculty with joint appointments in the instructional and research programs. Much of the research activity is sponsored by the United States Department of Agriculture. It is conducted on the University Teaching and Research Farm, in the Center for Environmental Farming Systems in Goldsboro, NC, Center for Excellence in Post-Harvest Technologies, and in on-campus laboratories where investigations include such areas as food safety, agromedicine, wetlands, water quality, biotechnology, biofuels and renewable energy, international trade, rural development, animal sciences, plant science, specialty crops, landscape architecture and design, human nutrition, child development, housing, food science, post-harvest technologies, and animal health.

### COOPERATIVE EXTENSION PROGRAM

Cooperative extension is an outreach, and engagement educational program whose objective is to provide science-based information and assistance in a broad range of subjects to individuals, families, and organized groups in rural and urban areas of the state. The Cooperative Extension Program at North Carolina A&T State University is an integrated participatory partner in North Carolina Cooperative Extension. North Carolina State University, in Raleigh, North Carolina, and North Carolina A&T State University collaborate in providing solutions to the problems that plague the citizens in the State of North Carolina.

### INTERNATIONAL AGRICULTURAL PROGRAM

The International Agricultural Program involves all departments in the College of Agriculture and Environmental Sciences and relates to the University's Office of International Programs through the International Trade Center.

In overseas locations, research, teaching, and community out-reach are conducted by faculty in association with long-term development assistance projects. Additionally, faculty share their expertise through short-term assignments for consultation in various overseas settings.

### INSTRUCTIONAL PROGRAMS

#### *Departmental Organization:*

The College of Agriculture and Environmental Sciences is organized into four departments: (1) Agribusiness, Applied Economics and Agriscience Education, (2) Animal Sciences, (3) Family and Consumer Sciences, and (4) Natural Resources and Environmental Design. Advisory groups associated with various professions represented by the College continually review

curricula and programs. The College sets high expectations and provides students with resources and support they need to take charge of their education.

*Requirements for Admissions:*

The requirements for admission to the College of Agriculture and Environmental Sciences are the same as the general requirements for admission to the University. Some programs have higher requirements. Please see the specific Department of interest.

*Requirements for Graduation:*

The requirements for graduation for the Bachelor of Science Degree are as follows:

1. The student must have satisfied the course requirements of an approved curriculum in an organized department administered by the College of Agriculture and Environmental Sciences.
2. The student must have earned a cumulative grade point average of at least a “C” in his or her major courses and in his or her overall academic program.
3. Students planning to teach secondary agricultural education must also meet the teaching requirements prescribed by the College of Education.

*Curricula:*

Departments in the College of Agriculture and Environmental Sciences provide several program options through curricula leading to the Bachelor of Science Degree. These program options accommodate specialization in several areas of the food, agricultural, family and environmental sciences. In addition, the College has several enrichment programs available to our students and many students participate in summer internships and cooperative education programs which enable them to receive academic credit for career-related experiences. The College encourages involvement in co-curricular activities as a means of developing communication and leadership skills.

The Master of Science Degree is offered in Agricultural and Environmental Systems (Concentrations: Agribusiness and Food Industry Management, Integrated Animal Health Systems, and Natural and Environmental Systems), Agricultural Education (Concentrations: Professional Licensure and Professional Service), and Food and Nutritional Science. The Master of Art in Teaching is offered in Family and Consumer Sciences and Child Development: Early Education and Family Studies Birth-K. (For further details please consult the graduate college bulletin.)

### **ACCREDITATION**

The programs in the College of Agriculture and Environmental Sciences that have accrediting organizations have been accredited. They are as follows:

- The Biological Engineering Program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.
- Family and Consumer Sciences Programs are accredited by the American Association of Family and Consumer Sciences.
- The Landscape Architecture Program is accredited by the American Society of Landscape Architecture Accreditation Board.
- The Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education and the North Carolina State Department of Public Instruction.

### **CAREER OPPORTUNITIES**

The College of Agriculture and Environmental Sciences provides professional education for a wide range of career opportunities in the food, agricultural, family and environmental and sciences. Students are prepared for careers in business, government, public service agencies, retail and service industries, health-related fields, biomedical and biotechnology companies, financial institutions, youth development agencies, conservation and environmental organizations, research, extension and education. Students are also provided with an appropriate background for graduate and professional programs.

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### **Department of Agribusiness, Applied Economics and Agriscience Education**

<http://www.ncat.edu/caes/departments/aged/index.html>

**Anthony Yeboah, Chairperson**

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### **OBJECTIVES**

The Department of Agribusiness, Applied Economics and Agriscience Education offers programs leading to the Bachelor of Science and Master of Science in Agricultural Education. It also offers programs leading to Bachelor of Science and Master of Science in Agricultural and Environmental Systems with a concentration in Agribusiness and Food Industry Management. Students who pursue the Bachelor of Science degree in Agricultural Education may concentrate in Secondary Education or Agricultural Professional Service. In addition, students may take prescribed courses in Rural Sociology and Sociology.

The objectives of the Agricultural Education programs are to train students to understand and apply the educational concepts in order to identify, analyze, and resolve management problems of the farm, agribusiness firms, rural communities, and government agencies, as well as preparing students for further study in Agricultural Education.

The Agricultural Education program is accredited by the Council for the Accreditation of Educator Preparation (CAEP) and the North Carolina State Department of Public Instruction (SDPI) for the preparation of teachers in agriculture in the public school system. Agricultural Education majors in both the Secondary Education and Agricultural Professional Service study tracks are

expected to complete a second major concentration in an agricultural academic discipline to include 18 semester credit hours. The major options available include agricultural science, animal science, agribusiness and marketing, agricultural communications, natural and environmental science, plant and soil science, and rural sociology.

The Agricultural and Environmental Systems (Agribusiness and Food Industry Management) programs provide a course of study that develops the requisite interpersonal and communication skills, knowledge base, critical thinking skills, and applied business skills that are required to have a successful career in an ever-changing economic, technological, political, and social environment. The programs teach the application of business concepts to the agricultural industry. The core is designed to provide students with an understanding of the basic functions of business and the application of theory and practice to the agribusiness industry. The directed and free electives enable students to generally emphasize some aspect of marketing or management with courses in both agriculture and business.

### **DEGREES OFFERED**

Agricultural Education (Secondary Education) – Bachelor of Science

Agricultural Education (Agricultural Professional Service) – Bachelor of Science

Agricultural and Environmental Systems (Agribusiness and Food Industry Management) – Bachelor of Science

Interdisciplinary certificate programs are offered to students enrolled in Bachelor of Science programs at the University. Areas of specialization include Entrepreneurship (18 credit hours), Biotechnology (18 credit hours) and Waste Management (18 to 20 credits hours) and Agricultural and Natural Resources Information Science (18 credit hours).

### **GENERAL PROGRAM REQUIREMENTS**

The admission of students to the undergraduate degree program is based upon the general admission requirements of the University.

### **DEPARTMENTAL REQUIREMENTS**

Undergraduate majors in Agricultural Education must complete 120 semester hours of University courses. Students must earn an average grade of “C” in all Agricultural Education courses in order to meet the major field requirements.. Agricultural education majors must earn a minimum grade point average of 2.8 to be admitted to the teacher education program, in addition to other admission requirements.

### **TEACHER EDUCATION PROGRAM**

The goals and objectives of the Teacher Education Program in agricultural education, as mandated by the Council for the Accreditation of Educator Preparation (CAEP) and the North Carolina State Department of Public Instruction (SDPI), address the development of competencies in the areas of animal science, soil science, plant science, agricultural and natural resources, horticulture, agricultural economics, agricultural mechanics, and agricultural communication. The goals of the program are twofold and are listed below:

1. Develop an understanding of and appreciation for teaching agricultural education; and
2. Develop competencies needed by individuals to teach agriculture in North Carolina public secondary schools.

The fourteen objectives of the agricultural education teacher preparation program are listed below:

1. To promote the agricultural education program in secondary schools; to meet the needs and interests of students and to satisfy employment demands;
2. To plan for effective public relations;
3. To plan for effective and comprehensive instruction;
4. To manage the classrooms and laboratories effectively;
5. To aid students in making career decisions;
6. To evaluate vocational agriculture programs and student progress;
7. To advise and manage the National FFA Organization as an integral part of instruction;
8. To extend learning experiences for students beyond the classroom through Supervised Agricultural Experience Programs;
9. To plan and conduct a program of career exploration and guidance and provide hands-on learning experiences in technical agriculture including animal science, soil science, plant science, agricultural and natural resources, agribusiness and agricultural mechanics;
10. To plan and conduct a program to develop knowledge and skills needed for job entry into agricultural production occupations and/or to pursue further training in the subject area;
11. To plan and conduct a program to develop knowledge and skills needed for job entry into agricultural mechanics occupations and/or pursue further training in the subject area;
12. To plan and conduct a program to develop knowledge and skills needed for job entry into agricultural and natural resources occupations and/or pursue further training in the subject area;
13. To plan and conduct a program to develop knowledge and skills needed for job entry into forestry occupations and/or pursue further training in the subject area;
14. To plan and conduct a program to develop knowledge and skills needed for job entry into agricultural products and processing occupations and/or pursue further training in the subject area.

### **CAREER OPPORTUNITIES**

Students who successfully complete programs in Agricultural Education are prepared for careers in teaching, supervision in schools and colleges, agricultural extension, agricultural-related business firms and industries, trade and professional associations,

government and private research firms, government services (legislative, administration, or professional), as well as for further study for advanced degrees.

Internationally and locally, there are thousands of jobs in Agribusiness and Food Industry Management. Many of our students have obtained jobs that combine their love of the industry with good incomes. The business side of this degree provides the students with multiple avenues that ensures a successful career.

**Department of Agribusiness, Applied Economics and Agriscience Education  
Bachelor of Science in Agricultural Education (Agricultural Professional Service)**

**Major Code: AGE\***

**Concentration Code: AGPR**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
AGED 101	2	ENVS 201	3
BIOL 100	4	CHEM 100 & 110	4
FRST 101	1	NARS 110	3
BIOE 114	3	<b>Semester Total</b>	<b>16</b>
<b>Semester Total</b>	<b>16</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
ABM 300 or AGED 200	3	HIST 106	3
HIST 207	3	POLI 110	3
ENGL 331	3	Second Major Concentration	3
ENGL 200	3	ANSC 163 or LASC 162	3
Second Major Concentration	3	ABM 330	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
AGED 302	3	AGED 303 (formerly AGED 402)	3
AGED 301 (formerly AGED 401)	3	AGED 304 (formerly AGED 403)	3
SLMG 200	4	ANSC 214	3
HORT 334	3	Second Major Concentration	3
Second Major Concentration	3	Second Major Concentration	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
AGED 407	3	AGED 498 (formerly AGED 504)	6
AGED 405 (formerly AGED 501)	3	Second Major Concentration	3
AGED 408	3	Agricultural Science Electives	3
Agricultural Science Elective	3	<b>Semester Total</b>	<b>12</b>
AGED 406 (formerly AGED 503)	3		
<b>Semester Total</b>	<b>15</b>		

**Total Credit Hours: 120**

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C or better in the following courses:*

AGED 101	AGED 405
AGED 302	AGED 406

AGED 301	AGED 409
AGED 303	AGED 407
AGED 304	AGED 408

### Second Major Concentrations

(Secondary Education Track 18 hours - Professional Service Track 18 hours)

**Agricultural Science:** NARS 100 - 699, HORT 100 - 699, SLSC 100 - 699, ANSC 100 - 699, ABM 100 - 699, ENVS 100 - 699

**Animal Science:** ANSC 100 - ANSC 699, LASC 100 - 699

**Agricultural Business and Marketing:** ABM 100 - ABM 699

**Agricultural Communications:** JOMC 100 - 699

**Natural Resources and Environmental Sciences:** ENVS 100 - 699, NARS 100 - 699

**Plant and Soil Science:** NARS 100 - 699, HORT 100 - 699, SLSC 100 - 699

**Rural Sociology:** AGED 200, AGED 620, AGED 609, SOCI 100 - 699

### Department of Agribusiness, Applied Economics and Agriscience Education Bachelor of Science in Agricultural Education (Secondary Education)

Major Code: AGE\*

Concentration Code: ASCE

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
HIST 207	3	CUIN 110	2
BIOL 100	4	CUIN 102	2
AGED 101	2	CUIN 101	1
FRST 101	1	ENVS 201	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>14</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
ENGL 200	3	HIST 106 ( <i>formerly HIST 201</i> )	3
ANSC 163	3	CUIN 255 ( <i>formerly CUIN 310</i> )	2
NARS 110	3	ANSC 214	3
BIOE 114	3	HORT 334	3
CUIN 210	2	POLI 110	3
Second Major Concentration	3	<b>Semester Total</b>	<b>14</b>
<b>Semester Total</b>	<b>17</b>		
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
AGED 301 ( <i>formerly AGED 401</i> )	3	AGED 303 ( <i>formerly AGED 402</i> )	3
SLMG 200	4	AGED 304 ( <i>formerly AGED 403</i> )	3
Second Major Concentration	3	CUIN 420 ( <i>formerly CUIN 520</i> )	2
Second Major Concentration	3	Second Major Concentration	3
CUIN 410	2	Second Major Concentration	3
<b>Semester Total</b>	<b>15</b>	ABM 300 or AGED 200	3
		<b>Semester Total</b>	<b>17</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	



AGED 405 (formerly AGED 501)	3	CUIN 498	9
AGED 407	3	CUIN 470	3
Second Major Concentration	3	<b>Semester Total</b>	<b>12</b>
AGED 406 (formerly AGED 503)	3		
ABM 330	3		
<b>Semester Total</b>	<b>15</b>		

**Total Credit Hours: 120**

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

AGED 101	AGED 405
AGED 301	AGED 406
AGED 303	AGED 407
AGED 304	

#### Second Major Concentrations (Track 18 hours)

**Agricultural Science:** NARS 100 - 699, HORT 100 - 699, SLMG 100 - 699, ANSC 100 - 699, ABM 100 - 699, ENVS 100 - 699

**Animal Science:** ANSC 100 - ANSC 699, LASC 100 - 699

**Agricultural Business and Marketing:** ABM 100 - ABM 699

**Agricultural Communications:** JOMC 100 - 699

**Natural Resources and Environmental Sciences:** ENVS 100 - 699, NARS 100 - 699

**Plant and Soil Science:** NARS 100 - 699, HORT 100 - 699, SLMG 100 - 699

**Rural Sociology:** AGED 200, AGED 620, AGED 609, SOCI 100 - 699

#### Department of Agribusiness, Applied Economics and Agriscience Education Bachelor of Science in Agricultural and Environmental Systems (Agribusiness and Food Industry Management)

Major Code: AES\*

Concentration Code: ABFM

#### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ABM 130	2	ENGL 101	3
ENGL 100	3	MATH 112 or MATH 131	4
MATH 111	4	CHEM 100 w/Lab (CHEM 110)	4
BIOL 100	4	HIST 130	3
FRST 101	1	<b>Semester Total</b>	<b>14</b>
HPED 200	2		
<b>Semester Total</b>	<b>16</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
HIST 106	3	PSYC 101	3
ECON 200	3	ECON 201	3
ABM 240	3	ABM 330	3
ABM 300	3	ABM 406	3
MGMT 110	3	Agricultural Elective <sup>1</sup>	3

TSCM 240	3	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>18</b>		
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
ABM 432	3	MGMT 322	3
Major Elective <sup>2</sup>	3	ABM 434	3
ECON 206	3	Free Elective	3
MGMT 201	3	Free Elective	3
SPCH 250	3	Agricultural Elective	3
<b>Semester Total</b>	<b>15</b>	PHIL 201	3
		<b>Semester Total</b>	<b>18</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
Major Elective	3	Agricultural Elective	3
ABM 444	3	Free Elective	3
ABM 480	3	Free Elective	3
Free Elective	3	Major Elective	3
<b>Semester Total</b>	<b>12</b>	<b>Semester Total</b>	<b>12</b>

**Total Credit Hours: 120**

<sup>1</sup>Agricultural Electives: (1) Animal Science - LASC 162 and TWO of the following - ANSC 211, ANSC 312, ANSC 411 or ANSC 451; (2) Food Science - FCS 150 and TWO of the following - FCS 245, FCS 246, or FCS 354; and (3) Plant Science - NARS 110 and TWO of the following - HORT 302, HORT 334, or SLMG 200.

<sup>2</sup>Major Electives: ABM 250, ABM 335, ABM 337, ABM 340, ABM 430, ABM 436, ABM 438, ABM 440, ABM 442, ABM 446, ABM 448, and ABM 450.

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C or better in the following courses:*

ABM 130	ABM 406
ABM 240	ABM 434
ABM 330	ABM 480

**COURSE DESCRIPTIONS IN AGRICULTURAL EDUCATION**  
Undergraduate

**AGED 101. Introduction to Agriscience Education** **Credit 2(2-0)**

This course includes a study of the broad base of modern agriculture with emphasis on current trends and opportunities. (F)

**AGED 200. Introduction to Rural Leadership** **Credit 3(3-0)**

This special topics course is designed to provide a basic introduction to leadership by focusing on what it means to be a good leader and the impact of leadership in a rural setting. Emphasis in the course is on the practice of leadership. The course will examine topics such as: the nature of leadership, recognizing leadership traits, developing leadership skills, creating a vision, setting the tone, listening to out-group members, overcoming obstacles, and addressing values in leadership. Attention will be given to helping students to understand and improve their own leadership performance.

**AGED 300. Introduction to International Agriculture** **Credit 3(3-0)**

This is an introductory course to acquaint students with international agriculture and agricultural developments, including the relationship between agricultural systems in various countries and the impact of world agriculture on the U.S. and other countries. It provides introduction for students who plan careers in agricultural education in the U.S. or other countries. (DEMAND)

**AGED 301. Leadership Theory and Youth Program Management (formerly AGED 401)** **Credit 3(3-0)**

Theories in leadership development will be analyzed, and the organization of youth groups in secondary schools, cooperative extension, and other community groups will be examined. (F)

**AGED 302. Instructional Technology In Agriscience Education (Formerly AGED 400)** **Credit 3(3-0)**

This course will cover the utilization of multimedia instructional tools, and how their applications can enhance the learning process. (F;S)

**AGED 303. History and Philosophy of Agriscience Education in the American Public School System (formerly AGED 402)** **Credit 3(3-0)**

The historical and philosophical structure of agriculture in the American public school system will be analyzed. (S)

- AGED 304. Adult Education in Agriscience and Extension Education (formerly AGED 403)** **Credit 3(3-0)**  
Principles and techniques for organizing educational programs for adults involved in the food and fiber system. (F;S)
- AGED 405. Materials and Methods of Teaching Agricultural Education and Extension (formerly AGED 501)** **Credit 3(3-0)**  
This course covers the principles of teaching as applied to agriculture in secondary schools and cooperative extension. Preparing and using lesson plans and organizing teaching aids to meet educational and community needs will also be a part of this course.
- AGED 406. Program Planning and Evaluation (formerly AGED 503)** **Credit 3(3-0)**  
This course covers the process of program building and evaluation in agricultural and extension education.
- AGED 407. Overview of Environmental Education (formerly AGED 507)** **Credit 3(3-0)**  
This course examines the overall complexities of the environment, including issues of sustainability as related to mankind's impact upon the environment. An overview of various curriculum materials that can be utilized for instruction in the area of environmental science will be covered. Prerequisites: Consent of instructor. (F;S;SS)
- AGED 408. Cooperative Extension Organization and Methods (formerly AGED 508)** **Credit 3(3-0)**  
The principles, objectives, organization, program development and methods in cooperative extension will be examined. Special emphasis will be given to cooperative extension programming within North Carolina. Prerequisites: Consent of instructor. (F;S;SS)
- AGED 420. Special Problems in Agricultural Education and Extension (formerly AGED 520)** **Credit 1-6(1-6)**  
Special work in problems dealing with Agricultural Education and Extension will be examined. (Enrollment by permission of department)
- AGED 487. Student-Teaching (formerly AGED 502)** **Credit 12(12-0)**  
Students will be required to spend a minimum of twelve weeks in an approved teaching center doing observation and directed student teaching. Prerequisite: AGED 501. (F;S)
- AGED 498. Internship in Extension, Government, or Agribusiness (formerly AGED 504)** **Credit 6(6-0)**  
Students will be required to spend a minimum of six weeks in an approved extension program, governmental agency, or agribusiness firm doing observation and directed professional work. (F;S;SS)
- Advanced Undergraduate and Graduate**
- AGED 600. Youth Organization and Program Management** **Credit 3(3-0)**  
Principles, theories, and practices involved in organizing, conducting, supervising and managing youth organizations and programs will be examined. Emphasis will be on the analysis of youth organization and programs in vocational and extension education. (SS)
- AGED 601. Adult Education in Vocational and Extension Education** **Credit 3(3-0)**  
This course is a study of the principles and problems of organizing and conducting programs for adults. Emphasis is given to the principles of conducting organized instruction in agricultural education, extension and related industries. (F)
- AGED 607. Environmental Education** **Credit 3(3-0)**  
This course examines the principles and practices of understanding the environment and the interrelated complexities of the environment. The course will include a study of agricultural occupations related to the environment and materials that need to be developed for use by high school teachers of agriculture and other professional workers. (S)
- AGED 608. Agricultural Extension Organization and Methods** **Credit 3(3-0)**  
The principles, objectives, organization, program development and methods in cooperative extension will be examined. (F)
- AGED 609. Community Analysis and Rural Life** **Credit 3(3-0)**  
This course is the study of the educational processes, structure and function of rural society, and the role which diverse organizations, agencies, and institutions play in the education and adjustment of rural people to the demands of modern society. (SS) (DEMAND)
- AGED 610. International Education in Agriculture** **Credit 3(3-0)**  
This course examines formal and informal agricultural education systems and related situations and processes which influence agricultural development in developing countries. Included are the nature and scope of the world food situation, the rationale and extent of U.S. involvement in development efforts, and the agencies and organizations involved and procedures they use. Educational programs that will enable families to improve their quality of life will be emphasized. (DEMAND)
- AGED 611. Special Problems In Agricultural Education and Extension** **Credit 1-6 (1-6 repeatable)**  
Special work in problems dealing with Agricultural Education and Extension will be examined. Students should be at the graduate level or be working on their lateral or provisional license in agricultural education. (Enrollment by permission of department.)
- AGED 612. Field Studies In Agricultural Education** **Credit 1-6(1-6 repeatable)**  
Field Studies involved in Agricultural and Extension Education. (Enrollment by permission of department.)
- AGED 620. Rural Communities and Leadership** **Credit 3(3-0)**  
This course will focus upon the importance of grassroots leadership development within the context of rural community settings.

**COURSE DESCRIPTIONS IN AGRICULTURAL AND ENVIRONMENTAL SYSTEMS  
(AGRIBUSINESS AND FOOD INDUSTRY MANAGEMENT)  
(Undergraduate)**

<b>ABM 130. Introduction to Agribusiness and Food Industries</b>	<b>Credit 1(1-0)</b>
This course provides an introductory overview of the characteristics, scope and functions of the U.S. food and fiber production/processing/distributing system. (F)	
<b>ABM 235. The Economics of World Food and Resources</b>	<b>Credit 3(3-0)</b>
This course provides an international and multidisciplinary perspective on food security and resources. (S)	
<b>ABM 240. Information Technology in Agribusiness</b>	<b>Credit 3(3-0)</b>
This course is designed to include practical use of computers and information technology to manage agribusiness topics. (F)	
<b>ABM 250. Dollar Enterprise</b>	<b>Credit 3(3-0)</b>
This course offers an integrated hands on learning and training opportunity for students to gain knowledge and experience in entrepreneurial mindset, decision making and new venture creature.	
<b>ABM 300. Rural Communities and Economic Development</b>	<b>Credit 3(3-0)</b>
This course is designed to offer participants an in depth understanding of rural communities in contemporary Western society. The central focus in this course is on the set of social and economic components that constitute the very fabric of communities in the context of rural settings. (F)	
<b>ABM 330. Applied Economics in Agribusiness</b>	<b>Credit 3(3-0)</b>
This course presents microeconomic and macroeconomic principles that relate to the consumption and production of food and fiber. (F;S)	
<b>ABM 337. Introduction to Local Food Systems</b>	<b>Credit 3(3-0)</b>
This course will examine the social, economic and ecological consequences of the modern, industrial agriculture paradigm. Topics will include history of agriculture, world views, the sustainability concept, alternative agriculture systems, world food systems, agro-ecology, ecological economics, biotechnology, local food systems and the geography of hunger. (F)	
<b>ABM 340. The Global Agricultural Economy, Hunger and Poverty</b>	<b>Credit 3(3-0)</b>
This course will introduce students to the interdependencies between the world's food, populations, and poverty problems. Specific emphasis will be placed on relationships between wealthy and poor countries, particularly in terms of policies, trade, and aid. (S)	
<b>ABM 406. Quantitative Analysis in Agribusiness</b>	<b>Credit 3(3-0)</b>
This course will introduce modern quantitative methods used in decision making in business and economics. Emphasis will be placed on understanding and interpreting standard techniques using relevant software. Prerequisites: MATH 111 and ABM 240. (F;S)	
<b>ABM 430. Agribusiness Sales and Advertising</b>	<b>Credit 3(3-0)</b>
This course presents the principles of professional sales techniques used by food and agricultural firms. A study of the major marketing strategies and decisions that must be made by agribusiness firms, including target market selection, marketing research, sales forecasting, product policies, distribution channels, pricing, and advertising. Prerequisite: ABM 330. (S)	
<b>ABM 432. Accounting for Agribusiness</b>	<b>Credit 3(3-0)</b>
The course introduces financial accounting and practices that make students familiar with management decision-making techniques. In addition to accounting concepts and procedures, this course addresses other principles from economics, finance, business organizations and analysis of the agribusiness enterprises. Prerequisites: MATH 111 and ABM 330. (F)	
<b>ABM 434. Food and Agribusiness Marketing</b>	<b>Credit 3(3-0)</b>
This course emphasizes the principles and practices as applied to food and fiber products. Other issues to be examined include form, place and time possession utility; the ultimate consumer's market, food and agricultural industries, the system of middlemen, exchange market operations, futures contracts, price determination, and marketing cost. Prerequisite: ABM 330. (F)	
<b>ABM 436. Agricultural Prices and Forecasting</b>	<b>Credit 3(3-0)</b>
Price theory and techniques for predicting price behavior of general economy and price behavior of individual agricultural products will be analyzed. Provides practice in the application of economics and statistics to agricultural price analysis. Prerequisite: ABM 330. (S)	
<b>ABM 438. Resource and Environmental Economics and Policy</b>	<b>Credit 3(3-0)</b>
This courses presents economic theory and concepts associated with natural resources - renewable resources (forests, fisheries and wildlife populations), and non-renewable resources (minerals and energy resources, soil); implications of market failures for public policy; design of environmental policy; theory of welfare measurement; and measuring the benefits of environmental improvement. Prerequisite: ABM 330. (S)	
<b>ABM 440. Alternative Marketing for Local Food Systems</b>	<b>Credit 3(3-0)</b>
This course will cover marketing and business options for small-scale producers. Specific topics include community-supported agriculture, the direct marketing resources, value-added expertise, commodity data, regulatory programs and business planning tools needed to enhance rural enterprise. (S)	
<b>ABM 442. Futures and Options Markets</b>	<b>Credit 3(3-0)</b>
This course studies the behavior of futures markets; how public agencies, businesses, and others use those markets. It also studies nature of various strategies involving options, commodity and futures contracts. Price determination in options and futures markets are examined. Prerequisites: MATH 111 and ABM 330. (F)	
<b>ABM 444. Financial Analysis for Agribusiness</b>	<b>Credit 3(3-0)</b>
This course covers the principles of financial management for agribusiness firms. Topics include the time value of money,	

analysis of financial records and of financial feasibility. Investment analysis, risk, markets and sources of loans for agribusiness firms will be explored. Prerequisites: MATH 111 and ABM 330. (F)

**ABM 446. Introduction to Agribusiness Research Methods** **Credit 3(3-0)**

This course is designed to provide a general understanding of agribusiness research through the use of various techniques of scientific methods. Subject matter includes the evaluation of research design - problem identification, literature review, data collection, methods of analysis, presentation of results, interpretation of findings, formation of conclusions, and the communication of recommendations. Prerequisite: ECON 305 or ABM 406. (S)

**ABM 448. Internship** **Credit 3(3-0)**

This course is designed to provide the student with a capstone experience. The student participates in a temporary period of supervised work experience which provides him/her with an opportunity to apply theoretical knowledge to a work situation. The internship is designed to give students supervised work experience in agriculture and environmental sciences. Prerequisite: Junior or Senior Standing. (F;S;SS)

**ABM 450. Agricultural Cooperatives** **Credit 3(3-0)**

This course is an introduction to an in-depth examination of the agricultural cooperative. Students will gain a working knowledge of the concepts, principles, and terminology of agricultural cooperatives through reference materials, lectures and presentations by guest speakers. The course will also explore the strengths and weaknesses of agricultural cooperative as well as its unique management and operational challenges. Prerequisite: ABM 330. (S)

**ABM 475. Computer Applications in Agribusiness** **Credit 3(3-0)**

This course will serve as an introduction to computer applications utilized in agricultural decision-making. Emphasis will be placed on utilizing existing software packages for microcomputers to make financial, economic and quantitative analysis of farm and agribusiness-related problems. (F)

**ABM 480. Agribusiness and Food Industry Management** **Credit 3(3-0)**

The economic structure and importance of the agribusiness and food industry will be discussed. Other topics to be covered include marketing, production, risk, human resource management, and financial management in agribusiness firms. Prerequisites: MATH 111 and ABM 330. (F)

**Advanced Undergraduate and Graduate**

**ABM 632. Food and Agricultural Policy** **Credit 3(3-0)**

Principles of agricultural and food policy formulation; agricultural adjustment processes; agricultural price and income policies in relation to land use, water, and rural development policies; interrelationships among U.S. and foreign agriculture and trade policies. (S)

**ABM 634. International Agribusiness Marketing** **Credit 3(3-0)**

This course will examine and analyze the series of problems, issues, policies, regulations and procedures relevant to the global marketing of agricultural and related commodities by agribusiness firms. Emphasis will be on combining firm-level agribusiness marketing concepts with international agribusiness marketing and export management practices, including the development of international agribusiness marketing plans and case studies from international agribusiness firms. Prerequisite: Consent of instructor. (F)

**ABM 638. Special Problems in Agricultural Economics** **Credit 3(3-0)**

This course is designed for students who desire to work out special problems in the field of agricultural economics; problem definition, formulation and investigation will be emphasized. Prerequisite: Consent of the department chairperson. (F)

**ABM 640. Advanced Agribusiness Management** **Credit 3(3-0)**

This course emphasizes decision-making of agribusiness managers, agribusiness management consultants, and entrepreneurs of agriculturally related firms. Contemporary topics facing the agribusiness decision-maker such as how to establish an agriculturally based firm, marketing agribusiness firms through E-Commerce, examining food supply chains, establishing contractual agreements with other firms, and evaluating industrial organization within the agribusiness industry are presented.

**ABM 641. Special Problems in Agribusiness Management** **Credit 3(3-0)**

This course relies heavily on the "Harvard Case Studies Approach" to make decisions and solve problems faced by agribusiness managers. Also, students will be exposed to quantitative techniques for analyzing and solving problems confronting the firm. Emphasis is placed on applying theoretical concepts to the real world decision-making environment. Prerequisite AGEC 640 or consent of instructor. (DEMAND)

**ABM 648. Appraisal and Finance of Agribusiness Firms** **Credit 3(3-0)**

This course evaluates principles of land valuation, appraisal and taxation. Special areas include the role of credit in a money economy, classification of credit, principles underlying the economic use of credit and the role of the government in the field of credit. (DEMAND)

**ABM 675. Computer Applications in Agriculture** **Credit 3(3-0)**

This course is designed to provide students with the tools to utilize computers for agricultural decision-making. Emphasis will be placed on utilizing existing software packages for microcomputers to make financial, economic and quantitative analysis of farm and agribusiness-related problems.

**DIRECTORY OF FACULTY**

**Antoine J. Alston** ..... **Professor & Associate Dean for Academic Studies**  
B.S., M.S., North Carolina A&T State University; Ph.D., Iowa State University

<b>Godfrey C. Ejimakor</b> .....	<b>Professor</b>
B.S., North Carolina State University; M.S., North Carolina A&T State University; Ph.D., Texas Tech	
<b>Paula Faulkner</b> .....	<b>Associate Professor</b>
B.S., M.S., North Carolina A&T State University, Ph.D., Penn State University	
<b>Benjamin Gray</b> .....	<b>Research Professor</b>
B.S., M.S. North Carolina A&T State University, Ph.D., North Carolina State University	
<b>Kenrett Y. Jefferson-Moore</b> .....	<b>Professor</b>
B.S., Southern University, M.S., Alabama A&M University; Ph.D., Auburn University	
<b>Donald R. McDowell</b> .....	<b>Professor</b>
B.S., Southern University A&M; M.S., Ph.D., University of Illinois	
<b>John P. Owens</b> .....	<b>Adjunct Instructor</b>
B.S., Appalachian State University, M.S., North Carolina A&T State University	
<b>Frank R. Roberts</b> .....	<b>Assistant Professor</b>
A.S., Murray State College; B.S., M.S., Ph.D., Oklahoma State University	
<b>Terrence Thomas</b> .....	<b>Research Professor</b>
B.S., University of West Indies; M.S., University of Wisconsin; Ph.D., Louisiana State University	
<b>Chastity Warren English</b> .....	<b>Associate Professor</b>
B.S., M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University	
<b>Anthony K. Yeboah</b> .....	<b>Professor and Chairperson</b>
B.S., University of Science and Technology; M.S., Ph.D., Iowa State University	
<b>Osei-Agyeman Yeboah</b> .....	<b>Research Professor</b>
B.S. University of Science and Technology, Kumasi, Ghana, M.S. North Carolina A&T State University; Ph.D. University of Nebraska	

**Department of Animal Sciences**  
<http://www.ncat.edu/caes/departments/ansc/index.html>

**Ralph C. Noble, Chairperson**

### OBJECTIVES

Baccalaureate degree programs in the Department of Animal Sciences prepare students for careers in animal sciences, biotechnology, biomedical research, pharmaceutical, and related industries, for graduate school, and for entry into veterinary and human medicine professional schools. The Department provides service to the people of North Carolina, the United States, and the world.

### DEGREE PROGRAMS

- Animal Science – Bachelor of Science
- Animal Science (Animal Industry) – Bachelor of Science
- Laboratory Animal Science – Bachelor of Science

Interdisciplinary certificate programs in Biotechnology (18 credit hours), Waste Management (18 to 20 credit hours) and Agricultural and Natural Resources Information Science (18 credit hours) are offered to students enrolled in Bachelor of Science degree programs in the department.

### INTERDISCIPLINARY CERTIFICATE IN BIOTECHNOLOGY

The interdisciplinary certificate in biotechnology is available to undergraduate students interested in learning and preparing for careers in Biotechnology. Biotechnology is a rapidly growing field based on the application of biological organisms, systems, or processes to learning about the science of life and the improvement of the value of materials and organisms such as crops, livestock and pharmaceuticals.

Students enrolled in the certificate program will acquire special skills in biotechnology, be exposed to cutting edge instruments and equipment, participate in critical assessment of biotechnology methods and approaches and obtain recognition in the form of a certificate at graduation.

The program requires 18 credit hours consisting of nine core credits and nine elective credits. Core requirements are concurrent with major degree requirements. Biotechnology certificate credits can be used toward the completion of degrees in the following majors: Animal Sciences, Food and Nutritional Sciences, Natural Resources and Environmental Design, Horticulture, Chemistry, Biology and Chemical Engineering.

Each student enrolled in the certificate program must satisfactorily complete a minimum of 9 credit hours from the following courses: Core credits 9 credit hours: MATH 131, MATH 132, PHYS 225, PHYS 235, PHYS 226, PHYS 236, CHEM 106, CHEM 116, CHEM 107, CHEM 117, CHEM 251, CHEM 252, BIOL 101, BIOL 102.

Elective credits 9 credit hours: Agriculture majors are required to take ANSC 214 and ANSC 665 and an interdisciplinary elective.

Suggested Interdisciplinary courses: ANSC 637, LASC 660, BIOL 401, BIOL 466, BIOL 630, BIOL 671, BIOL 620, BIOL 650, CHEN 605, CHEN 608, CHEN 655, CHEM 451, CHEM 422, CHEM 651 and 652, HORT 600, MCEN 310, NARS 600, NARS 667, HEFS 652.

## CERTIFICATE IN EQUINE MANAGEMENT

The Department of Animal Sciences offers the Certificate in Equine Management curriculum, designed to prepare students for positions within the horse industry. The curriculum is management oriented, preparing graduates for the widest range of available equine jobs; areas of specialization may be pursued during the internship. Farm management, breeding, nutrition, selection/judging, and health are covered in detail; training, teaching, and riding are also included. The graduates' wide spectrum of knowledge suits them for jobs with many different types of equine operations: grooms to assistant managers, private to recreational and racing barns; breed to discipline-oriented farms.

The Certificate in Equine Management is available to students in all university majors. The Certificate is awarded during Commencement. Interested students are required to complete 21 semester hours from the following courses: ANSC 218, 219, 220, 313, 314, 432 (formerly 614) and LASC 398 (formerly 363).

### ADMISSION AND DEGREE PROGRAMS REQUIREMENTS

Admission of students to the undergraduate degree programs in the Department of Animal Sciences is based upon the general admission requirements of the University. The B.S. degree in Animal Science, the B.S. with a concentration in Animal Science (Animal Industry) and the B.S. degree in Laboratory Animal Science requires a minimum of 120 semester hours. It is a university requirement that students complete three hours of Social/Behavioral Sciences, three hours of Global Awareness, and six hours of Humanities/Fine Arts. During summer vacations, internships are strongly recommended. During matriculation through the degree program, hands-on activities with various animal species are built into our education program. The various species are available on-campus through the Laboratory Animal Resource facility as well as our beef, dairy, equine, poultry, small ruminant (meat goats and sheep), swine and poultry units.

### CAREER OPPORTUNITIES

Graduates from the department have numerous and varied career opportunities that are related to the area of a student's specialization and interest. Careers include but are not limited to: sales positions in animal science and related industries; feed, food, and animal health professionals; technical professionals in biotechnology, biomedical and pharmaceutical industries, managerial, administrative, and public relations positions; product managers in swine, beef, dairy, poultry, sheep, and goat production; careers in veterinary and human medicine; consultants, representatives and managers with animal breeding and livestock marketing organizations and stockyard companies; technicians with zoos, kennels and similar facilities, breed companies and production animal agriculture; teachers and researchers in education; extension specialists and livestock insurance representatives; federal agency officials; managers with commercial feedlots, and laboratory technicians; managers, researchers, and technicians with livestock processing plants; and journalists with radio and television stations.

### HUMAN AND VETERINARY MEDICAL PREPARATION

#### (Pre-Veterinary)

Preparation for admission to Veterinary and Human Medical Schools is offered through the degree programs in Laboratory Animal Science or Animal Sciences. These programs have become the first choice programs for students aspiring to enter medical professional schools.

## Department of Animal Sciences Bachelor of Science in Laboratory Animal Science Major Code: LASC

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
LIBS 202 <sup>2</sup>	3	MATH 112	4
MATH 111*	4	BIOL 100 or 101	4
LASC 161	1	ANSC 163	3
LASC 162	3	HIST 106 <sup>2</sup>	3
FRST 101	1	<b>Semester Total</b>	<b>17</b>
<b>Semester Total</b>	<b>15</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	

CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
HIST 130 <sup>4</sup>	3	PSYC 101	3
ENGL 200	3	ANSC 212	3
LASC 261	3	MATH 224	3
ANSC 214	3	SPCH 250	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
CHEM 221	3	CHEM 222	3
CHEM 223	2	CHEM 224	2
LASC 361	4	LASC 362	3
LASC 365	4	PHYS 226	3
PHYS 225	3	PHYS 236	1
PHYS 235	1	<b>Semester Total</b>	<b>12</b>
<b>Semester Total</b>	<b>17</b>		
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
CHEM 251	2	BIOL 221	4
CHEM 252	1	LASC 436 <sup>1</sup> or ANSC 437, 431	3
MGMT 220	3	LASC 461 <sup>1</sup> or ANSC 351	3
LASC 462	3	LASC 453	4
LASC 489	1	<b>Semester Total</b>	<b>14</b>
LASC 398 or 498 (Capstone)	3		
<b>Semester Total</b>	<b>13</b>		

**Total Credit Hours: 120**

<sup>1</sup>Other Major courses which could be selected if needed: ANSC 351, LASC 464, 467

<sup>2</sup>The following courses can be used for a social/behavioral science: SOCI 200; African American: HIST 107, 103

<sup>3</sup>The following courses can be used for humanities/fine arts: ENGL 201, 230; MUSI 216; PHIL 101, 104, 266, 267; African American: ENGL 333, 304; MUSI 220

<sup>4</sup>Global Awareness Studies: HIST 207, HIST 231, 216, PHIL 103, or 201

\*MATH 111 (SAT qualification is 520-570 or ACT Score 21-23) – Otherwise students of 480-510 or ACT Score 18-20 will take MATH 103 and 104 and then proceed to MATH 112.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn an average grade of C or better in the following courses:*

LASC 161	LASC 453
LASC 162	LASC 461
LASC 261	LASC 462
LASC 361	LASC 489
LASC 362	ANSC 163
LASC 365	ANSC 212
LASC 436	

- The student in consultation with advisor should choose major and other electives
- Special consideration to changes in the curriculum will be considered based upon Students career goals
- Management courses may range from MGMT 220 and/or 422



**Bachelor of Science in Animal Science (Animal Industry)**  
**Major Code: ANSC**  
**Concentration Code: AIND**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
LASC 161	1	LIBS 202 <sup>3</sup>	3
HPED Elective <sup>5</sup>	1	ANSC 163	3
LASC 162	3	HIST 106 <sup>2</sup>	3
BIOL 100 or 101	4	<b>Semester Total</b>	<b>15</b>
FRST 101	1		
<b>Semester Total</b>	<b>16</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
CHEM 100	3	CHEM 104	3
CHEM 110	1	CHEM 114	1
HIST 130 <sup>4</sup>	3	PSYC 101	3
ACCT 203	3	ANSC 212	3
ANSC 214	3	ANSC 217	3
ABM 240	3	BIOL 220 or 221	4
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>17</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
ECON 201	3	ABM 434	3
ENGL 200	3	ANSC 316	3
ANSC 311	3	ANSC 351	3
ABM 330	3	MGMT 422	3
LASC 365	4	LASC 398 or 498	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
ABM 446	3	ABM 436	3
SPCH 250	3	ABM 438	3
ANSC 413	2	Major Elective <sup>1</sup>	3
LASC 489	1	ANSC 435 (Capstone)	3
ANSC 455	4	<b>Semester Total</b>	<b>12</b>
<b>Semester Total</b>	<b>13</b>		

**Total Credit Hours: 120**

<sup>1</sup>Major electives include (ANSC 312, 415, 321, 455; LASC 261)

<sup>2</sup>The following courses can be used for a social/behavioral science: SOCI 200; African American: HIST 107, 103

<sup>3</sup>The following courses can be used for humanities/fine arts: ENGL 201, 230; MUSI 216; PHIL 101, 104, 266, 267; African American: ENGL 333, 334; MUSI 220

<sup>4</sup>Global Awareness Studies: HIST 207, HIST 231, 216, PHIL 103 or 201

<sup>5</sup>HPED electives include (HPED 104, 105, 119, 125, 126)

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn an average grade of C or better in the following courses:*

LASC 161	ANSC 217
LASC 162	ANSC 311
LASC 398 or 498	ANSC 413
LASC 489	ANSC 316
ANSC 163	ANSC 421
ANSC 212	ANSC 351
ANSC 214	ANSC 455

- The student in consultation with advisor should choose major and other electives<sup>1</sup>
- Special consideration to changes in the curriculum will be considered based upon Students career goals
- Management courses may range from MGMT 220 and/or 422
- Courses needed for a Certificate in Equine Management: ANSC 218, 219, 220, 313, 314, and LASC 398.

**Department of Animal Sciences**  
**Bachelor of Science in Animal Science**  
**Major Code: ANSC**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
LIBS 202 <sup>3</sup>	3	MATH 112	4
LASC 161	1	ANSC 163	3
HPED Elective <sup>5</sup>	1	BIOL 100 or 101	4
LASC 162	3	HIST 106 <sup>2</sup>	3
MATH 111*	4	<b>Semester Total</b>	<b>17</b>
FRST 101	1		
<b>Semester Total</b>	<b>16</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
HIST 130 <sup>4</sup>	3	ENGL 200	3
ANSC 214	3	MATH 224	3
LASC 261	3	ANSC 212	3
PSYC 101	3	<b>Semester Total</b>	<b>13</b>
<b>Semester Total</b>	<b>16</b>		
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
CHEM 221	3	CHEM 222	3
CHEM 223	2	CHEM 224	2
ANSC 311	3	BIOL 220 or 221	4
LASC 361	4	ANSC 351	3
PHYS 225	3	SPCH 250	3
PHYS 235	1	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>16</b>		
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	

CHEM 251	2	LASC 461	3
CHEM 252	1	Major Elective <sup>1</sup>	3
PHYS 226	3	ANSC 437	3
PHYS 236	1	ANSC 435 (Capstone)	3
LASC 362	3	ANSC 316	3
ANSC 413	2	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>12</b>		

**Total Credit Hours: 120**

<sup>1</sup>Major electives include (ANSC 217, 312, 415, 321, 455, 432, 436; LASC 398, 498, 472)

<sup>2</sup>The following courses can be used for a social/behavioral science: SOCI 200; African American: HIST 107, 103

<sup>3</sup>The following courses can be used for humanities/fine arts: ENGL 201, 230; MUSI 216; PHIL 101, 104, 266, 267; African American: ENGL 333, 334; MUSI 220

<sup>4</sup>Global Awareness Studies: HIST 231, PHIL 103 or 201

<sup>5</sup>HPED electives include (HPED 104, 105, 119, 125, 126)

\*MATH 111 (SAT qualification is 520-570 or ACT Score 21-23) - Otherwise students of 480-510 or ACT Score 18-20 will take MATH 103 and 104 and then proceed to MATH 112.

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn an average grade of C or better in the following courses:*

LASC 161	ANSC 212
LASC 162	ANSC 214
LASC 261	ANSC 311
LASC 361	ANSC 316
LASC 362	ANSC 413
LASC 461	ANSC 351
ANSC 163	ANSC 437

- The student in consultation with advisor should choose major and other electives
- Special consideration to changes in the curriculum will be considered based upon Students career goals

**COURSE DESCRIPTIONS IN ANIMAL SCIENCE**

**ANSC 163. Animal and Laboratory Animal Sciences (formerly ANSC 211)** **Credit 3(2-2)**

Basic genetics, physiology, nutrition, animal products, processing, disease control, euthanasia, anesthesiology, and pharmacology. Production practices, management, and health of livestock and animals used in biomedical research. Prerequisite: LASC 162. (F;S)

**ANSC 212. Feeds and Feeding** **Credit 3(3-0)**

Composition and nutrient content of feeds, basic principles of feeding, comparative digestive systems, basic principles of nutrition for ruminant and monogastric animals. Prerequisites: LASC 162 and ANSC 211. (S)

**ANSC 214. Agricultural Genetics** **Credit 3(2-2)**

Basic principles of heredity in relation to animal and plant improvement. Laboratory in cytology and the genetic basis of inheritance. Prerequisite: BIOL 101, 240, or 160. (F;S)

**ANSC 217. Anatomy and Physiology of Farm Animals** **Credit 3(2-2)**

Structures and functions of the body systems and organs of domestic animals. Prerequisites: ANSC 163 (formerly ANSC 211), BIOL 160. (S)

**ANSC 311. Livestock Production (formerly ANSC 411)** **Credit 3(2-2)**

Selection, breeding, feeding, management of beef cattle, goats and sheep. Prerequisite: ANSC 212. (F)

**ANSC 312. Meat and Meat Products** **Credit 3(2-2)**

Meats from the consumer, processor, and producer standpoints. Meat as a food; inspection, grading, processing, preservation, and identification. (F)

- ANSC 316. Swine Production (formerly ANSC 416)** **Credit 3(2-2)**  
Breeding, nutrition, production, and management in modern swine enterprises. Marketing and economic aspects of swine production. Swine production and the environment. Prerequisite: ANSC 163 (formerly ANSC 211). (S)
- ANSC 413. Sanitation and Diseases of Farm Animals** **Credit 2(2-0)**  
Sanitation and the common diseases of livestock with reference to causes, prevention and treatment as well as their relation to the environment. (F)
- ANSC 415. Horse Production** **Credit 3(2-2)**  
A survey of the light horse industry in the U.S. Horse Breeds and registry associations. Breeding, care, and management in the light Horse. Comparative judging of breed groups' preventative procedures; disease control. (F)
- ANSC 417. Global Livestock Systems** **Credit 3(3-0)**  
Global trends in livestock production for food security and safety. Prerequisite: Senior standing. (F;S;SS)
- ANSC 431. Principles of Animal Nutrition** **Credit 3 (3-0)**  
Fundamental of modern animal nutrition; classification of nutrients, nutrient metabolism; nutrient partitioning in production. Prerequisite: ANSC 212 or permission of instructor. (F)
- ANSC 432. Animal Breeding (formerly ANSC 614)** **Credit 3(3-0)**  
Application of genetic and breeding principles to livestock production and improvement. Phenotypic and genotypic effects of selection methods; mating systems. Prerequisites: ANSC 163 (formerly 211) and 214. (F)
- ANSC 433. Selection of Meat and Meat Products (formerly ANSC 615)** **Credit 3(2-2)**  
Identification, grading and cutting of meats. (SS)
- ANSC 435. Special Problems in Livestock Management (formerly ANSC 619)** **Credit 3(3-0)**  
Problems in feeding, breeding and management in beef cattle, sheep and swine production. Prerequisite: Senior standing. (F)
- ANSC 436. Physiology of Reproduction in Vertebrate Species** **Credit 3(1-6)**  
Mechanisms for reproductive processes with special emphasis on their interaction with the disciplines of nutrition, immunology and biochemistry. Prerequisite: ANSC 163 or permission of instructor. (S)
- ANSC 437. Techniques in Biotechnology** **Credit 3(0-0)**  
Basic principles and laboratory experiences in biotechnology. Concepts of DNA structure, function, related applications in biotechnology. Methods: isolating DNA and RNA; genomic DNA and plasmid DNA analysis, gel electrophoresis, Southern hybridization, gene probes, and more. Prerequisites: CHEM 251, ANSC 214; BIOL 466 or permission of instructor. (F;S)
- ANSC 441. Disease Management of Livestock and Poultry**  
Prevention and control of diseases in livestock species and Poultry; Micro and macroenvironments that result in disease. Prerequisite: ANSC 351(formerly ANSC 451). (S)
- ANSC 611. Principles of Animal Nutrition** **Credit 3(3-0)**  
Fundamental of modern animal nutrition; classification of nutrients, nutrient metabolism; nutrient partitioning in production. (S)
- ANSC 624. Physiology of Reproduction in Vertebrate Species** **Credit 3(2-2)**  
Mechanisms of reproductive processes with special emphasis on their interaction with the disciplines of nutrition, immunology and biochemistry. Prerequisite: LASC 461, 623, or permission of instructor. (F)
- ANSC 637. Environmental Toxicology** **Credit 3(3-0)**  
Basic principles of environmental toxicology; regulatory perspectives; spills, anthropogenic pollution problems; ecological and human risk assessments; overview of classes of toxic agents, routes of exposure, target animals (aquatic, terrestrial, and mammalian species), and toxicological testing. Prerequisites: BIOL 101, CHEM 106 or 107, and CHEM 251. (S)
- ANSC 665. Techniques in Biotechnology** **Credit 3(2-2)**  
Basic principles and laboratory experiences in biotechnology. Concepts of DNA structure, function, related applications in biotechnology. Methods: isolating DNA and RNA; genomic DNA and plasmid DNA analysis, gel electrophoresis, Southern hybridization, gene probes, and more. Prerequisite: CHEM 251, ANSC 214, BIOL 466, or permission of instructor. (F;S)
- ANSC 713. Advanced Livestock Production** **Credit 3(2-2)**  
Research relating to various phases of livestock production; the livestock enterprise on the whole farm system. Overall economic performance. (F)

#### DAIRY SCIENCE

- ANSC 421. Dairy Cattle Production** **Credit 3(2-2)**  
Lactation, management and nutrition for efficient milk production. Dairy cattle breeding and selection. Care of dairy equipment and dairy cattle records. Prerequisite: ANSC 212. (F)

#### POULTRY SCIENCE

- ANSC 354. Fundamentals of Poultry Breeding** **Credit 4(3-2)**  
Breeding, selection, and improvement of poultry. Prerequisites: ANSC 214 and 351 (formerly ANSC 451). (S)
- ANSC 351. Poultry Production (formerly ANSC 451)** **Credit 3(2-2)**  
Principles and practices of poultry production. Prerequisite: ANSC 163 (formerly ANSC 211). (F)
- ANSC 455. Advanced Commercial Poultry Management (formerly ANSC 555)** **Credit 4(3-2)**  
Management of poultry farm and hatchery operation will be emphasized. Prerequisite: ANSC 351 (formerly ANSC 451). (F)
- ANSC 641. Disease Management of Livestock and Poultry** **Credit 3(2-2)**  
Prevention and control of diseases in livestock species and Poultry; Micro and macroenvironments that result in disease. Prerequisite: ANSC 351 (formerly ANSC 451). (S)

## LABORATORY ANIMAL SCIENCE

<b>LASC 161. Orientation I</b>	<b>Credit 1(1-0)</b>
Orientation to college academic life with consideration for program demands, learning techniques and resources. (F)	
<b>LASC 162. Introduction to Animal and Laboratory Animal Sciences</b>	<b>Credit 3(3-0)</b>
Ethical considerations, basic sciences, history of use, laws, and guidelines in using livestock and laboratory animals. (F)	
<b>LASC 261. Medical Terminology</b>	<b>Credit 3(3-0)</b>
Introduction to medical terminology; vocabulary building using Latin and Greek terms as it relates to basic anatomy, physiology, and pathology. (F;S)	
<b>LASC 361. Integrated Anatomy (formerly LASC 459)</b>	<b>Credit 4(3-3)</b>
The origin, development, and structure of bio-systems in laboratory animals, food animals and companion animals will be studied. Prerequisite: LASC 261. (F)	
<b>LASC 362. Microscopic Anatomy (formerly LASC 460)</b>	<b>Credit 3(2-3)</b>
Microscopic studies of cells and tissues of laboratory, food, and companion animals. Prerequisite: LASC 361 (formerly LASC 459). (F;S)	
<b>LASC 365. Biology, Diseases and Care of Laboratory Animal</b>	<b>Credit 4(3-3)</b>
The biology, diseases and care of laboratory animals; behavior of common laboratory animals; handling, restraint; necropsy and diagnostic procedures: anesthesia, aseptic surgical procedures. (F)	
<b>LASC 398. Internship I (formerly LASC 363)</b>	<b>Credit 1-6(0-2 to 12)</b>
Preparation and field experiences with activities in Laboratory Animal Sciences. Prerequisites: Junior standing and special departmental permission. (F;S;SS)	
<b>LASC 436. Principles of Toxicology (formerly LASC 636)</b>	<b>Credit 3(2-3)</b>
General principles involved in absorption, distribution, and excretion of toxicants, biotransformation, adverse effects, and factors that modify their effects. Toxic effects on specific target organs. (S)	
<b>LASC 453. Laboratory Animal Management and Clinical Techniques (formerly LASC 653)</b>	<b>Credit 4(2-6)</b>
Principles, theories and current concepts of laboratory animal science. Government regulations, ethical considerations, animal facility management and animal health surveillance. Prerequisite: Permission of instructor. (S)	
<b>LASC 461. Physiology of Domestic Animals</b>	<b>Credit 3(2-3)</b>
Function of bio-systems in laboratory animals, farm animals, and companion animals. Prerequisite: LASC 361 (formerly LASC 459). (S)	
<b>LASC 462. Principles of Medical Sciences</b>	<b>Credit 3(3-0)</b>
Basic concepts of diseases and the biological reactions to disease within the living body. Basic concepts on the living body; cell injury, inflammatory reactions; circulatory disturbances; immune disorders; growth disturbances; and the nature and cause of disease. (F)	
<b>LASC 464. Introduction to Research (formerly LASC 564)</b>	<b>Credit 3(2-3)</b>
Biomedical research techniques including fundamental laboratory investigations, precepts of the scientific method and experimental design; application of scientific instrumentation. Prerequisite: Senior standing. (S)	
<b>LASC 467. Immunological Techniques</b>	<b>Credit 3(1-6)</b>
This course discusses the principles and theory of techniques commonly used in research and diagnosis laboratories. The techniques covered include: radial immunodiffusion, immunohistochemistry, ELISA, western blot, and flow cytometry. The course is a combination of lecture and laboratory whereby the theory and principles these techniques are presented and opportunity for hands application of some of these techniques offered. Prerequisite: Senior standing. (S)	
<b>LASC 489. Seminar in Laboratory Animal Science (formerly LASC 569)</b>	<b>Credit 1(1-0)</b>
Discussion of current topics in laboratory animal science or histotechnology. (F)	
<b>LASC 498. Internship II (formerly LASC 463)</b>	<b>Credit 3-6(0-6 to 12)</b>
Field experiences in veterinary medical activities, Animal Industry and Animal Sciences including Equine Management. Prerequisites: LASC 363 and special departmental permission. (F;S;SS)	
<b>LASC 660. Special Techniques in Specimen Preparation, Immunological Techniques, Electron Microscopy, Radiology or Histotechnology</b>	<b>Credit 3(1-6)</b>
Special expertise in either the preparation of animal models for classroom, museum, and special display, the theoretical and practical aspects of immunological techniques, electron and light microscopy, radiology, tissue culture or histochemistry. Prerequisite: Senior standing or special departmental permission. (F;S;SS)	

## DIRECTORY OF FACULTY

<b>Uchenna Y. Anele</b> .....	<b>Assistant Professor</b>
B.S., Michael Okpara University of Agriculture, Umudlike; M.S., University of Agriculture, Abeokuta; Ph.D., University of Bonn, Germany	
<b>Yewande Fasina</b> .....	<b>Assistant Professor</b>
B.A., Obafemi Awolowo University (Nigeria); M.Sc., Ph.D., University of Saskatchewan	
<b>Andrea R. Gentry</b> .....	<b>Assistant Professor</b>
B.S., North Carolina A&T State University; DVM, North Carolina State University	
<b>Radiah Corn Minor</b> .....	<b>Associate Professor</b>
B.S., Florida A&M University; Ph.D., Meharry Medical College	

**Ralph C. Noble** ..... **Associate Professor and Chairperson**  
 B.S., M.S., Tuskegee University; Ph.D., University Illinois-Champaign-Urbana  
**Jenora Waterman** ..... **Associate Professor**  
 B.S., Bennett College; M.S., North Carolina A&T State University; Ph.D., North Carolina State University  
**Kyha D. Williams** ..... **Adjunct Assistant Professor**  
 B.S., North Carolina A&T State University; DVM, North Carolina State University  
**Mulumebet Worku** ..... **Professor**  
 B.Sc., Addis Ababa University, Alemaya College of Agriculture; M.S., Ph.D., University of Maryland, College Park

**Department of Family and Consumer Sciences**  
<http://www.ncat.edu/caes/departments/fcs/index.html>

**Jane T. Walker, Interim Chairperson**

### **OBJECTIVES**

The Department of Family and Consumer Sciences prepares students for professional careers that focus on improving the quality of life of individuals and families in a diverse society. These careers include employment in educational institutions, service institutions, community and government agencies, design and manufacturing industries, and other companies and industries that influence the quality of life. Students are also prepared for graduate school and for medical professional schools.

Students in Family and Consumer Sciences are prepared to assist families in meeting their quality nutritional needs, understanding human development, developing skills in family and parent education, managing materials and human resources, and acquiring appropriate and affordable living environments. The Department prepares students to apply new technologies and creative discoveries in apparel design and food science to address the needs of a diverse and changing society. The Department also empowers students to think critically, to communicate ideas effectively, and to develop leadership skills in the profession.

Faculty in the Department of Family and Consumer Sciences conduct research and engage in community activities that contribute to the body of knowledge in the areas of Child Development and Early Education, Food Science, Nutrition, Housing, Fashion Merchandising and Design, and Family Consumer issues. Furthermore, the Department has a commitment to provide continuing professional development for family and consumer sciences professionals that affects the quality of life of individuals, families and communities.

### **DEGREES OFFERED**

Child Development and Family Studies (Child Development and Family Relations) – Bachelor of Science  
 Child Development and Family Studies (Child Development and Family Studies B-K Licensure) – Bachelor of Science  
 Family and Consumer Sciences (Fashion Merchandising and Design) – Bachelor of Science  
 Family and Consumer Sciences (Consumer Sciences) – Bachelor of Science  
 Food and Nutritional Sciences (Food Science) – Bachelor of Science  
 Food and Nutritional Sciences (Pre-Medicine) – Bachelor of Science

### **MINOR OFFERED**

Child Development and Family Studies

### **CERTIFICATE IN FAMILY FINANCIAL PLANNING**

The Family Financial Planning Certificate program is an inter-institutional distance education certificate program created by the 1890 Family and Consumer Sciences – Distance Instructional Alliance (FCS-DIA): North Carolina A&T State University, Alabama A&M University, Fort Valley State University, South Carolina State University, Southern University, University of Arkansas at Pine Bluff, Tennessee State University, and the University of Maryland-Eastern Shore. The program is registered with the Certified Financial Planners Board of Standards and is delivered in accordance with a Memorandum of Agreement signed by each institution. The certificate program is available to students matriculating at North Carolina A&T State University as well as to individuals who hold a bachelor’s degree and are not currently enrolled at the University. The purpose of the certificate program is to prepare students for the CFP® Certification Examination. Each participating 1890 Alliance institution will award a certificate in Family Financial Planning to students who successfully complete the course requirements for the certificate and for a Bachelor’s Degree.

### **GENERAL PROGRAM REQUIREMENTS**

The admission of students to the undergraduate degree programs in the Department of Family and Consumer Sciences is based upon the general admission requirements of the University.

### **DEPARTMENTAL REQUIREMENTS**

Majors in the Department of Family and Consumer Sciences and all of the concentrations must complete the required programs of course work. A minimum grade of “C” is required in all core and program area courses for graduation.

### **ACCREDITATION**

All programs in the Department of Family and Consumer Sciences are nationally accredited by the American Association of Family and Consumer Sciences.

The Child Development and Family Relations concentration is approved by the National Council on Family Relations (NCFR) to offer the Certified Family Life Education program.

### THE CHILD DEVELOPMENT LABORATORY

The Child Development Laboratory (CDL) is licensed by the North Carolina Division of Child Development. It is primarily a teaching, learning, discovery, and servicing laboratory for students and faculty in the Department of Family and Consumer Sciences. The CDL is also available for use by students and faculty from other majors across the university that have an interest in child development, child behavior, special education, physical education, speech pathology, foreign language, social work, recreation, sociology, and other areas involving children and families. The CDL provides the opportunity for these students in their respective academic disciplines to make observational, instructional, evaluation, comparative and in-depth studies on child behavior and its related areas. The CDL embraces the "Creative Curriculum" which offers a variety of activities that integrate physical, intellectual, and social-emotional stimulation.

### CAREER OPPORTUNITIES

The programs in the Department of Family and Consumer Sciences prepare students for, but do not limit them to, the following suggested careers as community/early childhood center providers, family specialists, child-care directors, sport and corporate wellness nutritionists, private practice, nutrition-related business and industries, nutritionists in hospitals and other health care facilities, researchers in universities and medical centers, financial planners, apparel designers, visual merchandisers, retail buyers, managers, sketch artists, product development specialists, global sourcing managers, food production management specialists, quality assurance specialists, technical sales, food inspection specialists, and researchers for federal, state, and local government.

**Department of Family and Consumer Sciences**  
**Bachelor of Science in Family and Consumer Sciences (Fashion Merchandising and Design)**  
**Major Code: FCS\***  
**Concentration Code: FMDS**

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
FCS 181	3	MATH 224	3
HIST 106 (or equivalent)	3	BUED 110	3
FCS 160	2	FCS 180	3
MATH 111	4	HIST 130 (or equivalent)	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
ART 226	3	Elective	3
Humanities and Fine Arts	3	ACCT 210	3
FCS 281	3	ART 227	3
FCS 183	3	FCS 282	3
Scientific Reasoning	3	Scientific Reasoning	2
Scientific Reasoning Lab	1	Scientific Reasoning Lab	1
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
FCS 260	3	FCS 384	3
FCS 480	3	Elective	3
FCS 380	3	FCS 486	3
MGMT 201	3	FCS 481	3
FCS 382	3	FCS 385	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
FCS 460	3	FCS 482	3
FCS 484	3	FCS 461	3
FCS 483	3	MGMT 343	3
MKGT 230	3	Elective	3

FCS 487	3	Elective	2
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>14</b>

Total Credit Hours: 120

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

FCS 160	FCS 460
FCS 180	FCS 461
FCS 181	FCS 480
FCS 260	FCS 481
FCS 281	FCS 482
FCS 282	FCS 483
FCS 380	FCS 484
FCS 382	FCS 486
FCS 384	FCS 487
FCS 385	

Department of Family and Consumer Sciences  
 Bachelor of Science in Food and Nutritional Sciences (Food Science)  
 Major Code: FNS  
 Concentration Code: FDSC

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
BIOL 100	4	FCS 150	2
FCS 160	2	FCS 151	1
MATH 111	4	CHEM 107	3
CHEM 106	3	CHEM 117	1
CHEM 116	1	Elective	2
<b>Semester Total</b>	<b>17</b>	MATH 112	4
		<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
SPCH 250	3	FCS 157	3
FCS 245	3	PHYS 110	2
OSH 201	3	PHYS 111	1
BIOL 220	4	CHEM 221	3
HIST 106	3	CHEM 223 <sup>1</sup>	1
<b>Semester Total</b>	<b>16</b>	FCS 260	3
		MATH 224	3
		<b>Semester Total</b>	<b>17</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	



CHEM 251	2	FCS 346	3
CHEM 252	1	FCS 347	3
FCS 345	3	SOCI 100	3
FCS 455	2	PHIL 201	3
FCS 445	3	ANSC 312	3
AGEC 434	3	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>14</b>		
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
WMI 333	1	FCS 442	3
FCS 440	3	FCS 461	3
FCS 441	4	FCS 447	3
FCS 460	3	FCS 498	3
Elective	3	<b>Semester Total</b>	<b>12</b>
<b>Semester Total</b>	<b>14</b>		

**Total Credit Hours: 120**

<sup>1</sup>CHEM 223 is now a one hour course. Students may substitute a one hour elective to complete 120 hours.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

FCS 150	FCS 442
FCS 151	FCS 443
FCS 160	FCS 444
FCS 245	FCS 445
FCS 260	FCS 455
FCS 345	FCS 460
FCS 346	FCS 461
FCS 347	FCS 498
FCS 440	

Department of Family and Consumer Sciences  
 Bachelor of Science in Food and Nutritional Sciences (Human Nutrition)

Major Code: FNS\*

Concentration Code: HNTR

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FCS 160	2	HIST 130	3
ENG 100	3	ENG 101	3
BIOL 100	4	MATH 112	4
CHEM 106	3	Pre-Med or NTR Cognate	3-4
CHEM 116	1	CHEM 107	3
MATH 111	4	CHEM 117	1
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>17-18</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	

CHEM 221	3	Pre-Med or NTR Cognate	3
CHEM 223 <sup>1</sup>	1	Pre-Med or NTR Cognate	3
Gen Ed. (HIST 106)	3	FCS 157	3
Gen. Ed. (SPCH 250)	3	Pre-Med or NTR Cognate	3
FCS 245	3	Pre-Med or NTR Cognate	3-4
Pre-Med or NTR Cognate	4	<b>Semester Total</b>	<b>15-16</b>
<b>Semester Total</b>	<b>18</b>		
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
Pre-Med or NTR Cognate	3	PHIL 201	3
FCS 260	3	Pre-Med or NTR Cognate	3
CHEM 251	2	Pre-Med or NTR Cognate	3-4
CHEM 252	1	FCS 457	3
BIOL 361	4	Elective	1
FCS 455	2	<b>Semester Total</b>	<b>13-14</b>
<b>Semester Total</b>	<b>15</b>		
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
FCS 451	3	Pre-Med or NTR Cognate	3
FCS 359	3	Pre-Med or NTR Cognate	3
FCS 461	3	FCS 498	3
Pre-Med or NTR Cognate	3	FCS 460	3
<b>Semester Total</b>	<b>12</b>	<b>Semester Total</b>	<b>12</b>

**Total Credit Hours: 120**

<sup>1</sup>CHEM 223 is now a one hour course. Students may substitute a one hour elective to complete 120 hours.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

FCS 135	FCS 451
FCS 150	FCS 452
FCS 151	FCS 455
FCS 157	FCS 457
FCS 160	FCS 460
FCS 245	FCS 461
FCS 260	FCS 498

**Department of Family and Consumer Sciences**  
**Bachelor of Science in Family and Consumer Sciences (Consumer Sciences)**  
**Major Code: FCS\***  
**Concentration Code: CNSC**

#### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
HIST 106	3	FCS 135	3
FCS 160	2	PHYS 105	3

BIOL 100	4	SOCI 100 or SOCI 200	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
SPCH 250	3	FCS 260	3
PHIL 201 (formerly PHIL 315)	3	PSYC 101 (formerly PSYC 320)	3
FCS 181	3	BUED 110 (formerly BUED 210)	3
Elective	3	FCS Cognate	3
ACCT 210 (formerly ACCT 203)	3	HPED 200 <sup>1a</sup>	2
<b>Semester Total</b>	<b>15</b>	Elective <sup>1b</sup>	1
<b>Semester Total</b>		<b>Semester Total</b>	
<b>15</b>		<b>15</b>	
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
FCS Cognate	3	FCS Cognate	3
FCS 356	3	FCS 403	3
FCS Cognate	3	MGMT 110 (formerly MGMT 210)	3
FCS 400	3	FCS Cognate	3
Elective	3	MGMT 303 (formerly MGMT 361)	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
FCS 460	3	FCS Cognate	3
Elective	3	FCS Cognate)	3
FCS Cognate	3	FCS 411	3
FCS Cognate	3	Elective	3
FCS 461	3	FCS Cognate	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 120**

<sup>1a,1b</sup>HPED 200 is no longer offered; therefore, students should substitute SSFM 226 for the HPED 200 and Elective.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

FCS 135	FCS 403
FCS 160	FCS 411
FCS 181	FCS 460
FCS 260	FCS 461
FCS 356	All FCS Cognate Courses
FCS 400	

Department of Family and Consumer Sciences  
 Bachelor of Science in Child Development and Family Studies  
 (Child Development and Family Relations)  
 Major Code: CDFS  
 Concentration Code: CDFR

#### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	

ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
BIOL 100	4	ENVS 201	3
FCS 160	2	ENGL 230	3
Elective	3	FCS 221	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
HIST 207	3	FCS 356	3
FCS 260	3	FCS 321	3
SPCH 250	3	FCS 331	3
SPCH 319 or 310	3	FCS 334	3
SPED 250 (formerly SPCH 350)	3	HIST 107	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
FCS 322	3	FCS 422	3
FCS 420	3	FCS 339	3
FCS 430	3	FCS 433	3
HPED 219 or SOCI 304	3	FCS 432	3
HPED 342	3	Elective	3
Cognate Area Elective	3	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>18</b>		
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
FCS 460	3	FCS 429	6-9
FCS 435 or FCS 437	3	FCS 428	3
FCS 461	2	Cognate Area Elective	3
Cognate Area Elective	3	<b>Semester Total</b>	<b>12-15</b>
Elective	3		
Elective	1		
<b>Semester Total</b>	<b>15</b>		

Total Credit Hours: 120

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

FCS 160	FCS 420
FCS 221	FCS 422
FCS 260	FCS 428
FCS 321	FCS 429
FCS 322	FCS 430
FCS 331	FCS 432
FCS 334	FCS 433
FCS 339	FCS 435 or FCS 437
FCS 356	FCS 460
FCS 403	FCS 461

Department of Family and Consumer Sciences  
 Bachelor of Sciences in Child Development and Family Studies  
 (Child Development Early Education and Family Studies - B-K Licensure)  
 Major Code: CDFS  
 Concentration Code: BKLC

Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	CUIN 101	1
FCS 160	2	ENGL 101	3
BIOL 100	4	FCS 260	3
MATH 101	3	ENGL 230	3
CUIN 102	2	MATH 102	3
Free Elective	1	CUIN 110	2
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
HIST 107 (formerly HIST 202)	3	EASC 201	3
FCS 321	3	FCS 334	3
SPCH 250	3	FCS 331	3
SPCH 310	3	SPED 350	3
CUIN 210	2	CUIN 255	2
<b>Semester Total</b>	<b>14</b>	HIST 207	3
		<b>Semester Total</b>	<b>17</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
FCS 335	3	FCS 432	3
FCS 338	3	FCS 439	3
FCS 430	3	FCS 427	3
SPED 355	3	FCS 433	3
FCS 431	3	Elective	3
CUIN 410	2	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>17</b>		
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
FCS 461	3	FCS 438	3
FCS 435	3	CUIN 498	6-9
FCS 437	3	Elective	3
FCS 436	3	<b>Semester Total</b>	<b>12</b>
FCS 460	3		
<b>Semester Total</b>	<b>15</b>		

Total Credit Hours: 120

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C or better in the following courses:*

FCS 160	FCS 432
FCS 260	FCS 433
FCS 321	FCS 435
FCS 331	FCS 436
FCS 334	FCS 437

FCS 335	FCS 438
FCS 338	FCS 439
FCS 427	FCS 460
FCS 430	FCS 461
FCS 431	

### COURSE DESCRIPTIONS IN FAMILY AND CONSUMER SCIENCES

- AGRI 499. Undergraduate Research** **Credit 3(0-6)**  
 Research under the direction of faculty in the School of Agriculture and Environmental Sciences. The research may be carried out on campus or in an off-campus industry or business setting. Limited to majors with 3.0 overall GPA. Requires written paper and oral presentation. (F;S)
- FCS 104. The Individual and His Family in Contemporary Society** **Credit 1(1-0)**  
 This course focuses on individual development in the family, the changing needs and roles of individuals due to emerging social forces, and the role of the Family and Consumer Sciences professional in developing strategies for successful families. (DEMAND)
- FCS 133. Family Foods** **Credit 3(2-2)**  
 This course is study of the application of elementary principles of nutrition and cookery to the planning, preparation and serving of simple meals designed to meet the needs of all family members. (S)
- FCS 135. Food and Man's Survival** **Credit 3(3-0)**  
 This course acquaints students with the most common information regarding foods, nutrition and health, with attempts to dispel misconceptions about food properties and factors affecting the quality of foods. Areas of discussion include man's struggle for foods; chemical additives and food safety; modern food preservation; organic and health foods; and nutrition and the consumer. (F;S;SS)
- FCS 150. Food Preparation/Meal Management** **Credit 2(2-0)**  
 This is an introductory foods course that includes basic principles, techniques and management used in food preparation and preservation, which develop skills in planning, preparing and serving nutritious meals for families of various lifestyles. Prerequisites: Major, permission of instructor. (F;S;SS)
- FCS 151. Food Preparation/Meal Management Lab** **Credit 1(0-2)**  
 This course is an introductory course in the planning, selection, preparation, serving, and preservation of nutritious meals to accommodate various food intake needs. Prerequisites: Major or permission of instructor. (F;S;SS)
- FCS 155. Food for Weight Management** **Credit 3(3-0)**  
 This course acquaints students with a basic understanding of good nutrition and safe weight loss techniques. (DEMAND)
- FCS 157. Introduction to Human Nutrition** **Credit 3(3-0)**  
 The course acquaints students with the most common information regarding foods, nutrition and health, with a basic understanding of the biochemistry of nutrients. The synergy of foods, nutrients and physiology is emphasized with a focus on chronic disease prevention. (F;S;SS)
- FCS 160. Introduction to Family and Consumer Sciences** **Credit 2(2-0)**  
 This course is designed to assist students in making personal adjustments to college living; it provides an introduction to the broad areas of family and consumer sciences and a study of the curricula and professional opportunities in the field. (F;S)
- FCS 180. Introduction to Fashion Merchandising** **Credit 3(3-0)**  
 This course is an introduction to apparel business including discussions of current trends in fashion merchandising, fashion coordination and analysis of the function of fashion merchandising. (F)
- FCS 181. Social-Psychological Aspects of Dress** **Credit 3(3-0)**  
 This course is a basic study of the social, psychological, cultural and economic influences on contemporary fashions. (S)
- FCS 183. Textiles** **Credit 3(2-2)**  
 This course is an introduction to the study of textiles, including their sources, characteristics and production; the selection of fabrics for end-uses based on serviceability, performance, and care requirements is also discussed. Prerequisite: Sophomore standing. (F;S;SS)
- FCS 221. Exploring Professional Careers in CDFS (formerly FCS 201)** **Credit 3(3-0)**  
 This course is designed to provide an overview of career options in the child development, early education, and family studies field using a study tour format. Students will be provided the opportunity to visit multiple settings and interact with diverse personnel in the field. (F;S;SS)
- FCS 245. Introduction to Food Science** **Credit 3(2-2)**  
 This course is an introductory study of the nature of raw foods and behavior of food components during handling and processing. Key methods and principles of food preservation will also be discussed. (F)

- FCS 246. Purchasing in Food Service** **Credit 3(3-0)**  
 A study of problems involved in the purchase of food, equipment and other expendable supplies for food service establishments are the major topics of this course. Prerequisites: FCS 150 and AGECE 446. (S)
- FCS 257. Obesity and Weight Management** **Credit 3(3-0)**  
 This course will examine the multifactorial aspects of obesity, weight maintenance, and the relationship of weight status to chronic disease prevention. The prevalence and basic causes of caloric imbalance, along with a wide variety of approaches to weight control and energy balance will be discussed. (F;S;SS)
- FCS 260. Introduction to Human Development** **Credit 3(3-0)**  
 This course is an introduction to the human development process covering the life span from prenatal, childhood, adolescence, adulthood, and aging through death. The social, psychological, cognitive, physical and moral characteristics of each stage are studied. (F;S;SS)
- FCS 281. Apparel Construction and Evaluation I** **Credit 3(1-3)**  
 This course is an introduction to the fundamental principles of apparel construction using a commercial pattern with emphasis on fitting, pattern adjustments, and garment construction methods. This course will focus on laboratory experiences. (F;S;SS)
- FCS 282. Apparel Construction and Evaluation II** **Credit 3(1-3)**  
 This course is a continuation of FCS 281 focusing on advanced apparel construction methods, fitting and alteration techniques, and product quality evaluations. Laboratory experience is required. Prerequisites: FCS 183, FCS 281. (F;S;SS)
- FCS 300. Program Planning in Family and Consumer Sciences K-12** **Credit 3(3-0)**  
 This course involves participation in planning Family & Consumer Sciences programs for occupational education in public schools K-12. (Career awareness, middle school, exploratory, comprehensive occupational family and consumer sciences, youth and adult program). (DEMAND)
- FCS 303. Basic Interior Design (formerly FCS 503)** **Credit 3(2-2)**  
 This course is a study of housing and interior requirements for individuals and families with a focus on plans, design, furnishing and aesthetic. (DEMAND)
- FCS 304. Cooperative Extension (formerly FCS 606)** **Credit 3(3-0)**  
 This course is an introduction to the organization, philosophy, financing, personnel, clientele and programs of Cooperative Extension Service. (DEMAND)
- FCS 305. Residential Management Principles and Technology (formerly FCS 505)** **Credit 3(1-4)**  
 In this course students will examine the application of management principles involved in the selection, care and use of technology and equipment in the home and the infrastructure that supports it. (F;S;SS)
- FCS 314. Human Ecology of the Family** **Credit 3(3-0)**  
 This course is the study of the family as environment and within environment. Relations of values, goals, standards and decision-making in the management of the family. The unique role of the family in the social, economics, and political system. Prerequisite: SOCI 100. (DEMAND)
- FCS 316. Financial Planning for Families (formerly FCS 577)** **Credit 3(3-0)**  
 This course introduces students to the various financial planning topics that face families such as the financial planning process, client/planner interactions, time value of money applications, personal financial statements, cash flow and debt management, asset acquisition, and education planning. Risk management, investment planning, retirement planning, plan integration, and ethics are also discussed. (F;S;SS)
- FCS 317. Insurance Planning for Families (formerly FCS 578)** **Credit 3(3-0)**  
 This course introduces students to risk management and insurance decisions in family financial planning. Topics include insurance for life, health, disability, property and liability risks, as well as annuities, group insurance, and long term care. (F;S;SS)
- FCS 318. Income Tax Planning for Families (formerly FCS 579)** **Credit 3(3-0)**  
 This course is an overview of current tax laws, income tax principles, and taxation terminology. It focuses on tax planning considerations, computations, and tax planning strategies including tax pitfalls that impact families' financial planning. (F;S;SS)
- FCS 319. Investment Planning for Families (formerly FCS 580)** **Credit 3(3-0)**  
 This course provides the student with an understanding of the various types of securities traded in financial markets, investment theory and practice, portfolio construction and management, and investment strategies and tactics to meet a family's investment goals. (F;S;SS)
- FCS 321. Child Development: Prenatal Through Early/Middle Childhood** **Credit 3(2-2)**  
 This course is a study of the child's sequential development at different stages - conception through late childhood. Historical and theoretical approaches to child development programs for young children will be studied. Field experiences are required. (F;S)
- FCS 322. Adolescence and Young Adulthood** **Credit 3(3-0)**  
 This course provides a comprehensive study of the physical, mental, and psychological factors of development from late childhood through adulthood. Observation required. Prerequisite: FCS 260. (F;S;SS)
- FCS 325. Independent Readings in Child Development and Family Studies** **Credit 3(3-0)**  
 This course permits a student to undertake an in-depth analysis of various problems or issues in child development, early education, family studies, teacher preparation, multiculturalism, and developmental learning principles through individual study. The problem or issue may be selected from the scholarly literature in the field or the professional workplace. (F;S;SS)

- FCS 331. Family Systems** **Credit 3(3-0)**  
 This course provides an ecological overview of diverse family structures and functioning styles, including multigenerational challenges facing the contemporary family. A family mentor experience with socioculturally diverse families is required. Prerequisite: FCS 260. (F;S;SS)
- FCS 334. Foundations of Early Education and Family Studies** **Credit 3(3-0)**  
 This course is the study of the historical, sociological and philosophical background of typical and atypical development in young children. This course also reviews the dynamic of the family and current issues related to the teaching profession. Emphasis will be placed on understanding and applying theories to children and families, the integrated day, and scheduling. Prerequisite: FCS 260. (F;S;SS)
- FCS 335. Families as Participants in Diverse Learning Settings** **Credit 3(3-0)**  
 This course is the study of parental involvement and interactions in the child's development at home, school, community, and the global society. The effective partnership between parents and school personnel working together for children's developmental readiness and school success will be discussed. Prerequisite: FCS 260, FCS 321, FCS 334. (F;S;SS)
- FCS 338. Creative Expression in Early Education** **Credit 3(3-0)**  
 This course examines pedagogical knowledge, creative strategies, materials and evaluation used in language arts, mathematics, and science. In addition, the utilization of play, stories, computer games, cooking activities, and field-based teaching experiences are included. Prerequisites: FCS 260, FCS 321, FCS 334. (F;S;SS)
- FCS 339. Practicum in Interdisciplinary Services (formerly FCS 419)** **Credit 3(3-0)**  
 This course includes practical field experience in community service agencies concerned with all areas of childcare and family development. Emphasis will be placed on services to young children. Prerequisites: FCS 260, FCS 321. (F;S;SS)
- FCS 345. Food Chemistry** **Credit 3(2-2)**  
 This course is the study of food components, their interactions and reactions with emphasis on biochemical changes in fruits and vegetables on post harvest storage, postmortem biochemical changes in meat and fish, browning reactions, lipid oxidation and other chemical alterations in food. Prerequisites: CHEM 245, CHEM 221, CHEM 223. (F;S;SS)
- FCS 346. Food Safety and Sanitation** **Credit 3(3-0)**  
 This course studies the nature of raw foods and behavior of food components during handling and processing. Key methods and principles of food preservation will also be discussed. Prerequisites: FCS 245, BIOL 220. (F;S;SS)
- FCS 347. Food Engineering** **Credit 3(3-0)**  
 This course is the study of the fundamentals of heat transfer, fluid flow, refrigeration, evaporation and other unit operations in the food processing industry. Application of engineering principles and concepts to the processing of food will also be examined. Prerequisites: PHYS 110, PHYS 111. (F;S;SS)
- FCS 349. Food Packaging (formerly FCS 541)** **Credit 3(3-0)**  
 The characteristics of packaging materials, strength, elasticity, permeability, food packaging machines, adhesives, as related to products wholesomeness and package design as a form of advertising will be studied. Prerequisite: CHEM 106 or 107. (DEMAND)
- FCS 350. Food Consultant for Older Adults (formerly FCS 549)** **Credit 3(3-0)**  
 Techniques of consultation with older adults on diets, food choices, food fads, planning, purchasing and preparation procedures will be examined. Menus for limited incomes will be emphasized. Prerequisites: FCS 150, FCS 151. (DEMAND)
- FCS 354. Organizational Management in Food Service** **Credit 3(3-0)**  
 This course is designed to study the organizations, management and administration of various food service establishments and the inclusion of personnel management. Prerequisite: FCS 150, FCS 151. (F;S;SS)
- FCS 355. Nutrition and Metabolism** **Credit 3(3-0)**  
 This course will examine human physiology, including the digestion, absorption, transport, metabolism, and function of macronutrients and micronutrients and phytochemicals, with emphasis on their roles in health promotion and disease prevention. Prerequisite: FCS 157. (F;S;SS)
- FCS 356. Contemporary Nutrition** **Credit 3(3-0)**  
 This course provides an introductory approach to the principles of nutrition as they relate to human requirements for nutrients during the life cycle; influences of nutrition on growth and development; and the influence of contemporary living as it impacts healthy lifestyle. (F)
- FCS 358. Quantity Foods Procurement and Production** **Credit 4(3-2)**  
 This course focuses on the procurement of food, equipment, and other expendable supplies for food service establishments. It includes the application of principles of cookery to the preparation and service of food for group feeding with emphasis on menu planning, work schedules, cost and portion control. These concepts are applied in a laboratory setting. Prerequisites: FCS 150, FCS 151, FCS 354. (F;S;SS)
- FCS 359. Maternal Lifespan Nutrition** **Credit 3(3-0)**  
 This course emphasizes the energy and nutrient requirements and feeding practices for stages of the life span. The nutritional quality of food, physiological development, growth assessment, dietary evaluation and nutrition assessment for various stages of the lifespan are covered. Prerequisite: FCS 157. (F;S;SS)
- FCS 380. Visual Merchandising and Promotion** **Credit 3(2-2)**  
 This course explores the use of visual merchandising and promotional techniques for textile and non-textile products. Prerequisites: FCS 180, FCS 181, FCS 183, FCS 281, FCS 282. (F;S;SS)



- FCS 382. Creative Apparel Design I (Flat Pattern)** **Credit 3(2-2)**  
 This course examines the application of principles of creative design by the use of flat pattern techniques. Laboratory experience is required. Prerequisites: FCS 180, FCS 181, FCS 183, FCS 281, FCS 282. **(F;S;SS)**
- FCS 384. Historic Developments of Western Costumes and Textiles** **Credit 3(3-0)**  
 This course examines the evolution of dress through the study of western dress from ancient to modern times. Individual research is required. Prerequisites: FCS 180, FCS 181, FCS 183, FCS 281, FCS 282, FCS 382. **(F;S;SS)**
- FCS 385. Creative Apparel Design II (Draping)** **Credit 3(2-2)**  
 This course will focus on the application of principles of creative apparel design by use of the draping method. Laboratory experience is required. Prerequisites: FCS 180, FCS 181, FCS 183, FCS 281, FCS 282, FCS 382. **(F;S;SS)**
- FCS 398. Food and Nutritional Biochemistry** **Credit 3(3-0)**  
 This course is an introductory course for students in agricultural, animal, food, and nutritional sciences. The course emphasizes the cellular metabolism, structure, and function of proteins, nucleic acids, carbohydrates, and lipids. Vitamins, mineral, enzymes, and hormones are covered also. Prerequisites: CHEM 106, 116, 107, 117.
- FCS 400. Contemporary Housing** **Credit 3(2-2)**  
 This course is a study of problems in house planning to meet family needs. Emphasis is placed on the study of house designs, methods of financing and location. **(S)**
- FCS 402. Occupational Family and Consumer Sciences (formerly FCS 500)** **Credit 3(1-4)**  
 This course examines the organization and administration of occupational wage-earning programs at the upper high school level-methods and instructional media. Work experiences require at least one area of Family and Consumer Sciences occupational cluster. **(DEMAND)**
- FCS 403. Family Finance** **Credit 3(3-0)**  
 This course is a study of financial planning and budgeting strategies for individuals and families. Consideration is given to consumer issues such as credit, debt management, insurance, investments, housing, taxes, retirement and estate planning. Prerequisite: None. **(F;S;SS)**
- FCS 404. Cooperative Extension Field Experience (formerly FCS 607)** **Credit 3(0-6)**  
 The course includes field experience to provide an opportunity for students to become acquainted with the role of country personnel, office organizations and programs in Cooperative Extension Service. **(DEMAND)**
- FCS 406. Retirement Planning for Families (formerly FCS 581)** **Credit 3(3-0)**  
 This course provides information about public and private retirement plans and examines issues faced by individuals during retirement such as life style choices and medical challenges. **(F;S;SS)**
- FCS 407. Estate Planning for Families (formerly FCS 582)** **Credit 3(3-0)**  
 This course focuses on the efficient conservation and transfer of wealth, consistent with the family's goals. It is a study of the legal, tax, financial and non-financial aspects of this process, covering topics such as trusts, will, probate, advanced directives, charitable giving, wealth transfers and related taxes. **(F;S;SS)**
- FCS 408. Family Financial Planning Capstone** **Credit 3(3-0)**  
 This capstone course is designed for students to demonstrate the skills to develop integrated financial plans for clients and communicate their planning recommendations to those clients. Prerequisites: FCS 316, FCS 317, FCS 318, FCS 319, FCS 406, FCS 407. **(F;S;SS)**
- FCS 411. Family and Consumer Sciences Field Experience** **Credit 3(3-0)**  
 The course includes field experience to provide an opportunity for students to become acquainted with the role of professionals in family and consumer sciences. Junior, senior year. **(F;S;SS)**
- FCS 415. Materials, Methods and Evaluation II** **Credit 3(3-0)**  
 This course examines the materials, methods and evaluation used in the development of cognitive, effective, and psychomotor behaviors. Focus areas: Social Studies, Science, Math, Health and Safety. Prerequisite: FCS 414. **(DEMAND)**
- FCS 420. Administration of Early Care & Education Programs** **Credit 3(3-0)**  
 This course is an introduction to business administration, organizations, and supervision in diverse early education and family interagency settings. Emphasis is placed on key administrative and human resources concepts, practices, and issues related to the administrating, planning, organizing, staffing, financing, decision-making, supervising, and evaluating early education and family interagency settings. **(S)**
- FCS 421. Administrative Policies & Resource Management** **Credit 3(3-0)**  
 This course is designed to introduce ethical and legal issues, professional liability, budget policies, and resources management problems faced by managers in early education and family interagency settings. Course content and assignments align with the competency requirements for the North Carolina Early Childhood Center Director, and fulfill partial requirements for the National Council on Family Relations Content Area #9 Professional Ethics and Practice. Prerequisite: FCS 420 or permission of the instructor. **(F;S;SS)**
- FCS 422. Parent Child Relations** **Credit 3(3-0)**  
 This course is the study of parental interactions in the children's development at home, in the school and in the community. Students will learn the importance of socializing children as a primary caregiving function of parents and the challenges for contemporary parents and children. Prerequisite: FCS 260, FCS 321. **(F;S;SS)**
- FCS 423. Nutrition and Gardening Education for Young Children** **Credit 3(3-0)**  
 Students will experience an innovative course delivery of the fundamentals of child development, horticulture and nutrition and

how to implement gardening activities and nutritious foods lessons to young children. A hands-on experiential learning component of the course will take place with the preschoolers at the NCA&TSU Child Development Laboratory. Prerequisite: None. (F;S;SS)

**FCS 427. Emergent Literacy and Numeracy in Young Children (formerly FCS 534) Credit 3(3-0)**

This course focuses on the study of early literacy in preschool for the diverse learner, while utilizing teaching strategies and learning resources that establish a culturally responsive environment. Prerequisites: FCS 260, FCS 321, FCS 334, SPCH 310. (F;S;SS)

**FCS 428. Family Life Education Credit 3(3-0)**

This course focuses on the current issues, trends, and methods in teaching family life education, and fulfills partial requirements for the National Council on Family Relations Content Area #10 Methodologies. Prerequisite: Instructor consent. (F;S;SS)

**FCS 429. Community of Practice Internships (formerly FCS 539) Credit 6-9**

The internship focuses on the application, evaluation and reflection of content knowledge, skills knowledge, and dispositions in professional practices with children, families, and community partners. Emphasis is on observation, active participation, and demonstration of high quality, best practices for young children and their families under university and community-based supervision. Prerequisites: Permission of the instructor. (F;S;SS)

**FCS 430. Assessment and Evaluation of Young Children Credit 3(3-0)**

A study of the principles and practices of observing, recording and analyzing behavior and development of young children. Attention is focused on naturalistic observations, developmental theories, diagnostic information and an analysis of interpreting play, language and physical development of young children. Field experiences are included in this course. Prerequisites: FCS 260, 321, and 334. (F;S;SS)

**FCS 431. Emotional and Social Development for Young Children Credit 3(3-0)**

This course emphasizes the promotion of nurturing and responsive environments and practices related to the development of self-regulating and social skills for infants, toddlers and young children. Attention is also focused on the implementation of supportive guidance practices of child behaviors and emotions, including the facilitation of social skills. Prerequisites: FCS 260, FCS 321, FCS 430 (co-requisite). (F;S;SS)

**FCS 432. Cultural Responsive Perspectives for Children and Families Credit 3(3-0)**

This course is designed to develop content knowledge, skills, and dispositions focused on multicultural and anti-bias perspectives in the field of early education and family systems. Critical review of case studies and research emphasizing culturally responsive perspectives will be used as a framework. Prerequisite: None. (F;S;SS)

**FCS 433. Professional Development and Leadership in Early Childhood Credit 3(3-0)**

This course provides students with an overview of the characteristics, qualities, knowledge, skill, and ethical practices which define an early childhood professional. Applied activities will provide students with the opportunity to interact with professionals in the field. Prerequisites: FCS 260, FCS 321, FCS 334, SPCH 250. (F;S;SS)

**FCS 434. Applied Field Based Experiences in Early Education Studies Credit (variable)**

This course will provide the student with the opportunity to engage in real applied experiences that allow for the student to engage in extensive observation to participation in diverse settings from schools, hospitals, agencies, and the community for a minimum of 20 hours. Prerequisite: Permission of the Instructor. (F;S;SS)

**FCS 435. Applied Principles of Infant and Toddler Curriculum (formerly FCS 535) Credit 3(3-0)**

This course is designed to link child development theories, assessments, and culturally responsive practices for infants and toddlers (birth to age three), and their families. An embedded emphasis of health, nutrition, and safety with CPR and First Aid will be included. A field-based experience is required. Prerequisites: FCS 260, FCS 321, FCS 334, FCS 430. (F;S;SS)

**FCS 436. Inclusive Environments for Young Children and Families (formerly FCS 536) Credit 3(3-0)**

This course focuses on providing high quality learning environments in interacting with young children and their families in school and home. Emphasis is placed on the developmental assessment and evaluation of young children guided by inclusive curriculum strategies, management standards and practices for an effective learning environment. Prerequisites: FCS 260, FCS 430, FCS 439, SPED 350. (F;S;SS)

**FCS 437. Applied Principles of Pre-Kindergarten/Kindergarten Curriculum (formerly FCS 537) Credit 3(3-0)**

This course involves the study of instructional methods, materials, and evaluation measures for the development and enhancement of children (aged three to five) in the language/communication, social/emotional, cognitive, physical, and perceptual/motor developmental domains. Simulated teaching and field experiences are required. Prerequisites: FCS 320, FCS 321, FCS 338, FCS 439. (F;S;SS)

**FCS 438. Trends Practices in Early Education and Family Studies (formerly FCS 538) Credit 3(3-0)**

This course includes a synthesis of selected research for individuals and group study using projects, workshops, and colloquia. The focus is on early education, family studies, special education, developmental learning, assessment and evaluation, leadership development, technological advancements, diversity, and educational partnerships. Prerequisites: Permission of the instructor. (F;S;SS)

**FCS 439. Approaches to Developmental and Culturally Appropriate Curriculum Credit 3(3-0)**

This course provides a review of early childhood curricula as it relates to developmental learning patterns and the nature of knowledge, societal forces and interagency services. Special emphasis will be placed on screening and assessment procedures, and formulating objectives and strategies for working with professional team members. Prerequisites: FCS 260, FCS 321, FCS 334, FCS 430. (F;S;SS)

- FCS 440. Food Microbiology and Biotechnology** **Credit 3(3-0)**  
 A survey of selected topics in food microbiology and the impact of biotechnology on food production. The course will cover the metabolic pathways, organisms, genetic tools and processes involved with food production from fermented dairy products, vegetables, fruits and meats. Prerequisites: FCS 245, BIOL 220. (F;S;SS)
- FCS 441. Food Product Development** **Credit 3(3-0)**  
 This course provides experience in the development and testing of new food products. Opportunities are provided for food manufacturing, production, and distribution facility visits. Prerequisites: FCS 347, FCS 345. (F;S;SS)
- FCS 442. Sensory Evaluation of Foods** **Credit 3(3-0)**  
 This course is a study of the color, texture, aroma and flavor of foods by the use of diverse and innovative sensory evaluation methods. Prerequisites: FCS 157, FCS 245, MATH 224. (F;S;SS)
- FCS 444. Food Laws Regulations** **Credit 3(3-0)**  
 This course covers federal and state laws and regulations affecting food production, processing, packaging, marketing, and distribution of food and food products. Prerequisites: FCS 157. (F;S;SS)
- FCS 445. Food Preservation** **Credit 3(3-0)**  
 This course is the study of current methods of preserving foods - canning, freezing, dehydration, radiation and fermentation. Prerequisite: FCS 245. (F;S;SS)
- FCS 446. Special Problems in Family and Consumer Sciences** **Credit 3(3-0)**  
 This course is designed to provide an opportunity for in depth study of a special topic in family and consumer sciences. Emphasis is placed on individual reading assignments, research, and group discussions. Topics will vary by semester.
- FCS 447. Food Analysis (formerly FCS 547)** **Credit 3(3-0)**  
 This course is the study of fundamental chemicals, physical and sensory aspects of food composition as they relate to physical properties, acceptability and nutritional values of foods. Prerequisites: FCS 245, FCS 345, CHEM 221, CHEM 223. (F;S;SS)
- FCS 451. Nutrition and Prevention of Chronic Diseases** **Credit 3(3-0)**  
 This course examines the importance of diet modification in the management of nutrition related diseases and the interactions of diet, genetics and health. Prerequisites: Senior Standing. (F;S;SS)
- FCS 452. Medical Nutritional Therapy I** **Credit 4(4-0)**  
 This course is designed to provide the student with the knowledge and skills for assessment of the nutritional status of individuals. Students will develop nutrient based care plans for persons with various disease conditions. Prerequisites: FCS 457, CHEM 251, CHEM 252. (F;S;SS)
- FCS 453. Medical Nutritional Therapy II** **Credit 4(4-0)**  
 This course is a study of the principles of nutritional sciences in the treatment and management of nutrition related diseases. Course content includes etiology, prevalence, pathophysiology, biochemical clinical and nutritional needs and diet modification in the treatment of diseases. Prerequisite: FCS 452. (F;S;SS)
- FCS 455. Cultural Aspects of Food** **Credit 2(2-0)**  
 A study of the influence of cultural and socioeconomic factors on food patterns and nutritional status of selected ethnic groups. Prerequisite: FCS 157. (F;S;SS)
- FCS 456. Nutrition Education** **Credit 3(3-0)**  
 This course covers the philosophy, principles, methods and materials involved in nutrition education. The application of nutrition knowledge and skills in the development of the nutrition education curriculum and programs in schools and communities are implemented. Prerequisites: FCS 150, FCS 151, FCS 157. (F;S;SS)
- FCS 457. Advanced Nutrition** **Credit 3(3-0)**  
 Intermediate metabolism and interrelationships of organic and inorganic food nutrients in human biochemical functions will be studied. Prerequisites: FCS 157, CHEM 221, CHEM 223, CHEM 251, CHEM 252. (F;S;SS)
- FCS 458. Community Nutrition** **Credit 3(3-0)**  
 This course provides an introduction and review of materials, methods and goals in planning, assessing, organizing and marketing nutrition for health promotion and prevention of disease. Evaluation of food and nutrition programs at state and federal levels will be conducted. Prerequisite: FCS 456. (F;S;SS)
- FCS 459. Professional Activity in Dietetics** **Credit 3(3-0)**  
 The student participates in a temporary period of supervised work experience, which provides an opportunity to apply theoretical knowledge to a work situation. The internship is designed to give students supervised work experience in Food Administration, Nutrition/Dietetics and Food Science. Prerequisite: Senior Standing (with at least 20 hours in field of Dietetics). (F;S;SS)
- FCS 460. Applied Research in Family & Consumer Sciences** **Credit 3(3-0)**  
 This course is designed to provide students with a "hands-on" inquiry experience in the acquisition of knowledge and skills in the research and evaluation process. Students will participate in applied research activities preparatory for conducting a research project. Prerequisite: Junior or Senior Year. (F;S)
- FCS 461. Integrative Approaches to Family and Consumer Sciences (formerly FCS 560)** **Credit 3(3-0)**  
 This course will emphasize the basic unifying concepts of family and consumer sciences used to assist in the resolution of social, political, economical and ethical issues currently affecting individuals, families and communities. A service learning field experience is required. Prerequisite: Junior, Senior year. (F;S;SS)

- FCS 480. Computer Assisted Design for Apparel** **Credit 3(2-2)**  
 This course is an introduction to the use of the computer for sketching, pattern making, pattern grading and making markers. Laboratory experience is required. Prerequisites: FCS 180, FCS 181, FCS 183, FCS 281, FCS 282, FCS 382. **(F;S;SS)**
- FCS 481. Merchandising Math** **Credit 3(3-0)**  
 This course provides an integrated presentation of merchandising principles, mathematical formulas and real world applications to enable students to understand the concepts of financial management for the merchandising of fashion products. Prerequisites: FCS 180, ACCT 210 (formerly ACCT 203), and Junior Standing. **(F;S;SS)**
- FCS 482. Global Trends and National Perspectives in the Softgoods Chain** **Credit 3(3-0)**  
 This course provides an in-depth investigation of global and national trends as they relate specifically to the softgoods industry. Prerequisites: FCS 180, FCS 181, FCS 183 and senior standing. **(F;S;SS)**
- FCS 483. Apparel Product Development and Evaluation** **Credit 3(3-0)**  
 This course requires students to apply knowledge from previous courses to design a line of apparel products for specified target markets. Students will learn to use product development processes to design products, analyze patterns, develop full production specifications, and evaluate final product quality. Prerequisites: FCS 180, FCS 181, FCS 183, FCS 281, FCS 282, FCS 382. **(F;S;SS)**
- FCS 484. Fashion Marketing and Merchandising (formerly FCS 485)** **Credit 3(3-0)**  
 This course emphasizes the functions and responsibilities of the fashion merchandiser, and considers various retail establishments. A synthesis of business knowledge and its application to the fashion field will be included. Prerequisites: FCS 180, FCS 181, FCS 380. **(F;S;SS)**
- FCS 486. Cooperative Training in Business and Industry I** **Credit 3(3-0)**  
 This course is designed to provide pre-professional experiences for students majoring in fashion merchandising and design. Emphasis will be placed on career exploration, resume writing, business correspondence, and internship preparation. Prerequisites: Junior Standing, 15 – 18 hours in Fashion M & D courses, and permission of instructor. **(F;S;SS)**
- FCS 487. Cooperative Training in Business and Industry II** **Credit 3(0-7)**  
 This course allows students to have a temporary supervised work experience applying theoretical knowledge to a work situation in some aspect of the softgoods industry. Prerequisites: FCS 486 and senior standing. **(F;S;SS)**
- FCS 492. Applied Food Science Seminar (formerly 546)** **Credit 1(1-0)**  
 A review and discussion of selected topics and recent advances in the fields of animal and food science are emphasized. Prerequisite: MATH 224, Senior standing. **(F;S;SS)**
- FCS 498. Internship in Food & Nutritional Sciences** **Credit 3(3-0)**  
 Students will participate in supervised work experiences, which provides an opportunity to apply theoretical knowledge to a work situation. The internship is designed to give students supervised work experience in nutrition and food science. Prerequisite: Senior standing. **(F;S;SS)**
- FCS 512. Methods of Teaching Family and Consumer Sciences** **Credit 3(3-0)**  
 This course is a study of the methods and techniques necessary for teaching family and consumer sciences on the secondary level. Prerequisite: Formal admission to Teacher Education Program. **(F;S;SS)**
- FCS 548. Food Commodity Processing** **Credit 3(3-0)**  
 This course covers characteristics of raw food material, applying principles of food preservation and food processing techniques, packaging materials and methods, sanitation and water and management. Prerequisites: FCS 245, FCS 543, FCS 545. **(S)**
- FCS 550. Administrative Policies and Resources Management** **Credit 3(3-0)**  
 This course is designed to introduce ethical and legal issues, professional liability, budget policies, and resources management problems faced by managers in early education and family interagency settings. Prerequisite: FCS 420. **(F)**
- FCS 603. Special Problems in Family and Consumer Sciences** **Credit 3(1-4)**  
 Problems in the various areas of Family & Consumer Sciences may be chosen for individual study. **(DEMAND)**
- FCS 604. Seminar in Family and Consumer Sciences Education** **Credit 3(3-0)**  
 Consideration of problems resulting from the impact of social change in the various fields of Human Environment and Family Sciences, and the review of research and professional development will be included in this course. **(S)**
- FCS 605. Family and Consumer Sciences Study Abroad** **Credit 6(0-12)**  
 This is a course designed to provide opportunity for students and specialists to study historic and contemporary points of interest abroad. Exposure to customs, cultures and industries in an international setting will provide the basis for broader background and experiences in selected areas of human environment and family sciences. **(DEMAND)**
- FCS 608. Teaching Adult and Youth in Out-of-School Groups** **Credit 3(0-6)**  
 The design and development of informal educational programs for youth and adults in out-of-school settings. Prerequisite: FCS 606. **(DEMAND)**
- FCS 611. Child Development: Prenatal to Middle Childhood** **Credit 3(3-0)**  
 This course will focus on the advanced study of the child's cognitive, social-emotional, linguistic, physical, and adaptive development through an analysis of theory and research. A sociocultural framework will be used in this study of child development. **(F;S)**
- FCS 613. Substance Abuse** **Credit 3(3-0)**  
 Alcoholism and drugs, as well as their inherent effects upon the family and society will be examined. Problems in the family,

related to the individuals, business and industry. Additional focus will be given to treatment, agencies and methods of recovering self-esteem. (SS)

**FCS 618. Food Technology Seminar** **Credit 1(1-0)**

A review and discussion of selected topics and recent advances in the field of animal and food science are emphasized. Prerequisite: Senior standing.

**FCS 629. Applied Principles of Infant/Toddler Curriculum** **Credit 3(3-0)**

This course is designed to link child development theories, assessment, and classroom practices for infant, toddlers, and young children, birth to age three, and their families. A major emphasis of this course is to prepare students to plan, implement, and evaluate developmentally, individually, and culturally appropriate child care practices, teaching strategies and learning environments for infants, toddlers, and young children with and without disabilities. Students will apply content knowledge, skills, and dispositions in the field-based experience. Prerequisites: FCS 600. (F;S)

**FCS 635. Introduction to Research Methods in Food and Nutrition** **Credit 3(0-6)**

This course provides laboratory experiences in the use of methods applicable to food and nutrition research. Prerequisite: Consent of the instructor. (DEMAND)

**FCS 637. Special Problems in Food and Nutrition** **Credit 3(0-6)**

This course provides independent study/research in the areas of Food and Nutrition or Food Science. Prerequisites: Junior, senior, graduate standing, and consent of instructor. (S)

**FCS 639. Applied Principles of Preschool/Kindergarten Curriculum** **Credit 3(2-2)**

This course involves the study of basic principles, materials, and evaluation measures underlying acting leading experiences in improving children's intellectual styles and social relations. Special attention is given to goals and objectives, daily routine, teacher-made materials, questioning techniques and ideas for small and large group activities. Simulated teaching experiences are required. Prerequisites: FCS 310, 311, 414, and 600. (F)

**FCS 640. Geriatric Nutrition** **Credit 3(3-0)**

Multi-disciplinary approaches to geriatric foods, nutrition and health problems. Evaluation of nutritional status and nutrition care of the elderly is emphasized. Field experiences: nursing home and other community agencies. Prerequisite: FCS 157. (DEMAND)

**FCS 641. Food Protection and Defense** **Credit 4(4-0)**

This course covers foundational and advanced concepts and policies related to protecting the food supply from intentional contamination. Prerequisite: Permission of Instructor. (F;S;SS)

**FCS 645. Risk Assessment in the Food Industry** **Credit 3(3-0)**

This course is the study of the quantitative impact of foodborne pathogens and chemical contaminants on food and nutrition, the evaluation procedures to determine the effects of contaminants. Prerequisite: FCS 641. (F;S;SS)

**FCS 650. International Nutrition** **Credit 3(3-0)**

This course is a study of an ecological approach to the hunger and malnutrition in technologically developed and developing countries. Focus is on integrated intervention programs, projects, and problems. Opportunities to participate in national and international internships through cooperative arrangements are available. (DEMAND)

**FCS 655. Observation and Student Teaching in Early Education and Family Studies (B-12)** **Credit 9(1-16)**

The application and practice of methods, techniques, and materials of instruction in a real classroom situation under supervision will be studied. The course includes teaching purposeful observation, organizing teaching materials, participation in other activities, and parent-teacher association activities. See University Student Teaching Handbook for specific requirements. (DEMAND)

**FCS 659. Fundamentals of Emergent Literacy** **Credit 3(3-0)**

This course explores current research, theory, strategies and resources that enable students to acquire theoretical and practical knowledge to design research-based literacy activities and environments. Topics explored include: the social content of literacy learning; stages of language and literacy development; role of families in supporting literacy development; cultural and linguistic similarities and differences; English language learners; performance-based assessments; and adaptations for children with special needs. Prerequisites: FCS 611, SPED 600, CUIN 619. (F;S)

**FCS 664. Occupational Exploration in Middle Grades** **Credit 3(3-0)**

This course is designed for persons who teach or plan to teach middle grades occupational exploration in the curriculum. Sources and uses of occupational information, approaches to middle school teaching, and philosophy and concepts will be taught in cooperation with the Department of Business Education and Administrative Services, Family and Consumer Sciences and Industrial Education. (DEMAND)

**FCS 665. Occupational Exploration in the Middle Grade Family and Consumer Sciences** **Credit 3(3-0)**

Emphasis is placed on curriculum, methods and techniques of teaching and resources and facilities for teaching in the service occupations cluster which involves the areas of consumer and family sciences education, personal service, public service, hospitality and recreation and health occupations. (DEMAND)

**FCS 681. Curriculum Instructional Planning and Assessment** **Credit 3(3-0)**

This course addresses the need for planning programs in education. The course covers teaching objectives, curriculum models, evaluation of family and consumer sciences programs, use of advisory groups, organizations, and use of resources and facilities. Prerequisites: Consent of Instructor. (F;S)

**FCS 682. Advanced Interior Design** **Credit 3(3-0)**

This course will address the current aspects of interior design. Topics to be covered include certification laws, fire-safety and

abrasions resistance requirements for furniture and fabrics, accommodations for universal access, and issues of environmentalism. Stylistically, the course will address neornamentalism, post modernism, and deconstructionism. Additionally, students will be made aware of new composite materials, acoustic controls, and lighting types. Prerequisites: Consent of Instructor. **(F;S)**  
**FCS 683. Consumer Behavior in Fashion** **Credit 3(3-0)**  
 This course is the study of how the consumer's world is influenced by the actions of fashion marketers and how fashion marketers are influenced by consumers. Marketing and consumer behavior theories and concepts as they apply to fashion will be discussed. Results of research studies will be used to illustrate marketing and consumer behavior theories and concepts. Students will gain an understanding of how fashion shapes the everyday world of consumers. Prerequisites: Permission of Instructor. **(F;S)**

#### DIRECTORY OF FACULTY

<b>Lynda Brown</b> .....	<b>Associate Professor</b>
B.S., The College of William and Mary; Ph.D., University of Maryland at College Park	
<b>Guibing Chen</b> .....	<b>Associate Professor</b>
B.S., M.S., Dalian University of Technology; Ph.D., Perdue University	
<b>Heather L. Colleran</b> .....	<b>Assistant Professor</b>
B.S., University of North Carolina at Wilmington; M.S., University of Massachusetts; Ph.D., University of North Carolina at Greensboro	
<b>Devona L. Dixon</b> .....	<b>Assistant Professor</b>
B.S., Southern A&M University; M.S., Colorado State University; Ph.D., Louisiana State University	
<b>Valerie L. Giddings</b> .....	<b>Associate Professor and Interim Associate Dean for Research</b>
B.S., Bennett College; M.S., Ph.D., Virginia Polytechnic Institute and State University	
<b>Thurman Guy</b> .....	<b>Associate Professor</b>
B.S., M.S., North Carolina A&T State University; M.S., University of Wisconsin; Ed.D., University of North Dakota	
<b>Sherrell House</b> .....	<b>Associate Professor</b>
B.S., Howard University; M.S., University of Pittsburgh; Ph.D., Michigan State University	
<b>Salam A. Ibrahim</b> .....	<b>Professor</b>
B.S., University of Mosul; M.S., University of Georgia; Ph.D., University of Kentucky	
<b>Hye Won Kang</b> .....	<b>Research Assistant Professor</b>
B.S., Dongduk Women's University; M.S., Korea University; Ph.D., University of Connecticut	
<b>Sung-Jin Lee</b> .....	<b>Research Associate Professor</b>
B.S., M.S., Chungnam National University; M.S., Ph.D., Virginia Polytechnic Institute and State University	
<b>Valerie J. McMillan</b> .....	<b>Associate Professor</b>
B.S., M.Ed., South Carolina State University; Ph.D., Iowa State University	
<b>Elizabeth Newcomb Hopfer</b> .....	<b>Associate Professor</b>
B.S., M.S., Ph.D. North Carolina State University	
<b>Shengmin Sang</b> .....	<b>Associate Professor</b>
B.S., Shandong Normal University; Ph.D., Shanghai Institute of Material Medica, Chinese Academy of Sciences	
<b>Reza Tahergorabi</b> .....	<b>Assistant Professor</b>
B.S., University of Sistan and Baluchestan; M.S., Azad University; Ph.D., West Virginia University	
<b>Jane T. Walker</b> .....	<b>Professor and Interim Department Chairperson</b>
B.S., Appalachian State University; M.S., Virginia Polytechnic Institute and State University; Ph.D., University of North Carolina at Greensboro	
<b>Leonard Williams</b> .....	<b>Professor and Director of the Center for Post Harvest Technologies</b>
B.S., M.S., North Carolina A&T State University; MBA., Wake Forest University; Ph.D., Alabama A&M University	
<b>Meeshay Williams-Wheeler</b> .....	<b>Associate Professor</b>
B.S., University of North Carolina at Greensboro; M.S., North Carolina Central University; Ph.D., University of North Carolina at Greensboro	

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#### Department of Natural Resources and Environmental Design

<http://www.ncat.edu/caes/departments/nars/index.html>

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**Abolghasem Shahbazi, Interim Chairperson**

#### OBJECTIVES

The objectives of the Department of Natural Resources and Environmental Design are to meet its responsibilities to society by training students as professional agriculturists and horticulturists, natural resources specialists, landscape architects, agricultural and biological engineers and environmentalists who can identify, analyze, and solve the problems of today, as well as new problems that may arise in the future. Realizing the dynamic and ever-changing nature of modern society, the Department seeks to provide its students with the tools of analysis as well as facilities for applying the natural, physical, and social sciences to thinking processes that will enable them to meet the present and future needs in managing their environment.

#### DEGREES OFFERED

Agricultural and Environmental Systems – Bachelor of Science  
 Concentrations: (Urban & Community Horticulture)

(Sustainable Land Management)

(Environmental Studies)

Biological Engineering – Bachelor of Science

Landscape Architecture – Bachelor of Science

Interdisciplinary certificate programs are offered to students enrolled in Bachelor of Science programs at the University. Areas of specialization include Biotechnology (18 credit hours), Waste Management (18 to 20 credits hours).

### **GENERAL PROGRAM REQUIREMENTS**

The admission of students to the undergraduate degree programs and qualification for the Bachelor of Science degree in the Department of Natural Resources and Environmental Design are based upon the general admission and graduation requirements of the University. For admission to Biological Engineering see respective handbooks and program requirements elsewhere in this catalog.

### **DEPARTMENTAL REQUIREMENTS**

Majors in the Department of Natural Resources and Environmental Design must complete a minimum of 120 semester hours of University courses. Included in the 120 hours are thirty hours in a major elective depending on the degree program. A minimum grade of “C” may be required for some major courses. A Waste Management Certificate is awarded with the Bachelor of Science degree to students who complete a minimum of 18 credit hours of courses identified as waste management core courses. There is also a biotechnology certificate for students who meet the requirements.

### **CAREER OPPORTUNITIES**

The Department of Natural Resources and Environmental Design provides professional education for a wide range of career opportunities. Graduates of the program work in such industrial areas as land-use planning, environmental control, natural resources management, waste management, soil and water quality, and environmental policy analysis, general plant protection, greenhouse production, landscape contracting, nursery/garden center management, landscape architecture and regional and urban planning. Career opportunities also include work with federal, state, and local government agencies involved in regulation, resource management, and policy development. Students have found employment with consulting firms involved in solving environmental and production problems, as well as working as licensed landscape architect providing professional design consultations. Graduates also are prepared for graduate school to pursue degrees in the environmental science, soil science, horticultural sciences, landscape architecture and biological engineering.

### **LANDSCAPE ARCHITECTURE**

<http://www.ncat.edu/caes/departments/nars/landarch/index.html>

**T. Carter Crawford, Program Coordinator**

When majoring in landscape architecture, you will learn how to blend science, engineering, and artistic expression to develop sustainable, livable, and inspiring environments. Our graduates are part of a community of visionary, creative, and influential professionals, who are making a positive impact on important global issues, including climate change, impending food shortages, and decreasing biodiversity.

Landscape architecture is everywhere around us from green infrastructure to shopping areas, to our homes, to communities, to parks, to transportation, to gardens, to campus and basically everywhere. Landscape architecture is the design, planning, research and management of our landscapes.

### **Preamble**

The Landscape Architecture Program at North Carolina A&T State University is rooted in the University’s unique legacy, which includes its history as the largest publicly funded Historically Black College or University within the State of North Carolina, as well as home to the A&T four who helped spark the civil rights movement in the south. The Program has produced more African American landscape architects than any other accredited degree program. As such, the A&T Landscape Architecture Program has been instrumental in supporting diversity within the profession. This social and geographical context provides a unique framework for studying landscape architecture, which is carried forward in service-based learning projects that often focus on underrepresented populations of the rural, urban, and suburban south.

### **Mission**

The Landscape Architecture Program at North Carolina A&T State University prepares a diverse student body to become leaders within the field of landscape architecture. Students are instilled with the theoretical, technical, and life skills necessary to address the complex and continually changing ecological and social challenges of the 21<sup>st</sup> century associated with the design, conservation, and management of landscapes. Educational emphasis is placed on developing creative and critical thinking skills, high moral character and ethical behavior, exposure to various geographies and cultures, and an independence of mind and freedom of spirit.

### **Goals**

1. Support a strong undergraduate program focusing on the development of sound thinking skills, personal vision, and high moral character and ethical behavior through exposure to the broad range of landscape architecture activities and technical skills.
2. Recruit, retain and graduate high-caliber students in an effort to increase the diversity of leaders within the field of landscape architecture.
3. Foster well-respected faculty within the University and broader academic setting, who have the support network and skills necessary to succeed in teaching, research, community service, and/or creative works.
4. Offer high quality facilities, technology, travel, and internship opportunities, as a means to help ensure student success.
5. Make positive contributions to the broader social and ecological context, and develop a respected visible reputation, through community service based research and teaching activities.

### **Degree Offered**

Landscape Architecture – Bachelor of Science

### **Admission and Degree Program Requirements**

Admission of students to the undergraduate degree programs in the Landscape Architecture Program is based upon the general admission requirements of the University. Students majoring in Landscape Architecture must complete 120 semester hours of University courses. Students must earn an average grade of “C” in all landscape architecture courses in order to meet the major field requirements for graduation. It is a university requirement that students complete 6 hours of written communication, 6 hours of mathematical, logical, and analytical reasoning, 7 hours of scientific reasoning, 6 hours of social/behavioral sciences, 6 hours of humanities/fine arts, and 2 hours of student success. Of the 12 total hours in social/behavioral sciences and humanities/fine arts, at least 3 hours must be completed in African-American studies courses and 3 hours in global studies courses. During summer vacations, internships are strongly recommended. During matriculation through the degree program, hands-on activities of any kind related to the field of landscape architecture is strongly recommended.

### **Accreditation**

The program is accredited by the Landscape Architectural Accreditation Board (LAAB). In order for program graduates to sit for the licensure examination in all 50 states, they must have graduated from an accredited institution. The landscape architecture program has been accredited by the LAAB since 1993.

### **Community Service Projects**

Because this program is rooted in the unique legacy of North Carolina A&T State University, we are committed to community service design and planning projects that address the underserved communities of North Carolina.

### **Field Study**

Landscape architects design, plan, manage, and research areas from small intimate spaces to large complex regions. The landscape architecture program student population varies greatly in its socio-economic backgrounds. It is essential that the landscape architecture students taste as much of the outdoor world as possible to experience the real-life needs of all parts of society. Experiential learning opportunities, as a means to ensure student success in the classroom and in the workforce, are necessary. Therefore, visitation to the beach, the mountains, a professional landscape architecture office, a planning or city office, presentations in front of a “client,” or travel to a diverse range of landscape architecture project sites such as parks, plazas, urban districts, campuses, etc. are all part of the experiential learning for landscape architects.

Every spring the sophomore class leaves Greensboro by train and travels to Boston and from there we take a ten day trip back to Greensboro. The tour starts in Boston then to New York, Philadelphia, Baltimore, and Washington DC. The class visits notable landscapes, offices and graduate schools of landscape architecture.

### **Career Opportunities**

Students who successfully complete the program in Landscape Architecture are prepared for careers as landscape designers or consultants, environmental planners, golf course designers, community development, urban planning and landscape supervisors. Working with state and local government as city planners and federal governmental such as working with the National Park Service or Forestry Service are also careers for landscape Architects. While the majority of landscape architects work for landscape architecture services and firms, a full 20 percent of people in the profession are self-employed.

### **Program Requirements**

Students majoring in Landscape Architecture must complete 120 semester hours of University courses. Students must earn an average grade of “C” in all landscape architecture courses in order to meet the major field requirements for graduation.

### **BIOLOGICAL ENGINEERING PROGRAM**

[http://www.ncat.edu/caes/departments/nars/BS\\_bio\\_eng.html](http://www.ncat.edu/caes/departments/nars/BS_bio_eng.html)



**Abolghasem Shahbazi, Program Director**

**MISSION**

The mission of the Biological Engineering program is to provide its students with a quality Biological Engineering education and to satisfy the educational and technical needs of society at local, national and international levels.

**OBJECTIVES**

Biological Engineering graduates are expected to attain the following within a few years of graduation:

- 1) Be competent in creative and contemporary engineering designs to advance environmental sustainability and human health,
- 2) Have disciplinary knowledge and skills to conduct engineering practice or pursue graduate studies,
- 3) Work effectively, inclusively and ethically in multidisciplinary teams,
- 4) Be active in professional societies and continuing engineering education through lifelong learning.

**PROGRAM REQUIREMENTS**

The Biological Engineering major must complete 120 credit hours following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements.

**ACCREDITATION**

The undergraduate program in Biological Engineering, leading to the Bachelor of Science in Biological Engineering (BS-BLEN) degree, is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC-ABET). <http://main.abet.org/aps/AccreditedProgramsDetails.aspx?OrganizationID=410&ProgramIDs=967>. Biological Engineering at North Carolina Agricultural and Technical State University was the first to obtain national accreditation at a Historically Black University in the USA. The program of study leading to the Bachelor of Science in Biological Engineering degree is accredited by the Engineering Accreditation Commission of ABET.

**CAREER OPPORTUNITIES**

A degree in this field prepares students for careers in engineering design, management, research, consulting, sales, teaching, product development, governmental agencies (federal and state), industries and foreign services.

**Department of Natural Resources & Environmental Design  
Bachelor of Science in Landscape Architecture  
Major Code: LDAR**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 101	1	ENGL 101	3
ENGL 100	3	MLAR Elective <sup>1∞</sup>	3
MLAR Elective <sup>1∞</sup>	3	LDAR 104	3
LDAR 147	3	LDAR 148	3
LDAR 150	3	LDAR 171	3
LDAR 170	3	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>16</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
SR Elective <sup>1</sup>	3	SR Elective <sup>1</sup>	4
SBS Elective <sup>1*</sup>	3	Global Awareness (GA)*	3
HFA Elective <sup>1*</sup>	3	A-A Culture and History (AA)^	3
LDAR 204	3	LDAR 205	3
LDAR 247	3	LDAR 248	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
LDAR 304	3	LDAR 346	4
LDAR 345	4	LDAR 348	4
LDAR 347	4	Major Elective <sub>±</sub>	6
LDAR 380	3	<b>Semester Total</b>	<b>14</b>
<b>Semester Total</b>	<b>14</b>		
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	

LDAR 442	3	LDAR 443	3
LDAR 444	3	LDAR 448	4
LDAR 445	3	Free Elective	4
LDAR 447	4	Major Elective	3
Free Electives	3	<b>Semester Total</b>	<b>14</b>
<b>Semester Total</b>	<b>16</b>		

**Total Credit Hours: 120**

<sup>1</sup>General Education courses: Select courses from approved university list. MLAR (Mathematical, Logical and Analytical Reasoning); SR (Scientific Reasoning); SBS (Social and Behavioral Sciences)

∞Must be math courses from approved university list.

\*Must choose from the following: HIST 130, HIST 207, HIST 216, HIST 231; PHIL 103; PHIL 201

^Must choose from the following: HIST 106, HIST 107, HIST 103, ENGL 333; ENGL 334; LIBS 202; MUSI 220

±Must choose from following major elective list: GCS 181, GCS 320, GCS 329, GCS 342, GCS 424; ENVS 201, ENVS 344; ART 218, ART 219, ART 220, ART 221, ART 222, ART 300, ART 301; BIOE 204, BIOE 216

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C or better in the following courses:*

LDAR 104	LDAR 345
LDAR 147	LDAR 346
LDAR 148	LDAR 347
LDAR 150	LDAR 348
LDAR 170	LDAR 380
LDAR 171	LDAR 440
LDAR 204	LDAR 442
LDAR 205	LDAR 443
LDAR 247	LDAR 444
LDAR 248	LDAR 445
LDAR 304	LDAR 447
LDAR 342	LDAR 448
LDAR 344	

**Department of Natural Resources and Environmental Design**  
**Bachelor of Science in Biological Engineering (Bioprocess Engineering Track)**  
**Major Code: BLEN**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
GEEN 111	1	GEEN 121	1
ENGL 100	3	ENGL 101	3
CHEM 106	3	CHEM 107	3
CHEM 116	1	MATH 132	4
MATH 131	4	PHYS 241	3
GEEN 100	2	PHYS 251	1

<b>Semester Total</b>	<b>14</b>	CHEM 117	1
		<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
MEEN 230	3	African/ American Studies, Elective	3
MATH 231	4	BIOL 101	4
PHYS 242	3	CAEE 334	2
PHYS 252	1	MATH 341	3
Humanities, Elective	3	GEEN 161	2
<b>Semester Total</b>	<b>14</b>	BIOE Elective	2
		<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
CHEN 200	4	Global Studies, Elective	3
CAEE 362	3	ECEN 340	3
BIOL 221	4	BIOE 330	4
CHEN 312	4	CHEM 221	3
BIOE 440	3	CHEM 223	1
<b>Semester Total</b>	<b>18</b>	<b>Semester Total</b>	<b>14</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
Statistics Elective	3	BIOE 425	3
BIOE 422	3	BIOE 423	3
BMEN 411	4	BIOE 496	2
ISEN 260	2	BIOE Elective	3
BIOE 495)	1	Social Behavioral Science, Elective	3
CAEE 400	1	<b>Semester Total</b>	<b>14</b>
<b>Semester Total</b>	<b>14</b>		

Total Credit Hours: 120

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

BIOE 330	GEEN 100
BIOE 423	ISEN 260
BIOE 495	ISEN 370
BIOE 496	ECON 305
CAEE 304	MATH 131
CAEE 334	MATH 132
CAEE 362	MATH 224
CHEM 106	MATH 231
CHEM 107	MATH 341
ECEN 340	PHYS 241
MEEN 230	PHYS 242

BIOE Electives:

BIOE 404, BIOE 415, BIOE 432, BIOE 426, BIOE 485, BIOE 490, CIEN 310 or other junior and senior level engineering courses approved by the faculty advisor.

Statistics Electives:

MATH 224, ECON 305, CAEE 304, and INEN 370

Humanities/Fine Arts:

ENGL 200, ENGL 201, ENGL 230, ENGL 231, ENG 333, ENG 334, MUS 216, PHIL 101, PHIL 266, PHIL 267, SPCH 250, LIBS 202, MUSI 220, PHIL 104, PHIL 267, PHIL 103, PHIL 201 or courses approved by the faculty advisor.

Social/Behavioral Sciences:

BUED 279, ECON 200, ECON 201, FCS 134, FCS 181, FCS 260, HIST 103, HIST 104, HIST 105, HIST 106, HIST 107, HIST 130, HIST 206, HIST 207, HIST 216, HIST 231, JOMC 240, POLI 110, PSYC 101, SOCI 10, SOCI 200, SSFM 226 or courses approved by the faculty advisor.

**Department of Natural Resources and Environmental Design  
Bachelor of Science in Biological Engineering (Natural Resources Engineering Track)  
Major Code: BLEN**

**Curriculum Guide Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
GEEN 111	1	GEEN 121	1
ENGL 100	3	ENGL 101	3
CHEM 106	3	MATH 132	4
CHEM 116	1	PHYS 241	3
MATH 131	4	PHYS 251	1
GEEN 100	2	CHEM 107	3
<b>Semester Total</b>	<b>14</b>	CHEM 117	1
		<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
MEEN 230	3	African/American Studies Elective	3
MATH 231	4	CAEE 334	2
PHYS 242	3	BIOE 216	3
PHYS 252	1	BIOL 101	4
Humanities Elective	3	GEEN 161	2
<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>14</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
BIOE 204	3	BIOE 360/CAEE 364	3
CAEE 362	3	BIOE 432/ SLSC 632	3
MEEN 441	3	BIOE 330	4
Global Studies Elective	3	BIOL 221	4
BIOE 440	3	MATH 341	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>17</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
Statistics Elective	3	BIOE 424	3
BIOE 400	3	BIOE 423	3
ISEN 260	2	BIOE 496	3
ENVS 422	3	BIOE Elective	4
ECEN 340	3	Social Behavioral Science Elective	3
BIOE 495	1	<b>Semester Total</b>	<b>14</b>
CAEE 400	1		
<b>Semester Total</b>	<b>16</b>		

**Total Credit Hours: 120**

## MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

BIOE 330	ISEN 370
BIOE 400	INEN 370
BIOE 423	MATH 131
BIOE 495	MATH 132
BIOE 496	MATH 224
CAEE 334	MATH 231
CHEM 106	MATH 341
CHEM 107	MEEN 441
ECEN 340	PHYS 241
ECON 305	PHYS 242
GEEN 100	CAEE 362

BIOE Electives:

BIOE 404, BIOE 415, BIOE 425, BIOE 426, BIOE 485, BIOE 490, CIEN 310, or other junior or senior level engineering courses approved by the faculty advisor.

Statistics Electives:

MATH 224, ECON 305, INEN 370, and CAEE 304.

Humanities/Fine Arts:

ENGL 200, ENGL 201, ENGL 230, ENGL 231, MUS 216, PHIL 260, PHIL 266, PHIL 267, PHIL 268, SPCH 250, LIBS 202, MUSI 220, PHIL 265 or PHIL 315 or courses approved by the faculty advisor.

Social/Behavioral Sciences:

BUED 279, ECON 200, ECON 201, FCS 134, FCS 181, FCS 260, HIST 103, HIST 104, HIST 105, HIST 106, HIST 107, HIST 130, HIST 206, HIST 207, HIST 216, HIST 231, JOMC 240, POLI 110, PSYC 101, SOCI 10, SOCI 200, SSFM 226 or courses approved by the faculty advisor.

**Department of Natural Resources & Environmental Design**  
**Bachelor of Science in Agricultural and Environmental Systems (Sustainable Land Management)**  
**Major Code: AES\***  
**Concentration Code: SLMG**

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100 <sup>1</sup>	3	ENGL 101 <sup>1</sup>	3
CHEM 106 <sup>2</sup>	3	CHEM 107	3
CHEM 116 <sup>2</sup>	1	CHEM 117	1
MATH 111 <sup>3</sup>	4	MATH 110 <sup>3</sup>	4
African American Studies Elective <sup>4</sup>	3	Global Awareness Elective <sup>6</sup>	3
FRST 101 <sup>5</sup>	1	<b>Semester Total</b>	<b>14</b>
NARS 100	1		
<b>Semester Total</b>	<b>16</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	

CHEM 221	3	BIOL 101	4
CHEM 223	1	MATH 244	3
SPCH 250 <sup>7</sup>	3	PHYS 110 <sup>2</sup>	2
SLMG 200	4	PHYS111 <sup>2</sup>	1
SBS/HFA Elective <sup>8</sup>	3	GEOG 200	3
AGED 101	1	BIOE 216	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
SLMG 300	3	SLMG 350	3
SLMG 301	2	HORT 422	3
NARS 418	3	NARS 492	1
WMI 236	1	Major Area Elective <sup>9</sup>	3
General Elective	3	Major Area Elective <sup>9</sup>	3
Major Area Elective <sup>9</sup>	3	General Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>16</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
SLMG 400	4	ABM	3
NARS 498	3	SLMG 450	3
Major Area Elective <sup>9</sup>	3	Major Area Elective <sup>9</sup>	3
Major Area Elective <sup>9</sup>	3	Major Area Elective <sup>9</sup>	3
General Elective	3	<b>Semester Total</b>	<b>12</b>
<b>Semester Total</b>	<b>16</b>		

**Total Credit Hours: 120**

<sup>1</sup>These courses meet the General Education / Written Communication (WC) requirement of 6 credit hours.

<sup>2</sup>Courses used to meet the General Education / Scientific Reasoning (SR) requirement of 7 credit hours.

<sup>3</sup>Courses used meet the General Education/Mathematical, Logical, and Analytical Reasoning requirement of 6 credit-hours.

<sup>4</sup>Select a 3 credit-hour course from the university approved list General Education / African American Culture and History.

<sup>5</sup>Courses used meet the General Education/Student Success (SS) requirement of 2 credit hours.

<sup>6</sup>Select a 3 credit hour course from the university approved list General Education / Global Awareness.

<sup>7</sup>Courses used to meet the General Education/Humanities and Fine Arts (HFA) requirement of 6 credit-hours.

<sup>8</sup>Select a 3 credit hour course from the university approved lists General Education / Social Behavioral Sciences (SBS).

<sup>9</sup>Major Area Elective courses include any departmental course or curriculum related courses in other departments. The course chosen as major area elective must be approved by major advisor.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

SLMG 200	NARS 418
SLMG 300	NARS 492
SLMG 301	NARS 498
SLMG 350	BIOE 216
SLMG 400	HORT 422
SLMG 450	

**Department of Natural Resources & Environmental Design**

**Bachelor of Science in Agricultural and Environmental Systems  
(Urban & Community Horticulture)  
Major Code: AES\*  
Concentration Code: HORT**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
FRST 101	1	NARS 100	1
HIST 130 or HIST 207	3	CHEM 106	3
SPCH 102	3	CHEM 116	1
NARS 110	3	BIOL 101	4
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
HFA/SBS Elective	3	HFA/SBS Elective	3
HIST 201, 202 or 203	3	MATH 244	3
CHEM 107	3	PHYS 110	2
CHEM 117	1	PHYS 111	1
ENVS 201	3	HORT 210	3
SLMG 200	4	Elective	3
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
ENGL 331	3	ABM 330	3
HORT 410	3	HORT 334	3
HORT 301	3	HORT 330	3
HORT 350	3	HORT 351	2
Major Elective	3	Major Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>14</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
NARS 487	3	MGMT 425	3
HORT 422	3	HORT 400	3
ABM 337	3	Major Elective	3
HORT 420	3	Major Elective	3
NARS 492	1	Major Elective	3
<b>Semester Total</b>	<b>13</b>	<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 120**

**Major Electives:** HORT 402, HORT 403, HORT 327, HORT 412, HORT 485, FCS 157, LDAR 150, or advisor's approval.

**Electives:** ABM 434, BIOE 114, BIOE 216, FCS 245, FCS 398, FCS 423, FCS 455, LDAR204, LDAR205, NARS 250, NARS 418, SLMG 300, SLMG 350, or advisor's approval.

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C or better in the following courses:*

ABM 330	HORT 330
ENVS 201	HORT 334
NARS 110	HORT 350

LDAR 102	HORT 351
MGMT 425	HORT 400
SLMG 200	HORT 410
NARS 487	HORT 420
NARS 492	HORT 422
HORT 301	

**Department of Natural Resources and Environmental Design**  
**Bachelor of Science in Agricultural and Environmental Systems (Environmental Studies)**  
**Major Code: AES\***  
**Concentration Code: ENVS**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100 <sup>1</sup>	3	ENGL 101 <sup>1</sup>	3
CHEM 106 <sup>2</sup>	3	CHEM 107	3
CHEM 116 <sup>2</sup>	1	CHEM 117	1
MATH 111 <sup>3</sup>	4	MATH 110 <sup>3</sup>	4
African American Studies Elective <sup>4</sup>	3	Global Awareness Elective <sup>6</sup>	3
FRST 101 <sup>5</sup>	1	<b>Semester Total</b>	<b>14</b>
NARS 100	1		
<b>Semester Total</b>	<b>16</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
CHEM 221	3	BIOL 101	4
CHEM 223	1	MATH 244	3
SPCH 250 <sup>7</sup>	3	PHYS 110 <sup>2</sup>	2
SLMG 200	4	PHYS111 <sup>2</sup>	1
SBS/HFA Elective <sup>8</sup>	3	GEOG 200	3
AGED 101	1	BIOE 216	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
SLMG 300	3	SLMG 350	3
SLMG 301	2	HORT 422	3
NARS 418	3	NARS 492	1
WMI 236	1	Major Area Elective <sup>9</sup>	3
General Elective	3	Major Area Elective <sup>9</sup>	3
Major Area Elective <sup>9</sup>	3	General Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>16</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
SLMG 400	4	ABM	3
NARS 498	3	SLMG 450	3
Major Area Elective <sup>9</sup>	3	Major Area Elective <sup>9</sup>	3
Major Area Elective <sup>9</sup>	3	Major Area Elective <sup>9</sup>	3
General Elective	3	<b>Semester Total</b>	<b>12</b>
<b>Semester Total</b>	<b>16</b>		

**Total Credit Hours: 120**

<sup>1</sup>These courses meet the General Education / Written Communication (WC) requirement of 6 credit hours.



<sup>2</sup>Courses used to meet the General Education / Scientific Reasoning (SR) requirement of 7 credit hours.

<sup>3</sup>Courses used meet the General Education/Mathematical, Logical, and Analytical Reasoning requirement of 6 credit-hours.

<sup>4</sup>Select a 3 credit-hour course from the university approved list General Education / African American Culture and History.

<sup>5</sup>Courses used meet the General Education/Student Success (SS) requirement of 2 credit hours.

<sup>6</sup>Select a 3 credit hour course from the university approved list General Education / Global Awareness.

<sup>7</sup>Courses used to meet the General Education/Humanities and Fine Arts (HFA) requirement of 6 credit-hours.

<sup>8</sup>Select a 3 credit hour course from the university approved lists General Education / Social Behavioral Sciences (SBS).

<sup>9</sup>Major Area Elective courses include any departmental course or curriculum related courses in other departments. The course chosen as major area elective must be approved by major advisor.

## MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

SLMG 200	NARS 418
SLMG 300	NARS 492
SLMG 301	NARS 498
SLMG 350	BIOE 216
SLMG 400	HORT 422
SLMG 450	

## COURSE DESCRIPTIONS IN BIOLOGICAL ENGINEERING

### **BIOE 114. Home and Farm Maintenance**

**Credit 3(1-4)**

This course provides instruction in the selection, sharpening, care and correct use of shop tools and equipment; woodworking and simple carpentry; simple electrical repairs; sheet metal work; electric arc and oxyacetylene welding; pipe fitting and simple plumbing repairs. (F;S)

### **BIOE 204. Principles and Applications of Land Surveying**

**Credit 3 (1-4)**

This course covers basic surveying knowledge, theories and practices of plane and topographic surveying, measurements (accuracy and errors), differential and profile leveling, stadia traverse, and an introduction to site planning and development. The integration of Global Positioning Systems along with field layout, orientation, land leveling and water management (Irrigation and Drainage) will be emphasized, horizontal and vertical roadway layout will also be discussed. Prerequisites: MATH 102 or 110 or 131. (F;S;S)

### **BIOE 216. Geographic Information Systems**

**Credit 3(1-4)**

This course introduces Geographic Information System (GIS) concepts and applications. GIS theory is presented, and hands-on exercises are used to demonstrate the application and use of GIS in agriculture, arts and sciences, health, political sciences, engineering, technology, and other disciplines. (F;S)

### **BIOE 330. Engineering Systems Analysis and Design**

**Credit 4(2-4)**

This course introduces the analysis and the design of engineering systems. Concepts, methods, and procedures associated with the engineering design process are studied. Specific topics include project management; customer need identification; team behavior; concept generation and evaluation; embodiment design; modeling and simulation; finite element analysis software; material selection; engineering statistics; and legal and ethical issues in design. Prerequisites: CAEE 332 or MEEN 336 or equivalent. (F;S)

### **BIOE 360. General Hydrology**

**Credit 3(2-2)**

This course is an introduction to the study of surface and subsurface hydrology. Topics include hydrologic cycle, rainfall-runoff relationships, precipitation measurements and hydrographs, unit hydrograph analysis, flood routing, planning and design of runoff/detention systems, and computer applications in hydrology. Prerequisites: CAEE 362 or MEEN416. (F;S;S)

### **BIOE 400. Soil and Water Engineering**

**Credit 3(2-2)**

This course emphasizes the application of hydraulics, hydrology, saturated flow, engineering principles, and soil and plant Properties in the analysis and design of soil and water management systems. Topics include water quality, precipitation, overland flow and erosion, states of flow, equation of flow, irrigation and drainage designs, and pipe flow. Additional discussions will

include ways to improve conservation engineering commonly used; as well as the transfer of technology to agriculture, engineering and other related disciplines. Prerequisite: CAEE 364 or equivalent. (F;S;S)

**BIOE 404. Structures and the Environment** **Credit 3(2-2)**

This course covers the fundamentals of timber-framed building design and construction. Topics include, selection of materials, design of foundations, beams and columns, reinforced concrete, and environmental considerations, such as temperature, humidity, condensation, and ventilation. Prerequisite: CAEE 332 or MEEN 336 or equivalent. (F;S;S)

**BIOE 415. Water Management and Conservation** **Credit 3(3-0)**

The primary purpose of the course is to examine basic concepts and practices dealing with water issues, agricultural pollutants, irrigation and drainage water conservation methods, and design and evaluation of water management systems at the field and water shed scale. This course will review basic principles of hydrology, erosion, saturated and unsaturated flow, soil-water-air-plant relationships, land leveling and development. Prerequisites: SLMG 200 or equivalent and Senior standing in Biological Engineering. (F;S;S)

**BIOE 422. Introduction to Bioprocess Engineering** **Credit 3(3-0)**

This course covers the engineering concepts for biological conversion of raw materials to food, pharmaceuticals, fuels, and chemicals. Emphasis is placed on energy balance, material balance, fluid flow and mixing, heat and mass transfer, bioreaction kinetics, design, analysis, instrumentation, and control of bioreactors. Prerequisites: BIOE 330 or equivalent. (F;S;S)

**BIOE 423. Fundamentals of Renewable Energy Systems** **Credit 3(2-2)**

This course discusses the production, utilization, and design of renewable energy systems. Specific topics include: heat transfer, heat exchangers, solar (thermal and photovoltaic) energy, biogas, biomass, bioethanol, gasification and pyrolysis, energy analysis, sustainability, air pollution and ethics. Prerequisite: MEEN 441 or CHEN 312. (F;S;S)

**BIOE 424. Water Resources Engineering** **Credit 3(2-2)**

This course emphasizes the analysis and design of water resources systems. Topics include water resources planning and development, hydraulic structures, open channel flow, introduction to aquifer analysis and contamination, well development, pumps and pumping, pipe flow, water supply quantity and quality, best management practice, water laws, watershed models (SWAT) and flood plain models (HEC-RAS). Prerequisite: CAEE 364 or equivalent, or BIOE 400. (F;S;S)

**BIOE 425. Instrumentation for Biological Systems** **Credits 3(1-4)**

Basic concepts of instrumentation for monitoring of biological systems will be studied. Specific topics include: selection and use of sensors and data acquisition systems for measuring various parameters of biological systems (temperature, pressure, flow and pH value) monitoring and control of bioreactors, analytic instruments for measuring cells and biomolecules (light and fluorescent microscopes, GC-MS, HPLC and elemental analyzer) and analysis of experimental data. Prerequisite: BIOE 330. (F;S;S)

**BIOE 426. Food Engineering (Formerly BIOE 522)** **Credit 3(2-2)**

The general engineering principles of solids, fluids, and process equipment are discussed. Topics include energy, heat, enthalpy, psychrometrics, heat and mass transfer, drying and refrigeration of food products. Prerequisite: CHEM 107. (F;S;S)

**BIOE 432. Physical and Engineering Properties of Soil** **Credit 3(2-2)**

This course addresses fundamental principles of laws which govern the movement or behavior of water and air in soils. The impact of soil physical and biological properties on drainage and irrigation design are discussed. Discussion will also include stream restoration, compaction and mechanics of soil materials. Prerequisite: CAEE 364 or equivalent. (F;S;S)

**BIOE 440. Engineering Properties of Biological Materials** **Credit 3(2-2)**

This course covers engineering properties of plant and animal materials. Specific topics include structure and composition of plant and animal materials, elastic and viscoelastic properties, food rheology and thermal properties, aerodynamic and hydrodynamic properties, and electromagnetic properties. Prerequisites: BIOL 101 or equivalent; CAEE 332 or and MEEN 336 or equivalent. (F;S;S)

**BIOE 485. Selected topics in Biological Engineering (formerly BIOE 505)** **Credit 3(3-0)**

An in-depth lecture course covering several advanced topics in Biological Engineering. Topics are selected to match student interest and faculty expertise. A specific course description will be made available at the time such a course is offered. Prerequisite: Senior standing in Biological Engineering. (F;S;S)

**BIOE 490. Independent Study in Biological Engineering (formerly BIOE 510)** **Credit 1-3(0-6)**

An independent study course is completed on a single topic in Biological Engineering/Topics are selected to fit the mutual interests of students and faculty advisor. The study includes the design of an apparatus, a process, or a procedure. Final written report and an oral presentation of the work are required. Prerequisites: Permission of Instructor (F;S;S)

**BIOE 495. Engineering Design I (formerly BIOE 501)** **Credit 1(1-0)**

In this course, each student identifies a design project, defines the problem, collects all required resources and databases and outline the work plan. This project integrates design concepts from previous courses. Prerequisite: BIOE 330. (F;S;S)

**BIOE 496. Engineering Design II (formerly BIOE 502)** **Credit 2(2-0)**

In this course students complete the work plan established in BIOE 501. Prerequisite: BIOE 501. (F;S;S)

## COURSE DESCRIPTIONS IN AGRICULTURAL AND ENVIRONMENTAL SYSTEMS

### Concentration: Environmental Studies

**ENVS 201. The Earth – Man’s Environment** **Credit 3(3-0)**

This course is a study of the earth’s system as related to atmosphere, biosphere, hydrosphere and lithosphere. The interrelationship

of humans with the earth's environment as revealed in the modification of natural processes will also be examined. Prerequisite: Consent of the instructor. (F;S;SS)

**ENVS 209. Physical Geology** **Credit 3(2-2)**

This course deals with geological principles; nature, composition and distribution of earth materials; processes responsible for the formation and modification of landscapes; rock and mineral identification; utilization of geographic processes; resource conservation; application of geologic concepts to agricultural, engineering and environmental problems. Prerequisite: CHEM 101 or consent of the instructor. (S)

**ENVS 210. Introduction to Environmental Science** **Credit 3(3-0)**

This course gives students a basic understanding of environmental science and the concept of sustainability. It also presents examples showing the development of solutions to complex environmental issues. Prerequisites: Consent of the instructor. (F;S;SS)

**ENVS 230. Weather and Climate** **Credit 3(3-0)**

This course examines world patterns of climate types and climate change, weather systems, atmospheric circulation, Tropical storms, tornados, hurricanes. It surveys the impacts of weather and climate on landforms and applications to Problems in engineering, military science and planning for agricultural, urban and regional development projects Prerequisites: Sophomore standing and consent of the instructor. Prerequisites: Sophomore standing and consent of the instructor. (F)

**ENVS 308. Independent Work in Environmental Studies** **Credit 3(1-4)**

Supervised independent research in environmental studies. Prerequisite: Junior standing and consent of the instructor. (S;SS1)

**ENVS 344. Environmental Sustainability** **Credit 3(2-2)**

This class covers environment sustainability issues such as sustainable energy, climate change, sustainable water supply, waste reduction and recycling. (F;S;SS)

**ENVS 410. Sustainable Earth** **Credit 3(3-0)**

The topics addressed in this course include global climate change, ocean habitat and productivity, sustainable food production, the available of land, natural resources, and safe and pure drinking water. Students will focus on environmental issues, and they will examine present options with a perspective of how we may influence or be influenced by these issues in the future. Prerequisites: Consent of the instructor. (F;S;SS)

**ENVS 420. Environmental Studies** **Credit 3(3-0)**

The course provides a multidisciplinary approach to several global, regional, and local environmental issues. These issues will be examined from a variety of perspectives; scientific, technical, social, political, economic, legal and ethical. A combination of in-class and out-of-class activities will provide the basis for research projects. Prerequisites: Consent of the instructor. (F;S;SS)

**ENVS 424. Geomorphology** **Credit 3(2-2)**

This course examines various land forms and their evolution – the naturally evolved surface features of the Earth's crust and the processes responsible for their evaluation, their relations to man's activities and as the foundation for understanding the environment. Prerequisites: ENVS 209. (F;S;SS)

#### **Advanced Undergraduate and Graduate**

**ENVS 416. Natural Resource Conservation** **Credit 3(3-0)**

This class covers uncontrolled use of natural resources, increased urbanization, unplanned growth and general deterioration of the man-made and natural environments. Prerequisite: Senior standing and consent of the instructor. (F)

**ENVS 421. Environmental Challenges and Issues** **Credit 3(3-0)**

Students will be involved case studies in which small groups of students will represent government or interest groups in a town meeting that will discuss controversial environmental issues. Students will also participate in field trips that will provide an understanding of the complexities of environmental issues. Students will present a formal report. Prerequisite: Senior/Graduate standing. (F;S;SS)

**ENVS 422. Environmental Sanitation and Waste Management** **Credit 3(2-2)**

This course is the study of traditional and innovative methods of managing with handling liquid, solid and other forms of waste products in urban and rural environments. Prerequisites: Senior standing and consent of the instructor. (F;S;SS)

**ENVS 444. Problem Solving in Environmental Studies** **Credit 3(3-0)**

Supervised independent field and/or laboratory research in environmental studies. Prerequisites: Senior standing and consent of the instructor. (S)

**ENVS 466. Earth System Science** **Credit 3(3-0)**

This course is the study of the earth as a "system" with emphasis on the atmosphere, biosphere, hydrosphere, and lithosphere interactions as related to global change and human impact. Prerequisites: Senior standing and consent of the instructor. (F)

**ENVS 699. Environmental Problems** **Credit 3(3-0)**

This course covers multidisciplinary examination of environmental problems and application of innovative techniques of analysis to environmental problems. Team taught by environmental faculty. Prerequisites: Senior standing and consent of the instructor. (S)

#### **COURSE DESCRIPTIONS IN AGRICULTURAL AND ENVIRONMENTAL SYSTEMS**

##### **Concentration: Urban & Community Horticulture**

- HORT 210. The Science of Plants** **Credit 3(3-0)**  
 This course focuses on the fundamental biological characteristics, and principles of growth and development of crop plants. Prerequisites: NARS 110. (F;S;SS)
- HORT 301. Disease Management Strategies in Urban and Community Horticulture** **Credit 3(2-2)**  
 This course covers plant pathology issues in urban and community horticulture: main diseases and pests, and how to take into account specific conditions of community and urban environment, particularly how to address those issues in organic production conditions, under agriculture structures or in common spaces. (S)
- HORT 330. Plant Nutrition** **Credit 3(3-0)**  
 This course describes basic principles of plant nutrition, importance of nutrients for plant growth and how to build a plant nutrition program that is responsive to optimum productivity and minimal environmental pollution. Prerequisite: NARS 110, SLMG 200. (F;S;SS)
- HORT 334. Plant Propagation** **Credit 3(2-2)**  
 This course is the study of the types, construction, and management of propagation structures; it covers the fundamental principles of propagation by seed, and of vegetable propagation. Prerequisite: NARS 110. (F;S;SS)
- HORT 350. Factors affecting Urban and Community Horticulture** **Credit 3(3-0)**  
 This course covers important environmental factors, waste recycling, and socio-economical considerations that influence production of edible plants in urban and in community gardens. Prerequisite: NARS 110. (F;S)
- HORT 351. Practice in Sustainable Horticulture** **Credit 2(0-2)**  
 This course offers faculty-supervised practical hands-on experience for students on projects in the area of Sustainable Urban and Community Horticulture, such as small-scale farms and community horticulture gardens. (S)
- HORT 327. Basic Floral Design and Edible Arrangements (formerly HORT 527)** **Credit 3(2-2)**  
 This course covers the history and principles of floral design, with special attention to design principles, such as Balance, harmony, color, and line movement. The course includes edible arrangements using fruits and vegetables. Requires and includes practice of different techniques of flower and edible arrangement (Lab fee). (F;S;SS;DEMAND)
- HORT 400. Advanced Techniques for Horticultural Crop Improvement (formerly HORT 600)** **Credit 3(2-2)**  
 This course studies principles and techniques of plant cell, tissue and organ culture, embryogenesis and organogenesis, Breeding and genetic transformation, and their applications in horticultural crop improvement. Prerequisites: NARS 110, HORT 334. (F;S;SS)
- HORT 402. Grapes and Small Fruits** **Credit 3(2-2)**  
 This course covers principles and production practices of the various varieties of grapes and small fruits produced in North Carolina. Prerequisite: NARS 110. (F;S)
- HORT 403. Specialty Crops** **Credit 3(2-2)**  
 This course will cover production aspects of some specialized crops, like Mushrooms, Herbs and Medicinal Plants. Prerequisite: NARS 110. (F;S)
- HORT 410. Season Extension in Sustainable Production** **Credit 2(2-0)**  
 This course covers different options for producing vegetables, small fruits or other edible plants requiring limited space in a rural environment. From the production under protected conditions to season extension including all the different possibilities offered to growers. Prerequisite: NARS 110. (F;S)
- HORT 422. Integrated Pest Management Systems (formerly HORT 612)** **Credit 3(2-3)**  
 This course provides basic principles and skills or the management of pest of crops, greenhouse and ornamental plants, and those attacking man and his domesticated animals. (F;S;SS)
- HORT 420. Vegetable Production for Small Scale Production** **Credit 3(3-0)**  
 This course provides a comprehensive study of vegetable crops that are adapted to small scale production. It covers Production practices, quality and nutritional characteristics, main propagation techniques, post-harvesting handling and storage, and some marketing aspects of the crops and production systems studies. Prerequisites: NARS 110, HORT 334, or permission of instructor. (S)
- HORT 485. Special Topics in Horticulture** **Credit 3(3-0)**  
 This course will teach a specific topic in horticulture for advanced undergraduate students. Prerequisites: NARS 110, HORT 334. (F;S;SS)

## COURSE DESCRIPTIONS IN AGRICULTURAL AND ENVIRONMENTAL SYSTEMS

### Concentration: Sustainable Land Management

- SLMG 200. Soil Science** **Credit 4(3-2)**  
 Study of soil as a natural resource, soil formation, soil properties, and how soil properties influence soil function in land-use systems. This course examines the fundamental nature and properties of soils, soil genesis, and classification and land use will be covered. (F)
- SLMG 300. Soil and Soil Management** **Credit 3(3-0)**  
 Topics in soil fertility, chemistry, physics and biology. Discussion of how land management techniques affect Soil properties, soil function, soil quality, and other environmental components. (F)
- SLMG 301. Soils and Soil Management Laboratory** **Credit 2(0-4)**  
 A laboratory course that focuses on the measurement of soil physical, chemical and biological properties of soil and their practical applications in land-use systems. (F)

**SLMG 350. Land and Water Conservation Management** **Credit 3(3-0)**  
Major topics covered are climate change, precipitation patterns and soil erosion, soil and water conservation Techniques, restoration of eroded and degraded soils, reclamation of mine spoils, formation and reclamation of saline and sodic conditions, and water conservation techniques for urban and rural lands. (S)

**SLMG 400. Environmental Quality Assessment** **Credit 4(2-4)**  
Discussion of how urban, agricultural, and forestry land techniques affect environmental quality, methods of Contaminant assessment and abatement, and contaminant remediation in soil, water and air. (F)

**SLMG 450. Sustainable Land-Use Systems** **Credit 3(3-0)**  
Discussion of past and present agronomic, horticultural and forestry production systems, how they need to Evolve to adapt to current climatic conditions, to mitigate greenhouse emissions, and to reduce excessive Soil erosion and land degradation rates. (S)

**SLSC 517. Soil Fertility** **Credit 3(3-0)**  
This course examines that following: the general principles of soil fertility; influence of chemical, physical and microbiological properties of soils on crop production; application of fertility principles in cropping programs; and limited treatment of impact of agricultural pollutants on the environment. Prerequisite: SLSC 338, CHEM 101 or consent of instructor. (DEMAND)

#### **Advanced Undergraduate and Graduate**

**SLSC 621. Soil Microbiology** **Credit 4(2-4)**  
A study of soil micro and macro organisms and their role in elemental cycles, environmental pollution remediation and crop yields. Also, deals with the rhizosphere ecology and processes. Organic matter accumulation and carbon sequestration in soils. (DEMAND)

**SLSC 632. Soil Physics** **Credit 4(2-4)**  
This course is a study of fundamental physical principles and laws which govern the behavior of soils. Physical constitution of soil water, and soil air and the relationship of soil physical conditions to plant growth and environment will also be examined. Prerequisites: SLSC 338, CHEM 102, and MATH 113, and consent of instructor. Spring terms of even numbered years. (S)

**SLSC 633. Soil Genesis, Classification and Land Use** **Credit 4(2-4)**  
Factors and processes of soil formation, grouping of soils based on their properties, soil mapping, soil interpretations for various uses and discussion of new concepts in soil taxonomy will be studied. Prerequisite: SLSC 338 or consent of instructor. (F)

**SLSC 634. Soil Environmental Chemistry** **Credit 4(3-2)**  
This course is a study of the chemical properties of soil environment including interactions of solid, liquid and gaseous phases. Discussion will also include ion and pollutant interactions with soil, their retention, potential movement and the environmental impact. Additional discussion will include oxidation and reduction, soil acidity and alkalinity and their impact on waste management, resource utilization and the environment. Prerequisite: SLSC 338. (S)

**SLSC 640. Wetland Management** **Credit 3(0-0)**  
Designed to provide a basic understanding of the benefits that wetlands in their natural conditions offer mankind, fish and wildlife habitat, water quality improvement, flood protection, filter traps for pollutants, erosion control, natural products, recreation, and aesthetics. Primary instructional areas will include ecology, wetland systems of the southeast region, wetland law and regulations, soil conditions of wetlands, hydrology of wetlands, methodology of delineating wetlands, wetland irrigation, plant and vegetation identification, and writing environ-mental reports.

#### **LANDSCAPE ARCHITECTURE**

**LDAR 102. Environmental Design Ethics** **Credit 2(2-0)**  
This course is designed to emphasize issues, values, and ethics in landscape architecture. Current concerns and issues involving the environment, design and social factors will be explored. A variety of ideologies within the practice of landscape architecture and their niches within the profession will be examined. (F;S;SS)

**LDAR 104. Landscape Architecture History** **Credit 3(3-0)**  
This history course is a study of the development of landscape architecture from antiquity to modern times, with emphasis on its relationships to allied arts and professions of designed landscapes. (F;S;SS)

**LDAR 105. Landscape Architecture History II** **Credit 3(3-0)**  
This course is a study of the development of landscape design during the modern and post modern eras. Topics will include the English Landscape School, the City Beautiful Movement, the Country Place Era, the International School, and contemporary landscapes and their designers. Prerequisite: LDAR 104. (F;S;SS)

**LDAR 147. The Space Creation Studio** **Credit 3(0-6)**  
This studio course will explore issues of basic design and design theory such as the principles and elements of visual design. Two and three dimensional aspects of form and space creation will be explored along with the development of a design language. (F;S;SS)

**LDAR 148. The Imaginary Space Studio** **Credit 3(0-6)**  
Students in this studio course will explore basic concept development using the principles and elements of design. The course will give students a greater understanding of space through analysis of forms, proportions, and scale. Students will investigate design theory by proposing solutions to a given problem. Prerequisite: LDAR 170. (F;S;SS)

**LDAR 150. Landscape Architecture Discovery** **Credit 3(3-0)**  
This course will explore the broad field of landscape architecture. Students will be introduced to the planning and design

process. The ecological and social factors of design, planning, management, and research of landscapes will be introduced with emphasis on sustainability. Also, the development of the landscape architecture lexicon will be emphasized. (F;S;SS)

**LDAR 170. Landscape Architecture Drawing One Studio** **Credit 3(0-6)**

Students enrolled in this studio course will explore the field of landscape architecture through the various visual communication techniques. Students will be exposed to traditional and digital visual graphic techniques necessary for the communication of ideas. Students will also develop three dimensional models. (F;S;SS)

**LDAR 171. Landscape Architecture Drawing Two Studio** **Credit 3(0-6)**

This studio course is designed to explore further issues of visual communication. Both traditional and digital visual media will be used to investigate more technical aspects of communication. Students will also develop more complex to three dimensional models. (F;S;SS)

**LDAR 204. Plant Materials I** **Credit 3(1-4)**

This course will concentrate on the study of plant materials as used in landscape design. Emphasis is placed on major categories of herbaceous plants and woody plants as they pertain to landscape usage. Identification techniques will be introduced and used. (F;S;SS)

**LDAR 205. Plant Materials II** **Credit 3(1-4)**

This course is a continuation of LDAR 204. Different plant species will be the focus of this course. (F;S;SS)

**LDAR 247. The Small Private Spaces Studio** **Credit 3(0-6)**

This studio course is designed to explore further issues of design with emphasis on sustainable landscapes. Course material will emphasize ideologies about scales, context, and concept development. Small residential projects will explore creative solutions to “real” world constraints (i.e. zoning regulations, economic, environmental, social, political, etc.). The cyclic nature of the design process and its layers will also be emphasized. (F;S;SS)

**LDAR 248. The Small Public Spaces Studio** **Credit 3(0-6)**

This studio course is designed to explore further issues of design with emphasis on sustainable landscapes. Course material will emphasize ideologies about scales, context, and concept development. Small public projects will explore creative solutions to “real” world constraints (i.e. zoning regulations, economic, environmental, social, political, etc.). The cyclic nature of the design process and its layers will also be emphasized. Prerequisite: LDAR 247. (F;S;SS)

**LDAR 304. Designing Sustainably** **Credit 3(3-0)**

This lecture course will explore current research, technology, best practices and performance goals for the design, construction and maintenance of sustainable sites. Basic concepts of ecology, ecosystem structure and function will be explored; energy flow and material recycling emphasized. Field trips are required. (F;S;SS)

**LDAR 344. Landscape Architecture Construction Materials** **Credit 3(1-4)**

This course will introduce students to various materials used in landscape construction projects. The nature, structure and/or composition of the material, its typical application in the landscape and construction techniques with emphasis on sustainable materials will be discussed. Emphasis will be placed on the use of materials in the landscape and the development of drawn construction details during the lab period. (F;S;SS)

**LDAR 345. Landscape Architectural Construction Studio** **Credit 4(0-8)**

This studio course will focus on exercises and projects in site engineering with emphasis on sustainable landscapes. Prerequisites: MATH 101 and 102 or higher, PHYS 105 or higher. (F;S;SS)

**LDAR 346. Landscape Architecture Materials and Equipment Studio** **Credit 4(0-8)**

This studio course will focus on lectures, exercises and projects dealing with landscape equipment, and design methods with emphasis on sustainable landscapes. Prerequisite: LDAR 345. (F;S;SS)

**LDAR 347. Site Design Studio** **Credit 4(0-8)**

This is a studio course for students to develop design solutions to problems involving private, quasi-public, and public spaces with emphasis on the design process and sustainability. The student will develop programs, site analysis, concept, and presentation drawings. (F;S;SS)

**LDAR 348. Site Planning Studio** **Credit 4(0-8)**

This studio course is a continuation of LDAR 347 addressing more complex sustainable design issues. Prerequisite: LDAR 347. (F;S;SS)

**LDAR 380. Design Field Study** **Credit 3(0-6)**

This is a course for landscape architecture students to visit and explore examples of exemplary natural systems and built landscapes. Students will study successful North Carolina or international (i.e. Ghana, England) urban projects, gardens, parks, and residential communities, to further understand the environment. (F;S;SS)

**LDAR 400. Special Problems in Design** **Credit 3(3-0)**

This is a course for landscape architecture students to work on independent study projects. Prerequisite: Consent of the instructor and Program Coordinator. (F;S;SS)

**LDAR 440. Design Proposal Writing** **Credit 3(3-0)**

This course is intended to assist students in selecting an individual capstone project, finding and organizing appropriate information needed for the project, and firmly establishing parameters for the design and development of the project. (F;S;SS)

**LDAR 442. Design in Practice** **Credit 3(3-0)**

This course is a study of the professional practice of landscape architecture with emphasis on creating and maintaining a

professional firm. Professional ethics and registration laws; the preparation of proposals and contract documents; office administration; job supervision, and relationships with clients and customers will be covered. (F;S;SS)

**LDAR 443. Design Theory** **Credit 3(3-0)**

Lectures on historic and contemporary issues relating to the theory and practice of landscape architecture are the focus of this seminar. There will be individual research and group discussions during this lecture class. (F;S;SS)

**LDAR 444. Designing with Plants Studio** **Credit 3(0-6)**

This studio course will study the fundamentals of design as applied to aesthetic and functional arrangements with emphasis on native and ornamental plant material. Problems will include preparation of planting plans, cost estimates and technical specifications. Prerequisites: LDAR 204 and 205. (F;S;SS)

**LDAR 445. Construction Documents Studio** **Credit 3(0-6)**

This studio course will serve as a capstone to Landscape Architectural Construction studio with emphasis on understanding and preparing complete sets of construction documents for landscape architecture projects. Prerequisite: LDAR 346. (F;S;SS)

**LDAR 447. The Collaborative Studio** **Credit 4(0-8)**

This studio course is an in-depth group study of a comprehensive landscape architecture management, planning, and design problem while considering the research, programming, site analysis, conceptual studies, preliminary and master plan, design guidelines, and presentations of recommendations. Prerequisite: LDAR 348. (F;S;SS)

**LDAR 448. The Personal Discovery Studio** **Credit 4(0-8)**

This studio course focuses on an approved design problem requiring individual work, which will serve as a comprehensive examination. Preparation and presentation are to include a written and graphic problem statement, analysis, and detailed plans, or other activities approved by instructor. Prerequisite: LDAR 447. (F;S;SS)

#### NATURAL RESOURCES

**NARS 100. Introduction to Natural Resources and Environmental Design** **Credit 3(3-0)**

This course is designed to assist students in making personal adjustments to college living; it provides Introduction to the broad areas of natural resources and environmental design and a study of the curricula and professional opportunities in the field. In addition, this course provides a forum for dialogue among students, industry, and academia to work in partnership to define current and emerging issues in natural resources and environmental design. This course is only for freshman students in the department of Natural Resources and Environmental Design. (F;S)

**NARS 110. Introduction to Urban and Community Horticulture** **Credit 3(2-2)**

This introductory course emphasizes basic knowledge in botanical fundamentals of higher plants; plant growth and development; and essential principles in crop, horticulture and forestry sciences. (F;S)

**NARS 250. Insects, Man and Environment** **Credit 3(3-0)**

This course will explore the importance of insects and other arthropods in every aspect of human society, the reasons for their success and the environmental impact of controlling them. Illustrations will be used that transcend all disciplines and cultures, including their use as scientific models, decorative artifacts, human food, disease therapy and folklore, among others. (F;S;SS – DEMAND)

**NARS 305. Principles of Plant Breeding** **Credit 3(2-2)**

This is an introductory course with emphasis placed on basic principles of plant improvement through genetics; it is required of all Plant Science majors. Prerequisite: BIOL 140 or ANSC 214. (DEMAND)

**NARS 307. Forage Crops** **Credit 3(2-2)**

This course is the study of grasses, legumes and other plants and their uses as hay pasture, silage and special purposes of forages, identification of plants and seeds and study of quality in hay, silage and pasture population. Prerequisite: NARS 110. (DEMAND)

**NARS 400. Mycology & Fungal Biotechnology** **Credit 3(3-0)**

This course provides an introduction to the various groups of fungi and their morphology, biological activities, economic importance and their applications in biotechnology, bioremediation, waste recycling/bioconversion and bioproducts development. Prerequisites: BIOL 101 or any intro-biology, microbiology or biochemistry course. (F;S;SS)

**NARS 487. Capstone** **Credit 3(3-0)**

Students will be required to spend one semester or the summer in an approved government agency, or private firm conducting practical work, observation and/or directed professional activities. (F;S)

**NARS 492. Seminar in Plant Science and Technology** **Credit 1(1-0)**

This course examines current problems in Plant Science and Technology. Designed especially for unifying the three major areas of the Department by involving the staff with junior and senior students. (F)

#### Advanced Undergraduate and Graduate

**AGRI 604. Experimental Methods in Research** **Credit 3(2-2)**

Experimental design, methods and techniques of experimentation, application of experimental design to plant, Animal and food research; and interpretation of experimental data will be included in the course. Prerequisite: MATH 224. (F)

**NARS 601. Plant Pathology & Modern Approaches to Plant Disease Control** **Credit 3(2-2)**

Fundamental principles of plant pathology, including disease etiology, symptomatology, epidemiology of representative of Different crop and tree disease will be covered. Modern and biotechnology approaches to disease identification and control will also be covered. (F;S;SS)

**NARS 608. Special Problems in Natural Resources****Credit 3(3-0)**

The courses designed for students who desire to study special problems in Natural Resources; plant, soil, and environment. (F;S)

**NARS 618. General Forestry****Credit 3(2-2)**

This course is the study of the history, classification, culture, and utilization of native trees, with special emphasis on their importance as a conservation resource, the making of national forestry policy, and the ecological impact of trees on environmental quality. Prerequisite: BIOL 140. (SS)

**DIRECTORY OF FACULTY**

<b>Niroj Aryal</b> .....	<b>Assistant Professor</b>
B.S., Tribhuvan University, Nepal; M.S.; Ph.D., Michigan State University	
<b>T. Carter Crawford</b> .....	<b>Assistant Professor</b>
B.S., Old Dominion University; M.L.A., Ph.D., North Carolina State University	
<b>Beatrice Dingha</b> .....	<b>Research Scientist</b>
B.S., Nnamdi, Azikiwe University; M.S., University of Ghana; Ph.D., Auburn University	
<b>Godfrey A. Gayle</b> .....	<b>Professor and Interim Program Director</b>
B.S., North Carolina A&T State University; M.S., Ph.D., North Carolina State University	
<b>Odile N. Huchette</b> .....	<b>Lecturer</b>
M.S., Institute Polytechnique de Lorraine	
<b>Omoanghe S. Isikhuemhen</b> .....	<b>Professor</b>
B.S., M.S. University of Benin, Nigeria, Ph.D. Institute of Microbiology, MS CR, Prague	
<b>Louis E. Jackai</b> .....	<b>Professor</b>
B.S., University of Cape Coast, Ghana, WA; M.S., University of Wisconsin-Superior; Ph.D., University of Illinois, Urbana-Champaign	
<b>Gunwoo Kim</b> .....	<b>Assistant Professor</b>
B.L.A., University of Illinois, Urbana-Champaign; M.L.A., Seoul National University; Ph.D., Virginia Polytechnic Institute and State University	
<b>William Randle</b> .....	<b>Professor</b>
B.S., University of Arizona; M.S., Michigan State University; M.S., Ph.D., University of Minnesota	
<b>Abolghasem Shahbazi</b> .....	<b>Professor and Interim Chairperson</b>
B.S., University of Tabriz; M.S., University of California at Davis, Ph.D., Pennsylvania State University (F.E.)	
<b>Godfrey A. Uzochukwu</b> .....	<b>Professor</b>
B.S., M.S., Oklahoma State University; Ph.D., University of Nebraska, Certified Soil Scientist	
<b>Lijun Wang</b> .....	<b>Professor</b>
B.S., Zhengzhou University; M.S., South China University of Technology; Ph.D., National University of Ireland, Dublin (P.E.)	
<b>Guochen Yang</b> .....	<b>Professor</b>
B.S., Jilin Agricultural University; M.S., Ph.D., University of Nebraska-Lincoln	



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## COLLEGE OF ARTS, HUMANITIES AND SOCIAL SCIENCES

<http://www.ncat.edu/cahss/index.html>

Craig Rhodes, Interim Dean

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### OBJECTIVES

The College of Arts, Humanities and Social Sciences at North Carolina Agricultural and Technical State University introduces the student to the world of higher education and its many fields of human interests. The College provides opportunities for the acquisition of knowledge, skills, attitudes and behavioral patterns that promote excellence and competence. Our primary aim is to provide students with a global educational experience which prepares them to perform in a variety of dynamic leadership and employment situations.

Through its formal curriculum and program of study in the arts and humanities, and the social sciences, the College intends to achieve the following objectives:

1. Provide courses of instruction and service-learning experiences that prepare students for professional or self-employment.
2. Provide opportunities and experiences for the student to acquire analytical and critical thinking skills.
3. Provide training in effective communication.
4. Stimulate and encourage individual creativity and personal development through research and related activities.
5. Foster and inspire creativity, self-discipline, and objective thinking among our students.
6. Provide the undergraduate academic foundation for successful graduate and professional education.

### DEGREES OFFERED

The College of Arts, Humanities and Social Sciences is comprised of six academic departments with nine undergraduate degree programs leading to the Bachelor of Arts, the Bachelor of Science, and the Bachelor of Fine Arts. The Bachelor of Arts degree is offered with major programs of study in English, History, Liberal Studies, Music, Political Science, and Visual Arts. The Bachelor of Science degree is offered with major programs of study in Criminal Justice and Journalism and Mass Communication. The Bachelor of Fine Arts degree is offered in Professional Theatre.

### INTERDISCIPLINARY DEGREE PROGRAMS

The College of Arts, Humanities and Social Sciences embraces the institution's visionary concept of an interdisciplinary university that "mandates overall high quality, continued competitiveness, and effective involvement of global strategic partners in marketing and delivery of programs and operations." Specific interdisciplinary degree programs in the College include the Bachelor of Arts in Liberal Studies with concentrations in the following: African-American Studies, Pre-Law, and Applied Cultural Thought.

### DEGREE ENHANCEMENT OPPORTUNITIES

Undergraduate students in the College of Arts, Humanities and Social Sciences may also broaden their learning experiences and achieve enhancements to their degree through the following university-wide special programs and certificates: University Honors Program, Study Abroad, Forensic Science – Crime Scene Investigation, Global Studies Certificate, Waste Management Certificate, and Customer Relationship Marketing & Management Certificate.

### DEGREE REQUIREMENTS

To attain the baccalaureate degree in the College of Arts, Humanities and Social Sciences, a student must satisfactorily complete the General Education courses, requirements of his/her major field, and a sufficient number of electives to total at least 120 credits. The minimum scholastic average required for graduation in any department degree program is a 2.0 in all major courses, in addition to the overall grade point average requirement of 2.0.

### ACCREDITATION

All of the Programs in the College of Arts, Humanities and Social Sciences that have accrediting organizations have been accredited. They are as follows:

- The Music Program is accredited by the National Association of Schools of Music (NASM).
- The Bachelor of Fine Arts in Professional Theater is accredited by the National Association of Schools of Theatre (NAST).
- The Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education and the North Carolina State Department of Public Instruction (NCATE / NCDPI).
- The Journalism and Mass Communication Program is accredited by the Accrediting Council on Education in Journalism and Mass Communications (ACEJMC).

### CAREER OPPORTUNITIES

The curricula of the College prepare students for careers in teaching, research, journalism, radio and television, the creative arts, industry, government and self-employment. Within the professional curricula, students may pursue studies which lead to careers in law, librarianship, teaching and the ministry.

### SEMESTER LOAD LIMIT

The normal schedule is 15-16 credit hours per semester. No student may register for more than 18 semester hours per semester without permission of the Dean.

## ACADEMIC ADVISEMENT

To assist students in meeting graduation requirements, a system of academic advisement is provided in all departments. Academic advising is essential for assuring students that the courses they are taking include the required courses of their particular departments and desired degrees. It also assists in helping students make maximum use of the learning opportunities at the University and in helping them address academic problems.

## ADMISSION REQUIREMENTS

See specific descriptions for admission requirements for programs in the College of Arts, Humanities and Social Sciences. Requirements for graduation vary from department to department. Therefore, students must be certain to satisfy departmental requirements. Students are responsible for meeting all academic requirements for graduation.

### GENERAL EDUCATION REQUIREMENTS – Students in the College of Arts, Humanities and Social Sciences

All undergraduate students at the University must fulfill a minimum of 32 credit hours of approved General Education courses in the following areas: Written Communication (6 credit hours), Mathematical, Logical and Analytical Reasoning (6 credit hours), Scientific Reasoning (7 credit hours), Social/Behavioral Sciences (3 credit hours), Humanities/Fine Arts (3 credit hours), African-American Culture and History (3 credit hours), Global Awareness (3 credit hours), and Student Success (1 credit hour). Refer to the General Education section of the *Bulletin* for further details.

Transfer students with or without an AA or AS degree should also refer to the General Education section of the *Bulletin* for further details.

Students planning to enter teaching fields should also be knowledgeable about the semester hour requirements of these programs.

Students should also be aware that satisfactory advanced placement scores and / or comparable experiential evidence may be used to satisfy some of the requirements for a baccalaureate degree. Students should consult the chairperson of their respective departments for information.

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### Department of English

<http://www.ncat.edu/cahss/departments/engl/index.html>

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Valerie Nieman, Interim Chairperson

## OBJECTIVES

The objectives of the English Department are as follows:

1. to provide instruction in reading and writing skills, the humanities, linguistics, and literature;
2. to prepare English majors and minors to teach and to pursue graduate training in English and other professions;
3. to train students in professional writing.

## DEGREES OFFERED

English – Bachelor of Arts

English (African-American Literature) – Bachelor of Arts

English (Technical Writing) – Bachelor of Arts

English (Creative Writing) – Bachelor of Arts

English (Secondary Education) – Bachelor of Science

## GENERAL PROGRAM REQUIREMENTS

The admission of students to the undergraduate programs in the Department of English is based upon the general admission requirements of the University.

## DEPARTMENTAL REQUIREMENTS

English major – The English major must complete 120 semester hours of University courses. Included in the 120 semester hours are a minimum of 66 hours of English at the 200 level or above for the professional major. A minimum grade of “C” must be achieved in these courses.

The teaching major in English must complete a minimum of 120 semester hours of University courses. Included in these 120 hours are 54 semester hours of English courses at the 200 level or above with grades of “C” or better.

English (African-American Literature) – To complete a concentration in African American Literature, the student must complete a minimum of 120 semester hours of University courses. Included in these 120 hours are 96 semester hours of English courses at the 200 level or above with grades of “C” or better.

English (Creative Writing) – To complete a concentration in Creative Writing, the student must complete a minimum of 120 semester hours of University courses. Included in these 120 semester hours of University are 75 semester hours of English courses at the 200 level or above with grades of “C” or better.

English (Technical Writing) – To complete a concentration in Technical Writing, the student must complete a minimum of 120 semester hours of University courses. Included in these 120 hours are 75 semester hours of English courses at the 200 level or above with grades of “C” or better.

**The Minor in English** (teaching and non-teaching) – Students desiring a minor in English must complete 18 semester hours in English courses. A total of nine (9) hours must consist of three (3) hours in each of the following areas:

- English Literature: ENGL 220 or 221 (3 hrs.)

- African American Literature: ENGL 333 or 334 (3 hrs.)
- American Literature: ENGL 430 or 431 (3 hrs.)

A student must complete at least 24 hours of academic credits before declaring a minor and must have minimum GPA of 2.0. A Student may not have more than two (2) minors. A student also must take nine (9) hours of English courses from the 200 level or above.

### COMMON COURSES FOR ALL CONCENTRATIONS

- A. Required Major Core Courses for All Concentrations in English (24 hours)
- |          |          |          |
|----------|----------|----------|
| ENGL 210 | ENGL 410 | ENGL 431 |
| ENGL 220 | ENGL 430 |          |
- B. Required English Capstone Course

### CAREER OPPORTUNITIES

A degree in English prepares students to teach, to conduct research, to pursue graduate and professional degrees (such as law and library science), and to work in government, business, editing, and numerous other jobs requiring mastery of the language.

**Department of English**  
**Bachelor of Arts in English - African American Literature**  
**Major Code: ENGL**  
**Concentration Code: AAL**

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 101	1	PHIL 102 or MATH 102	3
ENGL 100	3	HIST 216	3
ENGL 226	3	ENGL 201 or ENGL 231	3
MATH 101	3	ENGL 101	3
HIST 106	3	HPED	1
ENGL 200	3	ENGL 200 or ENGL 230	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
ENGL 220	3	ENGL 334	3
FOLA I	3	ENGL 221	3
Science w/lab (BIOL 100 or CHEM 100/110)	4	FOLA II	3
ENGL 333	3	ENVS 201	3
ENGL 204	3	ENGL 205	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
ENGL 342	3	ENGL 345	3
ENGL 404	3	ENGL 343	3
ENGL 318	3	ENGL 331	3
ENGL 435	3	ENGL 406	3
ENGL 409	3	ENGL 408	3
Free elective	3	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>18</b>		
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
ENGL 405	3	ENGL 431	3
ENGL 410	3	Free Elective	3
ENGL 430	3	ENGL 494 ( <i>formerly ENGL 505</i> )	3
Free elective	3	Elective	3
<b>Semester Total</b>	<b>12</b>	<b>Semester Total</b>	<b>12</b>

**Total Credit Hours: 120**

## MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

ENGL 100	ENGL 318
ENGL 101	ENGL 333
ENGL 226	ENGL 334
ENGL 200	ENGL 435
ENGL 201 or 231	ENGL 345
ENGL 210	ENGL 343
ENGL 220	ENGL 331
ENGL 221	ENGL 408
ENGL 204	ENGL 406
ENGL 205	ENGL 405
ENGL 342	ENGL 430
ENGL 404	ENGL 431
ENGL 410	ENGL 494

**Department of English  
Bachelor of Arts in English  
Major Code: ENGL**

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 101	1	HPED	1
ENGL 100	3	MATH 102	3
ENGL 226	3	ENVS 201	3
MATH 101	3	ENGL 101	3
HIST 106 or HIST 107	3	SPCH 250	3
Science w/lab (BIOL 100 or CHEM 100/110)	4	HIST 130 or HIST 207	3
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
ENGL 220	3	ENGL 201	3
FOLA I	3	ENGL 221	3
ENGL 200	3	ENGL 231	3
ENGL 210	3	FOLA II	3
ENGL 240	3	ENGL 300	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
ENGL 333	3	ENGL 334	3
ENGL 430	3	ENGL 335	3
ENGL 336	3	ENGL 431	3
Free elective	3	Elective	3
Elective	3	Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>

Senior Year: First Semester		Senior Year: Second Semester	
ENGL 405	3	ENGL 406	3
ENGL 435	3	ENGL 436	3
ENGL 410	3	ENGL 492 ( <i>formerly ENGL 502</i> )	3
Elective	3	Elective	3
Elective	3	<b>Semester Total</b>	<b>12</b>
<b>Semester Total</b>	<b>15</b>		

Total Credit Hours: 120

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

ENGL 100	ENGL 334
ENGL 101	ENGL 335
ENGL 226	ENGL 336
ENGL 200	ENGL 405
ENGL 201	ENGL 406
ENGL 210	ENGL 410
ENGL 220	ENGL 430
ENGL 221	ENGL 431
ENGL 231	ENGL 435
ENGL 240	ENGL 436
ENGL 300	ENGL 492
ENGL 333	

Department of English  
 Bachelor of Arts in English - Technical Writing  
 Major Code: ENGL  
 Concentration Code: TCWR

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 101	1	HPED	1
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
Science w/lab (BIOL 100 or CHEM 100/110)	4	ENVS 201	3
SPCH 250	3	ENGL 226	3
<b>Semester Total</b>	<b>14</b>	Free elective	3
		<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
ENGL 200	3	ENGL 201	3
ENGL 244	3	ENGL 331	3
ENGL 220	3	FOLA II	3
FOLA I	3	HIST 107	3

HIST 130	3	Elective	3
Free elective	3	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>18</b>		
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
ENGL 411	3	ENGL 431	3
ENGL 413	3	ENGL 334	3
ENGL 430	3	GCS 381	3
ENGL 333	3	Technical Writing elective	3
GCS 181	3	GCS elective	3
Technical Writing elective	3	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>18</b>		
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
ENGL 415	3	ENGL 492 ( <i>formerly ENGL 502</i> )	3
MGMT 110	3	English elective	3
GCS elective	3	Elective	3
Elective	3	Elective	3
<b>Semester Total</b>	<b>12</b>	<b>Semester Total</b>	<b>12</b>

**Total Credit Hours: 120**

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

ENGL 100	ENGL 334
ENGL 101	ENGL 411
ENGL 200	ENGL 413
ENGL 201	ENGL 415
ENGL 220	ENGL 430
ENGL 221	ENGL 431
ENGL 226	ENGL 492
ENGL 244	Technical Writing elective
ENGL 331	Technical Writing Elective
ENGL 333	English elective

Department of English  
 Bachelor of Arts in English (Secondary Education)  
 Major Code: ENGL  
 Concentration Code: ESCE

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100 (WC)	3	ENGL 101 (WC)	3
CHEM 100 & 110 or BIOL 100 (SR)	4	ENVS 201 (SR)	3
MATH 101 (MLAR)	3	MATH 102 (MLAR)	3
ENGL 226	3	HIST 106 or 107 (SBS AA)	3
CUIN 102 (SS)	2	CUIN 110	2

<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>14</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
ENGL 210	3	ENGL 200 (HFA)	3
CUIN 210	2	ENGL 221	3
ENGL 220	3	CUIN 255	2
FOLA I**	3	FOLA II**	3
ENGL 230 or 231	3	ENGL 240	3
HIST 130 (SBS GA)	3	Free Elective	3
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>17</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
CUIN 410	2	CUIN 420	2
ENGL 201	3	ENGL 334	3
ENGL 300	3	ENGL 410	3
ENGL 333	3	ENGL 406	3
ENGL 430	3	ENGL 431	3
ENGL 460	2	Free Elective	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>17</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
ENGL 435 or 436	3	CUIN 498	9
ENGL 627	3	CUIN 470	3
ENGL 653	3	<b>Semester Total</b>	<b>12</b>
ENGL 602 or CUIN 526	3		
<b>Semester Total</b>	<b>12</b>		

**Total Credit Hours: 120**

\*\*A student must take a total of six (6) credit hours in the same language.

### MAJOR PROGRAM REQUIREMENTS

Completion of a minimum of 120 semester hours of University courses  
(Included in these 120 hours are 56 semester hours of English courses at the 200 level or above with grades of "C" or better)

Department of English  
Bachelor of Arts in English - Creative Writing  
Major Code: ENGL  
Concentration Code: AAL

### Curriculum Guide

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 101	1	HPED	1
ENGL 100	3	ENGL 101	3
ENGL 226	3	ENGL 200	3
PHIL 102	3	PHIL 262 or MATH 102	3
Social /Behavioral Science	3	Science w/lab (BIOL 100 or CHEM 100/110)	4
ENGL 105	3	<b>Semester Total</b>	<b>14</b>
<b>Semester Total</b>	<b>16</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
ENGL 220	3	ENGL 206	3

ENGL 311 or 312	3	ENGL 221	3
FOLA I	3	ENGL 231	3
ENGL 210	3	FOLA II	3
Global Awareness (GL)	3	Scientific Reasoning (SR)	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
ENGL 333	3	ENGL 334	3
ENGL 318	3	ENGL 337	3
ENGL 421 or 422	3	ENGL 418	3
Humanities and Fine Arts Elective	3	Free elective	3
Major Appropriate Elective	3	Humanities and Fine Arts Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
ENGL 406	3	ENGL 410	3
ENGL 430	3	ENGL 431	3
Major Appropriate Elective	3	ENGL 497 ( <i>formerly ENGL 506</i> )	3
Major Appropriate Elective	3	Elective	3
Elective	3	Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 120**

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

ENGL 100	ENGL 333
ENGL 101	ENGL 334
ENGL 105	ENGL 337
ENGL 200	ENGL 406
ENGL 220	ENGL 410
ENGL 221	ENGL 418
ENGL 226	ENGL 421/422
ENGL 231	ENGL 430
ENGL 311/312	ENGL 431
ENGL 318	ENGL 495
ENGL 330	ENGL 497

### COURSE DESCRIPTIONS IN ENGLISH

#### Undergraduate

#### **ENGL 100. Ideas and Their Expression I**

**Credit 3(3-0)**

This course helps prepare students for academic work by: (1) providing instruction in the foundational elements of writing; (2) focusing on skills required for effective writing in a variety of contexts; (3) emphasizing the development of ideas through varied rhetorical strategies; and (4) providing an introduction to library research. **(F;S)**

#### **ENGL 101. Ideas and Their Expression II**

**Credit 3(3-0)**

This course continues the student's growth as a writer through: (1) providing a review of the foundational elements of writing and methods of developing essays; (2) providing further development of critical thinking and analysis skills; (3) teaching the construction of argument; and (4) providing a study of research skills and writing a research paper.

#### **ENGL 102. Developmental Reading**

**Credit 2(2-0)**

This course includes instruction and practice in methods of increasing rate of reading and techniques of comprehending written material; emphasis is upon vocabulary skills. Limited registration.



## COURSE DESCRIPTIONS IN HUMANITIES

- ENGL 200. Survey of Humanities I** **Credit 3(3-0)**  
This course is a study of interrelationships of literature, music, and the fine arts; it is a study of master works, philosophical ideas, and artistic movements of Western Civilization, with attention given also to non-Western culture. It will survey cultures from ancient times to the end of the Renaissance. Prerequisite: ENGL 101. (F;S;SS)
- ENGL 201. Survey of Humanities II** **Credit 3(3-0)**  
This course is a continuation of ENGL 200. It will begin with the Baroque period and will include Neo-Classicism, Romanticism, and modern modes of artistic expression. Prerequisites: ENGL 101 and 200. (F;S;SS)
- ENGL 202. The Humanities in America** **Credit 3(3-0)**  
This course is a survey of the interrelationship of American and African-American literature, music, and art from colonial times to the present. The course will also include a study of the American historical, social, and philosophical experience. Prerequisite: ENGL 101. (DEMAND)
- ENGL 203. Humanities Perspectives of the South** **Credit 3(3-0)**  
This course examines the South from the perspectives of its history, beliefs, literature, music, and art. Prerequisite: ENGL 101. (F;S)
- ENGL 204. Topics in Humanities: A Multidisciplinary Course** **Credit 3(3-0)**  
This course is a study of selected topics in literature, art, music, philosophy, and other branches of the humanities. It is an elective course primarily for non-English majors. Prerequisite: ENGL 101. (DEMAND)
- ENGL 206. Film and Culture** **Credit 3(3-0)**  
This course examines film as a legitimate form of artistic expression worthy of serious critical analysis. Consequently, film will be studied as history (including its relationship to other print and non-print media), aesthetic theory, ideology, and cultural artifact. Particular attention will be paid to the ways in which film not only reflects, but also shapes, contemporary culture. (F;S)
- ENGL 234. Screenwriting: Adapting History for Film** **Credit 3(3-0)**  
This course introduces students to the craft of screenplay writing based on a specific historical event, person, or place. Students will research a historical phenomenon, adapt it into a compelling story, and employ the craft of screenwriting to share that story. Students will also analyze and evaluate professional screenplays and understand how they are unique to the film medium. Finally, students will apply craft specific techniques to their own creative works and share their screenplays in a workshop environment. Prerequisite: ENGL 101. (F;S;S)
- ENGL 235. Introduction to the Art and Craft of Screenwriting** **Credit 3(3-0)**  
This course is intended to develop the student's understanding of the business and craft of screenplays. Students will write screenplays through the process of composing and revision. They will also learn about contests, fellowships, agents, registering screenplays and career opportunities. Prerequisites: ENGL 100 and 101. (F;S;SS)
- ENGL 420. Humanities III, Great Ideas of World Civilization** **Credit 3(3-0)**  
This is a seminar devoted to the identification, analysis, and appreciation of some of the basic ideas or concepts which have underlain world culture in the arts, religion, philosophy, and social attitudes from ancient times to the present. (DEMAND)

## LANGUAGE AND COMPOSITION

- ENGL 226. The Basic Grammar and Mechanics of Writing** **Credit 3(3-0)**  
This course includes instruction and review of the most troubling grammatical and mechanical errors that plague college students' writing. All writing in this course will be limited to the context of well-developed paragraphs. There will be frequent practice in identifying and avoiding common grammatical and mechanical errors. (F;S;SS)
- ENGL 240. Advanced Grammar and Argumentation** **Credit 3(3-0)**  
This course covers the techniques of argumentation and the logic of grammar essential to both higher level writing and teaching in middle and high schools. (F)
- ENGL 300. Advanced Composition** **Credit 3(3-0)**  
This is a course for non-English majors in which techniques of narrative, descriptive, expository and argumentative composition are studied. Prerequisite: ENGL 101. (F;S;SS)
- ENGL 404. Writing in the Discipline of English** **Credit 3(3-0)**  
This course offers practice in critical, scholarly, and expository writing that emphasizes writing within the discipline of English. Prerequisite: ENGL 101. (DEMAND)
- ENGL 405. Introduction to Linguistics and the History of the Language** **Credit 3(3-0)**  
This course covers the nature of language, levels of linguistic analysis, dialectology, comparative linguistics, and the development of the English language. Prerequisite: ENGL 101.
- ENGL 445. Independent Study in English** **Credit 3(3-0)**  
This course provides an opportunity for students to pursue independently (at home and abroad) in-depth study in English Literature, African American Literature, English Technical Writing, Creative Writing, or Linguistics, culminating in a manuscript, report, or scholarly article suitable for publication. Prerequisites: Senior standing, completion of all General Education requirements, and prior consultation with department faculty. (F;S;SS)
- ENGL 490. Professional Writing Internship** **Credit 3(3-0)**  
This course includes on-the-job training with an appropriate agency and compilation of a portfolio of high caliber. Prerequisites: ENGL 261 and 480. (DEMAND)

**ENGL 629. Dimensions of Literacy**

This course introduces students to the various dimensions of Literacy. Literacy will be studied from linguistic, cognitive, sociocultural, developmental and educational perspectives, linking theory and research to practice. The topical foci include the nature of language, oral-written language relations, reading comprehension, writing processes, literacy as social practice and the teaching of literacy skills. Prerequisite: Senior standing or by Permission of Instructor. (F;S; Sum)

**ENGL 630. Sociolinguistics**

This course introduces students to the study of language in social contexts. Students will explore the relationship between language and society by examining language variations among difference cultures, genders and societal positions. The course focuses on how language both constructs and is constructed by identity in reference to language and power, vernacular dialects, pidgins and creoles, language and gender differences, and technologies' impact on language use and reception. Prerequisites: Senior Standing or above, or by Permission of Instructor. (F;S;Sum)

**Credit 3(3-0)****AFRICAN AMERICAN LITERATURE****ENGL 209. The History, Literary Connections, and Social Relevance of Hip-Hop**

This course focuses on the study of hip-hop as an artistic literary phenomenon which reflects elements of the Black experience and voices the concerns of a large and diverse segment of African-Americans in contemporary society. The following will be examined: the origins of hip-hop; the relationship of hip-hop to the oral literary tradition; the literary elements of hip-hop, as well as hip-hop's connection to literary movements, such as the Harlem Renaissance and the Black Arts Movement; the ability of hip-hop to articulate social ills as well as the concerns of urban and poor African-Americans; and significant hip-hop artists, their lyrics, performances, and impact. Prerequisites: ENGL 101 This course is open to non-majors. (F;S)

**Credit 3(3-0)****ENGL 316. Hip-Hop Discourse**

This course will analyze, critique, and discuss the literature and critical discourses that examine hip-hop culture. Assigned readings will consist of the most current theoretical, political, and social dialogue/texts that provide a framework for class discussion and writing assignments. Some of the major areas of focus are as follows: the major movements and themes of hip-hop; the relationship between the predominant American culture and hip-hop; the new Black Renaissance – hip-hop culture literature, and the commercialization of hip-hop. Prerequisites: ENGL 101. This course is open to non-majors of sophomore, junior, or senior standing. (F;S)

**Credit 3(3-0)****ENGL 318. African-American Film and Culture**

This course examines African-American film as an interpreter of the history and culture of African-Americans. Attention will be given to the aesthetic theory and ideology of Black film and culture. Prerequisites: ENGL 101. This course is open to non-majors. (F;S)

**Credit 3(3-0)****ENGL 333. Survey of African-American Literature I**

This course is the study of prose, poetry, and drama by American authors of African ancestry from the 18<sup>th</sup> century to the turn of the 20<sup>th</sup> century. Students will explore African-American literature, tracing its origins through the Diaspora and the period of slavery in America to the beginning of the 20<sup>th</sup> century. Important movements, authors, and works will be examined in both a literary and historical sense so that an understanding and knowledge of the Black experience through its literature may be acquired. Prerequisites: ENGL 101. (F;S)

**Credit 3(3-0)****ENGL 334. Survey of African-American Literature II**

This is a survey course focusing on literature written by African-Americans from the beginning of the 20<sup>th</sup> century to the present. Students will study exciting literary periods, such as the Harlem Renaissance and the Black Arts Movement, as well as modern and contemporary Black writers. Important movements, authors, and works will be examined in both a literary and historical sense. Prerequisites: ENGL 101. (F;S)

**Credit 3 (3-0)****ENGL 342. African-American Male Writers**

This course examines the poetry, short stories, and novels of significant African-American male writers from the 20<sup>th</sup> century to the present. Focus will be given to the literary and historical elements which reflect the African-American male's experience in America, as well as his contributions to and place within the African-American literary tradition. Prerequisites: ENGL 101. This course is open to non-majors. (F;S)

**Credit 3(3-0)****ENGL 343. African-American Women Writers**

This course examines the poetry, short stories, and novels of significant Black women writers from the 20<sup>th</sup> century to the present. Focus will be given to the literary and historical elements which reflect the African-American woman's experience as well as her place within and contribution to the African-American literary tradition. Prerequisites: ENGL 101. This course is open to non-majors. (F;S)

**Credit 3(3-0)****ENGL 345. The Survey of African-American Men's and Women's Autobiographical Writings**

This course surveys the genre of autobiographical writing from the 18<sup>th</sup> century to the 20<sup>th</sup> century as expression of the Black experience in America from slavery to freedom. Focus will be given to the historical and literary importance of major autobiographical writers, as well as their works – particularly slave narratives, letters, and other forms of autobiographical writing. Prerequisite: ENGL 333 or ENGL 334.

**Credit 3(3-0)****ENGL 407. African-American Drama**

This course examines the dramatic literature of African-Americans, from the 20<sup>th</sup> century to the present. Focus will be given to the literary, historical, and cultural elements of the Black tradition of drama. Prerequisites: UNST 110; ENGL 333 or 334. This course is open to non-majors. (F)

**Credit 3(3-0)**

**ENGL 408. The African-American Novel** **Credit 3(3-0)**  
This course will focus on the careful reading and discussion of the African-American novel from the 20<sup>th</sup> century to the present. Attention will be given to the various aspects of the traditions that have nourished the African-American novel as an art form and cultural interpreter of the Black experience in America. Among the authors' works to be examined are Zora Neale Hurston, John A. Williams, Ralph Ellison, James Baldwin, Richard Wright, Alice Walker, Toni Morrison, and Gloria Naylor. Prerequisites: ENGL 101; ENGL 334 or 334. This course is open to non-majors. (S)

**ENGL 416. Major African Women Writers** **Credit 3(3-0)**  
This course is a study of the works by major women writers from modern Africa. The thematic focus may be, but should not be exclusive to critical issues like feminism and the contestation with colonialism and patriarchy. Old and new generation post-independence African women's works will be studied. Readings from fiction, poetry, and drama will be selected from the works of Bessie Head, Tsitsi Dangaremba, Flora Nwapa, Efua Sutherland, Theodora Akachi Ezeigbo, Chimamanda Adichie, Yvonne Vera, Nawal El Saadawi, Nadine Gordimer, Buchi Emecheta, Zulu Sofola, Rebecca Njau, Mariama Ba, Ngocbo and so on. Prerequisite: ENGL 101. (F)

**ENGL 417. African Literature** **Credit 3(3-0)**  
This course surveys the literary genres and major authors of African literature and shows the relationship between modern African literature and African oral traditions, culture, and history. Texts will be selected from West, East, South, and North Africa. Prerequisites: ENGL 101. (S)

**ENGL 494. Interdisciplinary Research Methods in African-American Literary Studies (formerly ENGL 505)** **Credit 3(3-0)**  
This course is open only to junior and senior English majors and minors. It involves an interdisciplinary approach as well as practice in the research, documentation, and critical analyses of African-American literary studies. Students will discover, compile, and evaluate resources from across the disciplines that relate to the impact African-American literature and literary studies through using computer-based and traditional sources. This course will culminate in the students' completion of a final project which will include a writing assignment in conjunction with hosting an interdisciplinary literary colloquium, organizing and participating in an interdisciplinary literary conference, or publishing their papers. Prerequisites: This course is only open to junior and senior English majors and minors. (S)

## CREATIVE WRITING

**ENGL 105. Introduction to Creative Writing** **Credit 3(3-0)**  
This course is for beginners in creative writing which introduces students to writing in various genres by means of creative exercises and assignments, workshops, and individual conferences. A multi-genre text on creative writing will be assigned to support the reading and analyses of published works. (Genres may include poetry, fiction, plays, and creative non-fiction.) Course may be repeated for a different focus, and there are no prerequisites. (F;S;SS)

**ENGL 208. Spoken Word Performance Poetry Troupe I: A Practicum** **Credit 3(3-0)**  
This course is designed to develop and enhance the skills of individual student performers of the A&T Premier Spoken Word Troupe. Students will be instructed in the history and practice of the genre Spoken Word Performance Poetry through the study of the art form's development since the late sixties and seventies through to the current period. Influences on the art form such as Blues, Jazz, and Hip-hop will be covered. (This course can be taken more than once.) Student enrollment in this course is based on individual audition and/or by permission of the instructor. (F;S)

**ENGL 311. Intermediate Fiction Writing** **Credit 3(3-0)**  
Students will write and revise short fiction. A text on fiction writing will be assigned to support the reading and analyses of published fiction, including the following: developing characters, writing dialogue and managing point of view, as well as exploring techniques in narrative design in published stories. Students will also receive encouragement and constructive criticism from other writers in class, and develop the ability to criticize their own work. Contemporary authors such as Raymond Carver, Alice Walker, John Edgar Wideman, Louise Erdrich, Sandra Cisneros, Edwidge Danticat, and Eudora Welty will be studied. Prerequisites: ENGL 105, 210, and a survey course in British, American, or World Literature. (F)

**ENGL 312. Intermediate Poetry Writing** **Credit 3(3-0)**  
Students will study the craft of writing and revising poetry. A text on contemporary poetry writing will be assigned to support the reading and analyses of published poetry. The course will examine literary devices, such as diction, imagery, metaphor, rhyme, sound values, line units, meter, and forms. This study will be supported by a workshop devoted entirely to analyzing and discussing student poems. Contemporary authors such as Lucille Clifton, Joy Harjo, Yusef Komunyakaa, Thylas Moss, Adrienne Rich, Michael Harper, Sharon Olds, Audre Lorde, Amira Baraka, Ethridge Knight, Naomi Shihab, Nye Haki Madhubuti, and Rita Dove will be studied. Prerequisites: ENGL 101, 210, and a survey course in British, American, and World Literature. (F)

**ENGL 313. Drama Writing** **Credit 3(3-0)**  
This course introduces the student to the study and practice of the various elements of contemporary dramatic writing. A text on contemporary dramatic writing will be assigned to support the reading and analyses of published plays. Course topics will include format, story structure, character development, dialogue, building scenes and writing for a visual medium. Prerequisites: ENGL 101, and 210, and a survey course in British, American, or World Literature. (DEMAND)

**ENGL 314. Workshop in Creative Nonfiction Writing** **Credit 3(3-0)**  
This course introduces the student to the study and practice of the various forms of literary nonfiction. A text on creative nonfiction writing will be assigned to support the reading and analyses of published works. The student writer will develop skill in the incorporation of techniques from creative writing, such as point of view, voice, characterization and dialogue. Discussion will center around works in progress as well as works by contemporary essayists, such as Katha Pollitt, Alice Walker, James Baldwin,

Jewelle Gomez and Barry Lopez. Other areas of nonfiction which may be covered can include memoir, autobiography, nature writing and the personal essay. Prerequisites: ENGL 105 and 210. **(DEMAND)**

**ENGL 315. Editing Encore I** **Credit 3(3-0)**

This course is one in which students assist the student editor-in-chief in selecting, editing, and laying out editions of the University literary magazine sponsored by the Creative Writing Program. Prerequisites: ENGL 311, 312, 313 or 314. May be repeated. **(F;S)**

**ENGL 327. Editing Encore II** **Credit 3(3-0)**

This course, at the discretion of the program director, permits a student to serve as editor-in-chief. The student will work in conjunction with academic literary advisors and other student editors to edit the University literary magazine sponsored by the Creative Writing Program. Copy editing, layout, design, and aspects of distribution will be covered. Aptitude with digital and online media, as well as desktop and print publishing is essential. May be repeated. Prerequisites: ENGL 311, 312, or 313, 315, 327. **(F;S)**

**ENGL 330. Creative Literary Production and Service in Society** **Credit 3(3-0)**

The goal of this course is to provide students with the opportunity to apply their practice and understanding of creative writing to practical and concrete situations in their communities with groups such as the elderly in community and senior centers, teen groups and elementary students. Students will work in a variety of community settings – educational, political, and/or social service agencies – according to the availability/needs of such groups. Prerequisites: ENGL 105, 311, 312, 313 or 314. **(DEMAND)**

**ENGL 421. Advanced Fiction Workshop** **Credit 3(3-0)**

This course offers advanced work in techniques of writing fiction for students with substantial experience in writing fiction. Classes are conducted as workshop sessions primarily where each student must comment on the manuscript of fellow students. In the course of critiquing techniques of fiction writing, such as establishment of character, manipulation of viewpoint, use of setting, and such matters as consistency, motivation, imagery, plotting, and theme will be covered. Prerequisites: An “A” or “B” in ENGL 311 or permission of the instructor upon review of a writing sample. (This course is limited to students with a concentration in creative writing, who have completed one of the following advanced courses: ENGL 311, 312, 313, or 314.) **(F)**

**ENGL 422. Advanced Poetry Workshop** **Credit 3(3-0)**

This course offers advanced work in techniques of writing poetry for students with substantial experience in writing poetry. The course will consist of workshop sessions with students commenting on each other’s work. Students will be asked to pick several poets for a paper and an oral report. Prerequisites: An “A” or “B” in ENGL 312 or permission of the instructor. (This course is limited to students with a concentration in creative writing, who have completed one of the following advanced courses: ENGL 311, 312, 313, or 314.) **(F)**

**ENGL 418. Special Topics in Creative Writing** **Credit 3(3-0)**

Topics in this course might include “Style and Technique in African American Writing,” “Style and Technique in Third World Writing,” “Autobiography,” “Prose and Poetry,” “Poetry and Performance,” “Novel Writing,” “Science Fiction Writing,” “Literature of Protest,” “Poetry Translation,” “Literature and Film,” “Literature of the Black Diaspora,” and “Oral History.” The course may be repeated for a different focus. Prerequisites: ENGL 311, 312, or 313. **(S;S)**

**ENGL 419. Writer in Residence Writing Workshop** **Credit 3(3-0)**

This course includes a two day writing workshop in Poetry, Fiction, Creative Nonfiction. A course in writing is taught by the Visiting Writer in Residence. Enrollment is limited to specially selected students. Prospective enrollees should apply to the seminar committee and be prepared to submit writing samples for admittance before registering. The course is structured as a workshop and may be repeated for credit if the specific title and instructors are different. Prerequisites: ENGL 311, 312, 313 or 314. **(F;S)**

**ENGL 495. Creative Senior Seminar (formerly ENGL 504)** **Credit 3(3-0)**

This course includes intensive reading, creative writing and discussion. The course will also entail practice and studies of the form, craft, and theory of various genres. Topics may include: “Women’s Poetics – Ancient to Contemporary,” “Multicultural Poetics,” “Problems of Adaptation, Poetry, Personae, and Author,” “Studies in Manuscript Development,” “Studies in Short Fiction,” “Literature and Translation,” and “Political Poetry.” Prerequisites: Completion of one workshop sequence (Beginning, Intermediate and Advanced Workshop) in at least one genre. **(F)**

**ENGL 497. Creative Thesis (Formerly ENGL 506)** **Credit 3(3-0)**

Students will propose a special writing project to be completed in conference and workshop. The project will be suitable for inclusion in a portfolio for graduate school applications and, in some instances, for submission to a publisher. The semester’s work will include a project proposal and the compilation of a creative manuscript draft. The semester’s work will also include the completion of a critical analysis and the defense and final edition of the thesis. Prerequisites: Completion of one workshop sequence (Beginning, Intermediate and Advanced Workshop) in at least one genre. **(F;S)**

## LITERATURE

**ENGL 205. Topics in Literature** **Credit 3(3-0)**

This course is the study of selected topics in literature. It is an elective course primarily for non-English majors. Prerequisite: ENGL 101. **(DEMAND)**

**ENGL 210. Introduction to Literary Studies** **Credit 3(3-0)**

This course is required of English majors and minors and open to others only with approval of instructor; the critical analysis,

literary criticism, investigative and bibliographical techniques necessary to advanced study in English will be studied. This course is a prerequisite for all advanced courses in literature. Prerequisite: ENGL 101. (F;S)

**ENGL 220. English Literature I** **Credit 3(3-0)**

This course is a survey of the literary movements and major authors of English literature in relation to the cultural history of England from Beowulf to 1660 Prerequisites: ENGL 101, HIST 100 and 101. (F)

**ENGL 221. English Literature II** **Credit 3(3-0)**

This course is a continuation of ENGL 220 from 1660 to 1830. Prerequisites: ENGL 101. (S)

**ENGL 224. Contemporary Women's Literature: A World View** **Credit 3(3-0)**

This course is designed as an introduction to world literature focusing on the twentieth century and features literature from geographically and culturally diverse peoples. It is not intended to serve as a survey (historically or geographically) of world literature. This course allows students to work closely with a limited number of texts (poetry, fiction, essay and drama), which will reflect a view of world cultures from a decidedly feminist vantage point. The class will analyze how this literature is unique and similar to western literature. The class will view films and other works related to intercultural experiences and clashes.

Prerequisite: ENGL 210. (DEMAND) (F;S;SS)

**ENGL 230. World Literature I** **Credit 3(3-0)**

This course is a survey of selected major world writers from ancient times to about 1600. Prerequisite: ENGL 101 and ENGL 101. (F)

**ENGL 231. World Literature II** **Credit 3(3-0)**

This course surveys selected major world writers from about 1600 to the present, excluding English and American. Prerequisite: ENGL 101. (S)

**ENGL 232. Women Writers in Science Fiction** **Credit 3(3-0)**

This survey course will look at Science Fiction written by women, examine their work, their themes, and their values.

**ENGL 233. Images of Women in Literature** **Credit 3(3-0)**

This course uses period literature by both male and female authors to examine the changing roles and attitudes toward women in Europe and American societies. (F;S;SS)

**ENGL 236. A Survey of Early African-American Women's Poetry** **Credit 3(3-0)**

This survey course focuses on poetry written by African American women from the 18<sup>th</sup> century to the end of Reconstruction. Students will gain an understanding and knowledge of the African American experience from the perspective of African American women.

**ENGL 237. Standing and Testifying: African American Women Poets of the Harlem Renaissance** **Credit 3(3-0)**

This is a survey course focusing on the poetry written by African American women during the period of the Harlem Renaissance. Prerequisite: ENGL 101. (DEMAND)

**ENGL 239. American Griots: Black Women Storytellers in the 20<sup>th</sup> Century** **Credit 3(3-0)**

This course focuses on the short stories written by African American women during the 20<sup>th</sup> century. It examines the diversity, history, and literary techniques of Black women short story writers and shows how their work has evolved along with formal practices of the genre to the present time. Prerequisite: ENGL 101. (DEMAND)

**ENGL 241. Women Writers** **Credit 3(3-0)**

This course offers a study of literature and feminist theories by women from the 19<sup>th</sup> and 20<sup>th</sup> centuries. Prerequisite: ENGL 101. (DEMAND)

**ENGL 242. Postcolonial Women Writers** **Credit 3(3-0)**

This course offers a study of literature and feminist theories by postcolonial women from the Caribbean, Latin America, Africa, the Middle East, India, Oceania, Asia, and the Balkans. Prerequisite: ENGL 101. (F;S;SS)

**ENGL 243. Literature by Women of Africa and the African Diaspora** **Credit 3(3-0)**

This course offers a study of literature and feminist/womanist theories by Anglo-African, African American, Caribbean, Latin-American, and African women. Prerequisite: ENGL 101. (DEMAND)

**ENGL 245. American Crime Fiction: Violent Literature of Place, Race, and Class** **Credit 3(3-0)**

This course focuses on the study and practice of literature through reading crime fiction. Students will study how literature functions and how literature is used. Short stories, novels, and nonfiction will be examined for their historical, social, cultural, and psychological significance. Prerequisites: ENGL 100 and 101. (F;S;SS)

**ENGL 336. Postcolonial Novel** **Credit 3(3-0)**

This course introduces novels and theory post-1960 from areas including the Caribbean, Latin America, Africa, the Middle East, the Balkans, India, Asia, and Oceania. Prerequisite: ENGL 210. (S)

**ENGL 401. Drama** **Credit 3(3-0)**

This course surveys the history, literature, criticism, and arts of the theatre. Prerequisite: ENGL 210. (S)

**ENGL 406. Critical Theory** **Credit 3(3-0)**

This course examines interpretive strategies and theoretical assumptions of contemporary approaches to literary criticism. Prerequisite: ENGL 101. (S)

**ENGL 410. Shakespeare** **Credit 3(3-0)**

This course is an introduction to a study of the works of William Shakespeare through a detailed examination of representative works selected from the major periods of his development as a dramatist. Prerequisite: ENGL 210. (S)

- ENGL 430. American Literature I** **Credit 3(3-0)**  
 This course is a study of the literary movements and major authors of American literature in relation to the cultural history of America from the Colonial Period to 1865. Prerequisites: ENGL 210, ENGL 200, and 201. (F)
- ENGL 431. American Literature II** **Credit 3(3-0)**  
 This is a continuation of English 430, from 1865 to the present. Prerequisites: ENGL 210, ENGL 200, and 201. (S)
- ENGL 435. The Novel** **Credit 3(3-0)**  
 This course is a study of the novel as an art form, with attention to significant English novelists from 1750 to the present. Prerequisite: ENGL 210. (F)
- ENGL 436. Poetry** **Credit 3(3-0)**  
 This course is a study of poetry as an art form, with attention to significant English and American poets of the twentieth century. Prerequisite: ENGL 210. (S)
- ENGL 445. Independent Study in English** **Credit 3(3-0)**  
 This course provides an opportunity for students to pursue independently in-depth study in literature, linguistics, or professional writing. Prerequisites: Second semester junior or senior standing, and prior consultation with department faculty. (F;S;SS)
- ENGL 460. Technology and the Teaching of English** **Credit 3(3-0)**  
 This course provides knowledge of how technology, especially the computer and non-print media, can be utilized effectively in the teaching of English and in classroom management. Students will acquire knowledge of various instructional strategies appropriate for diverse backgrounds and learning styles. Development of appropriate professional attitudes and incorporation of research findings in the instructional program will also be included. (S)
- ENGL 475. British and American Literary History** **Credit 3(3-0)**  
 This course is designed to provide the student with the opportunity to develop a sense of the continuity of British and American literary history, supported by a reading of major works. Prerequisite: Senior standing. (DEMAND)
- ENGL 492. Senior Seminar** **Credits 3(3-0)**  
 This course intensively explores major figures, periods, or ideas in African American, American, British, World or Comparative Literature while emphasizing independent study and refines the techniques of literary research and critical analysis. Prerequisites: ENGL 404 and 406. (F;S)
- ENGL 503. Senior Honors Thesis** **Credits 3(3-0)**  
 This course allows students with a GPA in English of 3.2 or above to complete an in-depth research project in their area of interest. Prerequisite: ENGL 101. (F;S)

#### TECHNICAL WRITING

- ENGL 320. International Technical Writing** **Credits 3(3-0)**  
 This course will examine white papers and government documents related to business development from emerging business markets. Students will also look at documentaries and read literature about global markets to understand existing business and cultural relationships. Finally, students will examine the effect of NATO and the United Nations on these emerging markets by looking at websites, brochures, and business proposals written by countries that seek entry into the global economy. Prerequisites: ENGL 100 and 101.
- ENGL 324. Writing for Careers in Government** **Credits 3(3-0)**  
 This course examines government documents and web pages. The student will master the theory, principles and ethics in government writing while exploring the social interchanges and cultural contexts out of which government documents are created. Students will turn in portfolios for this course for final evaluation. Prerequisites: ENGL 100 and 101. (F;S;Sum)
- ENGL 331. Writing for Science and Technology** **Credit 3(3-0)**  
 This course includes the study and practice of the basic techniques of writing and editing scientific and technical materials for both the general audience and the specialist. Prerequisite: ECT 101. (The prerequisite applies to students who are Technical Writing Concentration majors within the English department. All other students may take ENGL 331 without a prerequisite. (F;S;SS)
- ENGL 411. Visual Rhetoric for Technical and Scientific Writer** **Credit 3(3-0)**  
 This course provides an introduction to the theory and techniques used by scientific and technical communicators. It covers elements of layout, design, and typography, giving students practice with short and long print texts and non-print texts and non-print media. Prerequisite: ENGL 101. (F;S;SS)
- ENGL 412. Writing Reports and Proposals** **Credit 3(3-0)**  
 This course is an intensive study of the principles and processes involved in preparing technical and scientific reports and proposals. (F;S;SS)
- ENGL 413. Feature Writing and Editing for Technical Journals, Magazines and Trade Publications** **Credit 3(3-0)**  
 This course provides theory and practice in writing and marketing articles for scientific publications with students submitting articles to commercial and scientific publications. This course also examines principles and practice of editors of scientific and technical publications. Students edit other students' works and that of outside clients. (F;S;SS)
- ENGL 414. Designing and Testing User Documents for Scientific and Technical** **Credit 3(3-0)**  
 This course is an advanced study of theories and practices associated with the production of user documents, instructional manuals and other media. (F;S;SS)

**ENGL 415. Practicum for Technical and Scientific Communicators** **Credit 3(3-0)**

This course is designed to give students practical writing experience related to scientific and technical fields. Offered as an on-campus and off-campus-directed internship, the experience teaches students the importance of client relationships, problem-solving skills, and professionalism in conduct and product. (F;S;SS)

**ENGL 432. Writing for Health Professions** **Credit 3(3-0)**

This course will consider specific forms of written and oral communications in the health professions, particularly in working with the NC A&T Department of Nursing. As an introductory writing course promoting effective communication skills, the course will ultimately contribute to the protection of the health and welfare of the public. (F;S;SS)

**ENGL 434. Writing Case Studies** **Credit 3(3-0)**

This course offers an intensive study of the principles and processes involved in writing case studies and histories. The focus will center around medical case studies and case studies dealing with engineering projects. The course is designed for both technical writing students and those in other fields such as nursing, engineering, and the sciences. (F;S;SS)

#### DIRECTORY OF FACULTY

<b>Anjail R. Ahmad</b> .....	<b>Associate Professor</b>
B.A., Agnes Scott College; M.A., New York University; Ph.D., University of Missouri-Columbia	
<b>Jason DePolo</b> .....	<b>Assistant Professor</b>
B.A., Indiana University of Pennsylvania; M.A., North Carolina A&T State University; Ph.D., Indiana University of Pennsylvania	
<b>Claudia Drieling</b> .....	<b>Assistant Professor</b>
B.A., Christian-Albrechts-Universität zu Kiel; M.A., Federal Institute of Higher Education, Stuttgart; Ph.D. Christian-Albrechts-Universität zu Kiel and Indiana University	
<b>Samuel Garren</b> .....	<b>Professor</b>
B.A., Davidson College; M.A., Ph.D., Louisiana State University	
<b>Letitia Guran</b> .....	<b>Lecturer</b>
B.A., University of Bucharest (Romania); M.A., University of Richmond; Ph.D., University of Georgia	
<b>Kimberly Harper</b> .....	<b>Assistant Professor</b>
B.A. North Carolina A&T State University; M.A., Miami University; Ph.D., East Carolina University	
<b>Marlene Hendricks</b> .....	<b>Lecturer</b>
B.A., M.A., North Carolina A&T State University	
<b>Moussa Issifou</b> .....	<b>Lecturer</b>
B.A., M.A., Université du Bénin; Ph.D., University of North Carolina at Greensboro	
<b>Hope Jackson</b> .....	<b>Lecturer</b>
B.A., M.A., North Carolina A&T State University; Ph.D., University of North Carolina at Greensboro	
<b>Adri-Anne Jones</b> .....	<b>Lecturer</b>
B.A., M.S., North Carolina A&T State University	
<b>Elon Kulii</b> .....	<b>Professor</b>
B.A., Winston-Salem State University; M.S., North Carolina A&T State University; Ph.D., Indiana University	
<b>Veloisa Marsh</b> .....	<b>Lecturer</b>
B.A.; Spelman College; M.A., University of Memphis	
<b>Gregory D. Meyerson</b> .....	<b>Associate Professor</b>
B. A., Miami University of Ohio; M.A., Ph.D., Northwestern University	
<b>Valerie Nieman</b> .....	<b>Professor and Interim Chairperson</b>
B.S., West Virginia University; M.F.A., Queens University of Charlotte	
<b>Jeffrey D. Parker</b> .....	<b>Associate Professor</b>
B.A., University of North Carolina at Greensboro; M.A., North Carolina A&T State University; Ph.D., University of South Carolina	
<b>Kevin Rippin</b> .....	<b>Lecturer</b>
B.A., M.F.A., University of Pittsburgh	
<b>Robert Randolph</b> .....	<b>Lecturer and Director of University Writing Center</b>
B.A., University of North Carolina at Greensboro; M.A., North Carolina A&T State University	
<b>Myrtle B. Solomon</b> .....	<b>Lecturer</b>
B.A., M.A., North Carolina A&T State University	
<b>Faye Spencer Maor</b> .....	<b>Associate Professor</b>
B.S., Florida A&M University; M.A., University of Colorado at Boulder; Ph.D., University of Illinois, Urbana-Champaign	
<b>Jawanna Southerland-Little</b> .....	<b>Lecturer</b>
B.A., M.A., North Carolina A&T State University, Ph.D., University of North Carolina at Greensboro	
<b>Bryon Turman</b> .....	<b>Lecturer</b>
B.A., M.A., North Carolina A&T State University	
<b>Pauline A. Uwakweh</b> .....	<b>Associate Professor</b>
B.A., University of Port Harcourt; Ph.D., Temple University	

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## Department of History

<http://www.ncat.edu/cahss/departments/hist/index.html>

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Arwin D. Smallwood, Chairperson  
Yunqui Zhang, Associate Chairperson

### OBJECTIVES

The Department of History offers students a knowledge of the past that enables them to better understand today's world and prepare for the future. The Department helps students develop skills in research, analysis, decision-making, and communication. These skills prepare students for successful careers, constructive participation in civic affairs, and lifelong learning. In short, the Department of History emphasizes the personal development of each student.

The specific objectives of the History Department are: 1) to contribute to the general education of students by providing the historical and geographical, background for the study of the arts, the sciences, and technical subjects; 2) to provide historical content and professional training to students preparing for careers in fields such as education, law, religion, international affairs, social service, journalism, history, or government; 3) to offer a curriculum that allows students to pursue the history of many areas of the world; 4) to offer a course of study leading to the Master of Science degree in Education and the Master of Arts in Teaching degree with a concentration in history; and, 5) to provide instruction for students preparing for doctoral programs.

In carrying out its aims and objectives, the Department of History offers a broad range of courses in history as well as courses in geography. To help ensure student success the Department assigns each student major to an advisor. It is particularly important that students consult their advisors when planning their educational programs. The Department also offers students a variety of extracurricular opportunities to enrich their college experiences. These include two student organizations. The *History Scholars* and *Phi Alpha Theta* History Honor Society, as well as numerous public lectures. Finally, the Department participates in the University Honors Program, which enables outstanding students to work closely with faculty members on special course and research assignments.

### DEGREES OFFERED

History – Bachelor of Arts

History Education – Bachelor of Science

### PROGRAM REQUIREMENTS

The admission of students to the undergraduate degree programs in the History Department is based upon the general admission requirements of the University.

### DEPARTMENTAL REQUIREMENTS

History Major – History majors must complete 120 credits of University courses. Included in the 120 credits are 56 credits in history courses and 15 credits in the social sciences. A minimum grade of “C” must be achieved in these history and social science courses. Students who wish to specialize in the history of Africa and African-Americans may pursue the special concentration in African history within the history major.

History Education Major – History Education majors must complete 120 credits of University courses. Included in the 120 credits are 42 credits in history courses and 15 credits in the social sciences. This major also includes 32 credits of education courses and field experience as a student teacher. Students in this major must earn at least a “C” in all history, social science, general education, and curriculum and instruction courses.

Students in the history education program are provided an opportunity to:

- Become knowledgeable about man's past experiences;
- Study the history of major world civilizations and understand the impact of various groups, institutions, and nations on global development;
- Understand the social, political, economic, and cultural forces at work in contemporary societies;
- Become more sensitive to the relationships between history and the other social science disciplines;
- Develop an understanding of the nature of history and of the methodology of historical research;
- Develop competencies essential for the effective teaching of history and social studies in secondary schools;
- Develop proficiency in using computer technology to enhance instruction;
- Qualify for initial certification in history or social studies in North Carolina; and
- Prepare for further study at the graduate level and understand the value of life-long learning.

History Minor – The minor in History will consist of 18 semester hours of History (HIST) courses.

**Required courses:** HIST 206 and 207.

**Elective Courses: 12 hours to be selected from the following:**

HIST 103, 104, 105, 106, 107, 130, 208, 209, 210, 213, 215, 216, 217, 218, 219, 220, 221, 223, 225, 229, 230, 231, 235, 237, 238, 250, 270, 271, 273, 275, 277, 306, 308, 309, 313, 314, 319, 320, 321, 322, 323, 324, 325, 332, 333, 334, 335, 336, 339, 340, 350, 351, 355, 356, 357, 366, 367, 372, 401, 403, 405, 406, 407, 410, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 424, 425, 430, 433, 440, 444, 450, 451, 452, 455, 458, 459, 460, 461, 462, 470, 477, 492, 600, 603, 606, 610, 615, 616, 617, 618, 622, 623, 624, 626, 628, 629, 630, and 633. A grade of “C” must be achieved in all history courses.

**Required Courses: 12 hours**

HIST 106, 107, 215, and 216



**Elective Courses: 6 hours to be selected from the following:**

HIST 103, 104, 105, 206, 207, 273, 314, 333, 356, 405, 372, 406, 412, 413, 416, 417, 418, 425, 440, 444, 455, 615, 616, 618, and 628. A minimum grade of “C” must be achieved in these courses.

Museum Studies Minor – The minor in museum studies consists of 18 credits of courses as follows: HIST 270, 271, 272, 273, 320, and 321.

**CAREER OPPORTUNITIES**

The undergraduate degree program in history leads to careers in education, state and federal law enforcement, foreign service, journalism, business, archives and museums, international affairs, and state and federal government service, among others. It also prepares students for law school, theological seminary, and other graduate and professional school programs.

**Department of History  
Bachelor of Arts in History  
Major Code: HIST**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100 (WC)	3	BIOL 100 (SR Lab)	4
HIST 106 (AA) ( <i>formerly HIST 201</i> )	3	ENGL 101 (WC)	3
MATH 101 (MLAR) <sup>1</sup>	3	HIST 107	3
Humanities/Fine Arts Elective (HFA) <sup>2</sup>	3	Mathematical, Logical & Analytical Reasoning Elective (MLAR) <sup>1</sup>	3
FRST 101 (SS)	1	POLI 110	3
<b>Semester Total</b>	<b>13</b>	<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
HIST 206	3	HIST 207 (GA)	3
HIST 250	3	ECON 201	3
Scientific Reasoning Elective (SR) <sup>3</sup>	3	Social Science Elective <sup>4</sup>	3
HIST 103	3	Humanities/Fine Arts Elective <sup>1</sup> (HFA) <sup>2</sup>	3
HIST 104 ( <i>formerly HIST 204</i> )	3	HIST 105 ( <i>formerly HIST 205</i> )	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
HIST Elective <sup>5</sup>	3	HIST 335 ( <i>formerly HIST 435</i> )	3
Social Science Elective <sup>4</sup>	3	FOLA <sup>6</sup>	3
Free Elective <sup>7</sup>	3	HIST Elective <sup>5</sup>	3
FOLA <sup>6</sup>	3	HIST Elective <sup>5</sup>	3
HIST 325	3	HIST Elective <sup>5</sup>	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
Social Science Elective <sup>4</sup>	3	HIST Elective <sup>5</sup>	6
Free Elective <sup>7</sup>	6	Free Elective <sup>7</sup>	6
HIST 492 ( <i>formerly HIST 599</i> )	3	Social Science Elective <sup>4</sup>	3
HIST Elective <sup>5</sup>	3	HIST 498 (Internship)	1
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>17</b>

**Total Credit Hours: 120**

<sup>1</sup>Students must take course from the approved Mathematical, Logical & Analytical Reasoning (MLAR) Electives General Education course list and should discuss options with their adviser.

<sup>2</sup>Students must take course from the approved Humanities/Fine Arts (HFA) Electives General Education course list and should discuss options with their adviser.

<sup>3</sup>Students must take course from the Scientific Reasoning (SR) Non-Lab General Education course list and should discuss options with their adviser.

<sup>4</sup>12 hrs. Students may take any Geography, Political Science, Psychology, Sociology, or Anthropology courses for which they meet the prerequisites.

<sup>5</sup>21 hrs. Including **SIX HOURS** from the Americas (US, African American, Native American, Latin American) and **THREE HOURS** from **each** of the following areas: Europe, Asia, and Africa. Must be at the 300-400 level or above, not including required history courses.

<sup>6</sup>Students must take 6 credit hours of the same language.

<sup>7</sup>12 hrs. Students may take any courses offered at the University for which they meet the prerequisites.

**Department of History**  
**Bachelor of Science in Secondary Education (History)**  
**Major Code: HIST**  
**Concentration Code: HSCE**

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100 (WC)	3	BIOL 100 (SR Lab)	4
HIST 106 (AA) ( <i>formerly HIST 201</i> )	3	CUIN 110	2
CUIN 101	1	ENGL 101 (WC)	3
CUIN 102 (SS)	2	HIST 107	3
MATH 101 (MLAR) <sup>1</sup>	3	Mathematical, Logical & Analytical Reasoning Elective (MLAR) <sup>1</sup>	3
Humanities/Fine Arts Elective (HFA) <sup>2</sup>	3	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>15</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
CUIN 210	2	CUIN 255 ( <i>formerly CUIN 310</i> )	2
HIST 104 ( <i>formerly HIST 204</i> )	3	HIST 105 ( <i>formerly HIST 205</i> )	3
HIST 206	3	HIST 207 (GA)	3
HIST 250	3	Humanities/Fine Arts Elective <sup>1</sup> (HFA) <sup>2</sup>	3
SOCI 200	3	Scientific Reasoning Elective (SR) <sup>3</sup>	3
GEOG 210	3	POLI 110 ( <i>formerly POLI 200</i> )	3
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>17</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
CUIN 410	2	CUIN 305 ( <i>formerly CUIN 401</i> )	3
SPED 250	3	CUIN 420 ( <i>formerly CUIN 520</i> )	2
HIST 325	3	HIST Elective <sup>4</sup>	3
HIST Elective <sup>4</sup>	3	HIST 335 ( <i>formerly HIST 435</i> )	3
HIST Elective <sup>4</sup>	3	ECON 201	3
PSYC 101	3	<b>Semester Total</b>	<b>14</b>
<b>Semester Total</b>	<b>17</b>		
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
CUIN 439	4	CUIN 460 ( <i>formerly CUIN 660</i> )	9
Free Elective <sup>5</sup>	3	CUIN 470 ( <i>formerly CUIN 670</i> )	3
HIST Elective <sup>4</sup>	3	<b>Semester Total</b>	<b>12</b>
HIST 492 ( <i>formerly HIST 599</i> )	3		
<b>Semester Total</b>	<b>13</b>		

**Total Credit Hours: 120**

<sup>1</sup>Students must take course from the approved Mathematical, Logical & Analytical Reasoning (MLAR) Electives General Education course list and should discuss options with their adviser.

<sup>2</sup>Students must take course from the approved Humanities/Fine Arts (HFA) Electives General Education course list and should discuss options with their adviser.

<sup>3</sup>Students must take course from the Scientific Reasoning (SR) Non-Lab General Education course list and should discuss options with their adviser.

<sup>4</sup>12 hrs. – including **ONE** course from **each** of the following areas: Europe, Asia, Africa, and the Americas. The Americas include the US, African American, Native American, and Latin American history. Must be at the 300-400 level or above, not including required history courses.

<sup>5</sup>3 hours – Students may take any courses offered at the University for which they meet the prerequisites.

## COURSE DESCRIPTIONS IN HISTORY

- HIST 103. North Carolina A&T State University: A Legacy of Social Activism and Aggie Pride (formerly HIST 203)** **Credit 3(3-0)**  
This course examines establishment and evolution of North Carolina A&T State University within the context of the development of American higher education. With the use of various primary and secondary sources, students will gain a greater knowledge of the development and growth of the institution during major historical periods by examining past and present leaders, facilities, programs, and accomplished alumni. Attention will be given to the impact of the University and its alumni on political, social, economic, and intellectual development at the local, national, and international levels. Emphasis is placed on the institution's and activists' impact on the Civil Rights movement and the pivotal role that each played. The course will also explore relevant contemporary issues and the institution's global perspective in the new millennium. (F;S;SS)
- HIST 104. U.S. History From 1492-1877 (formerly HIST 204)** **Credit 3(3-0)**  
This course examines the basic diplomatic, political, economic and sociocultural forces in the formation and development of the United States to 1877. Emphasis is placed upon political developments within a broad economic, social and cultural context. (F;S;SS)
- HIST 105. U.S. History Since 1877 (formerly HIST 205)** **Credit 3(3-0)**  
This course continues the examination of basic diplomatic, political, economic and sociocultural forces in the development of the United States since 1877. Study of these major historical elements is pursued in an effort to help students to better understand the problems and challenges of contemporary American life, both domestic and foreign. (F;S;SS)
- HIST 106. African-American History to 1877 (formerly HIST 201)** **Credit 3(3-0)**  
This is a survey of the history of African-Americans in the United States from the African background through the Civil War. The emphasis is on American slavery, the abolition movement, the free African-American community, Civil War, Emancipation, and Reconstruction. (F;S;SS)
- HIST 107. African-American History Since 1877 (formerly HIST 202)** **Credit 3(3-0)**  
This course emphasizes African-American leadership organizations, achievement, and the struggle of African-Americans for equality in the United States since 1877. (F;S;SS)
- HIST 130. The Contemporary Global Experience** **Credit 3(3-0)**  
This course examines the social, economic, political, and cultural and environmental forces that shape our individual and collective experiences in these times and in different parts of the world. Students will learn how current conditions across the globe have been shaped by recent historical developments and will be introduced to concepts enabling them to grasp the contemporary global experience. (F;S;SS)
- HIST 206. The World to 1400 (formerly HIST 100)** **Credit 3(3-0)**  
This course examines the social, political, economic, religious, and cultural developments of the pre-modern world, from prehistory to 1400 C.E. and the beginning of the period of transition to modern.
- HIST 207. The World Since 1400 (formerly HIST 101)** **Credit 3(3-0)**  
This course begins in 1400 C.E. and examines the social, political, economic, religious, and cultural developments that contributed to the making of the modern world.
- HIST 208. History of Asian Religions (formerly HIST 301)** **Credit 3(3-0)**  
This course reviews the origins, doctrines, evolutions, spread, and impact of major Asian religions such as Buddhism, Hinduism, Jainism, and Daoism. (DEMAND)
- HIST 209. The American Military Experience** **Credit 3(3-0)**  
This course is designed primarily to enable the student to understand better the role played by the armed forces in American society today through a study of the origins and development of military institutions, traditions, and practices in the United States, from 1775 to the present. (DEMAND)
- HIST 210. History of Asian Americans** **Credit 3(3-0)**  
This course examines the experiences of Asian communities in the united states – their immigration, political, economic, religious, and social life, as well as their relations with non-Asian communities. (DEMAND)
- HIST 213. History of Religions (formerly HIST 312)** **Credit 3(3-0)**  
This is a course that surveys the origin and development of the traditional religions of India and China and the three "Religions of the Book": Judaism, Christianity, and Islam. (DEMAND)
- HIST 215. History of Africa to 1800** **Credit 3(3-0)**  
This course is a general survey of the history of Africa to 1800. Major areas of study include the genesis of man in Africa, the ancient world, early East and West civilizations, and the coming of Europe. (F)
- HIST 216. History of Africa Since 1800** **Credit 3(3-0)**  
This course is a general survey of the history of Africa since 1800. Major areas of study include the slave trade, the underdevelopment of Africa, Western imperialism and the African partition, and the growth of nationalism. (S)
- HIST 220. History of Science and Technology** **Credit 3(3-0)**  
This course is a survey of major scientific discoveries and technological innovations since the Scientific Revolution. Special attention will be paid to the Newtonian mechanistic worldview, theories of evolution, relativity, industrial revolution, medical advances, nuclear energy, computers and robotics. The social, economic, and ethical impact of modern scientific and technical discoveries will also be discussed. (DEMAND)

- HIST 225. America in the 1960s** **Credit 3(3-0)**  
 This course surveys and analyzes the various movements which made the 1960s one of the most important and tumultuous decades in American history. Special emphasis will be placed on the civil rights movement, opposition to the Vietnam War, environmentalism, youth culture, and feminism. Attention will also be given to the continuing influence of the 1960s on the development of American society. **(DEMAND)**
- HIST 230. History of Modern Medicine** **Credit 3(3-0)**  
 This course surveys the development of modern medical theories and practices, the professional development of physicians and nurses, the impact of technology on health care, the rise of hospitals, the intersections between society and medicine, factors affecting wellness, and the current problems facing the American health care system. Attention will also be given to the ethical dilemmas faced by doctors and nurses in this age of high tech health. **(DEMAND)**
- HIST 231. Genocide** **Credit 3(3-0)**  
 This course examines the concept of genocide, the deliberate murder of a specific group of people. After studying various theoretical approaches students will apply these concepts to specific case studies in order to understand, and hopefully prevent, such incidents of atrocious political violence. **(F;S;SS)**
- HIST 232. Introduction to Latin American History and Culture** **Credit 3(3-0)**  
 This course introduces students to Latin America's major historical periods and prevailing cultural characteristics from Per-Columbian times to the present. Students in the course will develop a basic understanding of historical and cultural trends that will enhance their ability to interact with people from Latin America. **(F;S;S)**
- HIST 237. The History of Agriculture in North America** **Credit 3(3-0)**  
 This course will familiarize students with the major issues in American agricultural history from 15<sup>th</sup> century to the present. An underlying theme of the course will involve the environmental aspect of farming activities. Students will examine Colonial, Antebellum, Early 20<sup>th</sup> century and Modern agriculture, conservation and preservation. **(F;S;SS)**
- HIST 238. The History of North Carolina** **Credit 3(3-0)**  
 This course provides an intensive study of the historical political, economic and social development of North Carolina from its colonial beginnings to the present day. It documents the long history of the state and explains the entwined history of Native Americans, Europeans and Africans. **(F;S;SS)**
- HIST 250. The Nature, Study, and Writing of History** **Credit 3(3-0)**  
 The course includes material and presentations leading to an understanding of the basic nature of history, how to study it, methods and techniques in researching and writing it, basic computer and quantification skills, and more summarily, historiography and philosophies of history. **(F)**
- HIST 270. Introduction to Museums** **Credit 3(3-0)**  
 This course introduces the student to the collecting and educational functions of the museum. Students will learn how museum professionals research, interpret and exhibit the holdings of a museum for the benefit of the community. Students will gain experience in developing their own exhibits. Students will also have the opportunity to visit local historical projects, and museums to study how these agencies carry out mandated duties. **(DEMAND)**
- HIST 271. Museum Practice and Collection Maintenance** **Credit 3(3-0)**  
 This course introduces students to the duties of museum registrars, curators, conservationists, and administrators. Students will learn how to catalog and preserve the items in a museum's collection. Students will also visit other local museums to gain greater knowledge of museum operations. **(DEMAND)**
- HIST 275. Introduction to Women's Studies** **Credit 3(3-0)**  
 This course explores the significant of women's studies, its contemporary relevance, and its pertinence to interdisciplinary scholarship. It introduces students to women's studies scholars and activists and traces the develop of feminist theory.
- HIST 277. Quantitative History** **Credit 3(3-0)**  
 This course introduces quantitative history and makes use of statistical data in historical research. Students will examine and evaluate works that have utilized quantitative methods; will learn how to access, create, and manage historical databases; and, will utilize statistical data in their own research. **(F;S;SS)**
- HIST 304. Ancient History (formerly HIST 300)** **Credit 3(3-0)**  
 This course is a history of civilizations from the beginnings in the Near East and Egypt through Hellenism and the Roman Empire. **(DEMAND)**
- HIST 306. History of Women Since 1800** **Credit 3(3-0)**  
 This course will trace the changes in female self-images and roles since the early 19th century in Europe and the United States. It will concentrate upon the growth of new educational and occupational opportunities for women, changing concepts of motherhood, and the rise of female protest movement. **(DEMAND)**
- HIST 308. Early Modern Europe: Renaissance to 1815 (formerly HIST 408)** **Credit 3(3-0)**  
 This course is a survey of major trends in the development of early modern Europe. Topics to be discussed include Renaissance, Reformation, Scientific Revolution, Enlightenment, Absolutism, and the French Revolution. **(F)**
- HIST 309. Modern Europe (formerly HIST 409)** **Credit 3(3-0)**  
 This course is a survey emphasizing main trends in European development since 1789 including political and social impact of the French & Revolution, Industrial Revolution, authoritarianism vs. liberalism, church vs. state, nationalism, imperialism, World Wars I and II, Communism, the Russian Revolution and Stalin, Nazism, and present-day Europe -the continuing experiment with the idea of a European Union. **(S)**

- HIST 310. The Pre-Modern West (formerly HIST 302)** **Credit 3(3-0)**  
 This course is a survey of major developments in the Mediterranean and Western Europe from the origins of the Roman Empire through the end of the Middle Ages. **(DEMAND)**
- HIST 311. History of Capitalism (formerly HIST 303)** **Credit 3(3-0)**  
 This course surveys the history of capitalism from its origins to the present. Students will learn how capitalism works from the standpoint of its structural components, its changing socio-political dynamics in the context of a developing world economy, and its impact on human societies and nature in general. **(DEMAND)**
- HIST 313. Perspectives on Globalization** **Credit 3(3-0)**  
 Drawing heavily on the holdings of the Mattye Reed African Heritage Center and other museums, this course will demonstrate how to use material culture collections of art, artifacts, and archaeological findings to document and interpret African history. **(DEMAND)**
- HIST 314. African Religions** **Credit 3(3-0)**  
 This course will present a systematic survey of the attitudes of mind and belief that have evolved in many African societies. The course would discuss issues such as the African view of the universe, how god is approached by people, rituals and festivals, morals in African religion, as well as death and the hereafter. The course would also analyze the African contributions to major world religions – Judaism, Christianity, and Islam. **(DEMAND)**
- HIST 315. Socialism Since Karl Marx (formerly HIST 305)** **Credit 3(3-0)**  
 This course analyzes the transformation of socialist thought and practice since the time of Marx. Special attention will be devoted to Marxist doctrines, nineteenth century Revisionism, Social Democracy, and twentieth century Communism. **(DEMAND)**
- HIST 316 . The Historical Origins of Environmental Crises (formerly HIST 307)** **Credit 3(3-0)**  
 This course will deal with man’s changing philosophical and technological relationship with his natural environment since the start of the Industrial Revolution. **(DEMAND)**
- HIST 319. Topics in World History** **Credit 3(3-0)**  
 This course will examine selected topics in modern world history. **(DEMAND)**
- HIST 321. Cultural History, Ethnicity, and Ethnographic Collections in America** **Credit 3(3-0)**  
 By drawing upon the ethnographic and multicultural collections of museums in North Carolina, students will become familiar with the role that museums can play in documenting and interpreting the culturally diverse history of the United States. **(DEMAND)**
- HIST 322. Ethnic Conflict in the Postcolonial World** **Credit 3(3-0)**  
 The collapse of empires resulted in widespread violence as ethnic groups have fought over access to political and economic power. This class will examine the politicization of ethnic identities through case studies of postcolonial conflicts in Asia, Africa, and Europe. **(DEMAND)**
- HIST 323. History of the Tuscarora (formerly HIST 223)** **Credit 3(3-0)**  
 This course will study the history of the Tuscarora of North Carolina and their impact on both North Carolina and American history from the 16<sup>th</sup> century to the present. It will also explore the relationship between the Tuscarora and various Europeans, Africans and other Native Americans that surrounded and ultimately intermixed with them. **(F;S;SS)**
- HIST 324. History of Native Americans to 1776 (formerly HIST 235)** **Credit 3(3-0)**  
 This course examines Native-American people before Europeans contact, during first contact, colonial wars, and ending with the start of the America Revolution. It is designed to introduce the major historical themes in the field of Native-American History from their first arrival in North America to the start of the American Revolution. **(F;S;SS)**
- HIST 325. Topics in African-American History** **Credit 3(3-0)**  
 This is an intensive reading, research, and discussion course that will address selected topics in African-American history, including the African background, the institution of slavery, Abolitionism, the Reconstruction era, migration out of the South, the Civil Rights Movement, and African-American intellectual traditions. Prerequisite: HIST 106 and HIST 107 or permission of the instructor. **(F)**
- HIST 332. The Modern Middle East** **Credit 3(3-0)**  
 This course will focus on the Middle East from the mid-19th century to the present. Areas of study will include the nature of Islamic society; the rise of nationalism and independence movements; the creation of the state of Israel; and the Arab-Israeli conflict. **(DEMAND)**
- HIST 333. Women and Gender in African History** **Credit 3(3-0)**  
 This course will analyze historical transformations in Africa and their effects on women’s lives and gender relations. Themes include the role of women in pre-colonial and colonial societies, religious change, urban labor, nationalism, and sexuality. This course will also explore the changing roles of women in twenty-first century Africa. **(DEMAND)**
- HIST 334. Honors in History** **Credit 3(3-6)**  
 This course examines selected topics in history and requires extensive reading and research. Prerequisites: Honor students or permission of instructor. **(DEMAND)**
- HIST 335. Global History Since 1945** **Credit 3(3-0)**  
 This course requires intensive study of world historical developments since the beginning of the twentieth century. Through examination of primary and secondary sources, students will be expected to demonstrate an advanced understanding of the economic, political, social, cultural and environmental forces and developments that distinguish contemporary world history as a

distinct historical epoch. Prerequisites: HIST 106, HIST 107, HIST 104, HIST 105, HIST 206, HIST 207 and HIST 250.

**(DEMAND)**

**HIST 336. History of Native Americans 1776 to Present (formerly HIST 236) Credit 3(3-0)**

This course examines the struggle of Native Americans to survive the American Revolution, the Indian Wars the 19<sup>th</sup> century and the modern age. It also examines their efforts to restore their culture and language in the late 20<sup>th</sup> and early 21<sup>st</sup> centuries. **(F;S;SS)**

**HIST 339. The History of Mixed-Race Peoples in North America (formerly HIST 239) Credit 3(3-0)**

This course explores the history of race-mixing between Native Americans, African Americans, and Poor Whites in North America from the colonial period to the present. This course will examine the origins of mixed-race peoples in the eastern United States from the 1500s to present. Which will include but not be limited to; Lumbees, Melungeons, Jackson Whites, Creoles, Brass Ankles, Jukes, etc. Special emphasis will be placed on the question of creolization in early America and how the mixing of Africans, Native Americans and Europeans has led to hundreds of mixed-race communities and millions of mixed-race peoples all over the eastern United States. This course will also examine the evolution of laws dealing with mixed-race people from the 1500's to present. **(F;S;SS)**

**HIST 340. History of England Credit 3(3-0)**

This course concentrates on English history since 1688. Special attention is given to the following topics: The Glorious Revolution, industrialization, imperialism, decolonization, Victorianism, Ireland, and contemporary English society. **(DEMAND)**

**HIST 350. Historical Research and Computer Technologies (formerly HIST 400) Credit 3(3-0)**

This course enables students to use computer technologies as a tool for historical research and presentation. Students will learn proper internet research techniques and the challenges associated with the validation of electronic sources. Prerequisite: HIST 250. **(F;S;SS)**

**HIST 351. African-Americans in the American West Credit 3(3-0)**

This course covers African-American contributions to the development of the western United States. Emphasis will be on reading, research, and discussion of the African-American experience. **(DEMAND)**

**HIST 355. African-American Historical Perspectives on Africa Credit 3(3-0)**

This course is a study of the historical relationship of African-Americans with Africa, stressing the political, economic, and cultural significance of the continent in African-American history and thought. Missionary, repatriation, and Pan-African movements will be analyzed, as well as the evolving image of Africa in African-American popular culture. **(DEMAND)**

**HIST 356. Energy, the Environment, and Development in Africa Credit 3(3-0)**

This course examines issues and problems surrounding the energy and environmental practices and policies in Africa. The role of public policy and natural resources will be discussed. It will analyze both rural and urban energy needs and problems, and make comparisons with other countries in the Third World. **(DEMAND)**

**HIST 357. Internship in Public History and Museums Credit Variable (1-3)**

This course allows students the opportunity to engage in museum studies from a practical standpoint. Students will work a certain number of hours which will match the number of credits received. The appropriate type of museum work for each student will be arranged prior to the beginning of the internship. **(DEMAND)**

**HIST 360. African-American History and Museum Collecting (formerly HIST 273) Credit 3(3-0)**

Students will develop collections of materials and create exhibits on themes in African American history, especially in North Carolina. Students will learn how to preserve and catalog photographs, documents, and archival materials. They will also be introduced to the theory and ethics of historical collecting, including the criteria which should be used to determine if an item is of museum quality and historical importance. **(DEMAND)**

**HIST 366. East Asian History to 1800 (formerly HIST 211) Credit 3(3-0)**

This course is a study of the history and culture of the Chinese, Japanese, and Vietnamese peoples from the early classical civilizations to the middle Ch'ing. **(DEMAND)**

**HIST 367. East Asian History since 1800 (formerly HIST 212) Credit 3(3-0)**

Areas of study include traditional China under the Ch'ing, the impact of the West, feudal Japan, modernization of Meiji Japan, the Chinese Revolutions, and the Chinese model in Vietnam. **(DEMAND)**

**HIST 372. Oral History (formerly HIST 272) Credit 3(3-0)**

This course will introduce students to the ethics and techniques of collecting, preserving, and interpreting oral interviews. They will gain practice in using oral evidence, along with original primary sources and photographs, by exploring the role, impact, and consequences of race, gender and class on American history. **(DEMAND)**

**HIST 395. Modern China Credit 3(3-0)**

This course will begin with attention to the main characteristics of traditional Chinese civilization. The focus of the course will be on the political, social, economic, and intellectual changes in Chinese society from the 1840s to the present. **(F;S;SS)**

**HIST 401. Old Testament History and Literature Credit 3(3-0)**

This course is a survey of the books sacred to Judaism, Christianity, and Islam commonly called the Old Testament, in the context of the history of the people of Israel who composed them. **(DEMAND)**

**HIST 402. The Rise of Christianity Credit 3(3-0)**

This course is a historical study of the origins and development of the Christian Church from its beginnings to the end of the ancient world (around 476 A.D.). The political, social, economic, intellectual, and religious environment will be considered equally along with the internal development of Christian institutions, beliefs, and practices. **(DEMAND)**

- HIST 403. 20<sup>th</sup> and 21<sup>st</sup> Century Women Activists of the World (formerly HIST 501)** **Credit 3(3-0)**  
 This course is designed to introduce students to women activists, many of them not widely known to the general audience, who fought or are still fighting for social and economic change and justice in the United States and around the world. Women of all races, economic classes, and varying geographic locations will be studied. The class will examine a multitude of issues for which these women advocate, expanding student understanding of the role of global female activism. The emphasis upon “struggle over time” and “strategies for change” make this an important conversation for men and women alike.
- HIST 405. African-American Religious History (formerly HIST 404)** **Credit 3(3-0)**  
 This course surveys the origins and development of religious beliefs and organizations among African-Americans. Topics that will be studied include the rise of separate Christian denominations, African antecedents, the political and social role of the African-American church, and the appearance of Islamic and other religious groups. The relationships of religion to African-American reform and protest movements will be highlighted. **(DEMAND)**
- HIST 406. Research Seminar in Africana Historiography: A Comparative Approach (Formerly HIST 502)** *Credit 3(3-0)*  
 This course takes comparative and interdisciplinary approach to studying the historiography of Africans in Africa and throughout the Diaspora. The primary course objective is for students to learn the general chronology and methodological approaches of Africana historians. Students will utilize anti-colonial, liberation, and critical theory paradigms in their research.
- HIST 407. American Diplomatic History Since 1900** **Credit 3(3-0)**  
 American foreign policy and diplomacy from the Spanish-American War to the present will be covered in this course. Emphasis is on the impact of foreign policy upon domestic (U.S.) society and the growing involvement of the U.S. in international relations. Students are encouraged to understand fully and think critically about America’s role in the world. **(DEMAND)**
- HIST 410. American Constitutional History** **Credit 3(3-0)**  
 The development of American constitutionalism from English origins to the present will be covered in this course. Emphasis on the development of separation of powers, states’ rights, the Supreme Court, and the sectional controversy, economic regulations, and the modernization of the Bill of Rights, especially problems of desegregation, free speech, obscenity and criminal justice. **(DEMAND)**
- HIST 412. Modernization in Africa from 1920 to the Present** **Credit 3(3-0)**  
 This course is the study of African development since World War I. Areas of study include nationalism and independence movements, conflicts between traditional and modern ideas, United States and African relations, and racism in Southern Africa. **(DEMAND)**
- HIST 413. Identity and Double-Consciousness: Russian and African-American Cultural Identities** **Credit 3(3-0)**  
 The topic for this course is identity and “double-consciousness.” This topic will be explored through a comparison of the creative responses of Russians and African-Americans to Western standards of culture and literacy that marginalized and even attempted to erase the historic voices of these cultures. In both instances the response was cultural construction of an alternative literacy, which involved the very definition of “soul” and rhetoric based on the idea of “double-consciousness.” After examining the construction of the East European “other” by Western Europeans and the shared experience of unfree labor by slaves in North America and serfs in Russia, the emergence and assertion of a distinct cultural identity among both Russian and African-American thinkers will be examined. **(F;S;SS)**
- HIST 414. Nationalism** **Credit 3(3-0)**  
 Nationalism is one of the most powerful forces in the modern world and is at the root of many of the problems facing humanity. This theoretical and comparative course will utilize scholarship from a variety of disciplines (history, political science, sociology and geography) in order to examine how and why individuals have joined together to construct a collective identity and how the present draws upon the past to create nationalism. **(F;S;SS)**
- HIST 415. The Automobile and the Making of Modern America** **Credit 3(3-0)**  
 No country on earth has embraced the automobile as thoroughly as the United States. This course analyzes the reasons for the American love affair with the car and the impact of automobility on American society and culture from the early twentieth century to the present. Topics discussed include the advent of mass production as pioneered by Henry Ford, the transformation of the American landscape to meet the needs of the car, the growth of big labor, the rise of consumer culture, the car as a cultural icon, environmental problems created by unchecked automobile use, the Japanese challenge to American industrial practices, and current efforts to reinvent the car to meet the needs of the future. Prerequisite: HIST 205, HIST 220, or permission of the instructor. **(DEMAND)**
- HIST 416. History of African-American Culture** **Credit 3(3-0)**  
 This course begins with an investigation of early African-American cultural developments, folk culture, and religious expression in Antebellum America. It also pays special attention to the cultural trends of the twentieth century, the “Harlem Renaissance,” and urban life. **(DEMAND)**
- HIST 417. Colonialism and Slavery in Latin America and the Caribbean (formerly HIST 317)** **Credit 3(3-0)**  
 This survey course begins with an examination of pre-Columbian societies. It then considers the changes that accompanied the various European colonial projects in the region, and the coming of Latin America’s political independence. Topics considered include agrarian change and conflict, colonial economic practices, slave systems and slave cultural practices, indigenous resistance and rebellion, the spread and impact of Christianity, colonial state policies, and the role of women. Students will have the opportunity to develop their ability to analyze and evaluate historical materials, and formulate written and oral arguments. **(DEMAND)**

- HIST 418. Conflict and Change in Post-Colonial Latin America and the Caribbean (formerly HIST 318) Credit 3(3-0)**  
 This course surveys social and political conflict and change beginning with the movements for political independence and concluding with an assessment of recent developments. Topics considered include agrarian change and conflict, economic development and underdevelopment, slave emancipation, gender, urbanization and populism, social revolution, labor, and international relations and foreign intervention. Students will have the opportunity to develop their ability to analyze and evaluate historical materials, and formulate written and oral arguments. (DEMAND)
- HIST 419. Ethno Nationalism and Genocide in Eastern Europe Credit 3(3-0)**  
 For most of the recent past the nations of Eastern Europe have been prevented from asserting their identities fully in independent nation states. In such conditions the idea of the nation became utopian. The collapse of the Soviet Union engendered endless conflicts that resulted in the rise of ethno nationalism throughout Eastern Europe, and led to genocide in the Balkans and still threatens peace and stability in the region today. The critique of nationalism from the standpoint of democracy and the relationship between democracy and nationalism will also be examined. (F;S;SS)
- HIST 420. Seminar: Urban America Credit 3(3-0)**  
 This course includes special topics in the rise of the American city and the development of urban patterns of life, concentrates on such themes as population shifts to cities, the development of slums and ghettos, growth of municipal institutions and services, and the relationship of government with city residents. Prerequisites: HIST 205 and consent of the instructor. Prerequisite: HIST 105. (DEMAND)
- HIST 421. Exploring Europe's 'Others' Credit 3(3-0)**  
 This course will examine that deliberate historical construction of the image of "Eastern" Europe and the "Balkans" which categorized entire peoples as being half-barbarian and thus only half-civilized. This served to convince "Western" Europeans of their own superiority so that the terms "Eastern" Europe and "Balkans" became synonymous with ethnic hatred, backwardness and barbarism. Students will look at literature from these regions in order to understand their struggle to confront, resist and critique these stereotypes. (F;S;SS)
- HIST 422. Colonizer and Colonized: The British Imperial Experience Credit 3(3-0)**  
 Imperialism was a shared experience that remade the cultures of both the colonized and the colonizers. Using Great Britain in general and London in particular as a basis for comparison, the course will begin with a discussion of the classic interpretations and criticisms of empire and then look at how the imperial experience changed Victorian England into today's vibrant multicultural and multiracial society. Students will also examine the psychological effects of empire on both colonizers and colonized through the reading of several classic novels. (F;S;SS)
- HIST 424. Topics in Native-American History Credit 3(3-0)**  
 This is an intensive reading, research, and discussion course that will address selected topics in Native American History, including their background in North America, Native-American slavery, Colonial Wars with European, the Reconstruction Era, Early 20<sup>th</sup> Century Red Power and the Civil Rights Movement, and Native American intellectual traditions. Prerequisites: HIST 235 and HIST 236 or permission of the instructor. (F;S;SS)
- HIST 430. Topics in Twentieth Century American History Credit 3(3-0)**  
 This course includes in-depth analysis of selected topics since the late nineteenth century, with special emphasis on written historical communication. Prerequisites: 6 hours of American history (HIST 104 and HIST 105) and the consent of the instructor. (DEMAND)
- HIST 433. United States-East Asian Relations Credit 3(3-0)**  
 This course examines the evolution of the relations between the United States and East Asian countries in the 19<sup>th</sup> and 20<sup>th</sup> centuries. It will focus on such themes as mutual perceptions of Americans and East Asians, activities of American merchants and missionaries in the region, East Asian immigration to the United States, the Pacific War, the Korean War, the Vietnamese War, and the normalization of Sino-American relations. (F;S;SS)
- HIST 440. African-American Intellectual/Philosophical History Credit 3(3-0)**  
 This course examines the ideologies and programs of African-American leaders who have commanded both national and international attention from the antebellum period to the present. Special consideration will be given to the philosophical continuities and differences among leaders in the twentieth century. (DEMAND)
- HIST 444. History of West Africa Since 1800 Credit 3(3-0)**  
 This course explores the process by which the peoples of West Africa became integrated in the modern world system, examines cultural and scientific developments of the region, analyzes regional and Pan-African issues, and provides an in-depth study of major themes and problems in West African history. (DEMAND)
- HIST 450. Modernization in Historical Perspective Credit 3(3-0)**  
 This course concentrates on an analysis of the various paths to modernity taken by several advanced societies, notably the United States, England, France, Germany, Russia, and Japan. Particular attention will be devoted to the causes and effects of industrialization, population growth, urbanization, social protest, changes in family structure, intellectual responses to rapid change, and the development of the modern state. (DEMAND)
- HIST 451. Russian History (formerly HIST 350) Credit 3(3-0)**  
 This course surveys the history of Russia from earliest times to the present, with emphasis on the twentieth century. (DEMAND)
- HIST 452. Hitler's Germany Credit 3(3-0)**  
 This course will examine the social and political history of the Third Reich. Special attention will be paid to Hitler's racial policies and the Holocaust. (F;S;SS)



- HIST 455. Comparative Slavery of the Americas** **Credit 3(3-0)**  
 This course compares the development of different slave labor systems in the Americas from the fifteenth through the nineteenth centuries. After a brief consideration of slavery in the ancient world, the course examines the African origins of the slaves; the Atlantic slave trade; and slave life, work, culture, resistance, and emancipation in North America, Latin America, and the Caribbean. **(DEMAND)**
- HIST 458. Asian Perceptions of Health Preservation in Historical Perspective (formerly HIST 358)** **Credit 3(3-0)**  
 This course examines the origins, evolutions, and influences of some popular Asian health preservation techniques such as Indian Yoga and Chinese *taiji* (tai-chi) and development of modern health-care systems in major Asian countries (Japan, India, and China). **(F;S;SS)**
- HIST 459. The History of Human Rights (formerly HIST 359)** **Credit 3(3-0)**  
 This course will provide a cultural, legal, and historical introduction to human rights, a central concept and ideal of the contemporary world. Students will examine the long tradition of scholarship in economics, law, political science, sociology, and history. **(F;S;SS)**
- HIST 460. The Old South (formerly HIST 360)** **Credit 3(3-0)**  
 This course will focus upon the social, political, cultural, and economic evolution of the Old South from the 17th century through the Civil War and Reconstruction eras. In addition, the question of Southern distinctiveness and the tension between democracy and slavery will be analyzed. Issues of race, class, gender and religion will also be central to the course's investigation of rural and urban development in Southern society through 1877. North Carolina will be used frequently as a case in point. **(DEMAND)**
- HIST 461. History of the New South (formerly HIST 361)** **Credit 3(3-0)**  
 This course offers a chronological exploration of the history of the South from the end of Reconstruction in 1877 through the development of the concept of "The New South" to the politics and culture of the "Sunbelt South" of today. Major topics will include the political, economic and social conditions after Reconstruction; the myths and realities of the "New South"; Populism and Fusion politics; segregation and disfranchisement in the "New South"; the South in the Progressive Era and World War I; race, religion, gender, class and culture; the Depression and the new Deal; the South after World War II; urbanization and industrialization; and the Civil Rights movement. North Carolina will be used frequently as a case in point. **(DEMAND)**
- HIST 462. Utopias of Race, Class and Nation** **Credit 3(3-0)**  
 This course examines the unprecedented mass killings of the 20th century and beyond that were carried out by states pursuing a utopia based on national, racial and political ideologies. Prerequisite: Junior or senior standing. **(F;S;SS)**
- HIST 477. Technology, Empire, and Popular Culture** **Credit 3(3-0)**  
 This course focuses on the technologies of the New Imperialism of the late nineteenth Century both in the context of their use against native populations in various parts of the world and as mechanisms for building consensus in home countries for imperial adventures abroad. It will also examine the process whereby East Asia, South and Southeast Asia, Latin America, and Africa were consolidated into a new global system of Western dominance. Sites such as international expositions, public museums and libraries, and new forms of mass culture and amusement will be explored to demonstrate the appeal of empire in the West. Prerequisites: HIST 250 and 206 or 105 or permission of the instructor. **(DEMAND)**
- HIST 492. Senior Seminar (formerly HIST 599)** **Credit 3(3-0)**  
 This is a capstone course for undergraduate majors in the History Department. The course will address enduring topics of historical interest requiring extensive readings and a research paper. Prerequisite: Senior standing with a major in History or History Education. Other students may take the course with the permission of the instructor. **(F)**
- HIST 498. Internship in History** **Credit 2(2-0)**  
 This course is a field experience internship in History.

#### Advanced Undergraduate and Graduate

- HIST 600. The British Colonies and the American Revolution** **Credit 3(3-0)**  
 The planting and maturation of the English colonies of North America are required. Relationships between Europeans, Indians, and transplanted Africans, constitutional development, religious ferment, and the colonial economy are studied. **(DEMAND)**
- HIST 603. Civil War and Reconstruction** **Credit 3(3-0)**  
 Causes as well as constitutional and diplomatic aspects of the Civil War, the role of the African-American in slavery, in war, and in freedom, and the socio-economic and political aspects of Congressional Reconstruction and the emergence of the New South are studied. **(DEMAND)**
- HIST 606. U.S. History, 1900-1932** **Credit 3(3-0)**  
 This course emphasizes political, economic, social, cultural and diplomatic developments from 1900 to 1932 with special attention to their effect upon the people of the United States and their influence on the changing role of the U.S. in world affairs. **(DEMAND)**
- HIST 407. U.S. Since 1932-Present (formerly HIST 607)** **Credit 3(3-0)**  
 With special emphasis on the Great Depression, New Deal, the Great Society, and the expanding role of the United States as a world power, World War II, cold war, and the Korean and Vietnam conflicts are studied. Major themes include the origin, consolidation, and expansion of the New Deal, the growth of executive power, the origins and spread of the Cold War, civil liberties, civil rights, and challenges for the extension of political and economic equality and the protection of the environment. **(DEMAND)**
- HIST 610. Seminar in the History of Twentieth Century Technology** **Credit 3(3-0)**  
 This is a reading, research, and discussion course, which investigates the development and, especially, the impact of major

twentieth century technologies. Attention will also be given to the process of invention, the relationship between science and technology, and the ethical problems associated with some contemporary technologies. (DEMAND)

**HIST 615. Seminar in African-American History** **Credit 3(3-0)**

This is a reading, research, and discussion course, which concentrates on various aspects of the life and history of African-Americans. The emphasis is placed on historiography and major themes including nationalism, black leadership and ideologies, and economic development. (DEMAND)

**HIST 616. Seminar in African History** **Credit 3(3-0)**

Research, writing and discussion on selected topics in African history will be included in this course. (DEMAND)

**HIST 617. Readings in African History** **Credit 3(3-0)**

By arrangement with instructor. (SS)

**HIST 618. The African Diaspora** **Credit 3(3-0)**

This is an advanced reading, research, and discussion course on the historical experience of people of African descent in a global context. It examines the worldwide dispersal and displacement of Africans over time, emphasizing their migration and settlement abroad over the past five centuries. (DEMAND)

**HIST 622. History of Asian Women** **Credit 3(3-0)**

This course briefly examines the conditions of Asian (especially South Asian and East Asian) women in traditional societies and focuses on the changes in women's status in modern times (since 1800). It covers primarily the following topics: women and economic modernization (especially the impact of industrialization on women), the impact of the introduction of Western ideas (such as feminism) on women, women and wars (revolutions – especially in China, Korea, and Vietnam), women and crimes, women's political participation, and gender relations. (F;S;SS)

**HIST 623. Topics in East Asian Culture** **Credit 3(3-0)**

This course aims at illuminating some key features of East Asian culture, especially in modern times. It is concerned with East Asians' beliefs on a variety of issues (e.g., human relations, man-nature relations, state-society relations, and health) and the changes of these beliefs in the context of Western influence. Considerable attention will be given to such major intellectual schools as Confucianism, Daoism, and Buddhism. (F;S;SS)

**HIST 624. Seminar in Native American History** **Credit 3(3-0)**

This is a reading, research and discussion course concentrating on various aspects of the life and history of Native Americans. Emphasis will be placed on historiography and major themes in Native American history, including Indian slavery, Indian. Prerequisite: Senior standing. (F;S;SS)

**HIST 626. Revolutions in the Modern World** **Credit 3(3-0)**

This is a seminar course stressing comparative analysis of revolutions and revolutionary movements in the United States, France, Russia, China, Cuba, and Iran. Students will also evaluate theories of revolution in light of historical examples. (DEMAND)

**HIST 628. The Civil Rights Movement** **Credit 3(3-0)**

From original research, class lectures, and discussions, students will become familiar with the nature of the Civil Rights Movement; will evaluate its successes and failures; and will analyze the goals and tactics of each major participating Civil Rights organization. Students will also evaluate the impact of the Civil Rights Movement on American society. (DEMAND)

**HIST 629. Seminar on the History of Early Modern Europe** **Credit 3(3-0)**

Through extensive readings, discussion, research, and writing, students will examine selected topics of enduring importance in the history of Europe from the Renaissance through the French Revolution. (DEMAND)

**HIST 630. Studies in European History, 1815-1914** **Credit 3(3-0)**

This is an intensive study of selected topics in nineteenth century European history. (DEMAND)

**HIST 633. Independent Study in History** **Credit 3(3-0)**

By arrangement with instructor. (F;S;SS)

**HIST 699. Methods and Internship in History** **Credit 3(2-8)**

This required course for students in the M.A.T. program focuses on a field experience that emphasizes the development and use of teaching strategies, methods, skills, and assessments as they relate to the principles of teaching and learning in the area of history education. Candidates will learn to apply, plan and manage skills related to instruction, discipline, behavioral concerns and decision-making in small group and whole class instruction. Course content will include a variety of teaching strategies, methods, skills, and instructional resources. (F;S)

## GEOGRAPHY

**GEOG 200. Principles of Geography** **Credit 3(3-0)**

This course surveys the physical characteristics of the earth's surface including landforms, climates, vegetation and soils. The emphasis is on global variations and interactions among these physical characteristics. (F;S)

**GEOG 210. World Regional Geography** **Credit 3(3-0)**

This course is a survey of the geographic character of the major culture regions of the world. Contemporary cultural characteristics are examined within the framework of both environmental relationships and historical development. (F;S)

**GEOG 319. Regional Geography of the United States and Canada** **Credit 3(3-0)**

This course is a study of geographic regions of the United States and Canada. (DEMAND)

**GEOG 322. Economic Geography** **Credit 3(3-0)**

This course is a geographical survey of major economic activity with emphasis on global patterns of production and exchange of commodities that are strategic in sustaining the world's population and modern economic development. (DEMAND)

**Undergraduate and Graduate**

**GEOG 640. Topics in Geography of the United States and Canada** **Credit 3(3-0)**  
Selected topics in cultural geography of the United States and Canada are studied intensively. Emphasis is placed upon individual reading and research and group discussion. **(DEMAND)**

**GEOG 641. Topics in World Geography** **Credit 3(3-0)**  
Selected topics in geography are studied intensively. Concern is for cultural characteristics and their interrelationships with each other and with habitat. Emphasis is upon reading, research, and discussion. **(DEMAND)**

**DIRECTORY OF FACULTY**

- Fuabeh P. Fonge** ..... **Professor**  
B.A., University of Yaounde; M.A., Georgetown University; Ph.D., Howard University
- Conchita F. Ndege** ..... **Professor**  
B.F.A., Xavier University; M.A., Ph.D., Howard University
- Thomas E. Porter** ..... **Professor**  
B.A., Loyola College; M.A., Ph.D., University of Washington
- Philip Rubio** ..... **Associate Professor**  
B.A., Vermont College of Norwich University; M.A., North Carolina Central University; Ph.D., Duke University
- Arwin D. Smallwood** ..... **Professor and Chairperson**  
B.A., M.A., North Carolina Central University; Ph.D., The Ohio State University
- Dwana Waugh** ..... **Assistant Professor and Undergraduate and Graduate History Education Coordinator**  
B.A., Randolph-Macon Woman’s College; M.A., Ph.D., University of North Carolina at Chapel Hill
- James A. Wood** ..... **Professor**  
B.A., Tufts University; M.A., Ph.D., University of North Carolina at Chapel Hill
- Yunqui Zhang** ..... **Associate Professor and Associate Chairperson**  
B.A., Qufu Normal University; M.A., Ph.D., University of Toronto

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**Department of Journalism and Mass Communication**

<http://www.ncat.edu/cahss/departments/jomc/index.html>

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**Gail Wiggins, Interim Chairperson**

**OBJECTIVES**

The objectives of the Department of Journalism and Mass Communication are as follows:

1. to develop in students the speaking and writing skills they apply in general communication and in professional journalism and mass communication;
2. to develop the expertise of students in their professional specialties, and provide them the opportunity to integrate multiple skill sets, in journalism and mass communication;
3. to prepare students for employment and leadership in local, national and global media markets and to pursue career advancement and graduate study;
4. to cultivate the practice of seeking interdisciplinary knowledge in students, and help them acquire and apply analytical and critical skills in developing views on issues;
5. to prepare students to transcend professional and other boundaries individually and collaboratively in addressing situations, responsibilities and challenges;
6. to cultivate in students an understanding of the historical, cultural, legal, ethical and moral contexts in which they apply their knowledge and professional skills.

**DEGREES OFFERED**

- Journalism and Mass Communication (Mass Media Production) – Bachelor of Science
- Journalism and Mass Communication (Multimedia Journalism) – Bachelor of Science
- Journalism and Mass Communication (Public Relations) – Bachelor of Science

**MINORS OFFERED**

- Journalism and Mass Communication (Mass Media Production) – 18 Credit Hours
- Journalism and Mass Communication (Multimedia Journalism) – 18 Credit Hours
- Journalism and Mass Communication (Public Relations) – 18 Credit Hours

**GENERAL PROGRAM REQUIREMENTS**

The admission of students into the undergraduate degree programs in Journalism and Mass Communication is based upon the general admission requirements of the University. All students are expected to maintain a cumulative grade point average of at least 2.0 overall and 2.5 in the major.

The admission of students for a minor in Journalism and Mass Communication is based upon the general requirements for minors of the University. All students are expected to have a cumulative grade point average of at least 2.2 to declare a minor in Journalism and Mass Communication. They must make a grade of 70 or better in the Grammar Proficiency Examination.

## DEPARTMENTAL REQUIREMENTS

The Journalism and Mass Communication major must complete a minimum of 120 semester hours of University courses. Included are 42 semester hours of courses in the major.

All majors must meet certain prerequisites prior to beginning sophomore-level courses in their chosen concentrations. Majors must demonstrate computer literacy skills as defined by the College of Arts and Sciences. They also must:

- a. Make a grade of 70 or better in the Grammar Proficiency Examination.
- b. Make a cumulative grade point average of 2.0 or better in the first year of courses.

A student admitted in the Journalism and Mass Communication program must successfully complete a minimum of 120 credit hours in order to receive the bachelor of science and:

- a. Maintain a minimum 2.5 grade point average in courses in the major.
- b. Have a combined Scholastic Aptitude Test (SAT) score of 800 (in-state students) or 920 (out-of-state students) and achieve a high school cumulative grade point average of “B” or better.
- c. If criteria A and B are not met, a student may enter the University as “Undecided;” when the student achieves the cumulative GPA of 2.5, he or she may be admitted as a Journalism and Mass Communication major.
- d. Successfully complete the required capstone Professional Development Seminar course (JOMC 492).
- e. Complete an internship with an approved media organization.
- f. Complete the following practicum courses:
  1. Mass Media Production (1 Practicum + Mass Communication Professional Development Seminar + Mass Communication Internship)
  2. Multimedia Journalism (1 Practicum + Mass Communication Professional Development Seminar + Mass Communication Internship)
  3. Public Relations (1 Practicum + Mass Communication Professional Development Seminar + Mass Communication Internship)

## CAREER OPPORTUNITIES

A bachelor of science degree in Journalism and Mass Communication will prepare students for careers in research, teaching, management, public relations, and corporate communication. Corporations, consulting firms, non-profit organizations, educational institutions, and state, federal and local government agencies may provide job opportunities. Careers in the Journalism and Mass Communication industry continue to expand. With the development of new media and modern technology, increasingly more professional employment opportunities are becoming available.

## MINORS IN JOURNALISM AND MASS COMMUNICATION

Minor Field of Undergraduate Study Policy – The purpose of this policy is to establish minor fields of study at North Carolina A&T State University. The policy states that a minor may be offered only in a field for which there is a corresponding major or authorized undergraduate certificate program; an academic minor shall consist of at least 18 credits in an area apart from the major concentration of the students baccalaureate degree program; a minimum of 12 of the 18 minor credits must be in courses at the 200-level or above; a student must complete at least 24 hours of academic credits before declaring a minor and must have a minimum GPA of 2.2; and a student may not have more than two minors regardless of the student's major. The Faculty Senate Curriculum Committee must approve all minors. This policy is consistent with other institutions in the UNC System. The minor will be printed on the transcript and not the diploma.

**JOMC Minor Core Classes (9 credit hours):** JOMC 220 (*Reporting and Writing Across Platforms*), JOMC 249 (*Introduction to Multimedia*), and JOMC 393 (*Communication Law and Ethics*). Pick one of the following concentrations:

- 1) Mass Media Production: JOMC 206 (*Introduction to Video Production*), JOMC 275, and JOMC 259 (*Video Nonlinear Editing*). Total 18 credit hours.
- 2) Multimedia Journalism: JOMC 224 (*Editing for Online and Print Media*), JOMC 299 (*Introduction to Video Production and Editing*), and JOMC 325 (*Electronic News Writing*) or JOMC 430 (*Advanced Reporting and Writing*). Total 18 credit hours.
- 3) Public Relations: JOMC 276 (*Introduction to Public Relations*), JOMC 330 (*Public Relations Writing*), and JOMC 390 (*Public Relations Case Studies*). Total 18 credit hours.

## Department of Journalism and Mass Communication Bachelor of Science in Journalism and Mass Communication (Public Relations)

Major Code: JMC\*

Concentration Code: PBRL

## Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	

BIOL 100 (SR) <sup>1,9</sup>	4	ENGL 101 (WC) <sup>1</sup>	3
ENGL 100 (WC) <sup>1</sup>	3	ENGL 226	3
FRST 101 (SS) <sup>1</sup>	1	HIST 130, 207, 216 or 231 (GL) <sup>1,2</sup>	3
HIST 103, 106, or 107 (AA) <sup>1,2</sup>	3	JOMC 102 ( <i>formerly</i> JOMC 202)	3
HPED Elective	1	MATH 102 (MLAR) <sup>1</sup>	3
MATH 101 (MLAR) <sup>1</sup>	3	Grammar Proficiency Exam (GPE) <sup>3</sup>	0
<b>Semester Total Hours</b>	<b>15</b>	<b>Semester Total Hours</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
Foreign Language Level I <sup>4</sup>	3	Foreign Language Level II <sup>4</sup>	3
JOMC 220	3	JOMC 231 <sup>7</sup>	1
JOMC 276	3	JOMC 224 ( <i>formerly</i> JOMC 324)	3
Scientific Reasoning Elective (SR) <sup>1,9</sup>	3	Minor or Elective <sup>5,6</sup>	3
SPCH 250 (HFA) <sup>1,2</sup>	3	Minor or Elective <sup>5,6</sup>	2
<b>Semester Total Hours</b>	<b>15</b>	PSYC 101 or SOCI 100 or SOCI 200 (SBS) <sup>1,2</sup>	3
		<b>Semester Total Hours</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
JOMC 249 ( <i>formerly</i> JOMC 309)	3	JOMC 386 ( <i>formerly</i> JOMC 486)	3
JOMC 303	3	JOMC 393 ( <i>formerly</i> JOMC 493)	3
JOMC 330	3	JOMC 396 ( <i>formerly</i> JOMC 496)	3
JOMC 390	3	JOMC 492 <sup>8</sup> ( <i>formerly</i> JOMC 591)	2
Minor or Elective <sup>2,6,7</sup>	3	Minor or Elective <sup>6,7</sup>	3
<b>Semester Total Hours</b>	<b>15</b>	<b>Semester Total Hours</b>	<b>14</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
JOMC 498 ( <i>formerly</i> JOMC 598)	3	Business School Elective	3
Minor or Elective <sup>6,7</sup>	3	English Literature Elective <sup>9</sup>	3
Minor or Elective <sup>6,7</sup>	3	Geography Elective	3
Philosophy Elective	3	HPED Elective	1
Political Science Elective	3	JOMC Elective <sup>10</sup>	3
<b>Semester Total Hours</b>	<b>15</b>	Minor or Elective <sup>6,7</sup>	3
		<b>Semester Total Hours</b>	<b>16</b>

**Total Credit Hours: 120**

<sup>1</sup>This course fulfills the University's general education requirement. If course is not specified, see the General Education course list for course options and discuss with your advisor.

<sup>2</sup>General education requires 12 credit hours in the following areas: 3 hours in humanities and fine arts, 3 hours in social and behavioral sciences, 3 hours in global learning and 3 hours in African-American studies from the General Education course list. See your advisor to ensure you meet these hours.

<sup>3</sup>The Grammar Proficiency Exam must be passed before or during JOMC 220 and to continue in the major.

<sup>4</sup>Two levels of the same foreign language are required.

<sup>5</sup>Discuss minor or electives with your academic advisor.

<sup>6</sup>ACEJMC accreditation requires 72 credit hours outside the major.

<sup>7</sup>Consult the University Bulletin for Practicum requirements. Volunteers are encouraged to work in labs.

<sup>8</sup>Must take JOMC 492 Mass Communication Professional Development Seminar the semester prior to enrolling in JOMC 498.

JOMC 492 Prerequisites for Public Relations: Grammar Proficiency Exam, JOMC 220, 224, 276, 330, \*386, 390 (\*May be enrolled).

<sup>9</sup>Scientific Reasoning Elective: Must have 7 credit hours in the scientific reasoning with one lab hour (see the General Education course list for course options).

<sup>10</sup>Select from any courses under the following English Department subheadings: African-American Literature, Literature, or Women Writers and Women in Literature.

<sup>11</sup>JOMC Electives must be discussed with advisor. JOMC Electives included but not limited to: 200, 201, 203, 204, 205, 208, 240, 241, 245, 250, 255, 322, 339, 340, 351, 352, 353, 354, 356, 357, 366, 370, 399, 417, 418, 468, 475, 499, or 490.

## MAJOR PROGRAM REQUIREMENTS

*Students must earn a grade of 70 or better in the following course:*

- Grammar Proficiency Exam (GPE)

**Department of Journalism and Mass Communication**  
**Bachelor of Science in Journalism and Mass Communication (Multimedia Journalism)**

**Major Code: JMC\***

**Concentration Code: MMJR**

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
BIOL 100 (SR) <sup>1,9</sup>	4	ENGL 101 (WC) <sup>1</sup>	3
ENGL 100 (WC) <sup>1</sup>	3	ENGL 226	3
FRST 101 (SS) <sup>1</sup>	1	HIST 130, 207, 216 or 231 (GL) <sup>1,2</sup>	3
HIST 103, 106, or 107 (AA) <sup>1,2</sup>	3	JOMC 102 (formerly JOMC 202)	3
HPED Elective	1	MATH 102 (MLAR) <sup>1</sup>	3
MATH 101 (MLAR) <sup>1</sup>	3	Grammar Proficiency Exam (GPE) <sup>3</sup>	0
<b>Semester Total Hours</b>	<b>15</b>	<b>Semester Total Hours</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
Foreign Language Level I <sup>4</sup>	3	Foreign Language Level II <sup>4</sup>	3
JOMC 220	3	JOMC 224 (formerly JOMC 324)	3
JOMC 231 <sup>5</sup>	1	JOMC 249 (formerly JOMC 309)	3
JOMC 299	3	PSYC 101 or SOCI 100 or SOCI 200 (SBS) <sup>1,2</sup>	3
Minor or Elective <sup>6,7</sup>	3	Scientific Reasoning (SR) <sup>1,9</sup>	3
SPCH 250 (HFA) <sup>1,2</sup>	3	SPCH 116	1
<b>Semester Total Hours</b>	<b>16</b>	<b>Semester Total Hours</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
JOMC 325 (formerly JOMC 425)	3	Geography Elective	3
JOMC 329 (formerly JOMC 430)	3	JOMC 300	3
JOMC 393 (formerly JOMC 493)	3	JOMC 303	3
Minor or Elective <sup>2,6,7</sup>	3	JOMC 335 (formerly JOMC 425)	3
Minor or Elective <sup>6,7</sup>	4	JOMC 492 <sup>8</sup> (formerly JOMC 591)	2
<b>Semester Total Hours</b>	<b>16</b>	<b>Semester Total Hours</b>	<b>14</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
JOMC Elective <sup>10</sup>	3	Business School Elective	3
JOMC 498 (formerly JOMC 598)	3	English Literature Elective <sup>11</sup>	3
Minor or Elective <sup>6,7</sup>	3	HPED Elective	1
Philosophy Elective	3	Minor or Elective <sup>6,7</sup>	3
Political Science Elective	3	Minor or Elective <sup>6,7</sup>	3
<b>Semester Total Hours</b>	<b>15</b>	<b>Semester Total Hours</b>	<b>13</b>

**Total Credit Hours: 120**

<sup>1</sup>This course fulfills the University's general education requirement. If course is not specified, see the General Education course list for course options and discuss with your advisor.

<sup>2</sup>General education requires 12 credit hours in the following areas: 3 hours in humanities and fine arts, 3 hours in social and behavioral sciences, 3 hours in global learning and 3 hours in African-American studies from the General Education course list. See your advisor to ensure you meet these hours.

<sup>3</sup>The Grammar Proficiency Exam must be passed before or during JOMC 220 and to continue in the major.

<sup>4</sup>Two levels of the same foreign language are required.

<sup>5</sup>Consult the University Bulletin for Practicum requirements. Volunteers are encouraged to work in labs.

<sup>6</sup>Discuss minor or electives with your academic advisor.

<sup>7</sup>ACEJMC accreditation requires 72 credit hours outside the major.

<sup>8</sup>Must take JOMC 492 Mass Communication Professional Development Seminar the semester prior to enrolling in JOMC 498.

JOMC 492 Prerequisites for Multimedia Journalism: Grammar Proficiency Exam, JOMC 220, 249, 325, 329, \*335 (\*May be enrolled).

<sup>9</sup>Scientific Reasoning Elective: Must have 7 credit hours in the scientific reasoning with one lab hour (see the General Education course list for course options).

<sup>10</sup>Select from any courses under the following English Department subheadings: African-American Literature, Literature, or Women Writers and Women in Literature.

<sup>11</sup>JOMC Electives must be discussed with advisor. JOMC Electives included but not limited to: 200, 201, 203, 204, 205, 208, 240, 241, 245, 250, 255, 322, 339, 340, 351, 352, 353, 354, 356, 357, 366, 370, 399, 417, 418, 468, 475, 499, or 490.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a grade of 70 or better in the following course:*

- Grammar Proficiency Exam (GPE)

**Department of Journalism and Mass Communication**  
**Bachelor of Science in Journalism and Mass Communication (Mass Media Production)**  
**Major Code: JMC\***  
**Concentration Code: MMPR**

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
BIOL 100 (SR) <sup>1,9</sup>	4	ENGL 101 (WC) <sup>1</sup>	3
ENGL 100 (WC) <sup>1</sup>	3	ENGL 226	3
FRST 101 (SS) <sup>1</sup>	1	HIST 130, 207,216 or 231 (GL) <sup>1</sup>	3
HIST 103, 106, or 107 (AA) <sup>1,2</sup>	3	JOMC 102 ( <i>formerly JOMC 202</i> )	3
HPED Elective	1	MATH 102 (MLAR) <sup>1</sup>	3
MATH 101 (MLAR) <sup>1</sup>	3	Grammar Proficiency Exam (GPE) <sup>3</sup>	0
<b>Semester Total Hours</b>	<b>15</b>	<b>Semester Total Hours</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
Foreign Language Level I <sup>4</sup>	3	Foreign Language Level II <sup>4</sup>	3
JOMC 220	3	HPED Elective	1
JOMC 231 <sup>5</sup>	1	JOMC 244 ( <i>formerly JOMC 445</i> )	3
JOMC 206 ( <i>formerly JOMC 406</i> )	3	JOMC 259 ( <i>formerly JOMC 419</i> )	3
PSYC 101 or SOCI 100 or SOCI 200 (SBS) <sup>1,2</sup>	3	JOMC 275 ( <i>formerly JOMC 405</i> )	3
Scientific Reasoning (SR) <sup>1,9</sup>	3	SPCH 250 (HFA) <sup>1,2</sup>	3
<b>Semester Total Hours</b>	<b>16</b>	<b>Semester Total Hours</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	

JOMC 249 (formerly JOMC 309)	3	JOMC 393 (formerly JOMC 493)	3
JOMC 303	3	JOMC 492 <sup>8</sup> (formerly JOMC 591)	2
JOMC 306 (formerly JOMC 507) or JOMC 375 (formerly JOMC 508)	3	Minor or Elective <sup>6,7</sup>	3
Minor or Elective <sup>2,5,6</sup>	3	Minor or Elective <sup>6,7</sup>	3
Minor or Elective <sup>5,6</sup>	3	Philosophy Elective	3
<b>Semester Total Hours</b>	<b>15</b>	<b>Semester Total Hours</b>	<b>14</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
JOMC 498 (formerly JOMC 598)	3	Business School Elective	3
JOMC Elective #1 <sup>10</sup>	3	English Literature Elective <sup>11</sup>	3
Minor or Elective <sup>6,7</sup>	2	Geography Elective	3
Political Science Elective	3	JOMC Elective #2 <sup>10</sup>	3
Minor or Elective <sup>6,7</sup>	3	Minor or Elective <sup>6,7</sup>	3
<b>Semester Total Hours</b>	<b>14</b>	<b>Semester Total Hours</b>	<b>15</b>

**Total Credit Hours: 120**

<sup>1</sup>This course fulfills the University's general education requirement. If course is not specified, see the General Education course list for course options and discuss with your advisor.

<sup>2</sup>General education requires 12 credit hours in the following areas: 3 hours in humanities and fine arts, 3 hours in social and behavioral sciences, 3 hours in global learning and 3 hours in African-American studies from the General Education course list. See your advisor to ensure you meet these hours.

<sup>3</sup>The Grammar Proficiency Exam must be passed before or during JOMC 220 and to continue in the major.

<sup>4</sup>Two levels of the same foreign language are required.

<sup>5</sup>Consult the University Bulletin for Practicum requirements. Volunteers are encouraged to work in labs.

<sup>6</sup>Discuss minor or electives with your academic advisor.

<sup>7</sup>ACEJMC accreditation requires 72 credit hours outside the major.

<sup>8</sup>Must take JOMC 492 Mass Communication Professional Development Seminar the semester prior to enrolling in JOMC 498.

JOMC 492 Prerequisites for Mass Media Production: Grammar Proficiency Exam, JOMC 206, 220, 244, 259, 275, \*306 or \*375 (\*May be enrolled).

<sup>9</sup>Scientific Reasoning Elective: Must have 7 credit hours in the scientific reasoning with one lab hour (see the General Education course list for course options).

<sup>10</sup>JOMC Electives must be discussed with advisor. JOMC Electives included but not limited to: 200, 201, 203, 204, 205, 208, 240, 241, 245, 250, 255, 322, 339, 340, 351, 352, 353, 354, 356, 357, 366, 370, 399, 417, 418, 468, 475, 499, or 490.

<sup>11</sup>Select from any courses under the following English Department subheadings: African-American Literature, Literature, or Women Writers and Women in Literature.

## MAJOR PROGRAM REQUIREMENTS

*Students must earn a grade of 70 or better in the following course:*

- Grammar Proficiency Exam (GPE)

### COURSE DESCRIPTIONS IN JOURNALISM AND MASS COMMUNICATION

**JOMC 100. Freshman Seminar**

**Credit 1(1-0)**

This course gives students an overview of the various careers and required skills essential to the success of students majoring in Journalism and Mass Communication. (F;S)

**JOMC 102. Interactive Communication in the Digital World (formerly JOMC 202)**

**Credit 3(3-0)**

This course is a survey of mass media in the digital world – including newspapers, magazines, radio, television and multimedia. (F;S;SS)

**JOMC 200. Public Relations Seminar (formerly JOMC 500)**

**Credit 3(3-0)**

A course on a selected aspect of public relations as it relates to advertising and marketing research and other topics such as electronic communication. Topics vary from semester to semester. (DEMAND)



- JOMC 201. Minorities in Mass Media (formerly JOMC 302)** **Credit 3(3-0)**  
 This course presents an overview of past and present contributions of minorities in the areas of film, radio, television, newspapers and magazines. It also examines the roles of minorities in contemporary media, with an emphasis on career opportunities for minorities. Open to university. (F;S;SS)
- JOMC 203. Social Media** **Credit 3(3-0)**  
 This course is the study of traditional and emerging communication-related theories and concepts that help explain the popularity of social media primarily among young people. (F;S;SS)
- JOMC 204. Black Press in the United States (formerly JOMC 403)** **Credit 3(3-0)**  
 This course examines, within a chronological framework, the development of the African American press since the early 1800s. The focus is on significant personalities and issues during major movements in African American history. (F;S;SS)
- JOMC 205. Current Issues in Mass Communication (formerly JOMC 502)** **Credit 3(3-0)**  
 This course is a study of the rights, responsibilities and changing characteristics of the mass media and the problems therein. It includes use of debates, mass communication practitioners and guest speakers. (F;S;SS)
- JOMC 206. Introduction to Video Production (formerly JOMC 406)** **Credit 3(1-4)**  
 This course involves basic methods and techniques in video field and studio productions: announcing, program design, lighting, audio, camera, and electronic techniques are studied. (F;S;SS)
- JOMC 208. Women and Media (formerly JOMC 608)** **Credit 3(3-0)**  
 This course is designed to acquaint students with the major critical approaches to understanding the role of women as auteurs in film as well as editors, writers and producers in all facets of mass communication. The course also addresses gender in cinema with an examination of global diversity issues as they are explored through the readings of major film critics from national and transnational backgrounds. Readings and exercises of leading digital media scholars will also be explored. (F;S;SS)
- JOMC 220. Reporting and Writing Across Media Platforms** **Credit 3(2-2)**  
 This course is a study and practice of writing leads and elements of news stories across media platforms including copy for newspapers, radio, television and online. Students must pass the Grammar Proficiency Exam to complete this course. (F;S;SS)
- JOMC 224. Editing for Print and Online Media (formerly JOMC 324)** **Credit 3(3-0)**  
 This course emphasizes basic copy editing. It includes extensive practical work in copy editing and headline writing for print and online media. Prerequisite: JOMC 220. (F;S;SS)
- JOMC 231. Practicum II** **Credit 1(0-2)**  
 Students serve on the staffs of campus media organizations such as the newspaper, television studio, radio station, or university public relations office. Prerequisite: Sophomore standing. (F;S;SS)
- JOMC 240. Media History** **Credit 3(3-0)**  
 This course examines the relationship between the media and United States history. It recognizes the significance of alternative media such as minority and non-traditional media, and analyses the relationships between media and government to explore and understand the roles they play in history. (F;S;SS)
- JOMC 241. Media Ethics (formerly JOMC 441)** **Credit 3(3-0)**  
 This course will provide students with a working knowledge of journalism ethics, the impact that ethical decision-making by journalists has on society, and the harm that unethical reporting by journalists can do to their careers and to the lives of others. Prerequisites: JOMC 220. (F;S)
- JOMC 244. Script Writing (formerly JOMC 445)** **Credit 3(3-0)**  
 This course focuses on researching and writing treatments and scripts for radio, television, corporation or educational institutions, and online media. Prerequisite: JOMC 220. (F;S;SS)
- JOMC 245. Digital Information Sources** **Credit 3(2-2)**  
 This course involves instruction and practice in utilizing libraries, databases, government records and the Internet for the purpose of obtaining from electronic sources information used by professional communicators. (F;S;SS)
- JOMC 249. Introduction to Multimedia (formerly JOMC 309)** **Credit 3(1-4)**  
 This course presents the basic production elements of multimedia content and production. It develops an understanding of the ethics and application of audio and video production, still photography and the Internet. Prerequisite: JOMC 220. (F;S;SS)
- JOMC 250. Race, Media and Politics (formerly JOMC 550)** **Credit 3(3-0)**  
 This course examines communication as a social behavior incorporating all facets of political science such as foreign policy, the courts, political movements and elections. (F;S;SS)
- JOMC 255. On-Air Delivery** **Credit 2(2-0)**  
 This course emphasizes performance skills essential to successful communication through the electronic media. It focuses on the analysis and delivery of copy, voice quality, guidelines for pronunciation, and techniques for specialized announcing. Prerequisite: JOMC 220. (F;S;SS)
- JOMC 259. Nonlinear Video Editing (formerly JOMC 419)** **Credit 3(1-4)**  
 This course focuses on nonlinear editing and production techniques and practices. A nonlinear video editing system is used to produce public service and commercial announcements, and other types of video programs. Prerequisite: JOMC 220, 206 or 249. (F;S;SS)
- JOMC 275. Introduction to Radio and Digital Audio Production (formerly JOMC 405)** **Credit 3(2-2)**  
 This course focuses on practical experience in digital audio techniques and conventional studio practices; projects in radio announcing; and digital audio production. (F;S;SS)

- JOMC 276. Introduction to Public Relations** **Credit 3(3-0)**  
 This course will emphasize internal and external public relations concepts for corporate, government and non-profit organizations. (F;S;SS)
- JOMC 299. Introduction to Video Production and Editing** **Credit 3(2-2)**  
 The course is an introduction to basic video production and editing. (F;S;SS)
- JOMC 300. Photojournalism** **Credit 3(3-0)**  
 This course involves instruction and practice in photographing and videotaping with an emphasis on journalism techniques. (F;S;SS)
- JOMC 303. Mass Communication Research Methods** **Credit 3(3-0)**  
 This course introduces students to social science research methods commonly used to develop and implement mass communication research. It covers research design, and data collection, analysis and interpretation. Prerequisite: JOMC 220. (F;S;SS)
- JOMC 306. Advanced Video Production (formerly JOMC 507)** **Credit 3(2-2)**  
 This course involves project-based, hands-on, advanced video productions for in-studio and field applications. It places emphasis on producing professional quality programs for various media platforms. Prerequisite: JOMC 220, 206, 244, and 259,. (F;S;SS)
- JOMC 322. Media Management and Legal Issues (formerly JOMC 522)** **Credit 3(3-0)**  
 This course is an examination of the principles and policies of media management; it encompasses electronic and print media. Prerequisites: JOMC 206 and 220 . (F;S;SS)
- JOMC 325. Electronic News Writing (formerly JOMC 425)** **Credit 3(3-0)**  
 This course introduces students to the principles of electronic journalism – including news gathering, reporting, writing, producing, and editing across media platforms. Prerequisite: JOMC 220, 249. (F;S;SS)
- JOMC 329. Advanced Reporting and Writing (formerly JOMC 430)** **Credit 3(3-0)**  
 This course involves advanced training in newsgathering with an emphasis on business and investigative reporting and feature writing. Students will cover assigned beats and produce stories for publication on various media platforms. Prerequisites: JOMC 220, 231. (F;S;SS)
- JOMC 330. Public Relations Writing** **Credit 3(3-0)**  
 This course involves instruction and practice in writing for news, governmental and legislative agencies; it covers press releases and all other writing styles required of public relations specialists. Prerequisites: JOMC 220 and JOMC 276. (F;S;SS)
- JOMC 335. Electronic Reporting and Producing (formerly JOMC 435)** **Credit 3(2-2)**  
 This course focuses on specialized beat reporting and on producing newscasts in multimedia platforms under deadline conditions. Prerequisites: JOMC 220, 249, 325. (F;S;SS)
- JOMC 339. Feature Writing (formerly JOMC 540)** **Credit 3(3-0)**  
 This course is an intensive practicum of feature writing involving background research for in-depth reports on various topics. Prerequisite: JOMC 220. (F;S;SS)
- JOMC 340. Editorial Writing (formerly JOMC 440)** **Credit 3(3-1)**  
 This course is a study of interpretation and comment in writing editorials. It also provides practical experience in writing editorials for newspapers, magazines and online. Prerequisite: JOMC 220, and 224. (F;S;SS)
- JOMC 351. International Communication (formerly JOMC 551)** **Credit 3(3-0)**  
 This course involves readings, discussion and papers on the development of international communication and the role of communication in international relations. Prerequisites: Junior Standing; instructor's permission. (F;S;SS)
- JOMC 352. Communication Theory (formerly JOMC 552)** **Credit 3(3-0)**  
 This course involves readings and discussions examining various communication theories. Students will prepare papers on these theories. Prerequisite: Junior or Senior standing. (F;S;SS)
- JOMC 353. Mass Communication Seminar (formerly JOMC 553)** **Credit 3(3-0)**  
 This course involves research, discussions, and papers on communication topics. Prerequisite: Junior standing; instructor's permission. (F;S;SS)
- JOMC 354. Media Criticism (formerly JOMC 554)** **Credit 3(3-0)**  
 This course involves an explanation of the development of media and the theory and practice of media criticism. Prerequisite: Junior standing; instructor's permission. (DEMAND)
- JOMC 356. Business Reporting (formerly JOMC 556)** **Credit 3(3-0)**  
 This course involves instruction and practice in specific reporting techniques for business and industry. The coverage of trends and strategies will be explored. Prerequisite: Junior standing; instructor's permission. (F;S;SS)
- JOMC 357. Medical and Science Reporting (formerly JOMC 557)** **Credit 3(3-0)**  
 This course involves instruction and practice in specific reporting techniques for science and the medical industries. The coverage of trends and strategies will be explored. Prerequisite: Junior standing; instructor's permission. (DEMAND)
- JOMC 366. Leadership Problems and Media Management** **Credit 3(3-0)**  
 This course involves the analysis of issues facing media executives and their employees. It emphasizes problems and solutions that reflect the concerns of management in print, electronic media, and public relations. Prerequisite: Junior standing. (F)
- JOMC 370. Converged Media Projects (formerly JOMC 470)** **Credit 3(0-6)**  
 This lab course will allow students to apply the principles of writing and reporting in a cross-media environment. Students will

develop two converged media projects and a class website. Following completion of this course, students will receive a certificate. Prerequisites: JOMC 220 and junior or senior standing. **(DEMAND)**

**JOMC 375. Advanced Radio and Digital Audio Production (formerly JOMC 508)** **Credit 3(2-2)**  
 This course involves advanced production technology – including recording, editing and production techniques and concepts. Prerequisites: JOMC 220,244, and 275. **(F;S;SS)**

**JOMC 386. Public Relations Campaigns (formerly JOMC 486)** **Credit 3(3-0)**  
 This course involves instruction in research, planning and evaluation for public relations practice in internal and external business environments including social media. Prerequisite: JOMC 220, 224, 276, 330, and 390. **(F;S;SS)**

**JOMC 390. Public Relations Case Studies** **Credit 3(3-0)**  
 This course focuses on case studies in public relations, emphasizing the success and failure of public relations practices. Prerequisite: JOMC 220, JOMC 276 and Junior Standing. **(F;S;SS)**

**JOMC 392. Cable Television Seminar (formerly JOMC 592)** **Credit 3(3-0)**  
 This course includes a review of the development of cable television in the United States – including the law governing it, technical facilities necessary for an operation, and methods of financing various types of programming. The course will also focus on the advantages and disadvantages faced by minorities in cable programming. Prerequisites: Junior or senior standing. **(F;S;SS)**

**JOMC 393. Communications Law and Ethics (formerly JOMC 493)** **Credit 3(3-0)**  
 This course is a survey of legal and extra-legal limitations on press freedom. The course includes a study of legal issues – including libel, free press, contempt of court, copyright, access law. Prerequisite: Junior or senior standing. **(F;S;SS)**

**JOMC 396. Publication Design and Layout (formerly JOMC 496)** **Credit 3(2-2)**  
 Instruction in the principles of publication design and layout, with actual practice in laboratory publications. Prerequisite: JOMC 220, 224. **(F;S;SS)**

**JOMC 399. Law in Film and Literature (formerly JOMC 558)** **Credit 3(3-0)**  
 This course explores the correlations of legal issues and theories in film and literature through intense examination, analysis and discourse. Prerequisite: JOMC 393 or approval of professor and junior or senior standing. **(F;S;SS)**

**JOMC 417. Advanced Video Production** **Credit 3(3-0)**  
 Video production techniques are developed through the creation of individual video programs. Prerequisite: JOMC 206, and 259. **(DEMAND)**

**JOMC 418. Digital Audio Production** **Credit 3(3-0)**  
 Advanced editing and production techniques and practices are developed utilizing digital production equipment. Prerequisite: JOMC 220, 275, and 375. **(DEMAND)**

**JOMC 424. Design for Print and Online Media** **Credit 3(2-2)**  
 This course emphasizes design and layout. It includes extensive principles of typography and design principles. Prerequisites: JOMC 220, 224. **(F;S;SS)**

**JOMC 437. Field Production** **Credit 3(3-0)**  
 Practical application of out-of-studio production techniques and theories for audio and video programs will be emphasized. Prerequisite: JOMC 220, 206, and 259. **(DEMAND)**

**JOMC 468. Practical Writing (formerly JOMC 368)** **Credit 1(1-1)**  
 This course involves instruction and practice in communication skills for students of media management who will be involved in writing policies and procedures for media organizations. Prerequisite: Senior standing. **(S)**

**JOMC 475. Special Projects** **Credit 3(1-4)**  
 Students produce a weekly television news magazine, documentary production, or newscast. Content may be distributed in a multimedia format. Prerequisite: JOMC 220, 249, 244 or 325, 306 or 325. **(F;S;SS)**

**JOMC 490. Independent Study in Journalism and Mass Communication (formerly JOMC 580)** **Credit 3(3-0)**  
 This course will cover an area of journalism and mass communication to be determined by the student in consultation with the instructor. Prerequisites: Permission of chairperson and instructor, and Junior or Senior standing. **(F;S;SS)**

**JOMC 492. Mass Communication Professional Development Seminar (formerly JOMC 591)** **Credit 2(2-0)**  
 This is an intensive study of professional practices, skills, etiquette and attitudes of the mass communication industry in preparation for an off-campus field learning experience. There are different prerequisites for different concentrations: Mass Media Production (JOMC 492.01) – Grammar Proficiency Exam, JOMC 206, 220,244, 259, 275, 306\* or 375\* ; Multimedia Journalism (JOMC 492.02) – Grammar Proficiency Exam, JOMC 220,224, 249, 329, 335\*; Public Relations (JOMC 492.03) – Grammar Proficiency Exam, JOMC 220, 224, 276, 330, 390, 386\*. This course is not normally offered in the summer. (\*Must be enrolled in or must have completed these courses). **(F;S;SS)**

**JOMC 498. Mass Communication Internship (formerly JOMC 598)** **Credit 3(1-4)**  
 This class is an off-campus journalism and mass communication experience. Academic supervision is provided by faculty members and direction in the field is provided by an approved supervisor. This course must be taken the semester after passing JOMC 492 (Mass Communication Professional Development Seminar). Junior or senior standing. There are different prerequisites for different concentrations: Mass Media Production (JOMC 498.01) – Grammar Proficiency Exam, JOMC 206, 220,244, 259, 275, 306 or 375, 492; Multimedia and Journalism (JOMC 498.02) – Grammar Proficiency Exam, JOMC 220,224, 249, 325, 492; Public Relations (JOMC 498.03) – Grammar Proficiency Exam, JOMC 220, 224, 276, 330, 386, 390,492. **(F;S;SS)**

**JOMC 499. Seminar: Case Studies in International Media Management****Credit 3(3-0)**

This course involves readings, discussions and analyses of case studies in international media management strategies in an effort to highlight the issues confronting managers in international media organizations. Prerequisite: Senior standing. (S)

**DIRECTORY OF FACULTY**

<b>Linda Callahan</b> .....	<b>Professor</b>
B.A., University of North Carolina at Chapel Hill; M.A., Ph.D., Ohio State University	
<b>Michael Carter</b> .....	<b>Lecturer</b>
B.A., Bethany College; M.F.A., University of North Carolina at Greensboro	
<b>Keonte Coleman</b> .....	<b>Lecturer</b>
B.S., Jackson State University; M.A., Syracuse University; Ph.D., University of North Carolina at Greensboro	
<b>Dwight Davis</b> .....	<b>Lecturer</b>
B.A., High Point University; M.A., University of North Carolina at Greensboro	
<b>Ashley Gilmer</b> .....	<b>Lecturer</b>
B.S., North Carolina A&T State University; M.A., Elon University	
<b>Gary Guffey</b> .....	<b>Lecturer</b>
B.S., B.A., High Point University; M.B.A., Wake Forest University; M.A., Indiana University; Ph.D., University of Georgia	
<b>Emily Harris</b> .....	<b>Student Newspaper Advisor and Lecturer</b>
B.A., M.A., Marshall University	
<b>Allen Johnson</b> .....	<b>Lecturer</b>
B.A., M.A., University of North Carolina at Chapel Hill	
<b>Yahya R. Kamalipour</b> .....	<b>Professor</b>
B.A., Minnesota State University; M.A., University of Wisconsin – Superior; Ph.D. University of Missouri – Columbia	
<b>Kevin Keenan</b> .....	<b>Lecturer</b>
B.A., M.S., University of Illinois; Ph.D., University of Georgia	
<b>Arthea Perry</b> .....	<b>Lecturer</b>
B.A., Winston Salem State University; M.F.A., Savannah College of Art and Design	
<b>Kimberly Smith</b> .....	<b>Associate Professor</b>
B.A., Howard University; M.M.C., Ph.D., University of South Carolina	
<b>David Squires</b> .....	<b>Lecturer</b>
B.A., M.A., University of North Carolina at Chapel Hill	
<b>Anthony Welborne</b> .....	<b>Instructor and General Manager, WNAA-FM</b>
B.S., M.S., North Carolina A&T State University	
<b>Sheila Whitley</b> .....	<b>Associate Professor and Interim Dean</b>
A.A., Wingate University; B.A., University of North Carolina at Chapel Hill; M.A., Appalachian State University; Ph.D., University of North Carolina at Greensboro	
<b>Gail Wiggins</b> .....	<b>Assistant Professor and Interim Chairperson</b>
B.A., M.S., North Carolina A&T State University	

**Department of Liberal Studies**<http://www.ncat.edu/cahss/departments/libs/>**Damion Waymer, Chairperson****OBJECTIVES**

The Department of Liberal Studies (with Foreign Languages and Philosophy) offers interdisciplinary degrees designed to prepare students for employment, civic participation and life-long learning in a complex, global environment. A Liberal Studies Bachelor of Arts degree requires students to complete 120 semester hours in designated areas of competency. The program seeks to provide students with a solid liberal arts education. The degree affords students a breadth of academic experience as well as depth in a particular concentration field. The broad-based interdisciplinary nature of the Liberal Studies curriculum provides the knowledge base, communication expertise and analytical skills appropriate for graduate work, entrepreneurial endeavors and numerous careers and occupations in the public and private sectors of the economy. Currently, the Department of Liberal Studies (with Foreign Languages and Philosophy) offers concentration options in African-American Studies Applied Cultural Thought, and Pre-Law. The department also offers degrees that are a part of the Aggies at the Goal Line online degree completion program. The Aggies at the Goal Line Program allows students, with at least 60 completed college credits, who are returning to college after a break, an opportunity to complete a Bachelors of Arts degree in one of three concentration areas. This fully online degree completion option affords non-traditional students the flexibility to continue career and family responsibilities while earning college credits. The Department of Liberal Studies, in collaboration with Elon University School of Law, also offers an Accelerated Pathway to Law School Program (APLS). This major requires formal admission to the program, is open to incoming high school seniors, and is reserved for exceptional academically motivated students to earn a Bachelor of Arts and Juris Doctorate law degrees in five and a half years.

**DEGREES OFFERED**

Liberal Studies (African American Studies) – Bachelor of Arts  
 Liberal Studies (Applied Cultural Thought) – Bachelor of Arts  
 Liberal Studies (Pre-Law) – Bachelor of Arts

**MINORS OFFERED**

French  
 Philosophy  
 Spanish

**GENERAL PROGRAM REQUIREMENTS**

The admission of students to the Liberal Studies undergraduate degree program is based upon general admission requirements of the University. Transfer into the Liberal Studies Program requires a minimum 2.0 cumulative grade point average for most of the concentrations. Pre-Law requires a 2.5 grade point average. A minimum grade of a “C-” is required for all concentration courses and core curriculum requirements.

**FOREIGN LANGUAGE PLACEMENT EXAMINATION**

A foreign language placement examination will be administered to entering freshmen whose programs have a language requirement and who have taken at least two consecutive years of the same foreign language in high school. The placement test is web-based and can be accessed at: <http://webcape.byuhtsc.org/?acct=ncat>. Students will need a Banner ID for taking the test. The highest level in which a student can be placed is the Intermediate II. A student cannot satisfy a language requirement by taking this examination. The foreign language placement examination will be given in order to place students in the appropriate levels only.

**MINORS IN FRENCH, PHILOSOPHY AND SPANISH**

A minor may be achieved in French, Philosophy or Spanish by students who complete a minimum of 18 semester hours of coursework.

**MINOR IN FRENCH**

Students must successfully complete eighteen (18) semester hours in French courses. A minimum of twelve (12) of the eighteen semester hours must be in courses at the 200-level or above. A student must complete at least twenty-four (24) academic credit hours before declaring a minor, and must have a GPA of 2.0. A student may not have more than two minors. The minor will be printed on the student’s transcript but not on the student’s diploma.

	Recommended Course Sequence	
FREN 101	FREN 102	FREN 201
FREN 201	FREN 304	FRENCH elective

**MINOR IN PHILOSOPHY**

Students must successfully complete eighteen (18) semester hours in philosophy coursework at the 200-level or above with a “C” minimum grade in each course. The minor will be printed on the student’s transcript but not on the student’s diploma.

**MINOR IN SPANISH**

Students must successfully complete eighteen (18) semester hours in Spanish courses. A minimum of twelve (12) of the eighteen semester hours must be in courses at the 200-level or above. A student must complete at least twenty-four (24) academic credit hours before declaring a minor, and must have a GPA of 2.0. A student may not have more than two minors. The minor will be printed on the student’s transcript but not on the student’s diploma.

	Recommended Course Sequence	
SPAN 101	SPAN 102	SPAN 201
SPAN 202	SPAN 301	SPAN 302
SPAN 303	SPAN 304	SPAN 305

**STUDY ABROAD**

The Department of Liberal Studies and Foreign Languages encourages all students to study abroad. The Office of International Programs, (336) 334-7104, provides opportunities for A&T students to study in over 100 countries around the world while earning academic credit towards graduation.

**Department of Liberal Studies**  
**Bachelor of Arts in Liberal Studies (African American Studies)**  
**Major Code: LBS\***  
**Concentration Code: AAS**

**Curriculum Guide**

Freshman Year: First Semester		Freshman Year: Second Semester	
FRST 101 (SS)	1	Science and Reasoning (Lab) <sup>2</sup>	4
FOLA xxx <sup>1</sup>	3	FOLA xxx <sup>1</sup>	3
ENGL 100 (WC)	3	ENGL 101	3
MATH 101 (MLAR)	3	MATH 102 or PHIL 102 (MLAR)	3
HFA (GE)	3	SBS <sup>2</sup>	3
AA (GE) <sup>2</sup>	3	<b>Semester Total</b>	<b>16</b>
<b>Semester Total</b>	<b>16</b>		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
LIBS 200	3	MGMT110	3
GL <sup>2</sup>	3	Concentration Studies <sup>3</sup>	6
ENGL 226	3	Business Elective <sup>5</sup>	3
Science and Reasoning (Non-Lab)	3	LIBS or PHIL Elective <sup>6</sup>	3
LIBS 223	3	<b>Semester Total</b>	<b>15</b>
HPED Elective <sup>4</sup>	1		
<b>Semester Total</b>	<b>16</b>		
Junior Year: First Semester		Junior Year: Second Semester	
ENGL 240 or 300	3	LIBS 300	3
Concentration Studies <sup>3</sup>	6	Free Elective	3
LIBS or PHIL Elective <sup>6</sup>	3	Concentration Studies <sup>3</sup>	6
Free Elective	3	LIBS or PHIL Elective <sup>6</sup>	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
Senior Year: First Semester		Senior Year: Second Semester	
LIBS or PHIL Elective <sup>6</sup>	6	SPCH Elective <sup>7</sup>	3
Concentration Studies <sup>3</sup>	3	Free Electives	6
Free Elective	3	LIBS 475	3
LIBS 499	3	<b>Semester Total</b>	<b>12</b>
<b>Semester Total</b>	<b>15</b>		

**Total Credit Hours: 120**

<sup>1</sup>Six credit hours in the same foreign language.

<sup>2</sup>Students must take course from the approved General Education course list and should discuss options with their advisor.

<sup>3</sup>Concentration Studies: ART 310, ENGL 209, 237, 316, 318, 333, 334, 342, 343, 407, 408, HIST 405, JOMC 201, LIBS 209, 223, 239, 241, 242, 243, 244, 245, 311, 316, 317, 319, 398, 399, 403, 407, MUSI 219, 220, 221, PHIL 264, 312, 404, POLI 331, PSYC 230, SOWK 280, or any course approved by the Liberal Studies: African American Studies Coordinator.

<sup>4</sup>Any HPED course without pre-requisites or major restrictions.

<sup>5</sup>Business Elective: Any ACCT, FIN, BUED, ECON or MGMT course.

<sup>6</sup>Student should select a LIBS or PHIL elective in consultation with their academic advisor and consider getting a minor

in philosophy using their elective hours.

<sup>7</sup>Student will take an oral communication course and consider obtaining a minor in Communication Studies using their elective hours.

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C or better in the following courses:*

ENGL 100	LIBS 475
ENGL 101	LIBS 499
LIBS 200	All Concentration Studies Courses

**Department of Liberal Studies**  
**Bachelor of Arts in Liberal Studies (Applied Cultural Thought)**  
**Major Code: LBS\***  
**Concentration Code: ACT**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
African-American Studies (AA) <sup>1,2</sup>	3	ENGL 101 (WC) <sup>1</sup>	3
ENGL 100 (WC) <sup>1</sup>	3	Global Learning (GL) <sup>1,2</sup>	3
FRST 101 (SS) <sup>1</sup>	1	Humanities and Fine Arts (HFA) <sup>1,2</sup>	3
HPED Elective	1	LIBS 200	3
MATH 101 (MLAR) <sup>1</sup>	3	MATH 102 (MLAR) <sup>1</sup>	3
Scientific Reasoning with Lab (SR) <sup>1,3</sup>	4	<b>Semester Total Hours</b>	<b>15</b>
<b>Semester Total Hours</b>	<b>15</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
Elective <sup>4</sup>	3	Foreign Language Level II <sup>5</sup>	3
Foreign Language Level I <sup>5</sup>	3	LIBS Coursework (Any Level) <sup>6</sup>	3
LIBS Coursework (Any Level) <sup>6</sup>	3	Elective <sup>4</sup>	3
Scientific Reasoning without a Lab (SR) <sup>1,3</sup>	3	Elective <sup>4</sup>	3
Social and Behavioral Science (SBS) <sup>1,2</sup>	3	Elective <sup>4</sup>	3
<b>Semester Total Hours</b>	<b>15</b>	<b>Semester Total Hours</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
Elective <sup>4</sup>	3	Elective <sup>4</sup>	3
Elective <sup>4</sup>	3	Elective <sup>4</sup>	3
Elective <sup>4</sup>	3	Elective <sup>4</sup>	3
LIBS Coursework (Any Level) <sup>6</sup>	3	LIBS Coursework (Any Level) <sup>6</sup>	3
LIBS Coursework (300-Level and Higher) <sup>7</sup>	3	LIBS Coursework (300-Level and Higher) <sup>7</sup>	3
<b>Semester Total Hours</b>	<b>15</b>	<b>Semester Total Hours</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
Elective <sup>4</sup>	3	Elective <sup>4</sup>	3
Elective <sup>4</sup>	3	Elective <sup>4</sup>	3
Elective <sup>4</sup>	3	Elective <sup>4</sup>	3
LIBS Coursework (300-Level and Higher) <sup>7</sup>	3	Elective <sup>4</sup>	3
LIBS 475 Senior Seminar/Capstone	3	LIBS Coursework (300-Level and Higher) <sup>7</sup>	3
<b>Semester Total Hours</b>	<b>15</b>	<b>Semester Total Hours</b>	<b>15</b>

**Total Credit Hours: 120**

<sup>1</sup>This course fulfills the University's general education requirement. If course is not specified, see the General Education course list for course options and discuss with your advisor.

<sup>2</sup>General education requires 12 credit hours in the following areas: 3 hours in humanities and fine arts, 3 hours in social and behavioral sciences, 3 hours in global learning and 3 hours in African-American studies from the General Education course list. See your advisor to ensure you meet these hours.

<sup>3</sup>Scientific Reasoning Elective: Must have 7 credit hours in the scientific reasoning with one lab hour (see the General Education course list for course options).

<sup>4</sup>Discuss minor or electives with your academic advisor.

<sup>5</sup>Two levels of the same foreign languages are required.

<sup>6</sup>Must have 12 credit hours of Liberal Studies coursework (courses offered by the Department of Liberal Studies) at any level (100, 200, 300, or 400).

<sup>7</sup>Must have 12 credit hours of Liberal Studies coursework (courses offered by the Department of Liberal Studies) at 300-level or higher.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a Grade of 70 or better in the following courses:*

Foreign Language Level 1 and Level 2	LIBS Coursework 300-Level or Higher (12 hrs.)
LIBS 200 Introduction to Liberal Studies	LIBS 475
LIBS Coursework at any Level (12 hrs.)	

**Department of Liberal Studies**  
**Bachelor of Arts in Liberal Studies (Pre-Law)**  
**Major Code: LBS\***  
**Concentration Code: PLAW**

#### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 101 (SS)	1	ENGL 101 (WC)	3
ENGL 100 (WC)	3	Thought and Reasoning Elective <sup>3</sup>	3
SBS <sup>1</sup>	3	GL <sup>1</sup>	3
Fine Arts Elective <sup>2</sup>	3	Free Elective	3
Thought and Reasoning Elective <sup>3</sup>	3	MATH 101	3
HFA <sup>1</sup>	3	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>16</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
Science and Reasoning (Lab) <sup>1</sup>	4	Science and Reasoning (Non-Lab) <sup>1</sup>	3
BUED 110	3	LES Elective <sup>4</sup>	3
LES Elective <sup>4</sup>	3	PHIL 311 (Required Concentration)	3
AA <sup>1</sup>	3	Concentration Studies <sup>5</sup>	3
PHIL 102 (MLAR, Required Conc.)	3	LIBS 200	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
Free Elective	3	Thought and Reasoning Elective <sup>3</sup>	3
Philosophy Elective Course	3	PHIL 402 (Required Concentration)	3
Concentration Studies <sup>5</sup>	6	PHIL 406 (Required Concentration)	3
LES Elective <sup>4</sup>	3	LIBS 300	3
<b>Semester Total</b>	<b>15</b>	Concentration Studies <sup>5</sup>	3
		<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
Concentration Studies <sup>5</sup>	6	Free Electives	9
Free Electives	4	LES Elective <sup>4</sup>	3
LIBS 499 <sup>6</sup>	3	LIBS 475 Capstone	3
<b>Semester Total</b>	<b>13</b>	<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 120**

<sup>1</sup>Students must take course from the approved General Education course list and should discuss options with their advisor.

<sup>2</sup>Fine Arts Elective: Any ART, DANC, MUSI or THEA course.

<sup>3</sup>Thought and Reasoning Elective: Any CRJS, PHIL, POLI, PSYC, or SOCI course.



<sup>4</sup>LES Elective: Any LIBS, ENGL, or SPCH course 200-level or higher.

<sup>5</sup>Concentration Studies: CRJS 100, 220, 312, 314, 315, 317, 318, 319, 321, 442, 443; HIST 313, 410; JOMC 393; LIBS 225; MGMT 303, 429; PHIL 215, 314, 316, 317; POLI 110, 433, 442, 443, SOCI 406; SOWK 303 or any course approved by the Liberal Studies: Pre-Law Coordinator.

<sup>6</sup>LIBS 499 is the Senior Research Project and may be substituted with any of the following courses: CRJS 537; PHIL 492, POLI 442, 443.

## MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

ENGL 100	PHIL 102
ENGL 101	PHIL 311
LIBS 200	PHIL 402
LIBS 300	PHIL 406
LIBS 475	All Concentration Studies Courses
LIBS 499 or approved substitution	

### COURSE DESCRIPTIONS IN LIBERAL STUDIES

**LIBS 100. Global Understanding**

**Credit 3(3-0)**

This course allows students to learn about other cultures in a face-to-face environment without having to leave their classroom. It is designed to employ interactive technologies giving students the opportunity to communicate with students in different countries in “real time”. The cultural exchange is based on both written and oral communication between classrooms of students in two different nations using videoconferencing and other digital communication tools within the classroom environment and beyond. Cross-listed with GSCP 100.

**LIBS 200. Introduction to Liberal Studies**

**Credit 3(3-0)**

This is a course that provides students with broad knowledge and a strong comprehensive understanding of ethics and civil engagement; that exposes the interconnected relationships among the disciplines, society and humanity. This course surveys each concentration offered in the Liberal Studies Department.

**LIBS 201. Introduction to Race, Class and Culture**

**Credit 3(3-0)**

This course explores the history and theories of race and class and their impact on culture.

**LIBS 202. Introduction to African American Studies**

**Credit 3(3-0)**

This course is designed to provide freshmen and sophomores with a critical understanding of the field of African-American studies. The course will be taught from an interdisciplinary perspective, emphasizing critical thinking and communication skills.

**LIBS 203. Introduction to Women’s Studies**

**Credit 3(3-0)**

This course is designed to provide Women’s Studies concentrators with a critical understanding of the role of women in the U.S. and global economy, society and politics. It will emphasize critical thinking and communication skills through reading, writing and oral presentations.

**LIBS 209. History, Literary Connections and Social Relevance of Hip-Hop**

**Credit 3(3-0)**

This course expands the course offerings of two existing LIBS Concentrations: African-American Studies and Race, Class and Culture. It draws from several disciplines within the Social Sciences and Humanities and contributes to students’ ability to critically analyze the interrelationships between popular culture and the large society.

**LIBS 220. Race, Class and Environmental Quality**

**Credit 3(3-0)**

This course examines the relationships between race, class and environmental quality within the context of a global economy that seeks to maximize profits while minimizing responsibility. It also examines the concept of environmental justice as a means to restore positive connections within communities between environmental use and environmental quality.

**LIBS 221. Genetics, Race and Society**

**Credit 3(3-0)**

This course examines the historical development of theories of “race” in the Western world. It provides the student with a basic understanding of the principles of evolutionary/population biology, genetics, and taxonomy as they relate to biological and social conceptions of race.

**LIBS 223. African-American Culture Through Sports**

**Credit 3(3-0)**

This course examines how sports have historically formed and currently shape the contours of African-American culture. Particular attention is given to such questions as the ethical dimension of segregation, the locus of gender equity, cultural images, and their potential effects for African-American athletes and the African-American community.

- LIBS 225. Race, Crime and Social Injustice** **Credit 3(3-0)**  
 This course examines how social structure impacts the race-crime relationship in terms of theory, policy and practice. It explores the phenomenon from multiple perspectives, including those involved in the criminal justice process. Students are encouraged to think critically about the social construction of race and social class in crime and crime control.
- LIBS 227. Race, Class and Culture in South Africa** **Credit 3(3-0)**  
 This course acquaints students with the economic, social, political and cultural forces that have shaped contemporary South Africa. It explores the role of race, class, gender and culture during the apartheid and post-apartheid eras.
- LIBS 230. The HIV/AIDS Crisis in Africa** **Credit 3(3-0)**  
 This course examines the economic, social, political and cultural forces that shape the HIV/AIDS pandemic in Africa. It explores the reasons for Africa's high prevalence rates, the gendered nature of the pandemic, and the impact of the disease on development and on children.
- LIBS 235. African-American Anti-Imperialism** **Credit 3(3-0)**  
 This course addresses African-American political interventions and debates against European and U.S. colonialism and imperialism during the first three-quarters of the twentieth century. It also examines the parallel development of the U.S. civil rights movement and African-American support for African independence movements.
- LIBS 236. Africana Thought and Practice** **Credit 3(3-0)**  
 This course examines in depth a broad range of Black thought of scholars/activists, from W.E.B. DuBois and Marcus Garvey to Leopold Senghor and Frantz Fanon.
- LIBS 241. Black Situation in TV Comedies** **Credit 3(3-0)**  
 This course will provide students with the skills to critically analyze black situation comedies, from the 1950s to the present. The course will be taught from an interdisciplinary perspective (literature, history, political science, sociology, law) and emphasize critical thinking and communication skills.
- LIBS 242. The Political Economy of African Americans** **Credit 3(3-0)**  
 This course is an analytical examination of how political and economic forces interact to influence African American wealth. The course examines traditional African American products (i.e. music as a commodity) possessing a user or a value and an objective of production (possessing an exchange-value). Current political and economic trends will be juxtaposed with historical expropriations and exploitations. Prerequisite: LIBS 202.
- LIBS 243. African Americans and Education** **Credit 3(3-0)**  
 This course will explore the complex issues of education for African Americans within a 21st century context as a manifestation of The Mis-Education of the Negro, as scribed by Dr. Carter G. Woodson in 1933. Students will learn the role of American schooling and compare public education, private education, and the privatization of education.
- LIBS 244. The African American Male** **Credit 3(3-0)**  
 This course explores the social, cultural, and political dynamics that impact the experience of the African American male in the United States. The course will focus on a variety of Black male issues from post-slavery to the 21st century that include role identification, the criminal justice system, media representations, and the educational system. Students will learn the social construction of masculinity as defined by dominant culture and the effect on the African American male.
- LIBS 245. Global Views: Black Press in the Americas** **Credit 3(3-0)**  
 This interdisciplinary course will review issues that appeared throughout the last century in the press of Black communities in the non-English speaking countries of the Americas. It will examine articles in countries where Afro-descendants constitute a large number such as Brazil and the Dominican Republic, as well as those countries where Blacks are a small minority such as Argentina, Uruguay, and Bolivia. Students will compare conditions in Latin America to those described in the Black press of the United States. Prerequisite: LIBS 200.
- LIBS 301. Ethno-Nationalism and the Reconstruction of Nations** **Credit 3(3-0)**  
 This course examines how the breakup of the USSR led to the rise of ethno-nationalism in the process of national reconstruction. Exploring the myths, symbols and histories of those competing populations within the Soviet Union or its power, we discover a paradigm that applies to the wider postcolonial world as well.
- LIBS 302. Media Analysis** **Credit 3(3-0)**  
 This course examines the shaping of information in popular media, with special emphasis on the creation of news. Examining institutional configurations and conglomeration, it focuses on the role of news media within national discourses, on the shaping of ideological consensus and the marginalization of dissent. It asks questions about the limitations of political discourse, about bias and objectivity, about how news is defined, presented, and disseminated.
- LIBS 303. Consumer Culture** **Credit 3(3-0)**  
 This course examines the creation of consumer culture during the last two centuries. It looks at the development of advertising, public relations, mass marketing, and the construction of consumer consciousness. It also considers the consequences of global consumerism upon the environment, cultural tradition, human social relations and economic conditions.
- LIBS 304. The American South** **Credit 3(3-0)**  
 This course examines mythologies and realities of the American South: the antebellum period, the Civil War, Reconstruction, the Civil Rights era, and the New South. It looks at how these historical moments have been written and rewritten, in academic and popular discourses, in response to racial beliefs and ideological needs. It considers the South as a geographical, social, and cultural entity and as an important element within the shaping of an American national mythos.

- LIBS 305. Race and Class in Caribbean Culture** **Credit 3(3-0)**  
 This course will examine the ethnic, racial and cultural diversity of the Caribbean, including the impact of foreign cultures on the area, and the export of its unique cultural forms to the global society.
- LIBS 306. Gender and Technology** **Credit 3(3-0)**  
 This course will explore technology's interaction with the concept of gender and how gender is embodied in technologies, and conversely, how technologies shape societal notions of gender. Students will critically assess the gender relations produced in areas such as entertainment and games, work, identity, education, culture, globalism, race and ethnicity.
- LIBS 307. Food and The Global Community** **Credit 3(3-0)**  
 This course uses multidisciplinary perspectives to examine the connections between food and human life ways. Focusing on varied ethnic food traditions and people around the world, this course will explore 1) the interplay of class and gender in the preparation of food, 2) the role of political and economic power in the accessibility and distribution of food, and 3) the religious and cultural symbolism of eating.
- LIBS 308. Historical, Social, and Cultural Perspectives of Technology** **Credit 3(3-0)**  
 This course explores the interrelationships between the human race and technology, the range of determinism between the two, and the possible paths for technology and humans in the global world. Global perspectives -- including Eastern and western, Northern and Southern -- will be covered in the course.
- LIBS 309. Becoming Evil: How Ordinary People Commit Extraordinary Violence** **Credit 3(3-0)**  
 This course composes a critical study of the notion of "evil" by considering how the term has been employed historically to explain and sometimes justify radical violence such as genocide. It will consider the multi-disciplinary spectrum of theories that seek to explain how ordinary people come to participate in extraordinary acts of brutality and mass murder of their fellow human beings.
- LIBS 310. The Historical Origins of Environmental Crisis** **Credit 3(3-0)**  
 This course will deal with man's changing philosophical and technological relationship with his natural environment since the start of the Industrial Revolution. Cross-listed with HIST 307.
- LIBS 311. The Idea of Africa** **Credit 3(3-0)**  
 This course will provide students with the skills to critically analyze the way Africa has been portrayed historically in the West, in fiction, the academy, books, magazines, film, television and other popular media. The development of critical thinking skills in written and oral communication are at the core of this course which asks students to rethink common assumptions, perceptions and stereotypes.
- LIBS 312. Gender and Development in Africa** **Credit 3(3-0)**  
 This course examines women's roles in African economies, the gendered nature of legal rights under customary law, political participation, female genital mutilation, and the impact of conflict, war, genocide and the HIV/AIDS pandemic on African women.
- LIBS 313. Human Rights: An Interdisciplinary and Global Approach** **Credit 3(3-0)**  
 What are "human rights"? Who defines this concept and sets its standards? Has the concept changed over time? This course takes an interdisciplinary and global approach to the study human rights. It looks at specific "human rights" violations of our time, including honor killing, bride burning, genital mutilation, death by stoning, torture and child labor. Students will learn about the social, cultural, economic, political and legal contexts within which certain practices deemed human rights violations take place and be confronted with the ultimate question of "Can I judge the practices of people living in other cultures?"
- LIBS 314. Being Human** **Credit 3(3-0)**  
 This course represents a "workshop" or "think tank" style exploration that considers a spectrum of definitions of human being, challenging each for its strengths and weaknesses for promoting the full morally-rich human life, designated by the ancients as "human flourishing". Passages from ancient Greek, Roman, existentialist, and postmodern Jewish philosophy, Christian, Hebrew, Muslim and Buddhist scriptures, and modern rationalist/scientific definitions will be considered and compared, with the objective of determining which definitions have the potential to be most morally edifying. The course will address such questions as whether gender and race are essential or secondary qualities of human being, and how ideologies of individualism and communalism affect human modes of being-in-the-world.
- LIBS 315. World Views on Death and Dying** **Credit 3(3-0)**  
 This course examines issues and concepts involved in death and dying across societies and cultures from the perspectives of the social, natural and physical sciences, and the humanities. Issues such as rituals, artificial life-support, euthanasia, hospice care, and suicide are examined in Western and non-Western cultures. Prerequisite: LIBS 200.
- LIBS 316. Hip-Hop Discourse** **Credit 3(3-0)**  
 This course will analyze, critique, and discuss the literature and critical discourses of the most current theoretical, political, and social dialogue/texts that provide a framework for class discussion and writing assignments. Some of the major areas of focus are as follows: the major movements and themes of hip-hop; the relationship between the predominant culture and hip-hop; the new Black Renaissance - hip-hop culture literature; and the commercialization of hip-hop. Cross-listed with ENGL 316.
- LIBS 317. The Films of Spike Lee** **Credit 3(3-0)**  
 This course takes a critical analysis approach to the study of the work of Spike Lee. It examines the representations of race, class, gender, and sexuality in Lee's "joints" from an interdisciplinary perspective. The course looks critically at Lee's work within the broad historical framework of African American cultural history and explores Lee's engagement with numerous controversial social, political, and economic issues in American society.

- LIBS 318. Conflict and Its Transformation: Theory** **Credit 3(3-0)**  
 This course educates students in Conflict Theory, a range of strategies for navigating diverse differences, and it offers an approach for negotiating peaceful solutions to business, economic, social, and political problems in both our local communities and global societies.
- LIBS 319. Critical Discourse Analysis (CDA)** **Credit 3(3-0)**  
 Students in this course will critically study language as a social practice using a multidisciplinary approach. Critical Discourse Analysis is taught as a research methodology for language structures and it explores the relationship among these structures within cultural and situational contexts. Prerequisite: LIBS 200.
- LIBS 320. Doing Culture** **Credit 3(3-0)**  
 This course examines the significance of culture in human societies. It assumes that culture is more than the objects of cultural production. The course explores how culture is the continual construction and reconstruction of social, economic and political institutions.
- LIBS 321. One World Culture** **Credit 3(3-0)**  
 This course examines the concept of one world culture from an interdisciplinary viewpoint. The key questions the course will address include: Is one culture world emerging? If so, what are its advantages and disadvantages for individuals, communities, and nation states? How will human identities change with the emergence of one world culture? Students will learn how one world culture is changing the social, economic, legal and political contexts of our lives.
- LIBS 322. World Religions and Society** **Credit 3(3-0)**  
 This course examines interactions between religion and societies as factors influencing the formation of community, the breakdown of community, and reconciliation within and between communities. Contemporary, historical, and nonwestern examples will be explored. Interrelations between religion and societies will be explored from different disciplinary perspectives, including those of psychology, history, sociology, philosophy, and evolutionary biology.
- LIBS 330. Law and Humanities** **Credit 3(3-0)**  
 This course is an interdisciplinary topical course in legal concepts and issues and the ways in which these have been depicted in the humanities: literature, film, the arts, music and popular culture. Some of the topics that will be examined are: Freedom and the Law, Justice and Equality, Freedom and Responsibility, and Justice, Rights, and the Body. Students will explore the impact these various ways of depicting the law and legal concepts have on our understanding of ourselves, our communities, and the nation state.
- LIBS 335. Disparities in Public Health Care: The Effects of Race, Gender and Class** **Credit 3(3-0)**  
 This course is designed to examine the disparities that exist among the categories of race, gender, and class in relationship to health care. The course focuses on six areas of major health inequities, to include infant mortality, cancer, cardiovascular disease, diabetes, HIV/AIDS, and immunizations.
- LIBS 398. Cultural Foundations I** **Credit 3(3-0)**  
 This course is the introductory level of understanding different cultures from a global perspective and learning what “globalization” means in various contexts to include explorations of the arts (literature, music, and entertainment industry), social sciences, and ethical reasoning. Prerequisites: LIBS 200 or consent of instructor.
- LIBS 399. Cultural Foundations II** **Credit 3(3-0)**  
 This course is the intermediate level of cultural foundations from a global perspective: through literature, music, the entertainment industry, the social sciences, and ethical reasoning. Students will compare and contrast world-view/perceptions and critically analyze depictions of Americans. Prerequisites: LIBS 200, 398, or consent of instructor.
- LIBS 400. Passion Politics: Beyond bell hooks** **Credit 3(3-0)**  
 Passionate Politics: Beyond bell hooks is a course that centers on feminist theory, its reinterpretation, and its application. It allows students to differentiate feminist perspectives to better understand the diversity of feminist thought. Prerequisite: LIBS 200.
- LIBS 401. War and Culture** **Credit 3(3-0)**  
 This course investigates the nature of war, its causes and consequences, its depiction in news accounts, memoirs, literary texts, and popular media. This course asks questions about the function of war economically and ideologically. It considers the intersection of war with race and gender. It also considers the ways war is commonly represented within national discourses.
- LIBS 402. Historical Memory** **Credit 3(3-0)**  
 This course examines the nature of historical truth within a mass-mediated culture and against a prevailing postmodern skepticism. It also looks at the processes by which historical events are defined and represented. It asks questions about the intersections of nationalism and history, about the determining power of school curricula, textbooks, museums, academic experts, and popular media.
- LIBS 403. Black Feminist Thought** **Credit 3(3-0)**  
 Black Feminist Thought is a course about the determination for women's empowerment and social justice in America from slavery to the 21st century. It examines feminism and its multiple meanings and controversies and identifies cross- generational themes and tensions. Prerequisite: LIBS 200.
- LIBS 404. Reclaiming Democracy** **Credit 4(3-1)**  
 This multi-institutional, interdisciplinary course examines and models democracy by bringing together students and faculty from local colleges and universities for experiential learning projects within the greater Greensboro community. Students will explore public policy, governance, citizen engagement, economic justice and other issues at the microcosm level. Prerequisite: Junior or senior standing.

**LIBS 406. Cultural Foundations III** **Credit 3(3-0)**

This course is the advanced level of cultural foundations from a global perspective. This course will identify political, social, legal, and economic impact(s) of transnational corporations; examine concepts of industrialization/urbanization along with concepts of colonialism/de-colonialism/and neocolonialism; and, present an epistemology of mind, language, gender, and sexual identity. Prerequisite: LIBS 399.

**LIBS 407. Cultivating Humanity** **Credit 3(3-0)**

This course examines Socratic reason and cosmopolitanism grounded in the classical origins of the Western tradition. Through cross-cultural study and application, students will construct a “world-citizen” value set derived from the philosophy of Martha Nussbaum and apply geography, world religion, world history, and the humanities to examine creative solutions to alleviate social ills. Prerequisite: LIBS 200.

**LIBS 408. Law, Humanities & the Social Sciences** **Credit 3(3-0)**

This interdisciplinary topical course examines legal concepts and issues as depicted in the humanities and the social sciences. Topics include freedom and the law, justice and equality, and freedom and responsibility. Prerequisite: Junior or senior standing. Cross listed with PHIL 408.

**LIBS 409. Science and Religion** **Credit 3(3-0)**

This course explores the relationship between science and religion from an interdisciplinary perspective through readings, films, and case studies. Are scientific and religious ways of knowing compatible, conflictory, or how might these disciplines coexist and influence each other? Prerequisite: Junior or Senior standing. Cross listed with PHIL 409.

**LIBS 475. Senior Seminar/Capstone** **Credit 3(3-0)**

This course is a seminar for seniors to engage with critical theory and apply it to contemporary issues and problems. Concrete evidence of multidimensional and integrated student knowledge, skills, and abilities are documented as students are taught electronic portfolio preparation for career prospects and postgraduate education. Prerequisites: LIBS 200, LIBS 300, Liberal Studies major w/senior standing.

**LIBS 494. Independent Study I** **Credit 3(3-0)**

This course is designed for students to conduct advanced research and study on a special topic.

**LIBS 496. Independent Study II** **Credit 3(3-0)**

This course is designed for students to conduct advanced research and study on a special topic. Prerequisite: LIBS 200, 300.

**LIBS 497. Reading and Writing Cultural Critiques** **Credit 3(3-0)**

This writing intensive course is intended to prepare students to write the cultural critique -- popular and academic. The course emphasizes both critical analysis and writing, with particular attention to writing for a specific setting and audience. By the end of the course, students should be able to produce a conference paper or publishable essay.

**COURSE DESCRIPTIONS IN FOREIGN LANGUAGES**  
**FRENCH**

**FREN 101. Elementary French I\*** **Credit 3(3-0)**

This is a course for beginners which emphasizes the four language skills-listening, speaking, reading, and writing. (F;S)

**FREN 102. Elementary French II\*** **Credit 3(3-0)**

This is a continuation of FOLA 100 with further emphasis placed on the oral-aural approach. Prerequisite: FREN 101 or equivalent. (F;S)

**FREN 201. Intermediate French I\*** **Credit 3(3-0)**

This course consists of a brief review of pronunciation. Grammar is stressed with emphasis on cultural readings. Prerequisites: FREN 101 and 102, or two units of high school French. (F)

**FREN 202. Intermediate French II\*** **Credit 3(3-0)**

This course is a continuation of FREN 201. Stress is placed on grammar, cultural reading and conversation. Prerequisite: FREN 201 or equivalent. (S)

**FREN 301. French Composition** **Credit 3(3-0)**

This intensive review focuses on refining, through written expression, the grammar structures learned in previous courses. The course will prepare students for formal, academic writing, while expanding their vocabulary and polishing their style. It is conducted in French. Prerequisite: FREN 202. (F;S)

**FREN 302. French Grammar I** **Credit 3(3-0)**

An intensive study of French grammar, this course pays particular attention to the more challenging structures of the French verb system, such as the perfect and the imperfect, the subjunctive, and the sequence of tenses in multiple-clause constructions. It is conducted in French. Prerequisite: FREN 201. (F;S)

**FREN 303. French Grammar II** **Credit 3(3-0)**

This course is a continuation of FREN 302. French Grammar I. Among the topics examined are: the passive voice, impersonal constructions, relative clauses, adverbial clauses, and uses of *por* and *para*. It is conducted in French. Prerequisites: FREN 302 or consent of instructor. (F;S)

- FREN 304. Phonetics** **Credit 3(3-0)**  
 This is a course in French sounds and diction. It is required of all students majoring and minoring in French, and recommended for those who wish to improve pronunciation. Prerequisites: FREN 201 and 202. (F;S)
- FREN 305. Intermediate French Conversation** **Credit 3(3-0)**  
 This course provides practice in oral French, focusing principally on the real-life contexts of social, commercial and workplace settings. In addition, practice is provided in discussing topics of current interest, using national and international media as springboards for conversation. The course is conducted in French. It may be taken simultaneously with FREN 202. Prerequisites: FREN 201-202 or consent of instructor. (F;S)
- FREN 306. Advanced French Conversation** **Credit 3(3-0)**  
 This course offers students intensive training in self-expression and an opportunity to improve pronunciation, diction, reading and speaking. Prerequisite: FREN 305. (F;S)
- FREN 400. Introduction to Literary Analysis** **Credit 3(3-0)**  
 This course teaches the basic techniques of literary analysis, as well as the terminology and concepts used in understanding a variety of literary genres. Students will read both Caribbean and Afro-French texts. It is conducted in French. Prerequisites: FREN 202 and FREN 301. (F;S)
- FREN 401. Afro-French Expression** **Credit 3(3-0)**  
 The course is designed to provide the student with a general knowledge of Afro-French literature in its many manifestations throughout Francophone Africa and the Caribbean. Representative texts will be read within the context of the socio-historic and cultural influences that have shaped the black experience in Francophone Africa. The course is conducted in French. (F;S)
- FREN 402. Survey of French Literature I – The Middle Ages through the Enlightenment** **Credit 3(3-0)**  
 A study of representative works and literary movements in French literature from the Middle Ages through the Enlightenment. Students will learn to use the methods and language of literary analysis. Prerequisite: FREN 400. (F;S)
- FREN 403. Survey of French Literature II – Romanticism through the New Novel** **Credit 3(3-0)**  
 A study of representative works and literary movements in French literature of the nineteenth and twentieth centuries. Students will learn to use the methods and language of literary analysis. Prerequisite: FREN 400 and FREN 402 or consent of instructor. (F;S)
- FREN 404. French Civilization** **Credit 3(3-0)**  
 This course is a general survey of the history of France, with emphasis on the social, political and economic development designed to give students an understanding of present conditions and events. A detailed study of such French institutions as art, music, and education is included. This course is also offered in conjunction with reports of collateral readings. (F;S)
- FREN 406. Special Topics** **Credit 3(3-0)**  
 Selected topics in French. The topics will vary from semester to semester. Descriptions will be available from academic advisors. May be repeated for credit when topic changes. Prerequisite: FREN 400. (F;S)
- FREN 428. Special Topics** **Credit 3(3-0)**  
 Second Lan Teach and Learning. Prerequisite: Consent of instructor. (F;S)
- FREN 452. Introduction to Business French** **Credit 3(3-0)**  
 This course will enhance the student's ability to communicate in a multilingual environment. It will equip students with the necessary tools to conduct international business transactions. The course is conducted in French. Prerequisites: FREN 201 and 202. (F;S)
- FREN 453. Advanced French for Business** **Credit 3(3-0)**  
 This course completes FREN 452, instructing students in more advanced vocabulary and grammar, as well as offering further practice employing French in a business context. The course is conducted in French. Prerequisite: FREN 452.
- FREN 456. French Studies Abroad** **Credit 3(3-0)**  
 Primarily intended for transfer credit earned abroad in courses on French language, civilization, or culture. 1-16 credits per semester. Prerequisite: Consent of instructor. (F;S)
- FREN 457. French Conversation and Phonetics** **Credit 3(3-0)**  
 This course completes FREN 305, Intermediate French Conversation. Current techniques and their uses in attaining mastery in oral French. Prerequisites: FREN 305 or consent of instructor. (F;S)
- FREN 458. Selected Tales, Legends and Proverbs on Francophone Africa** **Credit 3(3-0)**  
 This course on the Francophone tales of Africa will introduce the student to African culture and oral literary thoughts. Based on the analysis of these tales and proverbs, students will gain a better understanding of the African family structure and social organization. The course is conducted in French. Prerequisite: FREN 305. (F;S)
- FREN 459. Selected Poetry and Prose from Francophone Writers of Central Africa** **Credit 3(3-0)**  
 The study of poetry and prose from francophone writers of Central Africa is an advanced francophone course. Its goal is to give the students a solid knowledge through analysis of poetry and prose of African lyricism, politics, and philosophical themes. The course is conducted in French. Prerequisites: FREN 305 and 306. (F;S)
- FREN 460. French Literature of the Seventeenth Century** **Credit 3(3-0)**  
 This course presents Classicism through masterpieces of Corneille, Racine, Moliere and other authors of the "Golden Period" in French letters. (F;S)
- FREN 461. French Literature in the Eighteenth Century** **Credit 3(3-0)**  
 This course presents the life and works of Montesquieu, Voltaire, and Rousseau as the main emphasis. (F;S)

<b>FREN 462. French Literature of the Nineteenth Century</b>	<b>Credit 3(3-0)</b>
The great literary currents of the nineteenth century Romanticism and Realism will be studied. (F;S)	
<b>FREN 463. The French Theatre</b>	<b>Credit 3(3-0)</b>
This course is a thorough study of the French theatre from the Middle Ages to the present. (F;S)	
<b>FREN 464. The French Novel</b>	<b>Credit 3(3-0)</b>
The novel from the Seventeenth Century to the present will be studied. (F;S)	
<b>FREN 465. French Syntax</b>	<b>Credit 3(3-0)</b>
This course is designed to teach grammar on the advanced level. (F;S)	
<b>FREN 466. Contemporary French Literature</b>	<b>Credit 3(3-0)</b>
This course deals with the chief writers and literary currents from 1900 to the present. (F;S)	
<b>FREN 485. Selected Afro-French Poets</b>	<b>Credit 3(3-0)</b>
This course is the study and analysis of the most representative works of Afro-French poets of South America, Africa and the Caribbean. Prerequisite: FREN 305, 306 or consent of instructor. (F;S)	
<b>FREN 490. Independent Study in Foreign Languages</b>	<b>Credit 3(3-0)</b>
This course includes independent study and research in a special area of the foreign language. Prerequisites: FREN 201 or 304. (F;S)	
<b>FREN 492. Seminar in Foreign Languages</b>	<b>Credit 3(3-0)</b>
This course includes discussion of readings and special topics in French. Presentations from students, faculty and guest lecturers will supplement the discussion. Prerequisites: FREN 202 or 304. (F;S)	
<i>*Students are required to purchase supplemental materials for this course.</i>	

## SPANISH

<b>SPAN 101. Elementary Spanish I*</b>	<b>Credit 3(3-0)</b>
This course for beginners focuses on the four language skills of listening, speaking, reading, and writing. Students will be asked to take the Spanish Placement Test. The course is conducted primarily in Spanish. (F;S;SS)	
<b>SPAN 102. Elementary Spanish II*</b>	<b>Credit 3(3-0)</b>
This course is the continuation of SPAN 101. It continues practice in the four language skills of listening, speaking, reading, and writing. Students will be asked to take the Spanish Placement Test. The course is conducted primarily in Spanish. Prerequisite: SPAN 101 or consent of instructor. (F;S;SS)	
<b>SPAN 201. Intermediate Spanish I*</b>	<b>Credit 3(3-0)</b>
This course is a review of elementary Spanish and offers further study of vocabulary, grammar, and syntax. Emphasis is placed on improving the four basic skills of language acquisition. Intermediate-level readings in literature and culture, as well as a service-learning component, complement the study of language. Students will be asked to take the Spanish Placement Test. The course is conducted in Spanish. Prerequisite: SPAN 102 or consent of instructor. (F;S;SS)	
<b>SPAN 202. Intermediate Spanish II*</b>	<b>Credit 3(3-0)</b>
The sequel to SPAN 201, this course reviews and completes the basic study of Spanish grammar. Practice continues with the four skills of listening, speaking, reading, and writing. Intermediate-level readings in literature and culture, as well as a service-learning component, complement the study of language. Students will be asked to take the Spanish Placement Test. The course is conducted in Spanish. Prerequisite: SPAN 201 or consent of instructor. (F;S;SS)	
<b>SPAN 203. Elementary Spanish Conversation Composition*</b>	<b>Credit 3(3-0)</b>
This course begins the Spanish conversation sequence, instructing students in more advanced vocabulary and grammar. Students will develop their conversational skills at different levels (interpersonal, presentations) on a variety of literary and cultural topics. Students will be asked to take the Spanish Placement Test. The course is conducted in Spanish. Prerequisites: SPAN 102 or consent of instructor. (F;S)	
<b>SPAN 301. Spanish Composition</b>	<b>Credit 3(3-0)</b>
This intensive review focuses on refining, through written expression, the grammar structures learned in previous courses. The course will prepare students for formal, academic writing, while expanding their vocabulary and polishing their style. It is conducted in Spanish. Prerequisite: SPAN 202. (F;S)	
<b>SPAN 302. Spanish Grammar I</b>	<b>Credit 3(3-0)</b>
An intensive study of Spanish grammar, this course pays particular attention to the more challenging structures of the Spanish verb system, such as the preterit and the imperfect, the subjunctive, and the sequence of tenses in multiple-clause constructions. It is conducted in Spanish. Prerequisite: SPAN 201. (F;S)	
<b>SPAN 303. Spanish Grammar II</b>	<b>Credit 3(3-0)</b>
This course is a continuation of SPAN 302, Spanish Grammar I. Among the topics examined are: The passive voice, impersonal constructions, relative clauses, adverbial clauses, and uses of <i>por</i> and <i>para</i> . It is conducted in Spanish. Prerequisite: SPAN 302 or consent of instructor. (F;S)	
<b>SPAN 304. Spanish Phonetics</b>	<b>Credit 3(3-0)</b>
This course includes a systematic analysis of speech sounds, and the operation of phonetic laws of the Spanish language. It is conducted in Spanish. Prerequisite: Span 201 or consent of instructor. (F;S)	
<b>SPAN 305. Intermediate Spanish Conversation</b>	<b>Credit 3(3-0)</b>
This course provides practice in oral Spanish, focusing principally on the real-life contexts of social, commercial, and workplace settings. In addition, practice is provided in discussing topics of current interest, using national and international media as	

springboards for conversation. The course is conducted in Spanish. It may be taken simultaneously with SPAN 202. Prerequisite: SPAN 201 or consent of instructor. (F;S)

**SPAN 306. Latin Culture in the United States** **Credit 3(3-0)**

This course traces the history of Latino influence in the United States, from the arrival of the Spanish in the 1500s to the massive immigration of Latin Americans in the 20th and 21st centuries. It seeks to explain the reasons behind the migration northward, and to show how the Latino presence has changed how we think about race and ethnicity, education and language, labor and capital, religion and politics. The class is conducted in English. (F;S)

**SPAN 400. Introduction to Literary Analysis** **Credit 3(3-0)**

This course teaches the basic techniques of literary analysis, as well as the terminology and concepts used in understanding a variety of literary genres. Students will read both Latin American and Peninsular texts. It is conducted in Spanish. Prerequisite: SPAN 202 and SPAN 301. (F;S)

**SPAN 401. Afro-Hispanic Literature** **Credit 3(3-0)**

The course is designed to provide the student with a general knowledge of Afro-Hispanic literature in its many manifestations throughout Spanish America and the Caribbean. Representative texts will be read within the context of the socio- historic and cultural influences that have shaped the black experience in Spanish America. The course is conducted in Spanish. Prerequisite: SPAN 400. (F;S)

**SPAN 402. Survey of Latin American Literature I** **Credit 3(3-0)**

This course is an overview of early Latin American literature, beginning with the Pre-Columbian period and ending with the wars of independence. It covers literary texts from several genres and offers a sampling of Latin America's complex and diverse cultures. The works of canonical and non-canonical writers will be studied through close readings of the texts and the application of literary analysis techniques. It is conducted in Spanish. Prerequisite: SPAN 400. (F;S)

**SPAN 403. Survey of Latin American Literature II** **Credit 3(3-0)**

This course covers representative texts from a variety of genres. Beginning with the *modernista* movement and ending at the present day, it examines the Latin American "Boom," Latino writers in the U.S., and testimonial literature, among others. It is conducted in Spanish. Prerequisite: SPAN 400, and SPAN 402 or consent of instructor. (F;S)

**SPAN 404. Survey of Spanish Literature I** **Credit 3(3-0)**

This course studies the literature of Spain from the Cid through the Golden Age. It is conducted in Spanish. Prerequisite: SPAN 400. (F;S)

**SPAN 405. Survey of Spanish Literature II** **Credit 3(3-0)**

A continuation of SPAN 404, this course focuses on the literature of Spain from the seventeenth century to the present. It is conducted in Spanish. Prerequisite: SPAN 400. (F;S)

**SPAN 406. Special Topics** **Credit 3(3-0)**

Topics to be studied may include linguistics, cinema, and specific literary periods, genres, or figures. It is conducted in Spanish. Prerequisite: SPAN 400. (F;S)

**SPAN 451. Spanish and Latino Culture** **Credit 3(3-0)**

This course introduces students to the geography, history, literature, arts, and economics of the diverse peoples of Spain and the Americas. The course is conducted in Spanish. Prerequisite: SPAN 202 or consent of instructor. (F;S)

**SPAN 452. Introduction to Spanish for Business** **Credit 3(3-0)**

This course is designed to enhance the student's ability to relate to a business environment in an increasingly important commercial language both nationally and internationally. It will introduce the student to the vocabulary and discourse related to business topics and functional areas as well as to the cultural setting of business. These topics will be interwoven with a grammar review taught in a business context. The course will be conducted in Spanish and will include some translating activities. Prerequisite: SPAN 202. (F;S)

**SPAN 453. Advanced Spanish for Business** **Credit 3(3-0)**

This course completes SPAN 452, instructing students in more advanced vocabulary and grammar, as well as offering further practice employing Spanish in a business context. The course is conducted in Spanish. Prerequisite: SPAN 452. (F;S)

**SPAN 454. Introduction to Spanish for Health Care Professionals** **Credit 3(3-0)**

This course is designed to enhance the student's ability to succeed in a medical environment in which a facility with both English and Spanish is beneficial or required. SPAN 454 introduces students to vocabulary and modes of discourse related to the health care profession, as well as to a variety of health care settings. The course will be conducted in Spanish and will include grammar review and translation activities. Prerequisite: SPAN 202. (F;S)

**SPAN 455. Advanced Spanish for Health Care Professionals** **Credit 3(3-0)**

This course completes SPAN 454, instructing students in more advanced vocabulary and grammar, as well as offering further practice employing Spanish in a health care context. It is conducted in Spanish. Prerequisite: SPAN 454. (F;S)

**SPAN 456. Americanos: Latino Culture in the United States** **Credit 3(3-0)**

This course studies different topics affecting Hispanic-Americans in the United States, like reasons for emigrating, U.S. immigration policy, assimilation, discrimination, affirmative action, bilingual education, alliance and conflict with African Americans in political and economic arenas, etc. The class will be conducted in Spanish, with an emphasis on discussion and composition. Prerequisite: SPAN 202 or consent of instructor. (F;S)



**SPAN 457. Spanish for Law Enforcement** **Credit 3(3-0)**

This course includes vocabulary, commands, and other terminology useful for the student aiming for a Law Enforcement career. Realistic situation (Miranda warning, high-stress circumstances, crime descriptions, finding out what happened) will be included. The class is conducted in Spanish. Prerequisites: SPAN 202 or consent of instructor.

**SPAN 490. Independent Study in Foreign Languages** **Credit 3(3-0)**

This course includes independent study and research in a special area of the foreign language. Prerequisite: SPAN 201 or SPAN 305. (F;S)

**SPAN 492. Seminar in Foreign Languages** **Credit 3(3-0)**

This course includes discussion of readings and special topics in French and Spanish. Presentations from students, faculty and guest lecturers will supplement the discussion. Papers employing research techniques in literary studies are required of all candidates for a degree with concentrations within the Foreign Languages Department. Prerequisite: SPAN 202 or SPAN 305. (F;S)

## GERMAN

**FOLA 102. Elementary German I** **Credit 3(3-0)**

The fundamentals of pronunciation and grammar will be studied. Attention is given to prepared and sight translations and vocabulary building. (F;S)

**FOLA 103. Elementary German II\*** **Credit 3(3-0)**

This course continues the emphasis on grammar, vocabulary building, prepared and sight translations. Maximum attention given to graded readings in German prose and drama. (F;S)

**FOLA 202. German Readings in the Natural Social Sciences and Technical Field** **Credit 3(3-0)**

This course includes individualized readings in the natural, social sciences and technical fields for students desirous of developing competency in German. (F;S)

**FOLA 204. Introduction to Business German** **Credit 3(3-0)**

This course will introduce students to the German language of everyday business dealings. Emphasis will be placed on those aspects that have an impact on the average citizen such as daily business dealings, social and environmental problems, and the dependence of the population on international trade. Prerequisites: FOLA 102 and 103. (F;S)

**FOLA 420. Conversational German** **Credit 3(3-0)**

This course includes intensive practice in everyday German. Prerequisite: German 102, 103, or approval of instructor. (F;S)

**FOLA 422. Intermediate German I** **Credit 3(3-0)**

This course is open to students who have completed German 102 and 103. The students read a cross-section of the simpler writings in German literature and German newspapers. (F;S)

**FOLA 423. Intermediate German II** **Credit 3(3-0)**

This course is a continuation of FOLA 422. Readings from German literature are included. (F;S)

**FOLA 424. Afro-German Studies** **Credit 3(3-0)**

Afro-German Studies will explore and discuss manuscripts either written by or written about Africans living in Germany and manuscripts written about or by Germans living in Africa. The manuscripts will be older and written in the older German script: some of the manuscripts will be current and modern. Prerequisites: FOLA 422 and 423. (F;S)

**FOLA 427. Survey of German Literature** **Credit 3(3-0)**

This course provides general introduction to the study of German literature. It is intended to give an overall picture of German literature and an opportunity to read outstanding works not offered in other German courses. (F;S)

## RUSSIAN

**FOLA 106. Elementary Russian I\*** **Credit 3(3-0)**

This is an elementary course for beginners which consists of grammar translation, practice in pronunciation and limited use of the spoken language. (F;S)

**FOLA 107. Elementary Russian II\*** **Credit 3(3-0)**

This course is a continuation of Elementary Russian 106. Attention is given to more advanced grammar. Reading in Russian is stressed. Prerequisite: FOLA 106. (F;S)

**FOLA 310. Literature of American Communism and Soviet Russia** **Credit 3(3-0)**

This course surveys literature of communism from the depression era through present day in the United States and literature of Soviet Russia. Course materials will focus on autobiographies of the period, with an emphasis upon the black experience with communism in both the United States and Soviet Russia. The course is designed to give students a broader cultural understanding of how Americans and Russians view one another. The course is taught in translation. (F;S)

**FOLA 311. Technical Russian** **Credit 3(3-0)**

This course is designed to teach basic reading and translation skills as well as vocabulary building, with an emphasis on the sciences/engineering. Course readings will be selected based on enrolled students' majors. The course is taught in translation. Prerequisites: FOLA 106 and 107. (F;S)

**FOLA 322. Intermediate Russian I** **Credit 3(3-0)**

This course is a continuation of basic Russian grammar. There is emphasis on reading, composition, and conversation. Prerequisite: FOLA 107. (F;S)

**FOLA 323. Intermediate Russian II** **Credit 3(3-0)**  
This course is a continuation of Intermediate Russian I. Students will analyze well-known Russian works in order to develop a competency in Russian. Emphasis will also be placed on conversation and composition. Prerequisite: FOLA 322. (F;S)

#### JAPANESE

**FOLA 108. Elementary Japanese I\*** **Credit 3(3-0)**  
This is an elementary course for beginners, which consists of practice in pronunciation and usage of the spoken language. This course is designed to offer the basic foundation for the development of listening comprehension and speaking skills, and also provides an introduction into the Japanese culture. (F;S)

**FOLA 109. Elementary Japanese II** **Credit 3(3-0)**  
This course is a continuation of Elementary Japanese I. The focus will be to examine the elementary Japanese alphabet called Hiragana through reading and writing. Prerequisite: FOLA 108. (F;S)

**FOLA 308. Intermediate Japanese I** **Credit 3(3-0)**  
This course focuses on development of conversational skills, with practice of reading skills and Japanese characters. Speaking and listening practice will be aided through the usage of videotapes and other media. (F;S)

**FOLA 309. Intermediate Japanese II\*** **Credit 3(3-0)**  
This course is a continuation of FOLA 308. In addition to practice to improve oral proficiency, this course will reinforce reading and writing skills, with emphasis on composition and oral presentation. (F;S)

#### PORTUGUESE

**FOLA 110. Elementary Portuguese I\*** **Credit 3(3-0)**  
This is a course for beginners, which emphasizes the four skills of listening, speaking, reading, and writing. The course is conducted in Portuguese. (F;S)

**FOLA 111. Elementary Portuguese II\*** **Credit 3(3-0)**  
This course is a continuation of Elementary Portuguese I and introduces students to more advanced grammar. There is emphasis on improving the four skills taught in Elementary Portuguese I. The course is taught in Portuguese. (F;S)

**FOLA 314. Intermediate Portuguese I\*** **Credit 3(3-0)**  
This course is a continuation from Elementary Portuguese II. There is a review of grammar and introduction to more advanced grammar. The course places an emphasis on improving the skills taught in Elementary Portuguese II. The course is taught in Portuguese, and students begin reading essays and short stories in Portuguese. (F;S)

**FOLA 315. Intermediate Portuguese II\*** **Credit 3(3-0)**  
This course is a continuation of Intermediate Portuguese I. There are reviews and completion of Portuguese grammar. The course places an emphasis on improving the four skills of reading, listening, speaking, and writing. Students will also read short stories and essays. The course is conducted in Portuguese. (F;S)

\*Students are required to purchase supplemental materials for these courses.

#### COURSE DESCRIPTIONS IN PHILOSOPHY

**PHIL 101. Introduction to Philosophy (formerly PHIL 260)** **Credit 3(3-0)**  
This is an introductory course covering such topics as theories of reality, the nature of mind and knowledge, and the higher values of life. (S)

**PHIL 102. Logic (formerly PHIL 262)** **Credit 3(3-0)**  
This is an introductory course designed to give a critical analysis of the principles, problems and fallacies in reasoning. (F;S;SS)

**PHIL 103. World Religions (formerly PHIL 265)** **Credit 3(3-0)**  
This course examines the teachings and practices of the world's major religions. This exploration is conducted as a factual approach in which the history, beliefs, philosophy, practices and important figures of each religion are presented. Religions covered include African and Native American oral traditions, Hinduism, Jainism, Sikhism, Buddhism, Taoism, Confucianism, Shinto, Judaism, Christianity, Islam, and new religious movements. (F;S;SS)

**PHIL 104. Introduction to Ethics (formerly PHIL 268)** **Credit 3(3-0)**  
This introductory course covers basic ethical theory, its history, and major authors. This course is designed to give students a vocabulary for discussing ethics as well as the skills necessary to articulate and apply normative positions. (F;S;SS)

**PHIL 201. Business Ethics (formerly PHIL 315)** **Credit 3(3-0)**  
This course will introduce students to ethical challenges faced in an international business world. Using a case studies approach, students will survey major theories of ethics, examine current ethical practices in business, and learn to formulate, articulate, and defend their own answers to business ethics' questions. (F;S;SS)

**PHIL 261. The Meaning of Life** **Credit 3(3-0)**  
This course will examine two interrelated questions. What is the meaning of life? What makes a particular life meaningful or meaningless? By analyzing literature, philosophical writings, and film, students will participate in a reflective investigation of subjective and objective answers to these questions. (DEMAND)

**PHIL 263. Ethics of Good Life and Character Building** **Credit 3(3-0)**  
This course explores the role of ethics in achieving a good life. The goal is to encourage students to reflect about their motivations and to contemplate the sort of character they might aspire to build. Questions examined include: What virtues make a person good? To what extent is self-interest compatible with being a virtuous person? What makes life meaningful? Why should we act morally and show concern for others? (F;S;SS)

- PHIL 264. Contemporary African American Philosophy** **Credit 3(3-0)**  
 This course has two objectives. First, it exposes students to the contributions made by African Americans to philosophy. Second, it explores issues of philosophy unique to the African American experience. Readings are drawn from both contemporary and classic sources. Comparisons between African American and African philosophy will be made. (F;S;SS)
- PHIL 266. Contemporary Moral Problems** **Credit 3(3-0)**  
 This course begins with an examination of various ethical theories and then applies these theories to address moral challenges faced by today's society. Topics include the environment, abortion, treatment of animals, drug use, pornography, hate speech, euthanasia, famine relief, affirmative action and the death penalty. (F;S;SS)
- PHIL 267. Philosophy of Love and Friendship** **Credit 3(3-0)**  
 In this course students will undertake a conceptual analysis of the terms "love" and "friendship". Questions addressed include: What are the various types of love? Does a person need friends in order to achieve happiness? And what are the minimal requirements of friendship? Students will survey a variety of philosophical and contemporary literature along with examples from film and popular culture to investigate the nature of love and friendship. (F;S;SS)
- PHIL 309. Contemporary Philosophy** **Credit 3(3-0)**  
 This course involves a critical investigation of some contemporary movements in philosophy with special emphasis on existentialism, pragmatism, and positivism. (DEMAND)
- PHIL 310. Feminist Philosophy** **Credit 3(3-0)**  
 This course will introduce students to some of feminist theory's contributions to philosophy. Students will explore various feminist perspectives and analyze the intellectual commitments, world views, and values of each school of thought. Students will then investigate how feminist theory relates to contemporary philosophical issues such as development programs in third world countries, pornography and reproductive. (F;S;SS)
- PHIL 311. Philosophy of Punishment** **Credit 3(3-0)**  
 This course introduces students to philosophical theories of punishment and investigates what types of punishments are morally justified. Issues examined include the normative scope for criminalization, the moral permissibility of capital punishment, the insanity defense, the prosecution of minors as adults and other related issues. (F;S;SS)
- PHIL 312. Political Philosophies of Malcolm X and Martin Luther King, Jr.** **Credit 3(3-0)**  
 This course contrasts the philosophies of Malcolm X and Martin Luther King, Jr. on race and racism, nonviolence and self-defense, integration and separatism, and Christianity and Islam. Students will be introduced to the political and social culture that shaped the thoughts and worldviews of Malcolm X and Dr. King. (F;S;SS)
- PHIL 313 Philosophy of Sports** **Credit 3(3-0)**  
 This course will consider several philosophical problems in sport: What is sport? What is the value of sports? How should we conduct ourselves when we play sports? Are there sports which are morally wrong? Students will examine ethical and political issues which have arisen in sports including Title IX, gender equity, racism, sexism, drug use, cheating and doping. Prerequisites: None. (F;S;SS)
- PHIL 314. Social and Political Philosophy** **Credit 3(3-0)**  
 This course considers the essential features of various types of government (democracy, monarchy, fascism, etc.) and justifications for the existence of any form of government. Through a historical, thematic and analytic exposition, students will survey the political theories of philosophers such as Plato, Aristotle, Hobbes, Locke, Rousseau, Hegel, Mill, Marx, Rawls, Nozick, Foucault, Althusser, Fanon and Nkrumah. (F;S;SS)
- PHIL 316. Environmental Ethics** **Credit 3(3-0)**  
 This course is an introduction to the philosophical study and moral assessment of human interaction with other species and the environment in which we live. Students will survey several environmental ethics theories including biocentrism, ecocentrism, deep ecology and social ecology and then apply these ethical tools to address real-world environmental problems. (F;S;SS)
- PHIL 317. Medical Ethics** **Credit 3(3-0)**  
 This course introduces students to ethical challenges arising within the practice of medicine. Topics considered include truth-telling, informed consent, confidentiality, medical futility, euthanasia, physician-assisted suicide, gene therapy, social justice in health care, use of animals and humans subjects in medical research, and organ transplantation. (F;S;SS)
- PHIL 318. Honors in Philosophy** **Credit 3(3-0)**  
 This course includes an examination of selected philosophical topics. May be repeated for credit. (S;SS)
- PHIL 319. Wabash-Provost Scholars Research** **Credit 1(1-0)**  
 This course provides student researchers training in collection, analysis, interpretation, and reporting of qualitative and quantitative institutional research data. May be repeated for credit. Course graded as S/U. Prerequisite: Acceptance in Wabash-Provost Scholars Program. (F;S;SS)
- PHIL 320. Ethics and Technology** **Credit 3(3-0)**  
 This course examines ethical issues arising from scientific and technological advancements. After exploring various standards of morality, students analyze issues such as reproductive technologies, cloning, genetic engineering, stem cell research, life-span extension, genetically modified foods, and ethical concerns within nanotechnology. (F;S;SS)
- PHIL 322. Death & Dying** **Credit 3(3-0)**  
 This course examines philosophical questions surrounding human mortality. Topics include what happens after death, immortality, the harm or benefit of death, grief, the act of dying, the good death, and the role technology and ethics play in this inevitable process. (F;S;SS)

- PHIL 323. Critical Theories** **Credit 3(3-0)**  
 This interdisciplinary course explores various ways that critical theorists have envisioned human liberation. Topics include ideology, social justice, economic justice, and political liberation. Cross listed with LIBS 323. (F;S;SS)
- PHIL 400. Ancient Philosophy** **Credit 3(3-0)**  
 This course will examine the history of philosophy from the ancient Greeks to medieval Europeans. Philosophers discussed include the pre-Socratics, Socrates, Plato, Aristotle, Aquinas, and Augustine. Topics will range from theories of nature, persons happiness, human knowledge, the good life, and the existence of God. Special focus will be on how each philosopher progressed ideas during this time period, thus setting the stage for modern philosophy. (F;S;SS)
- PHIL 401. Modern Philosophy** **Credit 3(3-0)**  
 This course will examine the history of philosophy from Descartes through Kant. Special focus will be given to the Rationalists (Descartes, Leibniz and Spinoza) and the Empiricists (Locke, Berkeley and Hume). Topics discussed include the possibility of human knowledge, the existence of God, the nature of causation, and the mind-body problem. How the moderns differed from the ancients, the impact the moderns had on the direction of philosophy, and the role women played in this philosophical change will also be explored. (F;S;SS)
- PHIL 402. Philosophy of Law** **Credit 3(3-0)**  
 This course is a philosophical investigation into the nature of law. Students will examine various theories of jurisprudence including natural law, legal positivism, legal naturalism, and legal realism. The course will also consider the relationship between law and morality and between equality and the law. Finally, students will investigate various philosophical problems in criminal and tort law.
- PHIL 403. Philosophy of Science** **Credit 3(3-0)**  
 This course will examine the most basic concepts and principles at work in scientific inquiry. Students will investigate the nature of scientific explanation, consider various scientific theories, theories of truth, and explore the distinction between science, metaphysics, and pseudoscience. (F;S;SS)
- PHIL 404. Philosophy, Marxism, and the African World** **Credit 3(3-0)**  
 This course analyzes the main ideas of Marxism and their development in the African world. Through an examination of early socialist and late twentieth century thinkers, students will acquire a basic understanding of Marxist theory and a historical understanding of Marxism in Africa and the African diaspora. (F;S;SS)
- PHIL 405. Philosophy of Religion** **Credit 3(3-0)**  
 This course examines the origins of the religious impulse, and religious myth and ritual as they have developed in the history of human societies. It considers classical arguments for and against the existence of god(s) and the immortality of the human soul, various views of the nature of god, and the challenge to the religious worldview posed by suffering and “evil”. (F;S;SS)
- PHIL 406. Logic for the Legal Profession** **Credit 3(3-0)**  
 This course focuses on the development of the logical and analytical reasoning skills required in the legal profession. Students will practice argument analysis, identification of assumptions, parallel reasoning, drawing inferences, applying general principles, and recognition of flawed reasoning. The course will be offered for a Pass/Fail grade. Prerequisite: Junior or Senior standing. (F;S;SS)
- PHIL 408. Law, Humanities & the Social Sciences** **Credit 3(3-0)**  
 This interdisciplinary topical course examines legal concepts and issues as depicted in the humanities and the social sciences. Topics include freedom and the law, justice and equality, and freedom and responsibility. Prerequisite: Junior or Senior standing. Cross listed with LIBS 408. (F;S;SS)
- PHIL 409. Science and Religion** **Credit 3(3-0)**  
 This course explores the relationship between science and religion from an interdisciplinary perspective through readings, films, and case studies. Are scientific and religious ways of knowing compatible, conflictory, or how might these disciplines coexist and influence each other? Prerequisite: Junior or Senior standing. Cross listed with LIBS 409. (F;S;SS)
- PHIL 441. Media Ethics** **Credit 3(3-0)**  
 This course applies ethical theory to issues within the media profession. The course begins with an examination of major ethical approaches and decision-making strategies and examines some ethical challenges faced by media professionals. Topics include privacy versus “the right to know”. Accuracy, fairness, exploitation in advertising, deceptive practices, media accountability, conflicts of interest, the public interest versus ratings, and the Digital Millennium Act.
- PHIL 492. Seminar in Philosophy** **Credit 3(3-0)**  
 This course is designed for students to examine special philosophical topics or conduct a senior research project.

#### DIRECTORY OF FACULTY

<b>José Alberto Bravo de Rueda</b> .....	<b>Professor</b>
B.A., Pontificia Universidad Católica; M.A., Ph.D., University of Maryland – College Park	
<b>Luz Marina Beuchner</b> .....	<b>Lecturer</b>
B.A. University Leon, Leon-Spain, M.A., Spanish	
<b>Temeka Carter</b> .....	<b>Lecturer</b>
M.A., North Carolina A&T State University, Ph.D., University of North Carolina at Greensboro	
<b>Michael Cundall, Jr.</b> .....	<b>Associate Professor</b>
B.A., University of Kentucky; Ph.D., University of Cincinnati	
<b>Maria Daily</b> .....	<b>Lecturer</b>

M.A. Appalachian State University	
<b>Stephen C. Ferguson</b> .....	<b>Associate Professor</b>
B.A., University of Missouri; M.A., Ph.D., University of Kansas	
<b>Galen Foresman</b> .....	<b>Associate Professor</b>
B.A., University of North Carolina at Chapel Hill; M.A., Ph.D., Bowling Green State University	
<b>Wendy C. Hamblet</b> .....	<b>Professor</b>
B.A., M.A., Brock University; M.A., Ph.D., Penn State University	
<b>Karen L. Hornsby</b> .....	<b>Associate Professor</b>
B.A., California State University-Sacramento; M.A., Ph.D., Bowling Green State University	
<b>John F. Humphrey</b> .....	<b>Associate Professor</b>
B.A., Manchester College; M.A., Ph.D., New School for Social Research	
<b>Chinedum Emmanuel Ikegwu</b> .....	<b>Professor</b>
B.A., University of the District of Columbia; M.A., Antioch School of Law; Ph.D. Howard University	
<b>Damion Waymer</b> .....	<b>Professor and Chairperson</b>
B.A., College of Charleston; M.A., Ph.D., Purdue University	
<b>Aaron West</b> .....	<b>Lecturer</b>
B.A., University of Maryland, Baltimore County, M.A., North Carolina A&T State University	

**Department of Political Science and Criminal Justice**

<http://www.ncat.edu/cahss/departments/pscj/index.html>

**Maruice Mangum, Chairperson**

**OBJECTIVES**

The specific objectives of the Political Science Program are as follows:

1. to help students develop an understanding of the operation of government at various levels.
2. to encourage students to engage in critical discourse of political and social issues.
3. to prepare students for advanced study.
4. to provide skills for employment in public and private organizations.

The specific objectives of the Criminal Justice Program are as follows:

1. to provide a broad-based liberal arts education with particular focus on the nature and causes of crime and delinquency, the correctional system, the courts, the police, the juvenile justice system, security and domestic violence.
2. to increase the pool of students with research skills and techniques in the field of criminal justice.
3. to provide an interdisciplinary focus of study in the field of criminal justice.
4. to increase the pool of talented and qualified minority students in this growing area of public service and professional practice.

The specific objectives of the Certificate in Forensic Science – Crime Scene Investigation program are as follows:

1. to prepare students to function as crime scene investigators within law enforcement agencies at various levels of government.
2. to provide students with critical knowledge of the criminal justice system, criminal law and scientific methodology.
3. to provide students with basic skills in criminal investigation and laboratory procedures and technologies.
4. to prepare students to communicate effectively, think critically and methodically solve problems.
5. to instruct students on professional standards and ethics, safety protocols and operational policies and regulations.

**DEGREES OFFERED**

Political Science – Bachelor of Arts

Criminal Justice – Bachelor of Science

Criminal Justice – Bachelor of Science with Certificate in Forensic Science – Crime Scene Investigation

Crime Scene Investigation – Certificate in Forensic Science (non-degree)

**GENERAL PROGRAM REQUIREMENTS**

The admission of students to the undergraduate degree programs in the Department of Political Science and Criminal Justice Program is based upon the general admission requirements of the University.

Political Science is the study of governments, public policies, and political behavior. Political Science uses both humanistic and scientific perspectives and skills to examine public power, social transformations, the nature of democracies, elections, public opinion, constitutions, technology and society, public policy, and similar issues. The Political Science degree program offers courses in the following fields: American Government, Public Policy and Administration, Political Theory, Research Methodology, and International Affairs.

The Department of Political Science and Criminal Justice requires students to develop competence in the use of modern political technology and information management systems. Students have access to excellent computing facilities as well as access to the Political and Social Research Geographic Information Systems (GIS) Laboratory. Students learn how to design, administer, and analyze surveys by working with the Political Science and Criminal Justice Computer Assisted Telephone

Interviewing Laboratory (CATI).

Criminal Justice will provide students with knowledge of the nature and causes of crime, criminal justice processes, security and law enforcement. Students will be introduced to social scientific methods and technologies and theoretical models needed for analysis and critique of the criminal justice system.

The Certificate in Forensic Science – Crime Scene Investigation program concentrates on crime scene investigation as distinguished from forensic science laboratory analysis. The crime scene investigator is oriented to field operations and the collection of evidence for laboratory evaluation. The professional practice of crime scene investigation requires an understanding of professional ethics, competency in safety protocols and laboratory procedures, knowledge of criminal law and the legal process, effective written and verbal communication skills and competency in the collection and preservation of evidence.

The Certificate in Forensic Science – Crime Scene Investigation program is structured as a concentration within the criminal justice program in the Department of Political Science and Criminal Justice. The Certificate in Forensic Science – Crime Scene Investigation program adheres to the directives and recommendations of the National Academy of Sciences report, *Strengthening Forensic Science in the United States: A Path Forward* (2009) and the National Institute of Justice’s 2004 report, *Education and Training in Forensic Science: A Guide for Forensic Science Laboratories, Educational Institutions and Students*. The certificate can be earned as a concentration with the Bachelor of Science degree in Criminal Justice or it can be earned separately without the completion of the requirements for the Bachelor’s degree.

The departments of Political Science and Criminal Justice, Psychology, and Sociology and Social Work provide the elective courses for the criminal justice curriculum. Instruction and research emphasizes interdisciplinary. Students in this program have the same access as Political Science majors to the Geographic Information Science (GIS) and Computer Assisted Telephone Interviewing (CATI) Laboratory.

### DEPARTMENTAL REQUIREMENTS

**Political Science Major** – Completion of a minimum of 120 semester hours of University courses. Included in the 120 semester hours are 37 hours of political science major courses, 15 hours of political science electives, 6 hours of International Relations and Comparative Politics courses. Students must also complete 34 hours of general education requirements, 6 hours of a foreign language and courses in speech, economics and health. A minimum grade of “C” must be attained in the major courses.

Students desiring to minor in political science must complete 18 semester hours in political science, including POLI 110 POLI 250, POLI 221 and POLI 444. A student must have completed a minimum of 24 hours of academic credits before declaring a minor, must have a minimum cumulative grade point average of 2.0 and may not have more than two minors.

**Criminal Justice Major** – Completion of a minimum of 120 semester hours of University courses. Included in the 120 hours are POLI 110 or POLI 215, 34 hours of criminal justice major courses, 15 hours of criminal justice electives, 32 hours of general education requirements, 6 hours of foreign language and courses in speech, economics, global studies and health.

Students desiring to minor in criminal justice must complete 18 semester hours in criminal justice, including CRJS 230 and CRJS 240. A student must have completed a minimum of 24 hours of academic credits before declaring a minor, must have a minimum cumulative grade point average of 2.0 and may not have more than two minors.

**Bachelors of Science in Criminal Justice with Certificate in Forensic Science – Crime Scene Investigation** – Completion of a minimum of 120 semester hours of university courses. Included in the 120 hours are POLI 110 or POLI 215, 34 hours of criminal justice major courses, 24 hours in forensic science curriculum, 9 hours of criminal justice electives, 33 hours of general education requirements, 6 hours of foreign language and courses in speech, psychology and health. A minimum grade of “C” must be attained in the major and required core courses.

Students cannot minor in the certificate program.

**Certificate in Forensic Science – Crime Scene Investigation** – Completion of a minimum of 48 semester hours of courses in the forensic science curriculum. A minimum grade of “C” must be attained in the major and required core courses.

### CAREER OPPORTUNITIES

A baccalaureate degree in **Political Science** prepares students for careers in government, public administration, law (for those continuing to law school), business, campaign management, foreign service, industry, interest groups, journalism, international affairs, teaching, research, and leadership in civic and political activities.

A baccalaureate degree in **Criminal Justice** prepares students to enter the broad array of career options. Criminal Justice graduates can use their knowledge and research skills in very rewarding and meaningful ways in employment in the fields of law enforcement, court related occupations security and corrections. This program will also provide an interdisciplinary foundation for students seeking advancement in these careers or wishing to pursue a graduate or professional degree.

Department of Political Science and Criminal Justice  
Bachelor of Arts in Political Sciences  
Major Code: PLSC

### Curriculum Guide

COURSE	CR	COURSE	CR
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Freshman Year: First Semester		Freshman Year: Second Semester	
FRST 101 (SS)	1	POLI 101	3
ENGL 100 (WC)	3	ENGL 101 (WC)	3
HIST 130 (GA)	3	HIST 107 (AA) (formerly HIST 202)	3
MATH 101 (MLAR)	3	MATH 102 (MLAR)	3
POLI 100 (formerly POLI 150)	3	BIOL 100 (SR)	4
POLI 110 (formerly POLI 200)	3	HPED 200 (substitution of SSFM 226)	2
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>18</b>
Sophomore Year: First Semester		Sophomore Year: Second Semester	
POLI 215 (formerly POLI 210)	3	POLI 240 (formerly POLI 340)	3
ENGL 200 (HFA)	3	FOLA Elective <sup>1</sup>	3
FOLA Elective <sup>1</sup>	3	POLI 251 (formerly POLI 290)	3
PHYS 101 (SR)	3	POLI 252 (formerly POLI 291)	1
SPCH 250	3	ENGL 201 (HFA)	3
<b>Semester Total</b>	<b>15</b>	PSYC 101 (SBS)	3
		<b>Semester Total</b>	<b>16</b>
Junior Year: First Semester		Junior Year: Second Semester	
POLI 233 (formerly POLI 333)	3	POLI 234 (formerly POLI 334)	3
POLI 442	3	POLI 443	3
ECON 200 or ECON 201	3	POLI 221 (formerly POLI 440)	3
Free or Minor Elective	3	IR and CP Restricted Requirement	3
POLI Elective	3	Free Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
Senior Year: First Semester		Senior Year: Second Semester	
IR and CP Restricted Requirement	3	POLI 492 Capstone (formerly POLI 505)	3
Free or Minor Elective	3	POLI Elective	3
POLI Elective	3	Free or Minor Elective	3
POLI Elective	3	POLI Elective	3
HPED Elective	1	<b>Semester Total</b>	<b>12</b>
<b>Semester Total</b>	<b>13</b>		

**Total Credit Hours: 120**

<sup>1</sup>A student must complete two courses (a minimum of 6 hours) of the same foreign language.

<sup>2</sup>Students must take 12 credit hours of Social and Behavioral Sciences and Humanities (SBSH)/Humanities and Fine Arts (HFA) courses from the following list: SOCI 200, HIST 101, HIST 103, HIST 231, ENGL 230, ENGL 231, PHIL 101, PHIL 103, LIBS 202, MUSI 220.

3. Students must complete six (6) credit hours of International Relations and Comparative Politics Restricted Requirement courses for the Political Science major requirement. To fulfill the International Relations Restricted Requirement students must select from POLI 441, POLI 444 or POLI 434 (formerly POLI 544). To fulfill the Comparative Politics Restricted Requirement students must select from POLI 310, POLI 445 or POLI 446.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

POLI 100 (formerly POLI 150)	POLI 234 (formerly POLI 334)
POLI 110 (formerly POLI 200)	POLI 240 (formerly POLI 340)
POLI 215 (formerly POLI 210)	POLI 221 (formerly POLI 440)
POLI 251 (formerly POLI 290)	POLI 442
POLI 252 (formerly POLI 291)	POLI 443

POLI 233 (formerly POLI 333)	POLI 492 (formerly POLI 505)
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International Relations & Comparative Politics Restricted Requirement	
POLI 441	International Relations Selection
POLI 444	International Relations Selection
POLI 434 (formerly POLI 544)	International Relations Selection
POLI 310	Comparative Politics Selection
POLI 445	Comparative Politics Selection
POLI 446	Comparative Politics Selection

**Department of Political Science and Criminal Justice**  
**Bachelor of Science in Criminal Justice**  
**Major Code: CRJS**

**Curriculum Guide**

<b>COURSE</b>	<b>CR</b>	<b>COURSE</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 101 (SS)	1	CRJS 101	3
HIST 130 (GA)	3	FOLA II <sup>1</sup>	3
FOLA I <sup>1</sup>	3	ENGL 101 (WC)	3
ENGL 100 (WC)	3	MATH 102 (MLAR)	3
MATH 101 (MLAR)	3	CRJS 100 (formerly CRJS 200)	3
SOCI 100 (SBS)	3	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>16</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
CRJS 210 (formerly CRJS 310)	3	CRJS 220 (formerly CRJS 320)	3
POLI 110 or 215 (formerly POLI 200 or POLI 210)	3	CRJS 251 & 252 (formerly CRJS 290 & 291)	4
HIST 107 (AA) (formerly HIST 202)	3	PHYS 101 or CHEM 100 & 110 (SR)	3-4
ENGL 200 or 201 (HFA)	3	SPCH 250	3
BIOL 100 (SR)	4	HPED 200 (substitution of SSFM 226)	2
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15-16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
CRJS 230 (formerly CRJS 330)	3	CRJS 240 (formerly CRJS 406)	3
CRJS 331 (formerly CRJS 430)	3	CRJS 332 (formerly CRJS 440)	3
CRJS Elective	3	ECON 200 or ECON 201	3
CRJS Elective	3	Free Elective	3
PSYC 101	3	Global Studies	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
CRJS 498 (formerly CRJS 500)	3	CRJS 492 (formerly CRJS 505)	3
Free Elective/Minor	3	CRJS Elective	3
Free Elective/Minor	3	Free Elective/ Minor	3
CRJS Elective	3	Free Elective /Minor	3
CRJS Elective	3	HPED Elective	1
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>13</b>



**Total Credit Hours: 120**

<sup>1</sup>Students must complete two courses (a minimum of 6 hours) of the same foreign language.

<sup>2</sup>Global Studies course should be taken from the following: CRJS 321, POLI 444, POLI 434, POLI 644, POLI 646, and other international/comparative courses listed with the approval of the CRJS advisor.

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C or better in the following courses:*

CRJS 100 (formerly CRJS 200)	CRJS 252 (formerly CRJS 291)
CRJS 210 (formerly CRJS 310)	CRJS 331 (formerly CRJS 430)
CRJS 220 (formerly CRJS 320)	CRJS 332 (formerly CRJS 440)
CRJS 230 (formerly CRJS 330)	CRJS 492 (formerly CRJS 505)
CRJS 240 (formerly CRJS 406)	CRJS 498 (formerly CRJS 500)
CRJS 251 (formerly CRJS 290)	

**Department of Political Science and Criminal Justice**  
**Bachelor of Science in Criminal Justice**  
**Certificate in Forensic Science - Crime Scene Investigation**  
**Major Code: CRJS**

**Curriculum Guide**

<b>COURSE</b>	<b>CR</b>	<b>COURSE</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 101 (SS)	1	CRJS 101	3
HIST 130 (GA)	3	HIST 107 (AA) (formerly HIST 202)	3
CRJS 100 (formerly CRJS 200)	3	ENGL 101 (WC)	3
ENGL 100 (WC)	3	MATH 102 (MLAR)	3
MATH 101 (MLAR)	3	POLI 110 or 215 (formerly POLI 200 or POLI 210)	3
SOCI 100 (SBS)	3	HPED 200 (substitution of SSFM 226)	2
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>17</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
CRJS 260	3	CRJS 270	3
CRJS 280	3	ENGL 200 or 201 (HFA)	3
FOLA <sup>1</sup>	3	FOLA	3
CRJS 210 (formerly CRJS 310)	3	CRJS 251 and 252 (formerly CRJS 290 and 291)	4
BIOL 100 (SR)	4	CHEM 100 and 110 (SR)	4
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>17</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
CRJS 331 (formerly CRJS 430)	3	CRJS 332 (formerly CRJS 440)	3
CRJS 220 (formerly CRJS 320)	3	CRJS 230 (formerly CRJS 330)	3
SPCH 250	3	CRJS 322 (formerly CRJS 546)	3
PSYC 101	3	CRJS Elective	3
CRJS Elective	3	CRJS 240 (formerly CRJS 406)	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	

CRJS 498 (formerly CRJS 500)	3	CRJS 492 (formerly CRJS 505)	3
CRJS 333 (formerly CRJS 410)	3	CRJS Elective	3
CRJS 370 (formerly CRJS 530)	3	CRJS 334 (formerly CRJS 420)	3
Free Elective or Minor	3	CRJS 371 (formerly CRJS 531)	3
<b>Semester Total</b>	<b>12</b>	<b>Semester Total</b>	<b>12</b>

**Total Credit Hours: 120**

<sup>1</sup>A student must complete two courses (a minimum of 6 hours) of the same foreign language.

<sup>2</sup>The maximum number of transferable credits is 80 semester hours from a 4-year college and 64 semester hours from a 2-year college. The 64 semester hours earned at a North Carolina Community College will be accepted according to the Criminal Justice Articulation Agreement between The University of North Carolina System and the North Carolina Community College System

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C or better in the following courses:*

CRJS 100 (formerly CRJS 200)	CRJS 322 (formerly CRJS 546)
CRJS 210 (formerly CRJS 310)	CRJS 331 (formerly CRJS 430)
CRJS 220 (formerly CRJS 320)	CRJS 332 (formerly CRJS 440)
CRJS 230 (formerly CRJS 330)	CRJS 333 (formerly CRJS 410)
CRJS 240 (formerly CRJS 406)	CRJS 334 (formerly CRJS 420)
CRJS 251 (formerly CRJS 290)	CRJS 370 (formerly CRJS 530)
CRJS 252 (formerly CRJS 291)	CRJS 371 (formerly CRJS 531)
CRJS 260	CRJS 498 (formerly CRJS 500)
CRJS 270	CRJS 492 (formerly CRJS 505)
CRJS 280	

**COURSE DESCRIPTIONS IN POLITICAL SCIENCE**

**POLI 100. Introduction to Political Science (formerly POLI 150)** **Credit 3(3-0)**

This course is an introduction to major concepts in political science including political culture, socialization, ideologies, institutions, processes, public policy, human rights, and interaction among nations. Majors only. (F;S;SS)

**POLI 101. Writing for the Social Sciences** **Credit 3(3-0)**

This course is designed to introduce Political Science majors to oral and written communication and critical thinking in the social sciences. The course focuses on building error-free sentences, concept formulation and proper citation, e.g., APA and MLA. (F;S;SS)

**POLI 110. American Government and Politics (formerly POLI 200)** **Credit 3(3-0)**

This course introduces the student to the study of politics through an analysis of major features of the American polity. Topics to be treated include the political self-understanding of Americans, the founding of the political system, the operation of our political institutions, and the forms of political participation. (F;S;SS)

**POLI 215. State and Local Government (formerly POLI 210)** **Credit 3(3-0)**

This course is a study of the structure and functions of state and local government in the United States and their relationship within the federal system. Special consideration is given to contemporary problems. (F;S;SS)

**POLI 221. Political Theory (formerly POLI 440)** **Credit 3(3-0)**

This course provides an overview of western political philosophy from its origins in the 5<sup>th</sup> Century B.C. to the latest controversies over multiculturalism, the nature of the liberal state, the role of racial inequality in modern democracies, of this area of political science and its relevance to the field. The approach considers ancient medieval thought as a unit and modern political thought as a separate unit. (F;SS)

**POLI 233. Political Research Methods I (formerly POLI 333)** **Credit 3(3-0)**

This course introduces students to qualitative and quantitative research design, problem formulation, hypothesis construction and testing. Students will learn procedures for collecting and analyzing political data. Research on a specific political subject is required. (F;SS)

- POLI 234. Political Research Methods II (formerly POLI 334)** **Credit 3(3-0)**  
 This course is a continuation of Political Research Methods I, focusing on data analysis, interpretation and computer utilization.  
 Prerequisite: POLI 223 or CRJS 331. (S;SS)
- POLI 240. Public Administration (formerly POLI 340)** **Credit 3(3-0)**  
 Emphasis is devoted to basic principles of organization, location of authority, fiscal management, personnel management, and forms of administrative action in the public service, technological and managerial advancements. (F;SS)
- POLI 250. Introduction to Public Policy** **Credit 3(3-0)**  
 This course is designed to provide the student with basic knowledge of public policy. Students will survey the approaches and methods of policy studies, contemporary policy issues, and future considerations of public policies. (F;S;SS)
- POLI 251. / CRJS 251. / CRJS 290. Introduction to Statistics (formerly POLI 290 / CRJS 290)** **Credit 3(3-0)**  
 This course is an introduction to elementary statistical reasoning, descriptive statistics, frequency distribution, graphics, measures of central tendency and dispersion. Correlation and regression techniques are also taught. Focus is on political science and criminal justice research. Taken concurrently with POLI 252. Prerequisite CRJS 100 or POLI 100. (F;S;SS)
- POLI 252. / CRJS 252. Introduction to Statistics Lab (formerly POLI 291 / CRJS 291)** **Credit 1(0-2)**  
 The laboratory provides first hand experiences in practical use of statistical methods. Computer software (e.g., SPSS) will be used to analyze, interpret and graph data. Taken concurrently with POLI 251. Prerequisite CRJS100 or POLI 100. (F;S;SS)
- POLI 270. Introduction to International Relations** **Credit 3(3-0)**  
 This course broadens students' understanding of key concepts, debates and theoretical perspectives across a variety of sub-fields such as comparative politics, international relations, comparative and international political economy, and regional studies. Furthermore, students learn about various research methods and designs used to answer questions about political systems, economic policies, human rights, environmental policies and other contemporary international issues. Prerequisites: POLI 100 and POLI 110. (F;S;SS)
- POLI 310. Comparative Politics** **Credit 3(3-0)**  
 This course is a survey of the politics and governments of selected political systems highlighting their commonalities and particularities. Special consideration is given to aspects of political development. (F)
- POLI 311. Blacks in the American Political System (formerly POLI 220)** **Credit 3(3-0)**  
 This course is designed primarily to facilitate the development of a frame of reference which will make it possible for students to organize and interpret political phenomena involving Black people living in the United States. Special emphasis is placed on understanding the Black predicament in this country, causes and changes. (F;S;SS)
- POLI 312. Politics of Transportation (formerly POLI 448)** **Credit 3(3-0)**  
 This course includes an analysis of the political roots of various transportation problems, such as highway location issues, mass transit issues, and the interest group struggle of transportation innovation. The working mechanisms of federal, state and local transportation related units will also be considered. Case studies of local, regional and national issues will be included. Prerequisite: Junior standing. (F)
- POLI 313. Women in Politics (formerly POLI 450)** **Credit 3(3-0)**  
 This course examines the development of women in politics from four different vantage points: a historical overview, a politico-economic and cultural development perspective, a view from electoral politics and electoral participation, and a view from a global perspective. This course begins with a historical analysis part of the course focuses on political, social, economic and cultural changes in women's lives, the forces behind those changes, and their reflection in American national public policy. The third segment of the course studies women as relatively new participants in U.S. electoral politics, and the challenges and opportunities for women as candidates and officeholders. This part of the course examines the specific trajectory of African-American women in electoral politics as case studies to illustrate broader developments in the body politic. Finally, the fourth part of the course examines the above issues from a global perspective. (F)
- POLI 314. Southern Politics (formerly POLI 460)** **Credit 3(3-0)**  
 The course presents an examination of political patterns and recent trends within the states of the former confederacy. Topics include southern race relations, African American political participation, demographic changes, party realignment and competitiveness, the Civil Rights movement, and the impact of the South on national politics. (S)
- POLI 315. Party Politics and Pressure Groups (formerly POLI 541)** **Credit 3(3-0)**  
 This course deals with modern political parties in the United States as instruments of popular government. Special emphasis is placed upon party structure, functions and operations as they relate to African Americans. Prerequisite: POLI 110. (DEMAND)
- POLI 350. Public Personnel Administration** **Credit 3(3-0)**  
 This course focuses on the theory and practice of public personnel administration with emphasis on public personnel selection, training, classification, compensation, promotion and human relations. (DEMAND)
- POLI 360. Political Economy (formerly POLI 390)** **Credit 3(3-0)**  
 This course will examine the interaction between economic models and political processes and institutions. Students will compare how specific economic theories and practices shape public policy as well as how political ideologies support particular economic policies in the United States and abroad. Prerequisites: POLI 200 and ECON 200. (F;S;SS)
- POLI 361. Mass Political Attitudes and Behavior (formerly POLI 400)** **Credit 3(3-0)**  
 This course is a study of mass political attitudes and their expression in various forms of political activity. Topics include opinion and democratic theory; social, psychological and institutional influences on political behavior; and opinion measurement and mass movements. (DEMAND)

- POLI 362. Public Policy and Technology (formerly POLI 410)** **Credit 3(3-0)**  
 This course is designed primarily for students in sciences and engineering; however, it does not exclude students in other disciplines, especially business and economics. Students will study the social, economic, human, and environmental impact of technological development. The role of scientists and technologists in selected policy choices will be examined. **(DEMAND)**
- POLI 363. Environmental Policy (formerly POLI 415)** **Credit 3(3-0)**  
 This course examines major environmental policies dealing with air pollution, water pollution, and solid wastes. Attention will be given to controversies in policy formulation, institutional arrangements for policy implementation, and the socio-economic and ecological impacts of these policies. **(S)**
- POLI 364 . Public Budgeting (formerly POLI 420)** **Credit 3(3-0)**  
 The course deals with the evolution, process, and impact of public budgeting. Special attention is given to the purpose, models, reforms and key factors involved. Budgeting is viewed from the federal, state and local levels. **(DEMAND)**
- POLI 365. Policy Analysis (formerly POLI 430)** **Credit 3(3-0)**  
 This course is an introduction to the foundation and methods of policy analysis. Statistical and economic methods are presented with case studies. **(DEMAND)**
- POLI 366. Public Policy and Health Disparities** **Credit 3(3-0)**  
 This course draws on insights from the political science and public administration disciplines to examine the multifaceted issue of health disparities in the United States health care system. Traditionally marginalized, poor, racial and ethnic communities and groups with disparities based on gender, sexual preference and identity, physical and mental disability will be examined at the systemic and institutional level. **(F;S;SS)**
- POLI 431. The American Presidency** **Credit 3(3-0)**  
 This course is an examination of the institution of the presidency through a focus on its constitutional foundations and relations with Congress, the Executive Office of the President, policy-making, the cabinet, executive branch, selection process, power and leadership. **(F;S;SS)**
- POLI 432. The U.S. Congress** **Credit 3(3-0)**  
 This course examines the complexity and conflicts of the institution and its members. This course explores the constitutional foundation and structure, committees, procedures, elections and its relation to the Presidency and the Supreme Court. There will be considerable focus on policy-making and reform. **(F;S;SS)**
- POLI 433. The Judiciary** **Credit 3(3-0)**  
 This course is intended to familiarize the student with the organization of American state and federal courts, their role in our society, the process in practice through which judges act, and their impact on politics and policy. In addition, the course will provide an introduction to how political scientists evaluate courts and the behavior of judges. **(F;S;SS)**
- POLI 434 . International Organization (formerly POLI 544)** **Credit 3(3-0)**  
 This course analyzes the role of international organizations in world politics. Particular emphasis is given to the various approaches of international organizations in fostering peace and economic and social cooperation. Some attention will be given to the United Nations system as well as such defense, political, and economic arrangements as NATO, OAS, SEATO and the European communities. **(S)**
- POLI 441. The Politics of Free Trade** **Credit 3(3-0)**  
 This course will examine the relationship between politics and free trade agreements. This course will include an overall study of bilateral, regional and multilateral trade agreements. The particular themes that will be addressed include the structure of trade negotiations; global trade institutions, the influence of labor, civil society and business on trade negotiations; and the impact of trade agreements on developed and developing countries as well as industries within those countries. Prerequisite: ECON 200. **(F;S)**
- POLI 442. American Constitutional Law** **Credit 3(3-0)**  
 This course is a case study of major Supreme Court Decisions, the Judiciary, the Congress, the President, the Federal System, the First Amendment Freedoms and Due Process Rights. **(F)**
- POLI 443. Civil Liberties** **Credit 3(3-0)**  
 This course is a study of major Supreme Court decisions interpreting the Bill of Rights (the First Ten Amendments) and the subsequent amendments dealing with freedom and equality. Rulings of the Warren and Burger Courts will be given special attention. Prerequisite: Juniors and seniors only. **(S)**
- POLI 444. International Relations** **Credit 3(3-0)**  
 This course is a comprehensive treatment of the context and content of the structure, policies and politics of nations. Concepts pertaining to the nature of the field will also be investigated, including: imperialism, colonialism, balance of power, international morality, treaties, sovereignty, diplomacy, tariff, war and other arrangements. The limits of international relations in the emerging era of globalism will also be explored. Prerequisite: POLI 200. **(F;S)**
- POLI 445. African Governments and Politics** **Credit 3(3-0)**  
 This course provides an introduction to the government and politics of modern African States with an emphasis on internal and external factors that shape contemporary society. A major theme of this course is that Africa is a continent in social, economic and political transformation, whose horizons extend beyond the oftentimes limiting perception of an intellectually antiquated academia and popular culture. Africa is more than a problem. This course will therefore seek to examine Africa by acquainting students with major concepts and theoretical frameworks, the historical legacies of colonialism, the state and civil society. **(F)**

- POLI 446. Politics of the Americas** **Credit 3(3-0)**  
 This course is designed to provide an overview of the development and operation of political systems comprising South and Central America, the Spanish-speaking Caribbean, and Mexico. Important economic and social factors affecting the nature of politics in this region will also be emphasized, including: the debt crisis, the nature of politically motivated violence, the politics of race and racial identity, and the foreign relations of these nations. (S)
- POLI 447. African American Political Theory** **Credit 3(3-0)**  
 This course examines the formation and development of political theory in the African American community from its classical period to the Post-Civil Rights Era. The course presents distinct periods in the development of African American political thought, examines major themes and debates of each period, and explores the contributions of important theorists. (S)
- POLI 490. Independent Study (formerly POLI 504)** **Credit 3(3-0)**  
 Senior political science majors who have exhibited facility for independent study and attained a minimum grade point average of 3.0 in their major may arrange to investigate an area not covered in the regular curriculum. Permission of the supervising instructor and the department chairperson is required. (DEMAND)
- POLI / CRJS 492. Honors Seminar in Political Science & Criminal Justice – Capstone  
 (formerly POLI/CRJS 505)** **Credit 3(3-0)**  
 This course includes an examination of selected political science and criminal justice topics and experiences. Students participating in co-op and study abroad experiences may enroll in this course. Seniors only. (S;F)
- POLI 498. Internship (formerly POLI 499)** **Credit 3(3-0)**  
 This course includes supervised internship in public and private agencies for political science majors. Prerequisites: POLI 200 and 210 or permission of department chairperson. (DEMAND)

#### Advanced Undergraduate and Graduate

- POLI 604. Directed Study/Research** **Credit 3(3-0)**  
 This course includes directed study or research on a specific topic in political science. (DEMAND)
- POLI 642. Modern Political Theory** **Credit 3(3-0)**  
 This course examines selected treatments of the state as a controversial concept. The course focuses on the works of Machiavelli, Hobbes, Spinoza, Rousseau, Burke, Mill, Hegel, Marx, Dewey, Rawls and Reed. (DEMAND)
- POLI 643. Urban Politics and Government** **Credit 3(3-0)**  
 This course is a detailed analysis of the urban political arena including political machinery, economic forces and political structures of local governmental units. (DEMAND)
- POLI 644. International Law** **Credit 3(3-0)**  
 This course is a study of the major principles and practices in the development of the Law of Nations, utilizing significant cases for purposes of clarification. Prerequisites: POLI 200 and 444. (DEMAND)
- POLI 645. American Foreign Policy-1945 to Present** **Credit 3(3-0)**  
 This course includes an examination of forces and policies that have emerged from Potsdam, Yalta, and World War II. Emphasis will be on understanding the policies that were formulated, why they were formulated, the consequences of their formulation, and the alternative policies that may have come about. Prerequisites: Survey course in American History, American Diplomatic History, and consent of instructor. (DEMAND)
- POLI 646. The Politics of Developing Nations** **Credit 3(3-0)**  
 Political structures and administrative practices of selected countries in Africa, Latin America, and Asia, analysis of particular cultural, social and economic variables peculiar to the nations will be studied. (DEMAND)
- POLI 653. Urban Problems** **Credit 3(3-0)**  
 This course presents an analysis of major problems in contemporary urban America. The course also includes an examination of their causes, effects and possible solutions. (DEMAND)

#### COURSE DESCRIPTIONS FOR CRIMINAL JUSTICE

- CRJS 100. Introduction to Criminal Justice (formerly CRJS 200)** **Credit 3(3-0)**  
 This course is designed to provide freshmen and sophomore students with knowledge of terminology, classification systems, trends, and theories of criminal justice. It will emphasize a critical analysis of course content. (F;S;SS)
- CRJS 101. Writing for the Social Sciences** **Credit 3(3-0)**  
 This course is designed to introduce Criminal Justice majors to oral and written communication and critical thinking in the social sciences. The course focuses on building error-free sentences, concept formulation and proper citation, e.g., APA and MLA. (F;S;SS)
- CRJS 210. Policing: Administration and Process (formerly CRJS 310)** **Credit 3(3-0)**  
 This course examines two interrelated aspects of policing, police administration and the law enforcement process. A study of the organizational theory and operations of police agencies will lay the foundation for the examination police strategy and tactics. (F;S;SS)
- CRJS 220. Courts and the Judicial Process (formerly CRJS 320)** **Credit 3(3-0)**  
 This course examines the criminal process within American courts from arrest/arrest warrant application to final appeal. Topics include magistrates, trial and appellate courts, plea bargains, evidence, burdens of proof, jury selection and instructions, jurisdiction, habeas corpus and accountability. (F;S;SS)

- CRJS 230. Corrections (formerly CRJS 330)** **Credit 3(3-0)**  
 This course provides an overview of correctional philosophies, practices, and procedures. It examines institutional frameworks and innovations, accountability measures and legislative initiative. (F;S;SS)
- CRJS 240. / SOCI 406. Criminology (formerly CRJS 406)** **Credit 3(3-0)**  
 The genesis and origin of crime and an analysis of theories of criminal behavior will be studied. (DEMAND)
- CRJS 251. / POLI 251. Introduction to Statistics (formerly CRJS 290/ POLI 290)** **Credit 3(3-0)**  
 This course is an introduction to elementary statistical reasoning, descriptive statistics, frequency distribution, graphics, measures of central tendency and dispersion. Correlation and regression techniques are also taught. Focus is on political science and criminal justice research. Taken concurrently with CRJS 252/POLI 252. Prerequisite CRJS 100 or POLI 100. (F;S;SS)
- CRJS 252. / POLI 252 . Introduction to Statistics Lab (formerly CRJS 291/POLI 291)** **Credit 1(0-2)**  
 The laboratory provides first hand experiences in practical use of statistical methods. Computer software (e.g., SPSS) will be used to analyze, interpret and graph data. Taken concurrently with CRJS 251/POLI 251. Prerequisite CRJS 100 or POLI 110. (F;S;SS)
- CRJS 260. Courtroom Testimony** **Credit 3(3-0)**  
 This course examines the legal requirement of cross examination for crime scene investigators. It will examine the critical role of technical language in oral testimony. The objective of this course is to improve oral communication in courtroom settings. Prerequisite: CRJS 200. (F)
- CRJS 270. Interviews and Interrogations** **Credit 3(3-0)**  
 This course covers the basic and specific techniques employed in criminal justice interviews and interrogations. Emphasis is placed on the interview and interrogation process, including interpretation of verbal and physical behavior and legal perspectives. Upon completion students should be able to understand and conduct interviews and interrogations in a legal, efficient and professional manner. Prerequisite: CRJS 200. (S)
- CRJS 280. Investigative Photography** **Credit 3(3-0)**  
 This course covers the operation of various photographic equipment and its application to criminal justice. Topics include cameras, analog and digital videography, proper light exposure, developing film and prints and preparing photographic evidence. Upon completion students should be able to demonstrate and explain the role of photography and proper film exposure and development techniques in crime scene investigation. Prerequisite: CRJS 200. (F;S)
- CRJS 311. / PSYC 434. Abnormal Psychology (formerly CRJS 434)** **Credit 3(3-0)**  
 Behavior deviations and psychological disorders occurring during the several developmental stages; basic concepts employed in psychopathology, mental hygiene, and psychiatry. (F;S;SS)
- CRJS 312. Criminal Law (formerly CRJS 450)** **Credit 3(3-0)**  
 This course covers the history/evolution/principles and contemporary applications of criminal law. Topics include substantive law, classification of crimes, parties to crime, elements of crimes, matters of criminal responsibility and critical theory of crime. (F;S;SS)
- CRJS 313. Criminal Procedure (formerly CRJS 470)** **Credit 3(3-0)**  
 This course examines the provisions of the United States Constitution that protect the due process rights of citizens accused of criminal acts, the rules of procedure that govern the criminal justice process from arrest through trial and sentencing, and the methods of imposing liability on criminal justice professionals for violations of constitutional and other legal rights granted citizens. Prerequisite: CRJS 200. (F;S;SS)
- CRJS 314. / SOWK 503. Juvenile Delinquency (formerly CRJS 503)** **Credit 3(3-0)**  
 This course is the study of sociological and psychological explanations relative to the causes and rehabilitation of juvenile delinquents, probation and treatment of juveniles within the criminal justice system. (F)
- CRJS 315. Victimology (formerly CRJS 510)** **Credit 3(3-0)**  
 This course exposes students to the role of victims in crimes, their treatment by the criminal justice system, victim assistance, and victim compensation. Sexual battery and domestic violence are also covered in the course. Prerequisite: CRJS 200. (S)
- CRJS 316. Alternatives to Incarceration (formerly CRJS 515)** **Credit 3(3-0)**  
 This course explores alternatives to imprisonment and intermediate sanctions, including probation, parole, diversion and other community based corrections. Students will also be introduced to theories of rehabilitation, treatment, and corrections. (S)
- CRJS 317. Race, Class and Gender in the Criminal Justice System (formerly CRJS 520)** **Credit 3(3-0)**  
 This course provides a survey of minority relations and criminal justice adjudication in America. The course focuses on minority/majority relations and how these sentiments impact on the criminal justice process. Prerequisite: CRJS 200. (F;S;SS)
- CRJS 318. Drugs and Crime (formerly CRJS 525)** **Credit 3(3-0)**  
 This course provides an in-depth review of the politics and political economy of drug control and regulation in historical and contemporary terms. The course also covers the construction of drug-crime, law enforcement logics and practices in the coupling of drugs and crime. (F;S;SS)
- CRJS 319. White Collar Crime (formerly CRJS 537)** **Credit 3(3-0)**  
 This course examines criminal activities in management and executive operations of government and private sector agencies and corporations. Topics include substantive law, investigation techniques and social and economic impacts. (F;S;SS)
- CRJS 321. Terrorism and War Crimes (formerly CRJS 545)** **Credit 3(3-0)**  
 This course will examine the historical development of the substantive concepts of anti-terrorist law. Topics will include the study of domestic and international agencies which exert jurisdiction over defendants accused of terrorism. (F;S;SS)

- CRJS 322. Survey in Forensics (formerly CRJS 546)** **Credit 3(3-0)**  
 This course will introduce students to the various fields of forensics. Emphasis will be on the legal application and evidentiary value of documents and objects subjected to scientific scrutiny. (F;S;SS)
- CRJS 331. Research Methods in Criminal Justice (formerly CRJS 331)** **Credit 3(3-0)**  
 This course introduces students to research methods and their application to criminal justice issues. Emphasis is placed on understanding social science research theory, research proposals and the analysis of data from the Uniform Crime Report, the National Crime Victimization Survey and various crime databases. Prerequisite: Junior standing or permission of instructor. (F;S;SS)
- CRJS 332. Applied Methods (formerly CRJS 440)** **Credit 3(3-0)**  
 This course covers applied qualitative and quantitative research methods, hypothesis testing, statistical presentation and description (including mapping and graphing) using a variety of statistical tests and software packages: t-test, F-test, Chi-square, regression, Excel, SPSS and GIS. (F;S;SS)
- CRJS 333. Investigative Process I (formerly CRJS 410)** **Credit (3-0)**  
 This course introduces the theories and fundamentals of the investigative process. Topics include crime scene and incident processing, information gathering techniques, collection and presentation of evidence, preparation of appropriate reports, court presentations and other related topics. Upon completion students should be able to identify, explain and demonstrate the techniques of the investigative process, report preparation and courtroom presentation. (F)
- CRJS 334. Investigative Process II (formerly CRJS 420)** **Credit 3(3-0)**  
 This course closely examines the theories and fundamentals of the investigative process through case studies. This course also covers professional standards and ethics. Upon completion students should be able to identify, explain and demonstrate the application of investigative principles and professional standards and ethics. Prerequisite CRJS 410. (S)
- CRJS 370. Forensics Laboratory (formerly CRJS 530)** **Credit 3(3-1)**  
 This course covers the functions of the forensic laboratory and its relationship to criminal investigations and prosecutions. Topics include advanced crime scene processing, investigative techniques, forensic technologies, laboratory administration and safety regulations and procedures. Prerequisites: BIOL 100, CHEM 100, CRJS 410, CRJS 420. (F;S)
- CRJS 371. Pathology of Death Investigation (formerly CRJS 531)** **Credit 3(3-0)**  
 This course will examine contemporary practices for investigating sudden, unexpected and violent death. Two major topics will be explored: the first focusing on the manner of death (the social circumstances under which the death occurs), the second focusing on the cause of death (the particular material actions which result in death – legal and factual). Prerequisite: CRJS 530. (F;S)
- CRJS 442. / POLI 442. American Constitutional Law** **Credit 3(3-0)**  
 This course is a case study of major United States Supreme Court decisions, the judiciary, the United States Congress, the President, federalism, the First Amendment Freedoms and Due Process Rights. Prerequisite: CRJS 200. (F)
- CRJS 443. / POLI 443. Civil Liberties** **Credit 3(3-0)**  
 This course is a study of major United States Supreme Court decisions, interpreting the Bill of Rights (the first ten amendments to the United States Constitution) and the subsequent amendments dealing with equal protection under the law and due process rights. Prerequisite: Junior or Senior standing. (S)
- CRJS 485. Special Topics in Criminal Justice (formerly CRJS 506)** **Credit 3(3-0)**  
 This course will explore and examine special topics related to the field of criminal justice. This class offers an opportunity for faculty and students to explore contemporary topics in depth that are generally not covered in the criminal justice curriculum. A single topic is covered each semester. Permission of the instructor is required. Juniors and seniors only. (DEMAND)
- CRJS 490. Independent Study (formerly CRJS 504)** **Credit 3(3-0)**  
 Senior criminal justice majors who have exhibited facility for independent study and attained a minimum grade point average of 3.0 in their major may request to investigate an area not covered in the regular curriculum. Permission of the supervising instructor and the department chairperson is required. Seniors only. (F;S;SS)
- CRJS/POLI 492. Honors Seminar in Political Science & Criminal Justice – Capstone (formerly CRJS/POLI 505)** **Credit 3(3-0)**  
 This course includes an examination of selected political science and criminal justice topics and experiences. Students participating in co-op and study abroad experiences may also enroll in this course. Seniors only. (S)
- CRJS 498. Internship (formerly CRJS 500)** **Credit 3(1-3)**  
 This course provides an opportunity for practical experience in various criminal justice agencies. Interns are required to participate in a one-hour weekly seminar. Prerequisites: Senior standing and permission of internship coordinator. (F;S;SS)

#### Advanced Undergraduate and Graduate

- CRJS 670./SOWK 670. Law and Society** **Credit 3(3-0)**  
 This course examines selected and representative forms of social justice and injustices; and barriers to opportunities for legal redress, as related to contemporary issues. Prerequisite: Senior or graduate standing (F;S;SS)

#### DIRECTORY OF FACULTY

**Ayanna R. Armstrong** ..... **Assistant Professor**  
 B.A., Spellman Collage; M.B.A, Ph.D., Clark Atlanta University

<b>Shon F. Barnes</b> .....	<b>Adjunct Instructor</b>
B.A., Elizabeth City State University; M.S., University of Cincinnati	
<b>Luisa E. Bowman</b> .....	<b>Adjunct Instructor</b>
B.S., Lee University; M.A., M.S., University of Tennessee at Knoxville; Ph.D., Clark Atlanta University	
<b>Brenton Boyce</b> .....	<b>Adjunct Instructor</b>
B.A., North Carolina A&T State University, J.D., North Carolina Central University School of Law	
<b>Keith L. Coleman</b> .....	<b>Adjunct Instructor</b>
B.A., University of South Florida; M.A., University of Massachusetts at Lowell	
<b>Ernest L. Cuthbertson</b> .....	<b>Adjunct Instructor</b>
B.A., North Carolina A&T State University; M.A., Methodist University	
<b>Maria Hicks-Few</b> .....	<b>Adjunct Instructor</b>
B.A., North Carolina A&T State University; M.P.A., University of North Carolina Greensboro	
<b>James Howerton</b> .....	<b>Adjunct Instructor</b>
B.A., North Carolina A&T State University; M.P.A., University of North Carolina at Chapel Hill	
<b>Barbara Anne Johnson</b> .....	<b>Adjunct Instructor</b>
B.S., Guilford College; M.A., University of North Carolina at Greensboro	
<b>Maruice Mangum</b> .....	<b>Professor Chairperson</b>
B.S., University of Iowa; M.A., The Ohio State University; Ph.D., Louisiana State University	
<b>James P. Mayes</b> .....	<b>Associate Professor and Director of Criminal Justice Program</b>
B.A., Princeton; M.A., The Ohio State University; J.D., University of Baltimore, School of Law	
<b>Radscheda R. Nobles</b> .....	<b>Adjunct Instructor</b>
B.A., Shaw University; M.S., Fayetteville State University	
<b>Raven Sapp</b> .....	<b>Adjunct Instructor</b>
B.S., Park University-Kuke AFB; M.S., Methodist University	
<b>Derick Smith</b> .....	<b>Adjunct Instructor</b>
B.A., M.A., Fayetteville State University	
<b>James D. Steele</b> .....	<b>Associate Professor</b>
BA., Morgan State University; M.A., Ph.D., Atlanta University	

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**Department of Visual & Performing Arts**

<http://www.ncat.edu/cahss/departments/vpa/index.html>

**Gregory J. Horton, Interim Chairperson**

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**OVERVIEW**

The Department of Visual and Performing Arts comprises the Programs of Music, Theatre, Visual Arts and a Dance concentration. Through an ongoing collaborative process, the Department develops and sustains the artistic and cultural environment of the university and the community. The department prepares students both academically and artistically through the implementation of interdisciplinary studies for leadership roles in a diverse society.

**MISSION**

The mission of the department of visual and performing arts is to provide students with exceptional professional programs, which combine development in artistic disciplines and career preparation in the arts. These programs are delivered to students through individualized and small group instruction within a broadly based curriculum. The department fosters creativity, exploration and discovery in students through interdisciplinary collaboration and outreach inspiring growth, change and global awareness through the arts. To support this mission, the faculty of the department of visual and performing arts subscribes to the highest academic, artistic and ethical standards for themselves and their students.

**VISION**

To be the premiere Southeastern Visual and Performing Arts center for the study, research and creation of dance, music, theatre and visual arts from a cross-cultural perspective with an emphasis in the African Diaspora.

**OBJECTIVES**

1. to prepare students for professional employment and admission to graduate and professional schools.
2. to engage students in dialogue about the aesthetic experience and its role in a global society.
3. to create awareness of the historical development of the arts in western and non-western traditions.
4. to provide opportunities for international studies, travel and documentation of the arts.
5. to provide an environment conducive to creative achievement in the arts.

**DANCE PROGRAM**

<http://www.ncat.edu/cahss/departments/vpa/dance-concentration/About%20us%20-dance.html>

**Melanie Dalton, Program Director**



## MINOR OFFERED

Dance

### COURSE DESCRIPTIONS IN DANCE

**DANC 100. Body Works** **Credit 2(0-2)**

This course focuses on aerobic training, strength training and endurance. Included also are topics on wellness and nutrition. There is a physical assessment at the beginning and the end of the semester. (F;S)

**DANCE 110. Beginning Ballet** **Credit 1(0-2)**

This course is an introduction to the basic principals of ballet as an artistic and skill medium. The emphasis is on barre' exercises, simple combinations in adagio and allegro. Additionally, French terminology will be addressed as it relates to the ballet movement vocabulary. (F;S)

**DANC 200. Modern Dance I** **Credit 1(0-2)**

This course is a study of the basic principles of movement: time, space and energy. The emphasis is on developing a movement vocabulary, correct body alignment and movement exploration. The history of dance is covered. (F;S)

**DANC 201. Modern Dance II** **Credit 1(0-2)**

This course is a continuation and refinement of the skills and principles addressed in DANC 200. More emphasis is placed on dance composition and dance history. Contributions to the field of dance by early pioneers such as Martha Graham, Katherine Dunham, Pearl Primus, Isadora Duncan and Alvin Ailey are explored. (S)

**DANC 210. Dance Company and Repertory** **Credit 1(0-2)**

This course encompasses the study and practice of dance rehearsal, performance and basic concert production elements culminating in a series of workshops and main stage performances. All dance concentration majors are required to participate in productions as performers and/or as technical assistants. Campus and community performances are required as a part of the experiences in this course. (F;S)

**DANC 220. Dance Appreciation** **Credit 3(3-0)**

This course is a survey of dance as an art form. Topics include compositional forms, movement styles, elements of dance, influential choreographers, and historical periods. This course may substitute for Humanities elective. (F;S;SS)

**DANC 300. Dunham Technique** **Credit 2(1-2)**

Dunham I is designed to introduce students to the technique of noted dancer, choreographer and anthropologists Katherine Dunham. Students will be introduced to the barre' exercises, center floor skills and progressions, as well as the history and philosophy of Katherine Dunham. (F)

**DANC 301. Dunham II** **Credit 2(1-2)**

This course is a continuation and refinement of the skills covered in Dunham Technique I. Special emphasis will be given to the theoretical framework and philosophy of Dunham Technique. Acquisition of additional skills includes progressions (movement through space) and performance style. A research paper and public performance is required. (S)

**DANC 330. World Dance** **Credit 2(1-1)**

The focus of this course is dances of other world not covered in DANC 330. These countries include but are not limited to North Africa, Asia, Europe and South America (Brazil). Cultural norms, history, and aesthetics are also included, In addition to lectures, the course will incorporate slides, video tapes of the various dance forms and guest lectures. Practical experiences in the dances are an important aspect of the course. (F;S)

**DANC 331. Dances of Africa and The Caribbean** **Credit 2(1-2)**

The course is an introduction to selected dances of Africa and the Caribbean. Skill acquisition, cultural norms, history, theory and aesthetics of the selected dances will be explored in depth. Geographical areas of study include, but are not limited to Ghana, Puerto Rico, Cuba, Haiti, and Jamaica. (F;S;SS)

**DANC 450. Blacks in Western Theatrical Dance** **Credit 3(3-0)**

This course is designed to include the theoretical framework of concert vernacular dance in America with emphasis on the contributions of African-Americans from 1900 to the present. Lectures and practical experiences are a part of this course. A research paper and presentation are required. (S)

**DANC 500. Dance Ethnography** **Credit 3(3-0)**

This is an introductory course in ethnography research methods and theory in dance. Emphasis is on the art and science of describing dances, rituals, and arts and crafts of a group or culture. Movement analysis, protocol in the field and us media equipment for research are included. (S)

**DANC 550. Summer Abroad** **Credit 3(2-2)**

This study abroad course includes a three week study of traditional folk dances in a selected African or Caribbean country. The focus is on traditional dances, cultural norms, history of the country and the dances, rituals and ceremonies of the people. Students will interact with the local population in structured and non-structured classes. Students will spend time in villages and provinces accompanied by a local guide. The material gathered during the study abroad experience will form the basis for the Senior Project. Pre-and post-departure preparation will occur during the first two week, and the final week of the summer session. (SS)

**LIBS 499. Senior Project** **Credit 3(2-2)**

The course description is under Liberal Studies.

## DIRECTORY OF FACULTY

**Melanie Dalton** .....**Adjunct Professor**  
 B.S., North Carolina A&T State University; B.A., University of North Carolina at Greensboro; Ph.D., Texas Women’s University  
**Cheryl M. Stevens** .....**Adjunct Lecturer**  
 B.S., M.S., North Carolina A&T State University; M.Ed., Ph.D., Temple University

**MUSIC PROGRAM**

<http://www.ncat.edu/cahss/departments/vpa/music-program/index.html>

**John P. Henry, Jr., Program Director**

**OBJECTIVES**

The general objectives of the Music Program are as follows:

1. to provide the student with basic skills, techniques, pedagogical concepts, and perspectives for a career as an artist and as a teacher of music on the K-12 levels.
2. to contribute to and present an experiential knowledge base that includes technological advances, instrumentation, and techniques which support the discipline.
3. to interpret, create, and maintain the highest level in individual and group performance in music,
4. to enhance the cultural and aesthetic life of the university student through personal experiences in a focused program of education in music.

**DEGREES OFFERED**

Music (Performance) – Bachelor of Arts  
 Music (General) – Bachelor of Arts  
 Secondary Education (Music Education) – Bachelor of Science

The Music Program offers the Bachelor of Arts degree with two options. One option is a liberal arts curriculum leading to the Bachelor of Arts in Music degree with concentrations in general music. This degree program is designed to accommodate students who wish to enter some area of music other than teaching. The other option is a professional degree in performance. This degree is designed for students who desire a career as a concert artist. Degree program requirements differ, and are not necessarily interchangeable. Students are advised to check programs carefully.

The Bachelor of Science degree is a teacher education based curriculum with either choral or instrumental concentrations. Students who wish to teach in the public schools must follow this curriculum and the guidelines of the School of Education to meet certification and graduation requirements.

**CAREER OPPORTUNITIES**

Successful completion of the requirements of the B.A. degree in Music provides the student with opportunities for various careers in the performing arts, and/or related disciplines. Completion of the B.S. degree certifies one to teach in the public schools.

**PROGRAM REQUIREMENTS**

For certified admission to the study of music as a major, all prospective students must successfully pass auditions set by the Faculty in the principal applied music area as well as a Music Theory Exam.

To continue in the Music Program as a major, students must maintain a 2.8 average in all music courses. Students whose averages fall below 2.8 will be placed on Program probation for the following semester of enrollment. Should the average not meet the minimum requirements at the end of the probationary period, their status will be subject to review by the Program Committee on Curriculum, Standards and Measures. Students who have a semester grade of “D” or below in a major course must repeat the affected course(s) and earn a grade of “C” or better before enrolling into any continuation or the next level of said course(s). Student progress will be evaluated at the end of the fourth semester of residency to determine approval for enrollment into upper level (junior classification, 400-600) music courses.

**MUSIC PERFORMANCE DEGREE REQUIREMENTS**

The Music Performance degree is a highly selective program that maintains specific entry and retention requirements. These requirements may include additional auditions and academic provisions.

**MUSIC DEGREE REQUIREMENTS**

Upon entrance into the music program, each student must choose a principal applied concentration area – woodwind, brasswind, percussion, voice or piano.

**PERFORMANCE ENSEMBLES**

Each student with a major in music is required to have 7 credits in performance ensembles during their enrollment. For instrumentalists, at least 4 of these credits must come from Marching Band or from Symphonic/Concert Bands. The remaining 3 credits may either be additional hours of Marching and Symphonic/Concert Bands, or may come from the other instrumental ensembles within the Program, such as Jazz Ensemble, Brass Ensemble, Woodwind Ensemble, Percussion Ensemble, Piano Chamber Ensemble, etc. For vocalists, 4 credit must come from Concert Choir, and the remaining 3 credits may come from Chamber Choir or Concert Choir. Participation in more than a single ensemble is encouraged so long as there are no schedule conflicts or violation of University policy concerning student course load.

### RECITAL SEMINAR

Music 307 is required each semester of enrollment as a major in the Program. As a part of this course, attendance is required for all music majors at student and faculty recitals, band, choir, and chamber ensemble concerts, and lyceum programs. A systematic method of checking and recording attendance will be used.

### INSTRUMENTS AND PRACTICE FACILITIES

Several studios are provided as practice facilities for students. Each contains a piano that is tuned regularly and kept in good repair. These areas are reserved for music majors only, and each person using the practice space assumes the responsibility for the maintenance of the instrument provided.

With the exception of piano students, each music major is expected to furnish an instrument for personal use. University-owned instruments are intended for use within ensembles and pedagogy classes only.

**Department of Visual and Performing Arts  
Bachelor of Arts in Music (General)  
Major Code: MUSC  
Concentration Code: GENR**

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
FRST 101	1	MUSI 102	3
MUSI 101	3	MUSI 113, 123, 133, 143, 153 or 163	2
MUSI 113, 123, 133, 143, 153 or 163	2	MUSI 154 or 164	1
MUSI 154 or 164	1	MUSI 119	1
MUSI 300, 301 or 308	1	MUSI 300, 301 or 308	1
MUSI 307	0	MUSI 307	0
<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>14</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
MUSI 200	3	MUSI 201	3
MUSI 213, 223, 233, 243, 253 or 263	2	MUSI 213, 223, 233, 243, 253 or 263	2
MUSI 254 or 264	1	MUSI 254 or 264	1
Elective	3	Elective	2
MUSI 300, 301 or 308	1	MUSI 300, 301 or 308	1
MUSI 307	0	MUSI 307	0
MUSI 219	3	MUSI 216	3
HIST 130 or HIST 216	3	PHIL 101 ( <i>formerly PHIL 260</i> )	
<b>Semester Total</b>	<b>16</b>	or SOCI 100	3
		<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
FOLA I or SPAN I	3	SPCH 250	3
MUSI 300, 301, 302, 303, 304, 305, 306, or 308	1	MUSI 300, 301, 302, 303, 304, 305, 306, or 308	1
MUSI 307	0	MUSI 307	0
MUSI 402	3	MUSI 404	3
MUSI 403	3	Elective	3
MUSI 415	2	Elective	2
MUSI 221	3	ENVS 201	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
BIOL 100	4	MUSI 300, 301, 302, 303, 304, 305, 306, or 308	1
MUSI 220	3	MUSI 490 ( <i>formerly MUSI 551</i> )	3
MUSI 300, 301, 302, 303, 304, 305,			

306, or 308	1	MUSI 307	0
MUSI 307	0	Elective	2
MUSI 401 (formerly MUSI 501)	3	Elective	3
Elective	3	Elective	3
DANC 100	2	Elective	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 120**

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in MUSI and MGMT courses.*

For advisement on curricula and courses in Music (General), please contact your academic advisor or the Director of the Music Program.

MUSI 113 (Principal Upper Brass), MUSI 123 (Principal Lower Brass), MUSI 133 (Principal Woodwinds), and MUSI 143 (Principal Percussion), 153 (Voice), 163 (piano)

MUSI 213 (Principal Upper Brass), MUSI 223 (Principal Lower Brass), MUSI 233 (Principal Woodwinds), and MUSI 243 (Percussion), 253 (Principal Voice), 263 (piano)

MUSI 154 (Secondary Applied Voice), MUSI 164 (Secondary Applied Piano)  
MUSI 254 (Secondary Applied Voice), MUSI 264 (Secondary Applied Piano)

*Possible Electives may come from the following:*

MUSI 226 (History of Electronic Music)	3 credits
MUSI 225 (Introduction to MIDI)	3 credits
MUSI 416 (Electronic Music)	2 credits
MUSI 417 (Electronic Music Composition) (formerly MUSI 516)	2 credits
MGMT 425 (Entrepreneurship)	3 credits
MUSI 414 (Composition)	3 credits
MUSI 418 (Psychology of Music)	3 credits

Other electives must be approved by the Music Program Director

**Department of Visual and Performing Arts**  
**Bachelor of Arts in Music (Performance)**  
**(Vocal Track)**  
**Major Code: MUSC**  
**Concentration Code: PERF**

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
FRST 101	1	MUSI 102	3
MUSI 101	3	MUSI 153	2
MUSI 153	2	MUSI 164	1
MUSI 164	1	MUSI 119	1
MUSI 301	1	MUSI 301	1

MUSI 307	0	MUSI 307	0
MUSI 120	1	MUSI 121	1
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
MUSI 200	3	MUSI 201	3
FOLA I German	3	MUSI 253	2
MUSI 253	2	MUSI 264	1
MUSI 264	1	MUSI 301	1
MUSI 301	1	MUSI 307	0
MUSI 307	0	MUSI 305 or 306	1
MUSI 305 or 306	1	ENVS 201	3
SOCI 100	3	MUSI 220	3
HIST 130 or HIST 216	3	MUSI 218	2
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
MUSI 301	1	BIOL 100	4
MUSI 307	0	DANC 100	2
MUSI 402	3	MUSI 307	0
MUSI 403	3	MUSI 404	3
MUSI 453	2	MUSI 453	2
MUSI 415	2	MUSI 305 or 306	1
FOLA I French	3	MUSI 301	1
MUSI 305 or 306	1	MUSI 450	1
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>14</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
MUSI 305 or 306	1	MUSI 454 (formerly MUSI 553)	2
MUSI 301	1	MUSI 460* (formerly MUSI 550)	1
MUSI 307	0	MUSI 305 or 306	1
MUSI 454 (formerly MUSI 553)	2	MUSI 301	1
MUSI 401 (formerly MUSI 501)	2	MUSI 307	0
MUSI 420 (formerly MUSI 503)	2	MUSI 490 (formerly MUSI 551)	3
MUSI 411 or MUSI Elective	3	SPCH 250 (Humanities/Fine Arts)	3
MUSI 427	3	Free Elective	3
<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>14</b>

**Total Credit Hours: 120**

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in MUSI and FOLA courses.*

For advisement on curricula and courses in Music (Performance – Vocal Track), please contact your academic advisor or the Director of the Music Program.

\*Capstone course

MUSI 113 (Upper Brass), MUSI 123 (Lower Brass), MUSI 133 (Woodwinds), and MUSI 143 (Percussion).

MUSI 154 (Secondary Applied Voice), MUSI 164 (Secondary Applied Piano)

MUSI 254 (Secondary Applied Voice), MUSI 264 (Secondary Applied Piano)

Courses with multiple numbers are determined on the basis of the principal applied instrument.

**Department of Visual and Performing Arts  
Bachelor of Arts in Music (Performance)**

(Piano Track)  
Major Code: MUSC  
Concentration Code: PERF

Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
FRST 100	1	FRST 101	1
MUSI 101	3	MUSI 102	3
MUSI 163	2	MUSI 163	2
MUSI 154	1	MUSI 154	1
MUSI 301	1	MUSI 119	1
MUSI 307	0	MUSI 301	1
MUSI 120	1	MUSI 307	0
<b>Semester Total</b>	<b>15</b>	MUSI 121	1
		<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
MUSI 200	3	MUSI 201	3
FOLA I	3	MUSI 218	2
MUSI 263	2	MUSI 263	2
MUSI 254	1	MUSI 254	1
MUSI 301	1	MUSI 301	1
MUSI 307	0	MUSI 307	0
MUSI 306	1	MUSI 306	1
SOCI 100	3	ENVS 201	3
HIST 130 or HIST 216	3	MUSI 220	3
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
MUSI 301	1	MUSI 260	1
MUSI 307	0	BIOL 100	4
MUSI 402	3	MUSI 301	1
MUSI 403	3	MUSI 306	1
MUSI 463	2	MUSI 307	0
MUSI 415	2	MUSI 404	3
MUSI 260	1	MUSI 463	2
SPCH 250	3	MUSI 450	1
<b>Semester Total</b>	<b>15</b>	DANC 100	2
		<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
MUSI 409 or MUSI Elective	2	MUSI 464 ( <i>formerly MUSI 563</i> )	2
MUSI 464 ( <i>formerly MUSI 563</i> )	2	MUSI 460* ( <i>formerly MUSI 550</i> )	1
MUSI 306	1	MUSI 306	1
MUSI 301	1	MUSI 301	1
MUSI 307	0	MUSI 307	0
MUSI 401 ( <i>formerly MUSI 501</i> )	2	MUSI 490 ( <i>formerly MUSI 551</i> )	3
MUSI 420 ( <i>formerly MUSI 503</i> )	2	MUSI Elective	2
MUSI 260	1	Free Elective	3
Free Elective	2	<b>Semester Total</b>	<b>13</b>
<b>Semester Total</b>	<b>13</b>		

**Total Credit Hours: 120**

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C or better in MUSI courses.*

For advisement on curricula and courses in Music (Performance – Piano Track), please contact your academic advisor or the Director of the Music Program.

\*Capstone course

MUSI 163 (Principal Applied Piano)

MUSI 154 (Secondary Applied Voice)

MUSI 254 (Secondary Applied Voice)

Courses with multiple numbers are determined on the basis of the principal applied instrument.

**Department of Visual and Performing Arts  
 Bachelor of Arts in Music (Performance)  
 (Instrumental Track)  
 Major Code: MUSC  
 Concentration Code: PERF**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
FRST 101	1	MUSI 102	3
MUSI 101	3	MUSI 113, 123, 133, 143, 153 or 163	2
MUSI 113, 123, 133, 143, 153 or 163	2	MUSI 164	1
MUSI 164	1	MUSI 119	1
MUSI 300, 301 or 308	1	MUSI 300, 301 or 308	1
MUSI 307	0	MUSI 307	0
<b>Semester Total</b>	<b>14</b>	MUSI 218	2
		<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
MUSI 200	3	MUSI 201	3
FOLA I	3	MUSI 213, 223, 233, 243, 253 or 263	2
MUSI 213, 223, 233, 243, 253 or 263	2	MUSI 264	1
MUSI 264	1	MUSI 300, 301 or 308	1
MUSI 300, 301 or 308	1	MUSI 307	0
MUSI 307	0	MUSI 302, 303, 304, or 306	1
MUSI 302, 303, 304, or 306	1	ENVS 201	3
SOCI 100	3	MUSI 220	3
HIST 130 or HIST 216	3	DANC 100	2
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	

MUSI 300, 301 or 308	1	MUSI 300, 301 or 308	1
MUSI 302, 303, 304, or 306	1	MUSI 302, 303, or 304, or 306	1
MUSI 307	0	MUSI 307	0
MUSI 402	3	MUSI 404	3
MUSI 403	3	MUSI 413, 423, 433,443,453 or 463	2
MUSI 413, 423, 433,443,453 or 463	2	MUSI 450	1
MUSI 415	2	SPCH 250	3
Elective	2	Elective	3
<b>Semester Total</b>	<b>14</b>	Elective	2
		<b>Semester Total</b>	<b>16</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
MUSI 419 (formerly 513), 421 (formerly 523), 434 (formerly 533), 444 (formerly 543), 454 (formerly 553) or 464 (formerly 563)	2	MUSI 419 (formerly 513), 421 (formerly 523), 434 (formerly 533), 444 (formerly 543), 454 (formerly 553) or 464 (formerly 563)	2
MUSI 302, 303, 304, or 306	1	MUSI 460* (formerly MUSI 550)	1
MUSI 300, 301 or 308	1	MUSI 302, 303, 304, or 306	1
MUSI 307	0	MUSI 300, 301 or 308	1
MUSI 401 (formerly MUSI 501)	2	MUSI 307	0
MUSI 420 (formerly MUSI 503)	2	MUSI 490 (formerly MUSI 551)	3
BIOL 100	4	Elective	3
MUSI 425, 426, or 430	2	Elective	2
<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>13</b>

**Total Credit Hours: 120**

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in MUSI courses.*

For advisement on curricula and courses in Music (Performance – Instrumental Track), please contact your academic advisor or the Director of the Music Program.

\*Capstone course

MUSI 113 (Upper Brass), MUSI 123 (Lower Brass), MUSI 133 (Woodwinds), and MUSI 143 (Percussion).  
MUSI 213 (Upper Brass), MUSI 223 (Lower Brass), MUSI 233 (Woodwinds), and MUSI 243 (Percussion).  
MUSI 413 (Upper Brass), MUSI 423 (Lower Brass), MUSI 433 (Woodwinds), and MUSI 443 (Percussion).  
MUSI 419 (Upper Brass), MUSI 421 (Lower Brass), MUSI 434 (Woodwinds), and MUSI 444 (Percussion).

MUSI 154 (Secondary Applied Voice), MUSI 164 (Secondary Applied Piano)  
MUSI 254 (Secondary Applied Voice), MUSI 264 (Secondary Applied Piano)

Courses with multiple numbers are determined on the basis of the principal applied instrument.

**Department of Visual and Performing Arts**  
**Bachelor of Arts in Secondary Education (Music Education)**  
**(Vocal Track)**  
**Major Code: MUSC**  
**Concentration Code: MUED**

**Curriculum Guide**



Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
MATH 100	3	MATH 101	3
MUSI 101	3	MUSI 102	3
MUSI 113, 123, 133, 143, 153 or 163	2	MUSI 113, 123, 133, 143, 153 or 163	2
MUSI 114, 124, 234, 144, 154 or 164	1	MUSI 114, 124, 234, 144, 154, or 164	1
MUSI 300, 301 or 308	1	MUSI 119	1
MUSI 307	0	MUSI 300, 301 or 308	1
MUSI 120	1	MUSI 307	0
CUIN 102	2	MUSI 121	1
<b>Semester Total</b>	<b>16</b>	MUSI 107	1
		CUIN 110	2
		<b>Semester Total</b>	<b>18</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
MUSI 200	3	MUSI 201	3
MUSI 213, 223, 233, 243, 253 or 263	2	MUSI 213, 223, 233, 243, 253 or 263	2
MUSI 214, 224, 234, 244, 254 or 264	1	MUSI 214, 224, 234, 244, 254 or 264	1
MUSI 300, 301 or 308	1	MUSI 300, 301 or 308	1
MUSI 307	0	MUSI 307	0
MUSI 425, 426, 428, or 430 <sup>++</sup>	2	MUSI 220	3
MUSI 216	3	CUIN 255 (formerly CUIN 255)	2
CUIN 210	2	ENVS 201	3
<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
CUIN 432 (formerly CUIN 532)	3	BIOL 100	4
MUSI 300, 301 or 308	1	MUSI 300, 301 or 308	1
MUSI 307	0	MUSI 307	0
MUSI 402	3	MUSI 404	3
MUSI 403	3	MUSI 413, 423, 433,443,453 or 463	2
MUSI 413, 423, 433,443,453 or 463	2	CUIN 431 (formerly CUIN 531)	3
MUSI 425, 426, 428, or 430 <sup>++</sup>	2	CUIN 430 (formerly CUIN 530)	2
CUIN 410	2	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>16</b>		
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
PSYC 101 (formerly PSYC 320)	3	CUIN 460 (formerly CUIN 660)	9
HIST 130, 207, or 216	3	CUIN 470 (formerly CUIN 670)	3
MUSI 425, 426, 428, or 430 <sup>++</sup>	2	<b>Semester Total</b>	<b>12</b>
MUSI 300, 301 or 308	1		
MUSI 307	0		
MUSI 401 (formerly MUSI 501)	2		
MUSI 420 (formerly MUSI 503)	2		
MUSI 460 <sup>+</sup> (formerly MUSI 550)	1		
<b>Semester Total</b>	<b>14</b>		

**Total Credit Hours: 120**

\* Capstone Experience

\*\* MUSI 113 (Upper Brass), MUSI 123 (Lower Brass), MUSI 133 (Woodwinds), and MUSI 143 (Percussion).

Courses with multiple numbers are determined on the basis of the principal applied instrument.

++ Vocal concentrators will enroll in 3 of the 4 Pedagogy courses to be chosen from MUSI 425, 426, 428 or 430

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in MUSI and CUIN courses.*

For advisement on curricula and courses in Secondary Education (Music Education) – Vocal Track, please contact your academic advisor or the Director of the Music Program.

Music education majors with emphasis in voice will enroll in MUSI 120, Instrumental concentrators will enroll in MUSI 119 and Piano concentrators will enroll in MUSI 260 (based on exhibited skills, the Piano teacher may delay enrollment in this course until later semesters).

**Criteria for Admission to Teacher Education**

- Purchase and Create a TaskStream Account
- Complete Dispositions Survey
- Submit and achieve proficiency on Philosophy of Teaching Statement
- Praxis Core – combined score of at least 522
- GPA – 2.8
- Obtain proficiency on an interview with Teacher Education faculty panel
- Complete the Notification and Acknowledgement of the Criminal Background Form
- Provide Proof of membership in professional organization
- Application – can be filled out online & taken to the SOE
- You may not take upper division teacher education courses, including CUIN 410, CUIN 460, CUIN 470, until you have been admitted to the Teacher Education Program.
- **Praxis II must be TAKEN before a grade can be given in Band or Choral Methods**

**Department of Visual and Performing Arts**  
**Bachelor of Arts in Music (Secondary Education – Instrumental Track)**  
**Major Code: MUSC**  
**Concentration Code: MUED**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL100	3	ENGL 101	3
MATH 101	3	MATH 102	3
MUSI 101	3	MUSI 102	3
MUSI 113, 123, 133, 143, 153 or 163	2	MUSI 113, 123, 133, 143, 153 or 163	2
MUSI 114, 124, 234, 144, 154 or 164	1	MUSI 114, 124, 234, 144, 154 or 164	1
MUSI 300, 301 or 308	1	MUSI 119	1
MUSI 307	0	MUSI 300, 301 or 308	1
CUIN 102	2	MUSI 307	0
<b>Semester Total</b>	<b>15</b>	MUSI 107	1
		CUIN 110	2
		<b>Semester Total</b>	<b>17</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
MUSI 200	3	MUSI 201	3
MUSI 213, 223, 233, 243, 253 or 263	2	MUSI 213, 223, 233, 243, 253 or 263	2
MUSI 214, 224, 234, 244, 254 or 264	1	MUSI 214, 224, 234, 244, 254 or 264	1
MUSI 300, 301 or 308	1	MUSI 300, 301 or 308	1
MUSI 307	0	MUSI 307	0

MUSI 430	2	MUSI 220	3
CUIN 210	2	CUIN 255 ( <i>formerly CUIIN 310</i> )	2
HIST 130, 207, or 216	3	MUSI 216	3
ENVS 201	3	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>17</b>		
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
MUSI 432 ( <i>formerly MUSI 532</i> )	3	BIOL 100	4
MUSI 300, 301 or 308	1	MUSI 307	0
MUSI 307	0	MUSI 404	3
MUSI 402	3	MUSI 413, 423, 433, 443, 453 or 463	2
MUSI 403	3	CUIN 431 ( <i>formerly CUIIN 531</i> )	3
MUSI 413, 423, 433, 443, 453 or 463	2	MUSI 300, 301 or 308	1
MUSI 426	2	CUIN 430 ( <i>formerly CUIIN 530</i> )	2
CUIN 410	2	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>16</b>		
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
PSYC 101 ( <i>formerly PSYC 320</i> )	3	CUIN 460 ( <i>formerly CUIIN 660</i> )	9
MUSI 300, 301 or 308	1	CUIN 470 ( <i>formerly CUIIN 670</i> )	3
MUSI 307	0	<b>Semester Total</b>	<b>12</b>
MUSI 401 ( <i>formerly MUSI 501</i> )	2		
MUSI 420 ( <i>formerly MUSI 503</i> )	2		
MUSI 428	2		
MUSI 425	2		
MUSI 460** ( <i>formerly MUSI 550</i> )	1		
<b>Semester Total</b>	<b>13</b>		

**Total Credit Hours: 120**

\*Capstone Experience

\*\*MUSI 113 (Upper Brass), MUSI 123 (Lower Brass), MUSI 133 (Woodwinds), and MUSI 143 (Percussion).

Courses with multiple numbers are determined on the basis of the principal applied instrument.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in MUSI and CUIIN courses.*

For advisement on curricula and courses in Music (Secondary Education - Instrumental Track), please contact your academic advisor or the Director of the Music Program.

Music education majors with emphasis in voice will enroll in MUSI 120, Instrumental concentrators will enroll in MUSI 119 and Piano concentrators will enroll in MUSI 260 (based on exhibited skills, the Piano teacher may delay enrollment in this course until later semesters).

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- Complete the Notification and Acknowledgement of the Criminal Background Form
- Provide Proof of membership in professional organization
- Application – can be filled out online & taken to the SOE
- You may not take upper division teacher education courses, including CUIIN 410, CUIIN 460, CUIIN 470, until you have been admitted to the Teacher Education Program.
- Praxis II must be TAKEN before a grade can be given in Band or Choral Methods

### **COURSE DESCRIPTIONS IN MUSIC THEORY**

#### **MUSI 101/102. Theory I and II**

**Credit 3(2-2)**

This course includes a review of the fundamentals of music, including the rudiments of music theory- construction and function of scales; intervals, triads and dominant seventh chords in root position and inversions; use of non-harmonic tones; correlated analysis, rhythmic, melodic, and harmonic dictation. (F;S)

#### **MUSI 110. Fundamentals of Music**

**Credit 3(1-4)**

This is a comprehensive study of the rudiments of music: notation, intervals, scales, keys, and rhythm. The course is designed for the entering music major and is an elective for non- majors. This course may not be used for credit toward degrees in music. (F;S;SS)

#### **MUSI 119. Sight Singing and Ear Training**

**Credit 1(0-2)**

This course is the study of the fundamentals of musicianship; correlated rhythmic, melodic, and harmonic drills. (S)

#### **MUSI 155. Gospel Improvisation-Vocal**

**Credit 2(0-4)**

This is a survey course designed to teach standard vocal techniques of Gospel music. Areas of instruction will include such topics as proper posture, breathing techniques and concepts, vocal pedagogy, vocal alterations, rearranging, and spontaneous composition of melodic lines. Students enrolling in this course must demonstrate the ability to match pitches, and replicate dictated melodic content. This course may be repeated for two additional credits. Courses MUSI 155 and 165 may be taken simultaneously with the approval of the vocal and keyboard instructors. (DEMAND)

#### **MUSI 165. Gospel Improvisation-Keyboards**

**Credit 2(0-4)**

This is a survey course designed to teach the fundamentals of keyboard improvisation in Gospel music. Emphasis will be placed on the basic elements of music importance of instrumentation, meter and tempo, melody and harmony. Students enrolling in this course must demonstrate basic improvisational keyboard skills. This course may be repeated for two additional credits. Courses MUSI 155 and 165 may be taken simultaneously with the approval of the vocal and keyboard instructors. (DEMAND)

#### **MUSI 200/201. Theory III and IV**

**Credit 3(2-2)**

Modulation, construction and function of seventh, ninth, eleventh, and thirteenth chords in root position and inversions; chromatic harmony; advanced modulation; trends of the twentieth century; corrected analysis, sight singing, ear training, dictation, and keyboard drill will be studied. Prerequisites: Music 101 and 102. (F;S)

#### **MUSI 401. Arranging (formerly MUSI 501)**

**Credit 3(2-2)**

Scoring for chorus, band, orchestra, vocal and instrumental chamber ensembles will be studied. Prerequisites: MUSI 400 and 401. (F)

#### **MUSI 402. Form and Analysis**

**Credit 3(3-0)**

Harmonic and melodic structure of the phrase- phrases in combination- the analytical methods; theme and variation, ternary, rondo, binary, sonata, concerto and unique forms; the fugue and related genres will be examined. Prerequisites: MUSI 200 and 201. (F)

#### **MUSI 414. Composition**

**Credit 3(2-2)**

This course includes an introduction to the basic elements of creative writing- melodic writing; organization and structure of musical sound; various approaches to the development of thematic and harmonic materials; as well as orchestration as it applies to composition. Prerequisites: MUSI 101, 102, 200, 201, and/or consent of instructor. (S)

#### **MUSI 415. Music Synthesis**

**Credit 2(2-0)**

This course is an introduction to electronic music, both in its technology and its role in reshaping musical traditions. The course will emphasize waveform analysis with the related mathematical and acoustical concepts. Units will include a history of electronic musical instruments, related acoustics, exploration of various methods of synthesis, and spectra analyses of waveforms using the

mathematics developed by Fourier. Students will create original or mutated timbre for use in an original arrangement or composition. The use of the computer as a tool for composition and score production will be explored. (F)

**MUSI 416. Electronic Music** **Credit 2(1-0)**

This course is designed to introduce the student to electronic music and how it is created. Topics to be covered will be the history of electronic music, the use and possible applications of the tape recorders, mixers, amplifiers, speakers, microphones, sound generators, synthesizers, etc., and the proper maintenance of all the equipment utilized. Each student will arrange two or more hours per week to work alone in the Electronic Music Studio with the equipment and materials. The creation of original compositions will be a project assignment to be premiered at a public concert. (S)

**MUSI 417. Electronic Music Composition (formerly MUSI 516)** **Credit 2(1-2)**

This course is a continuation of MUSI 416, and will explore advanced musical composition using electronically generated sounds. The compositions created in this course by students may be prerecorded sequences and/or interactive performances with some acoustic sounds. Project assignments will include the creation of electronic compositions that will be premiered at a public concert and used in the senior project. (F)

## **MUSIC HISTORY AND LITERATURE**

**MUSI 216. Music Appreciation** **Credit 3(3-0)**

This course is a study of melody, harmony, rhythm, simple forms, vocal music, texture and the orchestra. It is designed for the general student to provide an introductory survey to the art of music. (F;S;SS)

**MUSI 218. Introduction to Music Literature** **Credit 2(2-0)**

This course will present a study of western and non-western music, and will include analysis of music literature from western culture and a select group of non-western cultures. The musical styles will be studied chronologically except when no historical data is present. In the case of that exception (ex.: Native American Music or African Music), those styles will be studied in the time period that historical data is present (written accounts or recordings). (F)

**MUSI 219. History of Gospel Music** **Credit 3(3-0)**

This course will present a survey of the historical development of African-American Gospel Music. Emphasis will be placed on the stylistic and evolutionary development of the music and its significant contributions. This course may be taken as fulfillment of the Black-Global Studies requirement. (F)

**MUSI 220. History of Black Music in America** **Credit 3(3-0)**

This course is a study of black American music from the 17th century to the present. Emphasis is placed on musical forms and styles within the social, economic, and political areas. Formal musical training desirable but not required. Humanities credit given. (F;SS)

**MUSI 221. History of Jazz** **Credit 3(3-0)**

This is a general survey course of the history of jazz from its beginnings to the present, with major emphasis placed on the stylistic and evolutionary development of the music and the significant contributors to jazz styles. Lectures will be supplemented by films, slides, demonstrations, live concerts, and phonograph recordings. Course is open to non-music majors as well as music majors. No formal knowledge of music theory and history or previous background in music is necessary for enrollment. (F;S;SS)

**MUSI 226. History of Electronic Music** **Credit 3(3-0)**

This course will survey electronic music pioneers from the early twentieth century through the latest twentieth century developments with implications for the twenty-first century. Cahill, Cage, Vare'se, Stockhausen, Babbitt, Moog and Chowing are some of the electronic composers who will be studied. (F)

**MUSI 403. History and Literature of Music I** **Credit 3(2-2)**

This course includes analyses of main works of music literature presented in historical order; form, harmonic, and contrapuntal devices, orchestration, and other stylistic features investigated against the background of historic artistic and cultural developments – Ancient, Medieval, Renaissance and Baroque periods. Prerequisites: MUSI 101 and 102. (F)

**MUSI 404. History and Literature of Music II** **Credit 3(2-2)**

This course is an analysis of main works of music literature presented in historical order, form, harmonic and contrapuntal devices, orchestration, and other stylistic features investigated against the background of historic, artistic, and cultural development – Classical, romantic, Postromantic and contemporary periods. Prerequisite: MUSI 403. (S)

**MUSI 411. The Art Song** **Credit 2(1-2)**

This course is a survey of the art song from seventeenth century Italy to present, with special emphasis on the song literatures of Germany, France, and contemporary America- practice in interpretation with particular attention to style and diction. Prerequisite: MUSI 404. (S)

## **MUSIC PEDAGOGY**

**MUSI 225. Introduction to MIDI** **Credit 2(2-1)**

This course will introduce the concepts and functions of Musical Instrument Digital Interface (MIDI) devices that are used in the creation of musical compositions, scores, and recordings. (S)

**MUSI 427. Voice Pedagogy** **Credit 2(1-2)**

This course includes the following: use of the singing voice; basic principles of singing, interpretation and musicianship; physiology, breathing; tone production, resonance and diction. The application of basic principles to the singing voice; pronunciation, articulation, intonation, attack, legato, sostenuto, flexibility and dynamics; ensemble singing; techniques for producing choral tone in accompanied and unaccompanied styles, choral procedure and repertoire. (F)

**MUSI 428. String Pedagogy****Credit 2(2-0)**

This course is designed for the Music Education major. This course will present basic instructional techniques for playing orchestral stringed instruments. It also will present training in use of the singing voice including basic principles of singing, breathing, tone production, resonance and diction.

**MUSI 430. Percussion Pedagogy****Credit 2(2-0)**

This course is designed for Music Education majors. This course will present basic instructional techniques for playing percussion instruments inclusive of Snare Drum, Timpani, Xylophone, Bells, Chimes, and other percussion instruments. (F)

**PERFORMANCE ORGANIZATIONS**

The total number of semester hours to be earned through performance organization courses is specified in the outlines of major curricula. Each student with a major in music is required to maintain continuous membership in a Division-sanctioned performance ensemble. If the principal applied subject is a wind or percussion instrument, the student must elect band; if the principal applied subject is voice or piano, the student must elect choir. The organization elected must be repeated each semester as specified until the required number of semester hours has been earned. Other performance organization courses are elected as required of the several curricula and similarly repeated for credit until the necessary semester hours have been earned.

**MUSI 300. University Bands****Credit 2(0-5)**

The University Marching Band is organized in the fall of the year (first semester) and plays for all football games. It is open to all qualified students, both men and women. The Symphony Band and the Concert Band function during the spring semester performing concerts throughout the southeast. Membership in both the Symphony and Marching Bands is through audition with the Director of Bands. May be repeated for credit each semester. (F;S)

**MUSI 301. University Choir****Credit 2(0-5)**

This is an organization designed to perform a diversity of choral literature ranging from the classics to gospel. Numerous on and off-campus public appearances, as well as at least one tour are planned each year. Membership is open to all qualified students by audition. May be repeated for credit. (F;S)

**MUSI 302. Brass Ensemble****Credit 1(0-2)**

The study and performance of literature for brass instrument chamber groups from all periods of music history and in all styles are included as well as frequent public concerts. Membership is open to all qualified students, both men and women through audition with the director. May be repeated for credit each semester. (F;S)

**MUSI 303. Woodwind Ensemble****Credit 1(0-2)**

This course is the study and performance of literature for woodwind chamber music groups and in all styles. There will be frequent public concerts. Membership is open to all qualified students, both men and women through audition with the director. May be repeated for credit each semester. (F;S)

**MUSI 304. Percussion Ensemble****Credit 1(0-2)**

This course is a study and performance of literature for percussion chamber groups representing a wide variety of styles. It is designed to develop skill in ensemble performance on all of the instruments of percussion used in this growing modern repertoire. Membership is open to all qualified students, both men and women, through audition with the director. Frequent public concerts. May be repeated for credit each semester. (F;S)

**MUSI 305. Opera Workshop****Credit 1(0-2)**

Musical and dramatic group study and performance of excerpts from the operatic repertoire will be included. This course includes an annual production of a standard opera and/or contemporary chamber work, with staging, costumes, and scenery. Students must secure the approval of their university voice instructor before enrolling. May be repeated for credit each semester. (S)

**MUSI 306. Chamber Singers****Credit 1(0-2)**

This is a choral organization which is designed to perform a wide variety of compositions written for voices representing various musical styles and periods will be included as well as frequent public concerts. Membership is open to qualified students through audition with the director. May be repeated for credit each semester. (F;S)

**MUSI 307. Recital Seminar****Credit 0(0-1)**

This is a weekly assembly of music students with members of the faculty, providing opportunity for experience in public performance before an audience, lecture and discussion of problems in the general area of performance, including ensemble playing and singing, conducting, accompanying, stage deportment, also performance. (Required of all music majors during each semester of residence; a grade of pass (P) or fail (F) will be assigned on the basis of participation and attendance.) (F;S)

**MUSI 308. University Jazz Ensembles****Credit 1(0-2)**

This course involves the study and performance of jazz literature in all styles and idioms with special emphasis on contemporary compositions. Membership is open to all qualified students through audition with the director. May be repeated for credit each semester. (F;S)

**APPLIED MUSIC**

**Auditions are Required.** Individual instruction is available in the following branches of applied music as both principal and secondary areas of study:

Piano	Flute	French Horn	Euphonium
Voice	Saxophone	Trumpet	Tuba
Percussion	Clarinet	Trombone	

In the principal area of performance, each student receives a one hour individual lesson each week and must practice for at least two hours each day to earn two semester hours credit. In the secondary area of performance, each student receives two hours of lab instruction each week and is required to practice a minimum of one hour each day to earn one semester hour credit. (F;S)

**MUSI 420. Score Reading and Conducting (formerly MUSI 503)** **Credit 2(1-2)**

This course is the study of the fundamental conducting beat patterns, size of beats, and use of each hand; discussion and study of musical terminology; conducting experience with laboratory group. Transposition; characteristics and ranges of instruments-study of tempos and dynamics; and continued conducting experience with both choral and instrumental laboratory groups will be studied. (F)

**MUSI 450. Junior Recital** **Credit 1(0-2)**

This course is designed for the Junior music performance major to demonstrate proficiency on their major instrument in a formal concert setting. (F;S)

**MUSI 460. Senior Recital (formerly MUSI 550)** **Credit 1(0-1)**

This course is designed for the senior music major to demonstrate a high level of proficiency on a chosen instrument or in an applied music field (either brass, woodwinds, percussion, voice, strings or keyboards) in a concert situation. The course will culminate in a formal concert performance of hallmarks of music literature. This course is taken concurrently with MUSI 419, 421, 434, 444, 454, or 464. For Bachelor of Arts, Performance majors the recital should be presented during the second semester of MUSI 419, 421, 434, 444, 454, or 464. Prerequisites: MUSI 113, 213, and 413. (F;S)

**MUSI 470. Senior Recital for Music Education Majors (formerly MUSI 593)** **Credit 2(0-2)**

This course is designed for the senior Music Education major to satisfy the final undergraduate semester requirements of applied music study and performance. The student will receive appropriate Senior-level studio instruction, followed by a faculty jury hearing and culminating with a formally evaluated solo concert performance of hallmarks of musical literature. Prerequisites: MUSI 113, 213, and 413. (F;S)

**MUSI 114, 124, 134, 144, 154, 164. Applied Music Secondary I** **Credit 1(0-1)**

This course is semi-private or class study on a secondary instrument. Students whose principal performing medium is voice or one of the orchestral instruments are required to study the piano as the secondary instrument. Students whose principal performing medium is the piano may choose either voice or an orchestral instrument as the secondary instrument. Piano students pursuing the music education curriculum with a choral concentration must study voice as the secondary applied area. Emphasis is placed on the development of sound basic performance technique. May be repeated for credit. Two semesters are required. (F;S)

**MUSI 214, 224, 234, 244, 254 or 264. Applied Music Secondary II** **Credit 1(0-1)**

This course includes continued development of basic performance skills that were begun in MUSI 114. Attention will be given to preparation for the comprehensive examination on the secondary instrument required of all students. (F;S)

## PIANO

Requirements for Admission-Applicants must perform representative Classical works from major keyboard periods (Baroque, Classical, Romantic, 20<sup>th</sup> Century or Contemporary). Technical exercises such as scales and arpeggios may also be requested.

**MUSI 163. Principal Applied Piano** **Credit 2(0-2)**

This course includes a three-part invention by Bach; a movement of a Sonata by Haydn, Mozart, or Beethoven; a work of moderate difficulty by a Romantic composer; scales and arpeggios in parallel or contrary motion at a moderately rapid tempo; and sight-reading. (F;S)

**MUSI 260. Accompanying** **Credit 1(0-2)**

This course includes analysis and practice in piano accompaniment of singers and instrumentalists; sight-reading and transposition; discussion of style and performance; experience in public performance. May be repeated for credit each semester. Prerequisite: Consent of instructor. (DEMAND)

**MUSI 263. Principal Applied Piano** **Credit 2(0-2)**

This course includes a prelude and fugue from the Well Tempered Clavier by Bach; completion of the Sonata started in 163; a work from the Romantic school; a work written since 1900; scales and arpeggios at rapid tempo; and sight reading. (F;S)

**MUSI 463. Principal Applied Piano** **Credit 2(0-2)**

This course includes dance forms from French suites or parties by Bach; a sonata by Haydn, Mozart or Beethoven one movement memorized; a work from the Romantic school; a contemporary work; and sight reading. (F;S)

**MUSI 464. Principal Applied Piano (formerly MUSI 563)** **Credit 2(0-2)**

This course includes a prelude and fugue from the Well-Tempered Clavier by Bach, a sonata by Haydn, Mozart, or Beethoven, one movement memorized; a work from the Romantic school; a contemporary work; and sight reading. (F;S)

## VOICE

*Requirements for admission:* The voice applicant must demonstrate the ability to read standard Western musical notation, match pitches and replicate dictated patterns. An English Language art song is required, however other language performances will be considered.

**MUSI 120. Music Diction I** **Credit 1(0-2)**

This course is designed to familiarize the voice student with the pronunciation of the English and Italian languages through the study and use of the International Phonetic Alphabet. (F)

**MUSI 121. Music Diction II****Credit 1(0-2)**

This course is designed to familiarize the voice student with the pronunciation of the German and French languages through the study and use of the International Phonetic Alphabet. (S)

**MUSI 153. Principal Applied Voice****Credit 2(0-2)**

1. Competencies: Correct posture, breathing habits, phrasing, various five-note scales, diction.
2. Studies: Simple English and Italian art songs, folk songs, spirituals.
3. Solos: Six songs in English and Italian to be memorized each semester. Representative composers: Scarlatti, Handel, Purcell.

**MUSI 253. Principal Applied Voice****Credit 2(0-2)**

1. Competencies: Correct posture, breathing habits, phrasing, diction, scales and arpeggios.
2. Studies: English and Italian art songs, German art songs, folk songs, spirituals.
3. Solos: English songs in English, Italian, and German to be memorized each semester. Representative composers: Durante, Scarlatti, Schumann.

**MUSI 259. Singing for Actors****Credit 2(2-0)**

This course will present instruction in the development of singing techniques as presented in the “Broadway” theatrical style. The focus is placed upon the relationship between singing and speaking, designed to enhance understanding and performance presentation of both. Emphasis is placed on breath control, resonance (vowels), articulation (consonants); exploration and expansion of individual voice quality; range intonation and vocalization. Literature studies will be selected from that which is characteristic in genre of the Broadway theatrical style. Prerequisites: Permission of the instructor. (F)

**MUSI 453. Principal Applied Voice****Credit 2(0-2)**

1. Competencies: Continuation of 213.
2. Studies: English and Italian art songs, German songs, French art songs, folk songs and spirituals.
3. Solos: Nine songs in English, Italian, German, and French to be memorized each semester. Representative composers: Schumann, Schubert, Strauss, Faure, Britten, Mozart.

**MUSI 454. Principal Applied Voice (formerly MUSI 553)****Credit 2(0-2)**

1. Competencies: Continuation of 453 with emphasis on preparation for senior recital.
2. Studies: Continuation of 453 with more intricate scales and arpeggios.
3. Solos: 10 songs in English, German, Italian, and French to be memorized. Representative composers: Wolf, Schumann, Faure, Verdi, Britten, Handel, Debussy.

**PERCUSSIONS**

*Requirements for Admission:* The candidate shall demonstrate satisfactory performing ability in at least one of the following areas of percussion:

*Performance:* Snare drum, Xylophone, marimba and timpani. These competencies will include:

1. The ability to perform a solo.
2. The ability to perform an excerpt from a book in which the applicant has studied that will demonstrate musicianship and technical skill.
3. The ability to play at sight representative literature which is characteristic of the instrument.
4. Previous ensemble in band and/or orchestra. Additional competencies for snare drum:
  - a. Basic knowledge of rudiments.
  - b. The performance of a Sousa march or the equivalent.
 Additional competencies for xylophone marimba: The ability to play major scales through 4 flats and 4 sharps in one octave.  
 Additional competencies for timpani:
  - a. Basic knowledge of timpani techniques.
  - b. A thorough knowledge of the range of each timpani.

**MUSI 143, 243. Principal Applied Percussions**

1. Competencies:
  - a. Snare Drum: Fundamentals, military techniques, reading and control.
  - b. Mallets: Fundamentals, reading technique-musical orientation.
2. Studies: Price, Beginning Snare Drum; Goldeberg, Mallet Instruments; Stone, Stack Control; Bower, Drum Method; Gardner, Modern Method, Book 1, Stone, Mallet Control.
3. Solos: Wilcaxon, Rudimental Solos; Price, Exhibition Drum Solo; Colgrass, Advanced Snare Drum Solo; Brever Easy - Medium Mallet Solos; Stone, Military Drum Beats.

**MUSI 443, 444 (formerly MUSI 543). Principal Applied Percussions**

1. Competencies:
  - a. Snare Drum: Fine control, orchestra techniques.
  - b. Mallets: Reading, advanced techniques, tambourine, castanets, brass drum, and cymbals.
  - c. Timpani: Kettle technique, tuning exercises and control.
  - d. Latin-American Instruments.
  - e. Percussion: “Trap” techniques, tambourine, castanets, brass drum, and cymbals. Basic skills on each.
2. Studies: Price, Techniques and Exercises for Triangle, Tambourine and Castanets; Brewer, Daily Studies; Goldenberg, Mallet Instruments. Goodman, Timpani Method-Fresia, Timpani Method- Tourte, Snare Drum Technique; Gardner, Modern Method, Book II, Mallets, Chopin, Advanced Techniques for the Modern Drummer.



- Solos: McKenzie, Graded Timpani Solos; Britton, Timpani Solo-Hart, Timpani Solos; Price, Unaccompanied Timpani Solos; Brewer, 3 and 4 Mallet Solos, Quick 3 and 4 Mallet Solos; Stone Rudimental Drum Solos; Duets and Quintets.

### **WIND INSTRUMENTS**

*Requirements for Admission*-The candidate shall show evidence of the following:

- Basic development in embouchure and articulation.
- Knowledge of fingering and alternates.
- Satisfactory tone quality and control.
- Ability to play major scales through 4 flats and 4 sharps, in eight notes (M.M.=72) and the chromatic scale both slurred and articulated.
- Minimum – Two octave range.
- Ability to play a simple song demonstrating musicianship which includes phrasing and expression.
- Previous study in the equivalent of the Rubank Advanced Method.
- Previous ensemble experience in band and/or orchestra.
- Ability to play at sight representative literature which is characteristic of the instrument.

#### **MUSI 113-1, 213-1. Principal Applied Trumpet**

- Competencies: Breathing; elementary embouchure and tone production; tonguing as applied to various articulations; coordination of tone production habits through progressive major and minor scales; practical problems of artistic performance.
- Studies: “Studies: Arban’s selected studies; selected studies by Getchell, Hovey, Hering and Clarke.”
- Literature – Selected from NIMAC-Music Educator’s National Conference.

#### **MUSI 413-1, 419-1 (formerly MUSI 513-2). Principal Applied Trumpet**

- Competencies: Intonation; embouchure techniques; breath control and tone quality; articulation; reading; style; performance techniques.
- Studies: Rubank, Advanced Method, Arban Cumpleti Method for Trumpet, Fischer; Laube - CIB Contest Album; Bantold-Orchestral Excerpts.
- Literature: Selected from NIMAC-Music Educator’s National Conference.

#### **MUSI 113-2, 213-2. Principal Applied French Horn**

- Competencies: Breathing, embouchure and tone production; tonguing; progressive major and minor scale technique; practical problems of artistic performance.
- Studies: Rubank, Intermediate Method for French Horn; Modern Pares Foundation.
- Studies: Whistler, Daily Exercises for French Horn, Pottag.
- Literature: Selected from NIMAC-Music Educator’s National Conference.

#### **MUSI 413-2, 419-2 (formerly MUSI 513-2). Principal Applied French Horn**

- Competencies: Intonation, embouchure techniques, breath control and tone quality; articulations; reading; style; performance techniques.
- Studies: Rubank, Advanced Method for French Horn.
- Literature: Selected from NIMAC-Music Educator’s National Conference.

#### **MUSI 123-1, 223-1. Principal Applied Trombone-Euphonium**

- Competencies: Breathing, elementary embouchure and tone production- tonguing as applied to various instruments, coordination of tone production habits through progressive major and minor scales; practical problems of artistic performances.
- Studies: Trombone and Baritone, Arbans-Prescott Method for Trombone-Baritone-Carl Fisher, Inc., Rubank Intermediate Method for Trombone-Baritone. Skornicka and Boltz Rubank, Rubank, Inc. Modern Pares Foundation. Studies for Trombone and Bariton-Whistler.
- Literature: Selected from NIMAC-Music Educator’s National Conference.

#### **MUSI 423-1, 421-1 (formerly MUSI 523-1). Principal Applied Trombone-Euphonium**

- Competencies: Intonation, embouchure techniques; breath control and tone quality; articulations; reading; style; performance techniques.
- Studies: Rubank, Advanced Method for Trombone and Baritone.
- Literature: Selected from NIMAC-Music Educator’s National Conference.

#### **MUSI 123-2, 223-2. Principal Applied Tuba**

- Competencies: Breathing, elementary embouchure and tone production; tonguing as applied to various instruments coordination of tone production habits through progressive major and minor scales; practical problems of artistic performances.
- Studies: Tuba, Rubank Intermediate Method for Brass -Skornicka and Bolts, Rubank Inc. First Book of Practical Studies for Tuba-Hovey N. Beiwin, Inc. Vandercook Etudes for Bass-Rubank Inc.
- Literature: Selected from NIMAC-Music Educator’s National Conference.

#### **MUSI 423-2, 421-2 (formerly MUSI 523-2). Principal Applied Tuba**

- Competencies: Intonation, embouchure techniques breath control and tone quality; articulation; reading; style, performance techniques.
- Studies: Rubank, Advanced Method for Tuba.
- Literature: Selected from NIMAC-Music Educator’s National Conference.

**MUSI 113-1. Principal Applied Flute**

1. Competencies: Major and minor scales through 5 sharps and 5 flats. Emphasis on fingering and tonal development.
2. Studies: Soussmann, Complete Method for Flute; Anderson, 24 Progressive Studies, Op. 33.
3. Literature: Bizet, Minuet; Mozart, Adagio; Handel, Sonatas.

**MUSI 233-1. Principal Applied Flute**

1. Competencies: All Major and Minor scales throughout the practical performing range. Emphasis on sight-reading.
2. Studies: Cavally, Melodious and Progressive Studies for Flute Soussmann.
3. Literature: Bach, Suite in B. Minor; Mozart, concertos.

**MUSI 433-1. Principal Applied Flute**

1. Competencies: Continued scale study, emphasis on performing literature.
2. Studies: Soussman-Moyse, Flute Studies.
3. Literature: Bach, Sonatas; Debussy, Syrinx.

**MUSI 434-1. Principal Applied Flute (formerly MUSI 533-1)**

1. Competencies: Recital preparation.
2. Studies: Schmitd, Orchestral Studies.
3. Literature: Chaminade, Concertino, Hindemith, Sonata.

**MUSI 133-3. Principal Applied Clarinet**

1. Competencies: Major and Minor scales through 5 Sharps and 5 flats. Emphasis on fingerings and tonal development.
2. Studies: Klose Celebrated Method for Clarinet and Rose 32 Etudes.
3. Literature: Stubbins, Recital Literature for the Clarinet, Vol. II.

**MUSI 233-3. Principal Applied Clarinet**

1. Competencies: All major and minor scales throughout the practical performing range. Emphasis on sight reading. Reed adjustment.
2. Klose, Rose 40 Etudes.
3. Literature: Stubbins, Recital Literature, Vols. I and II.

**MUSI 433-3. Principal Applied Clarinet**

1. Competencies: Continued scale study, emphasis on performing literature.
2. Studies: Baermann, Method for Clarinet; Jean Jean, 18 Etudes de Perfectionnemen.
3. Literature: Stubbins, Recital Literature, Vol. III (The Concertos).

**MUSI 434-3. Principal Applied Clarinet (formerly MUSI 533-3)**

1. Competencies: Recital preparation.

**MUSI 133-4. Principal Applied Saxophone**

1. Competencies: Major and minor scales through 5 sharps and 5 flats. Emphasis on fingerings and tonal development.
2. Studies: DeVille, Universal Method; Ebdressen, Endrejen, Supplementary Studies.
3. Literature: Handel, Sonatas.

**MUSI 233-4. Principal Applied Saxophone**

1. Competencies: All Major and Minor scales through the practical performing range. Emphasis on sight reading. Reed adjustment.
2. Studies: DeVille; Rascher, Top Tones for Saxophone.
3. Literature: Bozza, Aria, Casadesus, Romance.
4. Studies: Baermann- Jean Jean, Orchestral Studies.
5. Literature: Bernstein, Sonata; Debussy, Rapsodie.

**MUSI 433-4. Principal Applied Saxophone**

1. Competencies: Continued scale study, emphasis on performing literature. Introduction to jazz improvising.
2. Studies: DeVille; Rascher, 158 Saxophone Exercises.
3. Literature: Creston, Sonata, Debussy, Rapsodie-Fasch Sonata; Music Minus one Saxophone.

**MUSI 434-4. Principal Applied Saxophone (formerly MUSI 533-4)**

1. Competencies: Recital preparation.
2. Studies: Traler-Lazarus, Virtuoso Studies.
3. Literature: Bozza, Scaramouche.

**Advanced Undergraduate and Graduate****MUSI 418. Psychology of Music (formerly MUSI 618)****Credit 3(2-2)**

This course is the study of physical and psychological properties of musical sounds and the responses of the human organism to musical stimuli. (S)

**RESEARCH****MUSI 490. Independent Study in Music (formerly MUSI 551)****Credit 3(0-6)**

This is a mentored independent research project, progressing from the proposal stage through final reporting and jury evaluation, devised by the student in consultation with a music faculty advisor. Prerequisites: Permission of selected faculty advisor and Division Coordinator, and junior or senior academic classification. (F;SS)

## DIRECTORY OF FACULTY

<b>Travis W. Alexander</b> .....	<b>Adjunct Instructor</b>
B.M., M.M., University of North Carolina at Greensboro	
<b>Sonya Bennett-Brown</b> .....	<b>Adjunct Instructor</b>
B.S., Salem College; M.M., The North Carolina School of the Arts	
<b>Ann Curtis</b> .....	<b>Adjunct Instructor</b>
B.M., Baldwin-Wallace College; M.M., University of North Carolina at Greensboro	
<b>Van-Anthoney Hall</b> .....	<b>Adjunct Instructor (Full Time Faculty)</b>
B.A., North Carolina A&T State University; M.M., Southern Methodist University; Ph.D., University of Illinois at Urbana	
<b>John P. Henry, Jr.</b> .....	<b>Associate Professor and Program Director</b>
B.M., M.M., University of Akron; D.M.A., University of Houston	
<b>Eve P. Hubbard</b> .....	<b>Adjunct Instructor</b>
B.M., University of North Carolina at Greensboro; M.M., Northwestern University; M.M., University of North Carolina at Chapel Hill	
<b>Rochelle Joyner</b> .....	<b>University Choir and Chamber Singers Accompanist</b>
B.S., Winston Salem State University; M.M., Southern Illinois University	
<b>Michael Lasley</b> .....	<b>Adjunct Instructor</b>
B.M.E, M.M., D.M.A., University of North Carolina at Greensboro	
<b>Michael Long</b> .....	<b>Adjunct Instructor</b>
B.A. M.M. D.M.A., University of North Carolina Greensboro	
<b>Lamon Lawhorn</b> .....	<b>Assistant Director of Bands</b>
B.M., Prairie View A. & M. University; M.M., The University of Mississippi; D.M.A., The University of North Carolina at Greensboro	
<b>C. Mondre Moffett</b> .....	<b>Adjunct Instructor (Full Time Faculty)</b>
B.A., New College of California; M.A., New York University; M.M.Ed. and Doctoral Studies, Boston University	
<b>James O' Gara</b> .....	<b>Adjunct Instructor</b>
B.S., Greensboro College; M.M, SUNY Purchase College	
<b>Charles Vaughan</b> .....	<b>Assistant Professor</b>
B.M., Louisiana State University; M.M, Southeaster Louisiana University; Ph.D., University of Florida (Gainesville)	

## UNIVERSITY BAND STAFF

<b>Kenneth Ruff</b> .....	<b>Director of Bands/Lecturer</b>
B.S., M.S., North Carolina A&T State University; M.M.E., Ed.D., University of North Carolina at Greensboro	
<b>Thomas Warner, Jr.</b> .....	<b>Assistant Director of Bands/Lecturer</b>
B.A., Morris Brown College; M.M.E., Florida State University College of Music	

## THEATRE ARTS PROGRAM

<http://www.ncat.edu/cahss/departments/vpa/theatre-program/index.html>

**Darius Omar Williams, Program Director**

### OBJECTIVES

The objectives of the Theatre Arts Program are as follows:

1. to teach students how to use theatre as a means of self-expression, awareness, and discipline,
2. to acquaint students with the great works of the theatre through reading and producing them,
3. to prepare students for professional careers in acting and technology,
4. to prepare students for admission into graduate schools,
5. to convey the skills necessary to promote theatre as a means of enhancing culture in the community, and,
6. to assist students in developing the skills necessary to participate in global Theatre opportunities through studies of the histories and cultures of selected peoples, participate in plays, and meetings with dramatists, actors, artists, and intellectuals from other countries and cultures.

### DEGREES OFFERED

Professional Theatre – Bachelor of Fine Arts  
(Options: Acting and Theatre Technology)

### GENERAL PROGRAM REQUIREMENTS

1. Admission is based upon the general admission requirements of the University. All majors must maintain a minimum grade point average of 2.0. If your GPA drops below 2.0 you will not be cast for any productions or given crew assignments until your GPA is 2.0 or better. Recommendations will be made by your academic advisor to attend tutorial sessions.
2. Students must pass an annual juried evaluation in acting or technology. The evaluation will be based on the improvement in creativity, technique, attitude, and determination.

3. The fulfillment of acting, audition, and crew assignments – except when advance exemptions by faculty have been granted – is expected.
4. Transfer students with previous training will be evaluated by the faculty, who might exempt the student from certain requirements. The exemptions will depend on demonstrated ability and experience.
5. The students must earn at least a “C” in all theatre courses listed on the curriculum guide in his/her concentration.
6. Anyone showing a fundamental weakness in an area of study might be requested by the Theatre Arts Program Director to take additional course work in the area.
7. Active participation is expected in at least two of the following organizations: The Richard B. Harrison Players, Alpha Psi Omega, NCTC, SETC, the Black Theatre Network, or the National Association of Dramatic and Speech Arts.
8. All students under the acting concentration must audition for all main stage productions, faculty directed studio productions and the Richard B. Harrison Players.
9. All students must participate in load-ins and strikes of all main stage productions – unless excused beforehand by the executive director of theatre, theatre arts program director, the director of the play, or the technical director.
10. Only graduating seniors will be allowed to appear or participate in off-campus commercial productions. Exceptions for students other than seniors will be **considered** once the following steps have been completed: (1) The student submits a letter to the theatre program chair stating the producing organization in which he/she is wanting to work, his/her time commitment to the project, the reason he/she wishes to participate in the project and the benefits he/she will receive; (2) An interview with the theatre program director to review current GPA, completed course work, class attendance, past and present theatre participation; (3) An interview with the faculty along with the program director who will then make the final decision.

### **PROGRAM REQUIREMENTS FOR THE B.F.A IN PROFESSIONAL THEATRE (Acting)**

In order to become a candidate for the B.F.A. with an option in Acting, the student must:

1. Make at least a “B” in Acting I and II.
2. Candidates must exemplify;
  - a. Attributes of a professional artist, which includes talent, a willingness to learn and develop, discipline, commitment, and cooperation.
  - b. Potential leadership skills.
  - c. Genuine love, respect, and appreciation of the theatre.
  - d. Active involvement during the first year of residency.
3. Pass a ten-minute acting audition and interview. The acting audition should include two or more of the following contrasting pieces: comedy, drama, tragedy, and song and dance. The passing average is 80%.
4. Present a ten-minute one-person show for the senior showcase during the senior year.
5. Perform an audition at two of the following events:
  - a. M.F.A. Program
  - b. North Carolina Theatre Conference (NCTC)
  - c. Southeastern Theatre Conference (SETC)
  - d. Irene Ryan Audition
  - e. University/Regional Theatre Audition (URTA)
  - f. Local, Regional or National Professional Theatre Companies

In addition to the curricular requirements, the students must complete such co-curricular obligations as (a) the pre-qualifying audition, (b) the qualifying audition, (c) the progress evaluation, (d) general audition, (e) production assignment, and (f) the senior thesis project.

### **THE QUALIFYING AUDITION**

This audition will occur in the student’s second or third semester of residency, at a date and time to be assigned by the Theatre Arts Program Director.

1. The Qualifying Audition must be at least ten minutes in length.
2. The judges will consist of the student’s academic advisor, along with two members of the performance faculty.
3. It will be the student’s responsibility to select the materials performed. The academic advisor, however, must approve the student’s selections.
4. Approval of the material by a performance faculty member must be obtained by the end of the semester *prior* to the one in which the student is required to perform. The performance faculty member must also approve any subsequent changes the student wishes to make in the selection. (NOTE: These stipulations are for the student’s protection. They are designed to guarantee that the student allows sufficient time for preparation and to insure that the material he/she selects is appropriate.)
5. Preparation of the qualifying material is solely the responsibility of the student.
6. The BFA Acting audition will be held the first semester of each year. Should a student’s qualifying performance be deemed unsatisfactory, he/she will be required to repeat it the following semester. The Theatre Arts Program Director will assign a new date. The student’s academic advisor must approve any changes in the qualifying material.

The comments and opinions of the student’s adjudicators will be collected by the academic advisor and communicated orally to the student within one week after the performance. In the event of an unsatisfactory rating, a written explanation will be given to the student.

## PROGRESS REVIEW EVALUATION

The Theatre Faculty will evaluate each student at the end of each academic year during jury hearings. Evaluation is based on observation of production activities (**quality and quantity**) and on academic progress toward the degree. Recommendations resulting from the evaluation will be reported to the student by the academic advisor.

## AUDITIONS

All Acting students are required to audition for all main stage productions and for the Richard B. Harrison Players, the department's varsity organization. Each student is also required to make a professional audition at two or more of the following: The North Carolina Theatre Conference, Southeastern Theatre Conference, University/ Resident Theatre Conference, the Irene Ryan Acting Award Competition, M.F.A. Acting Programs, Local, Regional, or National Professional Theatre Companies.

## PRODUCTION ASSIGNMENT

Each student must serve as Assistant Director or Stage Manager for at least *one* major departmental production or Studio production. This requirement must be met at some point during the student's first six semesters of residency. Evidence of its completion must be furnished in writing by the student to the Theatre Arts program director.

## SENIOR THESIS PROJECT

The Acting student's degree program culminates with a staged senior showcase, performance. The performance is the student's final demonstration of his/her craft proficiency and, as such, is a project the student should begin planning as early as possible in his/her residency. To ensure protection of the student's interests and to provide a reasonable guarantee that a project of the highest quality will result, the Theatre program has adopted specific procedures for the selection, preparation, and execution of the Senior thesis project. This information is listed in detail in the Theatre Arts Student Handbook.

## PROGRAM REQUIREMENTS FOR THE B.F.A IN PROFESSIONAL THEATRE (Theatre Technology)

The Theatre Technology option offers professional training in the crafts and arts of the technician.

The objective is to combine course work in Theatre technology with ample opportunities to construct fully mounted productions. The curriculum is a carefully structured series of courses aimed at covering the full gamut of technical productions. All courses are of practical variety; student technicians are given specific problems and are asked to find workable solutions. Faculty and peer-evaluation assist the student in perfecting skills.

The program presupposes that entering students have little or no background in technical theatre and design. Therefore, we introduce them to design and provide technical background in the crafts. Every student technician spends at least one semester as a costumer, master carpenter, shop foreman, master electrician, stage manager, sound technician, properties master, costume master, and assistant technical director. During those semesters, the student is given full responsibility for the areas assigned him/her, with, of course, ample assistance from the faculty. Each student serves a senior directing project as the studio theatre's technical director, allowing him/her the experience of personnel management, purchasing, and scheduling.

It should be noted in this regard that the constant diet of twelve-hour workdays extending to midnight and beyond, which are commonplace for tech students in many institutions is not allowed here. We feel strongly that students spending that much time and energy in shop cannot possibly achieve the full measure of growth in the art. Therefore, all production work is carefully scheduled so that it can be completed no later than 11:00 PM. However, Saturdays and Sundays will be used for specifically called times.

We realize that our students arrive with the kind of total commitment required for success in the theatre. We assume further that they come with basic insights, if not necessarily the kind of training or experience, needed for effective work. We look, therefore, upon our course work as an experimentation and practice. To intensify that experience, the student technician is normally given from four to eight major departmental productions to work on as a technician.

We wish to give the student as much learning time as possible. We assume that students want to leave an undergraduate school ready to deal with the realities of professional theatre work. We consider it our function to provide them with an opportunity to spend at least three years working with what is, in effect, a company with excellent artistic directions that can assist the student in learning and refining skills and broadening experiences. We do not promise to make every student a great technician; we do promise to make every student as good a pre-professional technician as capability allows.

In order to become a candidate for the B.F.A. with an option in Technology, the student must do the following:

1. Make at least a "B" in Stagecraft and Elements of Play Production.
2. Candidates must exemplify
  - a. Attributes of a professional artist, which includes talent, a willingness to learn and develop, discipline, commitment, and cooperation.
  - b. Potential leadership skills
  - c. Genuine love, respect, and appreciation of the theatre
  - d. Active involvement during the first year of residency
3. Pass an interview, resume and portfolio review. The technology review will consist of the student presenting his/her resume, any and all projects along with their portfolio as it presently stands.
4. Design and/or technically direct a main stage production by the end of their senior year.
5. Present Portfolio and interview at two of the following:
  - a. M.F.A. Program

- b. North Carolina Theatre Conference (NCTC)
- c. Southeastern Theatre Conference (SETC)
- d. United States Institute of Theatre Technology (U. S. I.T.T.)
- e. University/Regional Theatre Audition (URTA)
- f. Local, Regional or National Professional Theatre Companies

In addition to the curricular requirements, the student must complete such co-curricular obligations as (a) the qualifying interview (b) the progress evaluation, (c) portfolio and resume presentation (d) production assignment, and (e) the senior thesis project.

### **THE QUALIFYING AUDITION**

This interview will occur in the student's second or third residence at a date and time assigned to the student by the Theatre Arts Program Director.

1. The Qualifying Interview must include resume and portfolio.
2. The judges will consist of the student's academic advisor, along with two members of the technology and design faculty.
3. It will be the student's responsibility to select the materials to be included in their resume and portfolio. A member of the technology and design faculty, however, must approve the student's selections.
4. Approval of the material by - a member of the technology and design faculty must be obtained by the end of the semester *prior* to the one in which the student is required to present. The technology and design faculty member must also approve any subsequent changes the student wishes to make in his portfolio. (NOTE: These stipulations are for the student's protection. They are designed to guarantee that the student allows sufficient time for preparation and to insure that the materials he or she selects is appropriate.)
5. Preparation of the qualifying material is solely the responsibility of the student.
6. The B.F.A. Technology interview will be held the first semester of each year. Should a student's qualifying interview and portfolio presentation be deemed unsatisfactory, he/she will be required to repeat it the following semester. The Theatre Arts Program Director will assign a new date. A member of the technology and design faculty must approve any changes in the qualifying material.
7. The comments and opinions of the student's adjudicators will be collected by his/her academic advisor and communicated orally to the student within one week after his/her interview and presentation of portfolio. In the event of an unsatisfactory rating, a written explanation will be given to the student.

### **PROGRESS EVALUATION**

The faculty during jury will evaluate each student at the end of each academic year. Evaluation is based on observation of production activities (**quality and quantity**) and on academic progress toward the degree. Recommendations resulting from the evaluation will be reported to the student by his/her academic advisor.

### **INTERVIEWS**

All technology students are required to interview for all main stage production positions and for the Richard B. Harrison Players, the department's varsity organization. Each student is also required to make a professional interview at two or more of the following: the North Carolina Theatre Conference, Southeastern Theatre Conference, University Resident Theatre Conference, the United States Institute of Theatre Technology, M.F.A. Design/Technology Programs, Local, Regional or National Professional Theatre Companies.

### **PRODUCTION ASSIGNMENT**

Each student must serve as a member of the (1) running crew, (2) stage manager or assistant stage manager, (3) assistant technical director, or assistant designer for at least *one* major departmental production or Studio production. This requirement must be met at some point during the student's first six semesters of residency. Evidence of its completion must be furnished in writing by the student to the Theatre Arts program director.

### **SENIOR THESIS PROJECT**

The Technology student's degree program culminates with a final production project supervised by a faculty member in the technology area. The production is the student's final demonstration of his/her craft proficiency and, as such, is a project the student should begin planning as early as possible in his residency.

To ensure protection of the student's interests and to provide a reasonable guarantee that a project of the highest quality will result, the Theatre program has adopted specific procedures for the selection, preparation, and execution of the Senior thesis project. This information is listed in detail in the Theatre Arts Student Handbook.

### **ACCREDITATION**

Accredited by the National Association of Schools of Theatre (NAST) since 1988.

**Department of Visual and Performing Arts/Theatre  
Bachelor of Fine Arts in Professional Theatre (Acting)  
Major Code: THEA**

## Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 101	1	ENGL 101	3
ENG 100	3	MATH 102	3
MATH 101	3	BIOL 100	4
THEA 111	3	THEA 112	3
THEA 114	2	THEA 115	2
THEA 141	3	THEA 201	1
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
Humanities and Fine Arts Elective I <sup>1,2</sup>	3	African American Studies	3
Science Elective (Astronomy or Earth Science)	3	SOCI 100	3
THEA 231	3	THEA 218	3
THEA 219	3	THEA 260	3
THEA 201	1	THEA 204	3
THEA 205	3	THEA 367	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>18</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
FOLA Elective	3	FOLA Elective	3
Global Learning Elective	3	MUSI 259	2
THEA 323	3	THEA 257	2
THEA 464	3	THEA 465	3
THEA 290	3	THEA 312	3
THEA 311	3	<b>Semester Total</b>	<b>13</b>
<b>Semester Total</b>	<b>18</b>		
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
THEA 398	3	THEA Elective	3
Free Elective	3	THEA 368	3
THEA 496	3	THEA 413	3
THEA 390	3	THEA 490	3
<b>Semester Total</b>	<b>12</b>	<b>Semester Total</b>	<b>12</b>

**Total Credit Hours: 120**

<sup>1</sup>See the [list of courses](#) which may be taken as electives.

<sup>2</sup>Must complete 12 hours in the following areas: 3 hours in Humanities and Fine Arts, 3 hours in Social and Behavioral Science, 3 hours in Global Learning, and 3 hours in African-American Studies.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

THEA 111	THEA 312
THEA 112	THEA 315
THEA 114	THEA 323
THEA 115	THEA 367
THEA 141	THEA 368
THEA 201	THEA 375
THEA 204	THEA 390

THEA 205	THEA 413
THEA 218	THEA 464
THEA 219	THEA 465
THEA 257	THEA 490
THEA 260	THEA 496
THEA 290	MUSI 259

**Department of Visual and Performing Arts/Theatre**  
**Bachelor of Fine Arts in Professional Theatre (Theatre Technology)**  
**Major Code: THEA**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 101	1	ENGL 101	3
ENG 100	3	MATH 102	3
MATH 101	3	BIO 100	4
THEA 111	3	SOCI 100	3
THEA 114	2	ART 100	3
THEA 141	3	<b>Semester Total</b>	<b>16</b>
THEA 201	1		
<b>Semester Total</b>	<b>16</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
Humanities and Fine Arts Elective I <sup>1,2</sup>	3	African-American Studies	3
ART 226	3	THEA 232	3
THEA 219	3	THEA 343	3
Science Elective (Astronomy or Earth Science)	3	Global Learning Elective <sup>1</sup>	3
THEA 131	3	THEA 370	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
FOLA Elective	3	FOLA Elective	3
THEA 345	3	THEA 346	3
THEA 341	3	THEA 257	2
THEA 464	3	THEA 465	3
THEA 342	3	THEA 290	3
THEA 371	3	THEA 201	1
<b>Semester Total</b>	<b>18</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
THEA 467	3	Free Elective	3
THEA 362	3	THEA 368	3
THEA 496	3	THEA or Free Elective	3
THEA 390	3	THEA 352	3
THEA 201	1	<b>Semester Total</b>	<b>12</b>
<b>Semester Total</b>	<b>13</b>		

**Total Credit Hours: 120**

<sup>1</sup>See the [list of courses](#) which may be taken as electives.



<sup>2</sup>Must complete 12 hours in the following areas: 3 hours in Humanities and Fine Arts; 3 hours in Social and Behavioral Science, 3 hours Global Learning, and 3 hours in African- American Studies.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

THEA 111	THEA 346
THEA 114	THEA 352
THEA 131	THEA 362
THEA 141	THEA 367
THEA 201	THEA 368
THEA 232	THEA 390
THEA 257	THEA 464
THEA 260	THEA 465
THEA 290	THEA 496
THEA 341	ART 100
THEA 342	ART 226
THEA 343	ART 229
THEA 345	

### COURSE DESCRIPTIONS IN THEATRE

**THEA 110. Acting for Non-Theatre Majors (formerly THEA 210)** **Credit 3(3-0)**  
 This course will include an examination and analysis of the actor's craft through improvisation, sensitivity exercises, sense of emotional memory, and other exercises. These are used in order to free the student's mind and body for the work of creating the playwright's world. **(F;S)**

**THEA 111. Acting I (formerly THEA 211)** **Credit 3(2-2)**  
 This course will emphasize acting as organic interrelationship of self and environment. Students will learn to release individuality through improvisational exercises in relaxation and physical freedom, along with observation research, justification of action, objectives, talking and listening, inner focus through senses, all focusing on the Stanislavski Method, and on Dialogue and Text. Culminating projects under faculty supervision will be given. Theatre majors only. **(F)**

**THEA 112. Acting II (formerly THEA 212)** **Credit 3(2-2)**  
 This course is a continuation of Acting I with concentration on working on a role; breakdown of text into actions, objectives, beats; sensory work and its application to script. Students will learn developing and sustaining characters and action in increasingly complex texts. Rehearsals and performance of scenes and one-act plays with faculty and student directors will be emphasized. Prerequisite: THEA 111 or consent of the instructor. **(S)**

**THEA 114. Theatre Movement I (formerly THEA 214)** **Credit 2(1-2)**  
 This course is an introduction to the development of an expressive body. Emphasis will be placed on entering energy flow, harmonious alignment, Yoga exercises, Alexander technique, modern dance and ballet to achieve flexible, free, strong, and restfully alert body. Students will develop imaginative resources and sense of form through structures of improvisation in space. Theatre majors only. **(F)**

**THEA 115. Theatre Movement II (formerly THEA 215)** **Credit 2(1-2)**  
 The focus of this course will be on movement and breathing to increase range in body and voice, along with some dance techniques and styles. Concepts in weight, space, time, and flow; improvisations; and movement using imagination and forms found in music and dance composition will be emphasized. Prerequisite: THEA 114 or the consent of the instructor. **(S)**

**THEA 131. Elements of Play Production (formerly THEA 231)** **Credit 3(2-2)**  
 Study and application of the basic principles of all phases of theatre production and design as they relate to practical experiences in acting, directing, lighting, scenery design, and construction will be emphasized. Laboratory hours and audience attendance are required. **(F)**

**THEA 141. Stagecraft (formerly THEA 241)** **Credit 3(2-2)**  
 This course will consist of the study of basic principles of physical theatre, evolution of modern stages, building scenery and properties, lighting, makeup, and front-of-house practices. Working on crews and lab hours are required. **(S)**

- THEA 201. Theatre Production Lab (formerly THEA 401)** **Credit 1(0-2)**  
Students will work in various capacities for productions, including scenery, sound, special effects, property, lighting, costume, publicity, house, and/or makeup. Must be repeated for a maximum of three (3) credit hours. (F;S)
- THEA 203. Acting III (formerly THEA 415)** **Credit 3(3-0)**  
Students will gain experience in the application of the Stanislavski techniques to define and fulfill the actor's work in terms of form and content as required by the play and its performance. Examination of the special demands of auditioning and cold readings; development of portfolios and actor's prompt script books are required. Course fee required. Prerequisite: THEA 212. (F)
- THEA 204. Acting IV (formerly THEA 416)** **Credit 3(3-0)**  
Students will learn creating and sustaining character and action in texts since 1900. Emphasis will be on organic interrelation of acting, speech, and movement in scene study. Actor explores deeply the demands made by form and content of each script. Prerequisite: THEA 415. (S)
- THEA 217. Stage Voice I (formerly THEA 317)** **Credit 3(1-4)**  
This course is an introduction to the mechanics of voice for the stage. Special attention will be given in good stage diction, articulation, voice projection, and speaking effectively with non-regional dialect. The student will be introduced to the International Phonetics Association language. (F)
- THEA 218. Stage Voice II (formerly THEA 318)** **Credit 3(1-4)**  
Stage Voice II is a continuation of Stage Voice I (THEA 217). Students will improve their stage diction, articulation, and voice projection, while strengthening their comprehensive knowledge of the vocal mechanism. Further exploration and usage of the International Phonetics Association language and its application the use of dialects will be examined in the course. Prerequisite: THEA 217 or the consent of the instructor. (S)
- THEA 232. Advanced Play Production (formerly THEA 431)** **Credit 3(3-1)**  
Students will study specific theoretical and practical work in the methods of play production, along with detailed script analysis. Work on crew required. Prerequisite: THEA 131. (S)
- THEA 257. Makeup for the Performing Arts (formerly THEA 456)** **Credit 2(0-4)**  
The student will receive intensive study in the fundamental principles and practices of makeup for stage and media. This course provides drawing and face-painting skills, as well as, practices in the uses of cosmetics, wigs, and hairpieces. The student will work with departmental productions. (S)
- THEA 260. Introduction to Drama and Theatre (formerly THEA 360)** **Credit 3(3-0)**  
This is an introduction to the study of drama and theatre, including playwriting, directing, acting, design, and technical theatre. No experience in dramatic production is required. There will be lecture discussions, performances, demonstrations, films, tapes and guest appearances. (F;S)
- THEA 290. Stage Management (formerly THEA 584)** **Credit 3(2-2)**  
This is the study of the functions and responsibilities of stage managing, including the development of prompt scripts, union (or company) rules, handling of auditions and rehearsals, and the calling of the productions. (S)
- THEA 311. Acting Styles (formerly THEA 511)** **Credit 3(3-0)**  
The student will have a review of historic theatrical styles, including Greek, Shakespeare, Restoration, comedy of manners, and modern. Class projects will focus on work in two styles, one classical, the other contemporary. Movement, voice, and speech, integrated directly with acting concerns in studio instruction and coaching, will be emphasized. Final acting project is required. Prerequisite: THEA 204. (F)
- THEA 312. Acting Projects formerly THEA 512)** **Credit 3(3-0)**  
The student will prepare and perform an individual role of some length and complexity. Individual problems of actors will be emphasized, along with detailed critiques of roles. Prerequisite: THEA 311. (S)
- THEA 321. Directing I (formerly THEA 422)** **Credit 3(3-0)**  
This course is a practical beginning study of theories, practices, and techniques of play direction. Attention is given to the principles of analysis and research of casting and rehearsing. Exercises, lectures, and demonstrations will be used. Final project will be a scene or one-act play. (F)
- THEA 322. Directing II (formerly THEA 521)** **Credit 3(3-0)**  
The student will study the development of an approach to conceiving a theatre production, including the definition of people, situations, ideas, and action-flow inherent in a script. Also studied will be the identification of form and structure from director's point of view, along with the fundamental considerations in physical staging. The final directing project is a full-length play. Prerequisites: THEA 321 and 290. (S)
- THEA 341. Stage Lighting (formerly THEATRE 445)** **Credit 3(3-1)**  
This is a beginning course in stage lighting that emphasizes the practical aspects of electricity, optics, color, psychology of light, position, control, distribution, and timing. Working on crews is required. (S)
- THEA 342. Sound Design for the Theatre (formerly THEA 542)** **Credit 3(2-2)**  
This course is an in-depth study of uses of mixing boards, amplifiers, microphones, and recording devices for the Performing Arts. Prerequisite: THEA 241 or consent of the instructor. (S)
- THEA 343. Scene Design (formerly THEA 543)** **Credit 3(3-0)**  
The student will study the fundamentals of set design theory; basic mechanical and conceptual solutions for a variety of theatre spaces; and the development of presentational and research skills. (S)

- THEA 345. Drafting for the Theatre** **Credit 3(2-2)**  
 Students will receive intensive instruction in the techniques of theatrical drafting, in areas of scenery, lighting, and sound. Prerequisite: THEA 141 or the consent of the instructor. (F)
- THEA 346. Computer-Aided Design for Theatre** **Credit 3(2-2)**  
 This course will offer students techniques of computer-aided design and drafting. Attention will be given to scenic, lighting, and costume designs. Prerequisite: THEA 345 or the consent of the instructor. (S)
- THEA 352. Costume Design (formerly THEA 552)** **Credit 3(2-2)**  
 This course will introduce students to the fundamentals of watercolor, chalk, ink, and charcoal mediums; also studied will be costume design and an extensive range of visual, written, and verbal techniques that comprise play analysis and the design-team collaboration. Prerequisite: THEA 550. (F)
- THEA 362. History of Costume and Décor (formerly THEA 550)** **Credit 3(3-0)**  
 This course will examine the styles of costuming, architecture, furnishing, and ornamentation. Students will be exposed to highlights from ancient Egyptian to the present, with emphases on research and development. Prerequisite: THEA 141 or consent of the instructor. (F)
- THEA 367. African American Drama I (formerly THEA 467)** **Credit 3(3-0)**  
 This course will study the history and criticism of African American drama and theatre from William A. Brown in 1821 to Lorraine Hansberry. The schools, periods, classes, subclasses, and types of drama will be analyzed. (F)
- THEA 368. African American Drama II (formerly THEA 468)** **Credit 3(3-0)**  
 This is a continuation of African American Drama I. Course will study the history and criticism of African American drama and theatre from Lorraine Hansberry to the present. The schools, periods, classes, subclasses, and types of drama will be analyzed. (S)
- THEA 375. Playwriting (formerly THEA 466)** **Credit 3(3-0)**  
 This course studies the process of creating a play, including plot development, structure, characterization, and dialogue. Students will write a one-act play, which will receive a stage reading at the end of the course. (S)
- THEA 390. Theatre Management (formerly THEA 584)** **Credit 3(3-0)**  
 This is a study of theatre organizing and producing. This course will emphasize the analysis of the principles and methods of finances, box office, promotion, and house management. (F)
- THEA 398. Theatre Internship (formerly THEA 571)** **Credit 3(0-6)**  
 This course is designed to provide the student with a collaborative field experience in the profession. These experiences might or might not be salaried positions in a professional theatre or arts administration company. The student must be a participating performer, manager, or designer/technician. May be repeated for credit.
- THEA 413. Acting for the Camera (formerly THEA 513)** **Credit 3(1-4)**  
 This course will provide practical experience in camera techniques for actors, utilizing commercial, film, and television scripts. Students will work directly with agents and casting directors, allowing them the necessary exposure to marketing the actor for work in the film industry. Prerequisite: THEA 204. (S)
- THEA 452. Advanced Costume Design (formerly THEA 553)** **Credit 3(2-2)**  
 This course is for advanced costume-design students. It emphasizes multi-character and highly complex methods and technologies. There will be continual development of script analyses, styles, research techniques, and rendering skills. Prerequisite: THEA 352. (S)
- THEA 464. History of the Theatre I** **Credit 3(3-0)**  
 This course examines the interrelatedness of theatre's technical, dramatic, and theoretical aspects in the development of the art form from its origins in the dance and ritual of preliterate cultures to the neoclassic France. (F)
- THEA 465. History of the Theatre II** **Credit 3(3-0)**  
 This course is a continuation of Theatre History I. Studies will be the development of technical, dramatic, and theoretical aspects of modern theatre from German Romanticism to the present. Periodic examinations and papers are required. Additionally, each student will research the intellectual, cultural and social background of a particular play or performance style and will apply that research in a performance project. (S)
- THEA 469. Modern American Drama** **Credit 3(3-0)**  
 This is the study of the major currents in dramatic writing since 1900 in the U.S. as they reflect changes in society, audience, and literary form.
- THEA 471. Creative Dramatics (formerly THEA 561)** **Credit 3(3-0)**  
 Students will have an introduction to creative drama through improvisational theatre techniques. Emphasis will be on movement, voice, ensemble, and teaching strategies. Students will learn to use these activities in schools and community centers and with elderly and special-needs populations.
- THEA 472. Children's Theatre (formerly THEA 562)** **Credit 3(3-0)**  
 Various techniques used in producing children's theatre with adult actors in school and community settings will be studied. Experience in design, lighting, costuming, acting, and promotion will be gained. Class work and participation in A Children's Theatre Production are required.
- THEA 496. Theatre Projects (formerly THEA 563)** **Credit 3(3-0)**  
 This course is for advanced individuals interested in specialized, concentrated research or production project. Project will be selected by students in collaboration with the instructor. Comprehensive exam is to be taken. Thesis is to be written or project presented. (F)

**THEA 490. Independent Study (formerly THEA 572)****Credit 3(3-0)**

This course provides opportunities for the individual student to study in a specific area of theatrical production. Establishment of an independent study requires approval of the student's advisor and the study-supervisor prior to registration. May be repeated for credit. (F;S;SS)

**DIRECTORY OF FACULTY**

<b>Donna Baldwin-Bradby</b> .....	<b>Visiting Assistant Professor</b>
B.F.A., North Carolina A&T State University; M.F.A., Virginia Polytechnic University	
<b>Sonya Bennett-Brown</b> .....	<b>Adjunct Lecturer</b>
B.M., Salem College for Women; M.M., North Carolina School of the Arts	
<b>Gregory J. Horton</b> .....	<b>Associate Professor</b>
B.S., North Carolina Central University; M.F.A., Michigan State University	
<b>Deborah Kintzing</b> .....	<b>Adjunct Assistant Professor</b>
B.A., University of Tennessee; M.F.A., University of North Carolina at Greensboro	
<b>Tina Yarborough Liggins</b> .....	<b>Adjunct Assistant Professor</b>
B.F.A., University of North Carolina at Greensboro; M.F.A., Virginia Polytechnic University	
<b>Miller Lucky, Jr.</b> .....	<b>Associate Professor</b>
B.F.A., North Carolina A&T State University; M.F.A., University of Florida (Gainesville)	
<b>Jeffrey Richardson</b> .....	<b>Associate Professor</b>
B.A., Morgan State University; M.F.A., Purdue University	
<b>David Tidwell</b> .....	<b>Assistant Professor</b>
B.A., California State University (Long Beach); M.F.A., University of Kansas	
<b>Vanita V. Vactor</b> .....	<b>Associate Professor</b>
B.A., Hiram College; M.A., Western Illinois University; Ph.D., New York University	
<b>Darius Omar Williams</b> .....	<b>Associate Professor</b>
B.A., Jackson State University; M.F.A., Antioch University, Bowling Green State University; Ph.D., Ohio State University	

**VISUAL ARTS PROGRAM**

<http://www.ncat.edu/cahss/departments/vpa/visual-arts/index.html>

**Roymieco A. Carter, Program Director**

**OBJECTIVES**

The objectives of the Visual Arts Program are as follows:

1. to provide through studio activities, a strong foundation in traditional and contemporary visual arts media, media processes, and media production;
2. to provide an understanding of art history and contemporary issues of the visual arts;
3. to maintain a course of study that effectively provides instruction in pedagogical methods and procedures, knowledge in the selection, preparation, and organization of teaching materials for students who seek certification as public school teachers in the visual arts;
4. to encourage growth as a professional artist through studio production and critiques, student participation in competitive visual arts exhibitions, and through periodic review of portfolio development;
5. to provide a gallery for promoting increased awareness of the African-American's contributions to the visual arts and American culture, to foster a forum for the presentation, preservation, and exhibition of visual arts media, and to sponsor visual arts activities that provide opportunities for appreciation and cultural enlightenment in the University and surrounding communities.
6. to provide direct access to visual arts technology through continued development and maintenance of a specialized computer laboratory with graphics stations and, thus, to provide alternatives to studies in traditional media with courses in computer-aided design, desk top publishing, and interactive media production.

**DEGREES OFFERED**

Visual Arts, Design – Bachelor of Arts

Visual Arts, Visual Media (Graphic) Design – Bachelor of Arts

Art (Secondary Education) – Bachelor of Science

**GENERAL PROGRAM REQUIREMENTS**

To be admitted to an undergraduate degree program in the Visual Arts Program, the student must first meet all admissions requirements of the University.

**PROGRAM REQUIREMENTS**

Students who elect to major in Visual Arts, Design are required to complete a minimum of 120 semester hours to meet graduation requirements. Students who elect to major in Visual Arts, Visual Media Design are required to complete a minimum of 127-128 semester credit hours to meet graduation requirements. Students majoring in Secondary Education (Art) must take a minimum of 125 semester credit hours to meet graduation requirements. In addition to passing the core requirements of the University, a minimum grade of "C" is required performance in all art studio and art lecture classes.

The Visual Arts Program requires students who elect a visual arts major to have a desire to develop skills necessary for achieving as artists. It is recommended that students have taken high school courses in art or have had other art instruction. The visual arts major consists of courses from foundation to advanced levels in art media and techniques. Majors are expected to begin developing their portfolios as freshmen and to have accumulated a substantial body of work by their senior year.

Students are expected to demonstrate growth and development consistent with courses taken in drawing, painting, design and aesthetics as they work towards graduating from the Visual Arts Program.

Students should be prepared to spend from \$75 to \$150 or more per year on supplies and materials for studio art classes.

### DEGREE REQUIREMENTS

#### Visual Arts, Design Major

Students interested in the Design major will take studio courses in drawing, design, color theory, computer graphic design, painting and art history. The design degree requires 124 semester credit hours, 30 of which must be taken at the 200 level or above, with a grade average of “C” or above.

#### Visual Arts, Visual Media Design Major

Students interested in the Visual Media Design major will take studio courses in computer visual design, design drawing, advertising design, and motion arts. The visual media design degree requires 124 semester credit hours, 36 of which must be taken at the 200 level or above, with a grade average of “C” or above.

#### Secondary Education (Art) Major

Students who aspire to become teachers must enroll in the Secondary Education (Art) concentration. This major prepares prospective teachers for certified careers in a high-demand field. Students will take courses in art appreciation, art history and studio courses in painting, drawing, ceramics and computer graphic design. The teaching major requires 125 semester hours 33 of which should be at the 200 level or above, with a grade average of “C” or above.

### CAREER OPPORTUNITIES

Opportunities in the visual arts are more prolific and lucrative today than ever before for students. The visual arts world is experiencing rapid expansion in electronic imaging processes both for print production and the Internet. A new graphics language is in development and demands specialized technical training for today’s graphic design artist. Our mission is to provide the program and training that enable graduates to meet the demand for new standards in visual arts communications. To this end the visual arts major provides a rigorous curriculum centered on student portfolio development demonstrating skills in both traditional and new media.

## Department of Visual and Performing Arts Bachelor Arts in Design Major Code: ART

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 100	1	MATH 102	3
MATH 101	3	ENGL 101	3
ENGL 100	3	ART 250 ( <i>formerly ART 300</i> )	3
ART 100	3	ART 119 ( <i>formerly ART 219</i> )	3
ART 118 ( <i>formerly ART 218</i> )	3	ART 137 ( <i>formerly ART 227</i> )	3
ART 136 ( <i>formerly ART 226</i> )	3	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>16</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
BIOL 100	4	PHYS 101	3
HIST 106 ( <i>formerly HIST 201</i> )	3	SOCI 100	3
ART 315 ( <i>formerly ART 402</i> )	3	ART 229	3
Primary Studio: Level One	3	Primary Studio: Level Two	3
Secondary Studio: Level One	3	Secondary Studio: Level Two	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	

ART 251 (formerly ART 301)	3	ART 302	3
ART 310	3	ART 333 (formerly ART 520)	3
ENGL 206	3	SPCH 250	3
Primary Studio: Level Three	3	Primary Studio: Level Four	3
Secondary Studio: Level Three	3	PHIL 103 (formerly PHIL 265)	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
ART 280 (formerly ART 603)	3	ART 487 (formerly ART 607)	2
ART 398 (formerly ART 510)	2	ART 488 (formerly ART 502)	3
ART 334 (formerly ART 721)	3	ART 496 (formerly ART 526)	3
Free Elective I	3	Free Elective II	3
ART 315 (formerly ART 615)	3	ART 433 (formerly ART 720)	3
<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>14</b>

**Total Credit Hours: 120**

<b>Choose a Primary and Secondary Area of Focus:</b>				
<b>Area of Study</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	<b>Level 4</b>
Drawing / Painting	ART 205 (formerly ART 405)	ART 306 (formerly ART 406)	ART 328 (formerly ART 528)	ART 329 (formerly ART 529)
Material Arts	ART 245 (formerly ART 401)	ART 315 (formerly ART 402)	ART 369 (formerly ART 606)	ART 422 (formerly ART 608)
Art Criticism / History	ART 124 (formerly ART 224)	ART 275 (formerly ART 400)	ART 344 (formerly ART 459)	ART 488 (formerly ART 502)

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

ART 100	ART 529
ART 218	ART 602
ART 219	ART 603
ART 224	ART 604
ART 226	ART 606
ART 227	ART 607
ART 310	ART 615
ART 400	ART 616
ART 401	Primary Studio: Level One
ART 402	Secondary Studio: Level One
ART 405	Primary Studio: Level Two
ART 406	Secondary Studio: Level Two
ART 459	Primary Studio: Level Three
ART 520	Secondary Studio: Level Three
ART 526	Primary Studio: Level Four
ART 528	

Department of Visual and Performing Arts  
 Bachelor of Arts in Secondary Education Art Concentration  
 Major Code: ART

Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 100	1	PHIL 262	3
MATH 101	3	ENGL 101	3
ENGL 100	3	ART 119 (formerly ART 219)	3
ART 100	3	ART 137 (formerly ART 227)	3
ART 118 (formerly 218)	3	CUIN 101	1
ART 136 (formerly ART 226)	3	CUIN 110	2
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
BIOL 100	4	PHYS 101	3
HIST 106 (formerly HIST 201)	3	SOCI 100	3
ART 124 (formerly ART 224)	3	SPCH 250	3
Primary Studio: Level One (ART 334)	3	Primary Studio: Level Two (ART 433)	3
Secondary Studio: Level One	2-3	Secondary Studio: Level Two	3
CUIN 210	2	CUIN 255 (formerly CUIN 310)	2
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>17</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
ART 444 (formerly ART 600)	3	CUIN 420 (formerly CUIN 520)	2
ART 310	3	ART 333 (formerly ART 520)	3
ENGL 206	3	ART 487 (formerly ART 607)	2
Primary Studio: Level Three (ART 435)	3	PHIL 103 (formerly PHIL 265)	3
FOLA I	3	FOLA II	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>13</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
CUIN 425 (formerly CUIN 525)	3	CUIN 660	9
ELED 316	3	CUIN 670	3
ART 496 (formerly ART 526)	3	<b>Semester Total</b>	<b>12</b>
Free Elective I	3		
Free Elective II	3		
<b>Semester Total</b>	<b>15</b>		

**Total Credit Hours: 120**

Choose a Primary and Secondary Area of Focus:				
Area of Study	Level 1	Level 2	Level 3	Level 4
Drawing / Painting	ART 205 (formerly ART 405)	ART 306 (formerly ART 406)	ART 328 (formerly ART 528)	ART 329 (formerly ART 529)
Material Arts	ART 245 (formerly ART 401)	ART 315 (formerly ART 402)	ART 369 (formerly ART 606)	ART 422 (formerly ART 608)
Art Criticism / History	ART 124 (formerly ART 224)	ART 275 (formerly ART 400)	ART 344 (formerly ART 459)	ART 488 (formerly ART 502)

## MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in all ART and CUIN courses.*

ART 100	ART 529
ART 218	ART 602
ART 219	ART 603
ART 224	ART 604
ART 226	ART 606
ART 227	ART 607
ART 310	ART 615
ART 400	ART 616
ART 401	Primary Studio: Level One
ART 402	Secondary Studio: Level One
ART 405	Primary Studio: Level Two
ART 406	Secondary Studio: Level Two
ART 459	Primary Studio: Level Three
ART 520	Secondary Studio: Level Three
ART 526	Primary Studio: Level Four
ART 528	

**Department of Visual and Performing Arts**  
**Bachelor of Arts in Media Design**  
**Major Code: ART**  
**Concentration Code: MDDS**

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 100	1	MATH 102	3
MATH 101	3	ENGL 101	3
ENGL 100	3	ART 250 ( <i>formerly ART 300</i> )	3
ART 100	3	ART 119 ( <i>formerly ART 219</i> )	3
ART 118 ( <i>formerly ART 218</i> )	3	ART 137 ( <i>formerly ART 227</i> )	3
ART 136 ( <i>formerly ART 226</i> )	3	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>16</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
BIOL 100	4	PHYS 101	3
HIST 106 ( <i>formerly HIST 201</i> )	3	SOCI 100	3
ART 315 ( <i>formerly ART 402</i> )	3	ART 229	3
Primary Studio: Level One	3	Primary Studio: Level Two	3
Secondary Studio: Level One	3	Secondary Studio: Level Two	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	



ART 251 ( <i>formerly ART 301</i> )	3	ART 302	3
ART 310	3	ART 333 ( <i>formerly ART 520</i> )	3
ENGL 206	3	SPCH 250	3
Primary Studio: Level Three	3	Primary Studio: Level Four	3
Secondary Studio: Level Three	3	PHIL 103 ( <i>formerly PHIL 265</i> )	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
ART 280 ( <i>formerly ART 603</i> )	3	ART 487 ( <i>formerly ART 607</i> )	2
ART 398 ( <i>formerly ART 510</i> )	2	ART 488 ( <i>formerly ART 502</i> )	3
ART 334 ( <i>formerly ART 721</i> )	3	ART 496 ( <i>formerly ART 526</i> )	3
Free Elective I	3	Free Elective II	3
ART 315 ( <i>formerly ART 615</i> )	3	ART 433 ( <i>formerly ART 720</i> )	3
<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>14</b>

**Total Credit Hours: 120**

<b>Choose a Primary and Secondary Area of Focus:</b>				
<b>Area of Study</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	<b>Level 4</b>
Art Direction / Design	ART 350 ( <i>formerly ART 450</i> )	ART 351 ( <i>formerly ART 451</i> )	ART 340 ( <i>formerly ART 540</i> )	ART 341 ( <i>formerly ART 541</i> )
Illustration	ART 222	ART 205 ( <i>formerly ART 405</i> )	ART 355 ( <i>formerly ART 452</i> )	ART 356 ( <i>formerly ART 525</i> )
Typography	ART 210 ( <i>formerly ART 101</i> )	ART 230 ( <i>formerly ART 524</i> )	ART 260 ( <i>formerly ART 453</i> )	ART 325 ( <i>formerly ART 460</i> )

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

ART 100	ART 529
ART 218	ART 602
ART 219	ART 603
ART 224	ART 604
ART 226	ART 606
ART 227	ART 607
ART 310	ART 615
ART 400	ART 616
ART 401	Primary Studio: Level One
ART 402	Secondary Studio: Level One
ART 405	Primary Studio: Level Two
ART 406	Secondary Studio: Level Two
ART 459	Primary Studio: Level Three

ART 520	Primary Studio: Level Three
ART 526	Primary Studio: Level Four
ART 528	

### COURSE DESCRIPTIONS IN VISUAL ARTS

- ART 100. Basic Drawing and Composition** **Credit 3(0-6)**  
This course is a study of the fundamental principles of drawing as a mode of visual expression. Selected problems involving basic consideration of line, form, space and composition are presented for analysis and laboratory practice. (F;S;SS)
- ART 118. Art History I (formerly ART 218)** **Credit 3(3-0)**  
This course is a chronological survey of the history of art focusing on the styles and functions of the visual arts of the world from prehistoric times through the Middle Ages. (F;S)
- ART 119. Art History II (formerly ART 219)** **Credit 3(3-0)**  
This course is a chronological survey of the history of art focusing on the styles and functions of the visual arts of the world from Renaissance to the Modern World. Prerequisites: ART 218. (F;S)
- ART 124. Art Appreciation (formerly ART 224)** **Credit 3(3-0)**  
This course is an introduction to the study of visual art. Basic qualities of various forms of artistic expression are explained. Emphasis is placed on the application of art principles in everyday life. (F;S;SS)
- ART 125. An Introduction to the History of Art (formerly ART 225)** **Credit 2(2-0)**  
This is a general introduction to the history of art, beginning with an examination of ancient art in terms of extant monuments and culminating with the analysis and comparison of representative works of today. (F;S)
- ART 136. Design I (formerly ART 226)** **Credit 3(0-6)**  
This is an introduction to visual design based upon an analysis of the aims, elements, principles, sources of design and their application in a variety of media. (F;S)
- ART 137. Design II (formerly ART 227)** **Credit 3(0-6)**  
This course is a continuation of Art 226 with consideration given to three dimensional as well as two-dimensional problems. Students are encouraged in the experimental use of materials and are required to find individual and complete solutions to problems through various stages of research, planning, and presentation. Emphasis is placed on technical perfection and the development of professional attitudes. (S)
- ART 205. Materials and Techniques (formerly ART 405)** **Credit 3(0-6)**  
This course is the study of the materials of the artist, supports, ground, vehicles, binders, and protective covering. Exploration of the possibilities of various techniques of picture construction as a point of departure for individual expression will also be included. (F)
- ART 210. Lettering and Poster Design (formerly ART 101)** **Credit 3(0-6)**  
This course is a comprehensive study of the art of lettering. Projects involving the principles of layout, poster construction, and general advertising are required. (DEMAND)
- ART 220. Graphic Presentation I** **Credit 2(0-4)**  
Exercises in various sketching techniques and media, including work with pencil, charcoal, crayon, and ink are included. Individual instruction is given using forms in nature and still life for art and architectural presentation. Prerequisite: Sophomore standing. (S)
- ART 221. Graphic Presentation II** **Credit 2(0-4)**  
The theory of color mixture is studied. Individual instruction in the techniques of watercolor painting for architectural presentation and studies from nature and still life are included. Prerequisite: ART 220. (DEMAND)
- ART 222. Watercolor** **Credit 3(0-6)**  
This course includes experimental exploration of all aqueous media: watercolor, casein, gouache; their possibilities and limitations. (S)
- ART 228. Color Theory** **Credit 3(0-6)**  
Problems directed toward the understanding of color through creative experiment and application of color in visual organization are examined. Use of slides, filmstrips, and trips are included. (F;S;SS)
- ART 229. Anatomy and Figure Drawing** **Credit 3(0-6)**  
This course is a study of the human figure with emphasis on anatomy, body structure and proportions, draped figures at rest and in action. Special emphasis is given to detailed studies, composition, and stylization. (S)
- ART 230. Introduction to Graphic Arts (formerly ART 524)** **Credit 3(0-6)**  
This course is an introduction to printmaking processes. Production of prints in varied media: linoleum, woodcuts, dry point etchings, serigraphs, and lithographs will be studied. (F)
- ART 245. Ceramics (formerly ART 401)** **Credit 3(0-6)**  
This course is an introduction to sculptural form with the use of clay modeling, basic plaster techniques, wood, and metal in relation to the production of sculpture. Sculpting, decorating, glazing, and firing are also included. Supplementary reading is required. (F;S)

- ART 250. Design Drawing (formerly ART 300)** **Credit 3(0-6)**  
 This course provides students access to the basics of conceptual image development for visual representation in the digital media realm, through the use of a vector-based, designated draw program and traditional ideation tools (i.e., pen, pencil, marker, paper, etc.). Students are asked to use the computer as drawing tool. Prerequisite: ART 226 or GCS 110. (F;S;SS)
- ART 251. Visual Design I (formerly ART 301)** **Credit 3(0-6)**  
 This course provides students access to the basics of visual design concepts, traditional methods and principles of good design within the digital arena through the use of images scanning, a digital image manipulation program (e.g., Photoshop), a designated digital layout program (e.g., InDesign), and digital prints. File preparation for commercial pre-press production is discussed. Prerequisite: ART 250. (F;S)
- ART 260. Typography (formerly ART 453)** **Credit 3(0-6)**  
 The focus of this course will be on lettering and typography as a medium of visual expression. It will also focus on type as image and the relationship between graphical and verbal language, the expressive characteristics of letterforms and text. Additionally, the terminology, typographic history, and technical issues related to lettering and typography will be discussed. Prerequisites: ART 301. (F;S)
- ART 275. Renaissance Art (formerly ART 400)** **Credit 3(3-0)**  
 The study of the Renaissance in Italy and in major regions of northern and western Europe from 1300 to 1600 is included. (F;S)
- ART 302. Visual Design II** **Credit 3(0-6)**  
 This course prompts the interaction between text and images which are the fundamental components of visual design. The course exposes students to contemporary design issues, visual design terminology, and history. The course also expands the student's proficiency in all aspects of the design process, i.e., conceptualizing, critiques, the application of formal art elements and principles, creative brainstorming, and presentation. Prerequisite: ART 301. (F;S)
- ART 306. Painting Techniques (formerly ART 406)** **Credit 3(0-6)**  
 This course is a continuation of ART 405 with further work in projects that explore the esthetic opportunities and problems implicit in the use of varying media. Work in tempura, gouache, casein, polymers, and lacquers is required. (S)
- ART 310. African-American Art** **Credit 3(3-0)**  
 This course is a study of African-American art in Western art history from the colonial period to the present and its implications for today's art student. (F)
- ART 315. Basic Sculpture (formerly ART 402)** **Credit 3(0-6)**  
 This course is an introduction to sculptural form with the use of clay modeling, basic plaster techniques, wood, and metal in relation to the production of sculpture. (S)
- ART 325. Design and Typography (formerly ART 460)** **Credit 3(0-6)**  
 This is an advanced design course, which addresses practical problems relevant to contemporary visual design and the art of typography. The emphasis is on producing dynamic, aesthetically pleasing layouts for a variety of design formats, specifically publications. This course develops an in-depth sense of design through real world projects. Prerequisites: ART 453. (F;S)
- ART 328. Painting I (formerly ART 528)** **Credit 3(0-6)**  
 This course involves the creative painting in various media with emphasis on a modern approach and handling of medium. Research and experience in contemporary trends: abstracts, non-objective, and abstract expressionism will be required. (F)
- ART 329. Painting II (formerly ART 529)** **Credit 3(0-6)**  
 This course focuses on the development of the student as a professional artist; advance research and familiarization with contemporary trends, concepts, forms, and symbols. Emphasis is on an original contemporary statement. (S)
- ART 333. Modern Art (formerly ART 520)** **Credit 3(3-0)**  
 European and American Art from about 1875 to the present will be studied. (S)
- ART 340. Interactive Arts I (formerly ART 540)** **Credit 3(0-6)**  
 This course emphasizes visual aesthetics and the role of the artist in the development and production of graphical user interfaces (GUI) for the Internet. GUI design principles will be introduced and applied through the use of WYSIWIG editors (e.g., Dreamweaver, etc.), and supporting applications. Both form and function are key principles in this course, from concept development to site launch. Prerequisites: ART 302. (F;S)
- ART 341. Interactive Arts II (formerly ART 541)** **Credit 3(0-6)**  
 This course will introduce the dynamic application of an advanced digital authoring environment for creating rich, interactive art for digital platforms. This course will focus on creative expression in pursuit of good aesthetics through form and function. A digital development tool (e.g., Flash, etc.) will be introduced and explored. Art projects will also be produced. Prerequisites: ART 540. (F;S)
- ART 344. Baroque and Rococo Art (formerly ART 459)** **Credit 3(3-0)**  
 The study of art in Europe from 1600 to 1800 is emphasized. (F)
- ART 350. Advertising Design I (formerly ART 450)** **Credit 3(0-6)**  
 The focus of this advanced design course is to explore the role of creative advertising and its implications for packaging design. Work will require design elements and principles with text and imagery incorporated for effective communication and presentation of these formats. Both advertising and packaging design solutions will be developed through multiple projects. Prerequisites: ART 302. (F;S)
- ART 351. Advertising Design II (formerly ART 451)** **Credit 3(0-6)**  
 This course includes preparation and rendering of art work for reproduction from rough idea layouts to finished illustration.

Creative and technical class work is augmented by visits to commercial studios and printing companies. Prerequisite: ART 450. (DEMAND)

**ART 355. Commercial Art (formerly ART 452)** **Credit 3(0-6)**

Illustration techniques are studied. Different materials and renderings employed in advertising illustration such as airbrush colored inks, scratchboard, etc. are also examined. Attention is given to techniques of printing as far as they affect graphic design. (F)

**ART 356. Lithography and Serigraphy (formerly ART 525)** **Credit 3(0-6)**

This course explores the techniques of lithography and serigraphy as a means of contemporary artistic expression. Emphasis of medium is determined by individual interest. (S)

**ART 398. Internship (formerly ART 510)** **Credit 1 or 2(1-2-0)**

This course is designed to award credit to students who participate in supervised, off-campus activities with professional or institutional sponsors. Such activities must be formal, supervised and clearly related to study compatible with the visual arts program. Junior or senior standing. (F;S)

**ART 454. General Crafts** **Credit 3(0-6)**

This course is an introduction to craft processes, weaving, metalwork, leather, etc. (S)

**ART 496. Senior Project (formerly ART 526)** **Credit 3(0-6)**

Students who have given evidence of their ability to do serious individual work on a professional level may plan and carry out a project of their own choosing, subject to approval and supervision of a faculty member. (S)

#### Advanced Undergraduate Courses

**ART 280. Studio Techniques (formerly ART 603)** **Credit 3(3-0)**

This course includes demonstrations that illustrate and emphasize the technical potentials of varied media. These techniques are analyzed and discussed as a point of departure for individual expression. (S)

**ART 316. Motion Arts I (formerly ART 615)** **Credit 3(0-6)**

This course provides an introduction to digital three-dimensional design and sculpting. It will cover the basic concepts of digital 3-D objects design and scenery development. It will also include the fundamentals of modeling and setup of forms and environments. Also, surface effects, lighting, camera placement, and rendering of three-dimensional objects for art making and creative expression will be covered. The creative medium will be a digital modeling and motion program (e.g., Maya, etc.) to explore digital sculpture as an art form. Prerequisites: ART 540. (F;S)

**ART 369. Sculpture (formerly ART 606)** **Credit 3(3-0)**

This course includes further study of sculpture with an expansion of techniques. Individual problems for advanced students. (DEMAND)

**ART 370. Ceramic Workshop (formerly ART 604)** **Credit 2(0-2)**

This course is the study of advanced studio problems and projects in ceramics with emphasis on independent creative work. The student is given opportunity for original research and is encouraged to work toward the development of a personal style in the perfection of technique. (DEMAND)

**ART 385. Printmaking (formerly ART 605)** **Credit 3(3-0)**

The investigation of traditional and experimental methods in printmaking will be emphasized. Advanced studio problems in woodcut etching, lithography, and serigraphy will be studied. (DEMAND)

**ART 416. Motion Arts II (formerly ART 616)** **Credit 3(0-6)**

This course provides an introduction of three-dimensional motion for creative expression. The basic principles of timing and motion through the production of three-dimensional, computer-generated movement will also be covered. Meaning and expression are explored through the use of timing and gesture. The creative medium will be a digital modeling and motion program (e.g., Maya), and supporting applications. Prerequisite: ART 615. (F;S)

**ART 422. Arts and Crafts (formerly ART 608)** **Credit 3(3-0)**

Creative experimentation with a variety of materials tools and processes: projects in wood, metal, jewelry making wood and metal construction, fabric design, leather craft, puppet making, and paper sculpture. (DEMAND)

**ART 444. Public School Art (formerly ART 600)** **Credit 3(3-0)**

The course includes the study of materials, methods, and procedures in teaching art in public schools. Special emphasis is placed on selection and organization of materials, seasonal projects, lesson plan. (F;S;SS)

**ART 487. Project Seminar (formerly ART 607)** **Credit 2(0-4)**

This course includes advanced specialized studies in creative painting, design, and sculpture. By means of discussion and suggestions this seminar intends to solve various problems which might arise in each work. Prerequisite: Consent of the instructor. (DEMAND)

**ART 502. Seminar in Art History** **Credit 3(3-0)**

This course includes in-depth investigation of the background influences which condition stylistic changes in art forms by analyzing and interpreting works of representative personalities. Prerequisites: ART 219. (F;S)

#### DIRECTORY OF FACULTY

**James Barnhill**..... **Associate Professor**  
B.S., University of North Carolina at Chapel Hill; M.F.A., University of North Carolina at Greensboro

**Romyeico A. Carter**..... **Associate Professor and Program Director**  
B.F.A., Virginia Commonwealth University; M.F.A., The Pennsylvania State University

**Willie Hooker**..... **Professor**

B.S., Tennessee State University; M.A., Peabody-Vanderbilt University; Ed.D., Illinois State University

**Amy Schwartzott** ..... **Assistant Professor**

B.A., Drew University; M.A., University at Buffalo; Ph.D., University of Florida

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## COLLEGE OF BUSINESS AND ECONOMICS

<http://www.ncat.edu/cobe/index.html>

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Kevin James, Interim Dean

Lisa Owens-Jackson, Associate Dean

### VISION

The College of Business and Economics at North Carolina A&T State University will be recognized for preparing graduates who are innovative thinkers and ethical leaders with strong global acumen.

### MISSION

The mission of the College of Business and Economics is to prepare highly skilled and ethically conscious business leaders through innovative instruction, professional and community engagements, and relevant faculty scholarship.

### ACCREDITATION

The undergraduate accounting and business programs of the College of Business and Economics are accredited by the AACSB International – The Association to Advance Collegiate Schools of Business.

### DEGREES OFFERED

Accounting – Bachelor of Science  
Business Education (Business Teacher Education) – Bachelor of Science  
Business Education (Information Technology) – Bachelor of Science  
Economics (General) – Bachelor of Science  
Economics (Business) – Bachelor of Science  
Economics (Law) – Bachelor of Science  
Economics (International) – Bachelor of Science  
Finance – Bachelor of Science  
Management (General Management) – Bachelor of Science  
Management (Management Information Systems: MIS) – Bachelor of Science  
Management (Entrepreneurship & Innovation) – Bachelor of Science  
Management (International Management) – Bachelor of Science  
Marketing – Bachelor of Science  
Marketing (Sales) – Bachelor of Science  
Supply Chain Management – Bachelor of Science

### COURSE LOAD

The normal course load is fifteen to seventeen (15-17) credit hours. A full-time undergraduate student is required to carry a minimum of twelve (12) credit hours. Students majoring in the College of Business and Economics may not enroll for more than eighteen (18) credit hours without the approval of the department chairperson and the dean.

### GENERAL PROGRAM REQUIREMENTS

The student is held responsible for the selection of courses in conformity with the curriculum of his/her choice. A student who enters the College of Business and Economics has the privilege of graduating under the provisions of the *Bulletin* current upon admission provided all requirements are completed within six years. If all requirements are not completed within six years after admission, the student is expected to conform to the *Bulletin* requirements specified for the class with which graduation is anticipated.

The applicant for graduation must have earned a minimum of 120 semester hours (some majors require more), excluding deficiency and/or remedial course work, with a cumulative grade point average of 2.00 or better for all courses taken. Students enrolled in repeatable semesters of University Band (MUSI 300) and/or Choir (MUSI 301) will receive graduation credit for one semester only. Students in the College of Business and Economics must earn a minimum grade of “C” in ENGL 100, 101; MATH 111, 112; ACCT 221, 222, BUED 110, 260, ECON 200, 201, 206, FINC 343, MGMT 110, 132, 201, 303, 315, 495, and MKTG 230. Students must also earn a minimum grade of “C” in the 10 (30 credit hours) courses listed as their major program requirements and in their major program elective courses in the applicable University Bulletin for the selected course of study.

Students are considered for a change of major to a program in the College of Business and Economics from other academic majors and undecided classification upon the completion of twenty-four (24) semester hours with a minimum grade point average of 2.5. The 24 semester hours must include ENGL 100, ENGL 101, MATH 111, and MATH 112 or equivalents. FRST 098, SCS 099, UNST 103, MATH 099, MATH 101, and MATH 102 are not considered for the 24 hour requirement. MATH 103 and MATH 104 together may be substituted for MATH 111. MATH 131 and 132 may be substituted for MATH 111 and MATH 112 respectively; credit will be awarded for the higher level courses only. Exceptions to this policy require the recommendation of the department chairperson and the approval of the dean of the College of Business and Economics.

Students majoring in programs in the College of Business and Economics must enroll in three (3) courses (3-credit hour courses) of African American Culture & History, Global Awareness, and Humanities & Fine Arts electives which satisfy the General Education requirements of the University.

## **DOUBLE MAJOR**

Students who desire to obtain a double major within the College of Business and Economics must complete a minimum of twelve (12) semester hours beyond those required of the first major. As a general rule, major program courses in one major in the College of Business and Economics will not be accepted to meet major program elective course requirements in the second major.

## **APPROVAL FOR TRANSFER CREDIT**

Students enrolled in the College of Business and Economics must receive prior approval from the department chairperson and the Dean of the College of Business and Economics for courses to be considered for transfer credit from other colleges and universities. Community college courses included in articulation agreements and/or courses that are comparable to courses (100-300 level) in the first two years of the selected program of study at North Carolina A&T State University are considered for transfer credit.

## **PROFICIENCY EXAMINATIONS**

Students who have had some training or experience in certain fields offered in the College of Business and Economics may be given an opportunity to take an examination, with the permission of the chairperson of the department and the approval of the dean of the College of Business and Economics. A student who passes a proficiency examination is given credit toward graduation, provided that the course is acceptable for his/her curriculum. Credit is given only if a grade of "C" is made on the examination. A grade of "P" (pass) or "S" (satisfactory) is recorded on the student's record. No official record is made of failures on these examinations.

Proficiency examinations are given under the following restrictions:

1. Examinations may be taken only by persons who are in residence at the University.
2. Examinations may not be taken to raise grades or remove failures in courses.
3. Examinations may be taken only once in the same course.

## **SENIOR RESIDENCE REQUIREMENT**

A student must complete a minimum of three (3) semesters as a full-time student at the University which include the two semesters prior to graduation. At least one half of the student's credit hours in the major field must be earned at the University. Exceptions to either of these provisions may be made upon the recommendation of the chairperson of the student's major department and the approval of the dean of the College of Business and Economics.

## **COLLEGE REQUIREMENTS**

All business programs require the completion of Business and Economics core requirements, including the following courses: ACCT 221, 222; BUED 260; ECON 200, 201, 206; FINC 343; MGMT 110, 132, 201, 303, 315, 495; and MKTG 230.

## **BETA GAMMA SIGMA**

Beta Gamma Sigma (BGS) is the international scholastic honor society for majors in the College of Business and Economics. Membership in BGS represents the highest national recognition a student in business can receive in an undergraduate program accredited by the AACSB International – The Association to Advance Collegiate Schools of Business. Only outstanding students who rank in the upper 10 percent of the sophomore, junior, or senior class, and the upper 20 percent of graduate students are eligible for membership. The BGS chapter of North Carolina Agricultural and Technical State University was established in 1980 as a result of the accreditation of the undergraduate business programs in 1979.

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## **Accounting and Finance**

<http://www.ncat.edu/cobe/departments/acct/index.html>

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## **VACANT, Chairperson**

## **MISSION**

The mission of the Department of Accounting and Finance is to produce leaders who increase the competitiveness of their organizations through effective analysis and communication of financial information. We will achieve this mission through innovative instruction and relevant practical scholarship in a diverse and inclusive, student-focused environment.

## **ACCREDITATION**

The undergraduate accounting program is accredited by the AACSB International – The Association to Advance Collegiate Schools of Business.

## **DEGREES OFFERED**

Accounting – Bachelor of Science  
Finance – Bachelor of Science

## **GENERAL PROGRAM REQUIREMENTS**

All students completing the Bachelor of Science in Accounting degree program in the Department of Accounting and Finance must complete a minimum of 120 semester hours, consistent with the accounting curriculum guide. All students completing the Bachelor of Science in Finance degree program must complete a minimum of 120 semester hours, consistent with the finance curriculum guide. Students in the College of Business and Economics must earn a minimum grade of "C" in ENGL 100, 101, MATH 111, 112, ACCT 221, 222, BUED 260 (formerly BUED 360), ECON 200, 201, 206, FINC 343 (formerly FIN 253),

MGMT 110 (formerly MGMT 220), MGMT 132 (formerly MIS 241), MGMT 201 (formerly MGMT 422), MGMT 303 (formerly MGMT 361), MGMT 315 (formerly MGMT 481), MGMT 495 (formerly MGMT 520), and MKTG 230 (formerly MKTG 430). Students in the College of Business and Economics must also earn a minimum grade of “C” in BUED 110 (formerly BUED 210).

#### DEPARTMENTAL REQUIREMENTS

Majors in the department must earn a minimum grade of “C” in the 10 courses (30 hours) listed as major program requirements for their chosen major in the applicable University Bulletin. In addition, students must earn a minimum grade of “C” in all major program elective requirements.

#### CAREER OPPORTUNITIES

Students majoring in Accounting are prepared for careers in international and regional public accounting and industrial firms, government agencies and not-for-profit organizations, and are provided with an appropriate background for graduate study. Students majoring in Finance are prepared for a broad range of Finance related careers including corporate finance, investments, commercial banking, insurance, and financial planning.

### Department of Accounting and Finance Bachelor of Science in Accounting Major Code: ACCT

#### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 100	1	Scientific Reasoning Elective	3
MATH 111	4	MATH 112	4
ENGL 100	3	ENGL 101	3
African-American Culture and History Elective	3	BUED 110 (formerly BUED 220)	3
Scientific Reasoning Elective	4	MGMT 110 (formerly MGMT 220)	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
ACCT 221	3	ACCT 222	3
ECON 200	3	BUED 260 (formerly BUED 360)	3
ECON 206	3	ECON 210 (formerly ECON 310)	3
MGMT 132 (formerly MIS 241)	3	ECON 201	3
SPCH 250	3	Global Awareness Elective	3
ACCT 201 (formerly ACCT 301)	1	ACCT 202 (formerly ACCT 302)	1
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
ACCT 331 (formerly ACCT 441)	3	ACCT 332 (formerly ACCT 442)	3
ACCT 344 (formerly ACCT 444)	3	ACCT 362 (formerly ACCT 562)	3
FIN 343 (formerly FIN 253)	3	FIN 454 (formerly FIN 553) or	
MGMT 315 (formerly MGMT 481)	3	MGMT 355 (formerly MGMT 526)	3
Elective	3	MGMT 201 (formerly MGMT 422)	3
<b>Semester Total</b>	<b>15</b>	MKTG 230 (formerly MKTG 430)	3
		<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
ACCT 443	3	ACCT 461 (formerly ACCT 561)	3
ACCT 455 (formerly ACCT 545)	3	ACCT 492	3
MGMT 303 (formerly MGMT 361)	3	MGMT 429 (formerly MGMT 462) or	
Business Elective	3	ACCT 463	3
Elective	3	MGMT 495 (formerly MGMT 520)	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>12</b>

**Total Credit Hours: 120**



**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C or better in the following courses:*

ACCT 221	ACCT 362 (formerly ACCT 562)
ACCT 222	ACCT 443
ACCT 331 (formerly ACCT 441)	ACCT 455 (formerly ACCT 545)
ACCT 332 (formerly ACCT 442)	ACCT 461 (formerly ACCT 561)
ACCT 344 (formerly ACCT 444)	ACCT 492

**Department of Accounting and Finance  
Bachelor of Science in Finance  
Major Code: FINC**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 101	1	Scientific Reasoning II	3
MATH 111	4	MATH 112	4
ENGL 100	3	ENGL 101	3
Scientific Reasoning I	4	SPCH 250	3
MGMT 110 (formerly MGMT 220)	3	BUED 110 (formerly BUED 220)	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
ACCT 221	3	ACCT 222	3
ECON 200	3	ECON 201	3
ECON 206	3	BUED 260 (formerly BUED 360)	3
MGMT 132 (formerly MIS 241)	3	FIN 343 (formerly FIN 253)	3
African-American Culture and History Elective	3	Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
ACCT 331 (formerly ACCT 441)	3	ACCT 332 (formerly ACCT 442) or ACCT 443	3
ECON 315 (formerly ECON 415)	3	FIN 355 (formerly FIN 455)	3
FIN 350 (formerly FIN 550)	3	FIN 356 (formerly FIN 456)	3
MGMT 303 (formerly MGMT 361)	3	MKTG 230 (formerly MKTG 430)	3
Technical Area Elective	3	Technical Area Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
FIN 451 (formerly FIN 351)	3	FIN 454 (formerly FIN 553)	3
MGMT 201 (formerly MGMT 422)	3	MGMT 495 (formerly MGMT 520)	3
MGMT 315 (formerly MGMT 481)	3	Business Elective	3
Global Elective	3	Finance Elective	3
Financial Elective	3	Elective	2
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>14</b>

**Total Credit Hours: 123**

## MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

ACCT 222	FIN 350 (formerly FIN 550)
ACCT 331 (formerly ACCT 441)	FIN 351 (formerly FIN 551)
ACCT 332 (formerly ACCT 442) or ACCT 443	FIN 356 (formerly FIN 456)
FIN 343 (formerly FIN 253)	FIN 454 (formerly FIN 553)
FIN 355 (formerly FIN 455)	ECON 315 (formerly ECON 415)

### COURSE DESCRIPTIONS IN ACCOUNTING

**ACCT 201. Accounting Colloquium I (formerly ACCT 301) Credit (1-1)**

This course introduces accounting majors to the accounting profession and to the resources needed to prepare for an accounting career. Topics covered include exposure to varied career opportunities in the accounting profession; preparation for the professional examinations; development of presentation and analytical skills; and identification/discussion of current and emerging issues in the profession. Additionally, learning assurance assessment activities will be conducted as needed. Prerequisites: Sophomore standing and Accounting major. (F;S)

**ACCT 202. Accounting Colloquium II (formerly ACCT 302) Credit 1(1-1)**

Accounting Colloquium II is a continuation of ACCT 201. Prerequisite: Successful completion of ACCT 301 or permission of Chairperson, Sophomore standing, and Accounting major. (F;S)

**ACCT 210. Fundamentals of Accounting for Decision Making (formerly ACCT 203) Credit 3(3-0)**

The course defines and identifies accounting information as approached from the perspective of an end-user. Course coverage includes financial accounting and managerial accounting concepts. The financial accounting concepts include the meaning of the basic accounting equation, accounting for merchandising business, and financial statement analysis. The managerial accounting topics include cost behavior, cost-volume profit, budgeting, and cost tracking and analysis. Majors in the School of Business and Economics cannot substitute this course as an accounting or elective requirement. Prerequisite: Sophomore standing. (F;S;SS)

**ACCT 221. Principles of Accounting I Credit 3(3-1)**

This course is the entry level accounting course. It covers the accounting cycle including classification, recording, and summarization of general business transactions and the preparation and use of financial statements. Special accounting procedures for current assets, long-term assets, current liabilities, and partnerships are covered. Prerequisites: C or above in MGMT 110 (formerly MGMT 220) and Sophomore standing. (F;S;SS)

**ACCT 222. Principles of Accounting II Credit 3(3-1)**

This course is a continuation of Principles of Accounting I. The first part of the course covers financial accounting topics including long-term liabilities, stockholders' equity, investments, statement of cash flows, and financial statement analysis. The remainder of the course covers basic managerial accounting concepts such as job order and process costing, cost allocation, cost-volume profit analysis, and budgeting. Prerequisite: C or above in ACCT 221. (F;S;SS)

**ACCT 326. Managerial Accounting (formerly ACCT 446) Credit 3(3-0)**

This course covers fundamental managerial accounting concepts and techniques for planning and controlling organizational resources, and short-term decision-making. Topics include product costing, activity-based costing, budgeting, cost-volume profit analysis, decision analysis, responsibility accounting, and ethics in the management accounting environment. Prerequisite: C or above in ACCT 222. (F;S;SS)

**ACCT 331. Intermediate Accounting I (formerly ACCT 441) Credit 3(3-1)**

This course is an intensive study of financial accounting. The theories and concepts that define the content of the income statement, statement of retained earnings, and the balance sheet are studied in detail. Emphasis is placed on the theory and practice related to the accounting for asset accounts. Topics covered include cash and cash equivalents, receivables, fixed assets, and intangibles. Prerequisites: C or above in ACCT 221 and ACCT 222, Junior standing, Accounting and Finance majors only. (F;S;SS)

**ACCT 332. Intermediate Accounting II (formerly ACCT 332) Credit 3(3-1)**

This course is a continuation of ACCT 441. It emphasizes theories and practices related to the accounting for liabilities, stockholders' equity and corporations, dilutive securities, earnings per share, revenue recognition, taxes, pensions, leases, accounting changes, and the statement of cash flows. Attention is also given to accounting for investments and derivatives. Prerequisite: C or above in ACCT 331, Accounting and Finance majors only. (F;S;SS)

**ACCT 334. Cost Accounting (formerly ACCT 444) Credit 3(3-1)**

This course is a study of the principles and methodology of product and inventory cost determination and the effect on income measurement for manufacturing concerns, including job order and process costing under historical and standard cost systems. The course emphasizes strategic cost management and decision-making in a contemporary business environment. Coverage is also

given to activity-based costing, cost-volume profit analysis, target costing, pricing decisions, planning, budgeting, variance analysis, and modern decision tools. Prerequisites: C or above in ACCT 222, Junior standing, and Accounting majors only. (F;S)

**ACCT 345. Contemporary Cost Accounting Topics (formerly ACCT 563) Credit 3(3-0)**

The course covers contemporary issues/problems in cost and managerial accounting in the context of the modern business environment. Emphasis is given to cost information systems, analytical models, global aspects in management accounting, decision models, nontraditional accounting systems and other specialized cost topics. Case methodology and computer analysis are utilized. Prerequisites: Minimum Grade of "C" in ACCT 344. (S)

**ACCT 362. Accounting Systems (formerly ACCT 562) Credit 3(3-1)**

This course is an introduction to accounting systems analysis and design, with particular emphasis on internal controls. It explores the appropriate ethical considerations in the development and reporting of accounting information. The course places an emphasis on financial information needs and computer auditing techniques. Prerequisite: C or above in ACCT 331, and Accounting majors only. (F;S)

**ACCT 443. Income Tax Accounting Credit 3(3-1)**

This course is a study of federal income tax laws for individuals. While the course focuses on a determination of tax liability and computation of taxable income, the tax structure, tax administration, property transactions and accounting periods and methods are also covered. Students are introduced to tax software for individuals. Prerequisite: C or above in ACCT 222, Junior standing, and Accounting majors only. (F;S)

**ACCT 455. Advanced Accounting (formerly ACCT 545) Credit 3(3-1)**

This course emphasizes special topics and complex issues that include partnerships, business combinations, multinational businesses, and other selective advanced accounting topics. Prerequisite: C or above in ACCT 332, and Accounting majors only. (F;S)

**ACCT 461. Auditing Principles (formerly ACCT 561) Credit 3(3-1)**

This course focuses on the conceptual/practical aspects of the examination of historical financial statements by independent accountants within the framework of generally accepted accounting principles and generally accepted auditing standards. Detailed coverage is given to audit reporting, audit evidence, internal control, fraud auditing, and the numerous activities taking place during the various phases of the audit engagement. Professional ethics and auditor legal liability are addressed. In addition to audits of historical financial statements, the course addresses other assurance services commonly provided by public accounting firms. Prerequisite: C or above in ACCT 332, and Accounting majors only. (F;S)

**ACCT 463. Commercial Law Credit 3(3-0)**

In this course, the critical provisions of the Uniform Commercial Code will be examined in detail. Other topics will include anti-trust, security law, suretyship, professional liability, bulk transfers, and labor law. Prerequisites: MGMT 303 (formerly MGMT 361), Senior standing, and Accounting majors only. (S)

**ACCT 485. Selected Topics in Accounting (formerly ACCT 445) Credit 3(3-1)**

Topics covered give additional consideration to selected accounting problems. Current accounting issues/problems and approaches to their resolution are examined. Governmental and not-for-profit topics are also considered. Prerequisites: Successful completion of ACCT 222 and Junior standing. (F)

**ACCT 490. Seminar in Accounting Theory (formerly ACCT 590) Credit 3(3-1)**

This course focuses on the fundamental accounting concepts, principles, and procedures that make up the theoretical underpinning of financial accounting. In addition, emphasis is placed on knowledge needed for the CPA exam. Topics reviewed include structure of financial statements, depreciation methods, inventory valuation, revenue recognition, fair value accounting, liabilities, pensions, leases, and taxes. This course is NOT recommended for audit. Prerequisites: C or above in ACCT 332, senior standing, and permission of instructor, Accounting majors only. (F;S)

**ACCT 491. Fundamentals of Governmental & Not-for-Profit Accounting Credit 3(3-1)**

This course presents basic concepts of accounting for governmental and nonprofit entities. Financial reporting, budgeting, funds sources and uses, and the environment in which these entities operate are also explored. Differences in reporting by governmental entities and nonprofit organizations, based on compliance with different standard-setting bodies, are covered. Accounting for local and state governments, nonprofit organizations, colleges and universities, as well as health care organizations is included in this course. Prerequisites: C or above in ACCT 222, Senior standing, and Accounting majors only. (F;S)

**ACCT 643. Advanced Income Tax Accounting Credit 3(3-1)**

This course is a study of federal income tax laws related to partnerships, corporations, and fiduciaries. A study of property transactions is continued. Students are introduced to tax case research and the tax software for businesses. It is recommended that this course be taken for credit only and not for audit purposes. Prerequisite: C or above in ACCT 443, Accounting majors only. (F;S)

## COURSE DESCRIPTIONS IN FINANCE

**FINC 253. Business Finance (formerly FIN 453) Credit 3(3-0)**

This course is an introduction to the financial problems of business organizations, the finance function and its relationship to other decision-making areas in the firm, the concepts and techniques for planning and managing the acquisition and allocation of financial resources from the standpoint of internal management. Prerequisites: A minimum grade of C in ACCT 221 and Junior standing. (F;S;SS)

**FINC 350. Financial Analysis (formerly FIN 550) Credit 3(3-0)**

This course exposes students to the techniques of comprehensive financial statement analysis and the processes of analyzing

investment cases and enterprise valuation. Students will analyze corporate business strategies and competitive positioning as it pertains to financial performance and strategic alternatives. Various valuation methodologies will be covered in the context of real world applications and implications. Prerequisite: ECON 200, ECON 201, ACCT 222 and a minimum grade of C in FINC 343. (F;S;SS)

**FINC 355. Investments (formerly FIN 455) Credit 3(3-0)**

This course analyzes the various types of corporate and public securities and examines the operation of securities markets. Prerequisite: A minimum grade of C in FINC 253. (F;S)

**FINC 365. Real Estate (formerly FIN 465) Credit 3(3-0)**

This course is a comprehensive introduction to real estate theory and practice. It is designed to enable the student to understand realty terminology and procedures. Topics include realty law, leases, types of realty ownership, income tax law, sales contracts, mortgages, estimating property value, negotiating, financing realty, closing procedures, closing costs, and deeds. This course provides background preparation for the real estate salesman's pre-licensing exam. Prerequisite: Junior standing. (F;S)

**FINC 366. Real Estate Finance (formerly FIN 466) Credit 3(3-0)**

This course is an overview of real property with an emphasis on decision-making. Topics include present value calculations, underwriting residential and income property loans, mortgage law, kinds of mortgages, mortgage markets, and types of lenders. Prerequisite: A minimum grade of C in FINC 365, FINC 253 (formerly 453), or instructor consent. (S)

**FINC 451. Intermediate Financial Management (formerly FIN 351) Credit 3(3-0)**

This course concentrates on decisions involving long-term financial commitments and survival of the firm, including capital budgeting policies and procedures, capital structure, long-term financing and cost of capital. Practical approaches and theoretical models are used to examine domestic and multinational finance. Prerequisite: A minimum grade of C in FINC 343. (F;S;SS)

**FINC 452. Commercial Bank Management (formerly FIN 552) Credit 3(3-0)**

This course analyzes the operations of commercial banks, specifically, and other major financial institutions, generally. Emphasis is placed on management decision-making processes. Through case analysis and problems, the student is introduced to cash, loan, deposit, investment, and management problems faced daily by managers of financial institutions. Prerequisites: A minimum grade of C in FINC 253 and ECON 315 (formerly ECON 415). (S)

**FINC 454. International Finance (formerly FIN 553) Credit 3(3-0)**

This course provides a survey of fundamental issues in managing the financial operations of an international business unit. Topics include working capital management, capital budgeting, financial markets and instruments, and capital structure decisions. These issues are discussed within a framework that examines enhanced risks associated with currency fluctuations, political and regulatory differences, economics structure variations, and cultural differences. Prerequisite: A minimum grade of C in FINC 253. (F)

**FINC 457. Cases in Business Finance (formerly FIN 557) Credit 3(3-0)**

This course integrates the six major areas of financial planning learned in previous courses. Students will refine skills in creating and delivering professional and competent financial planning services to the public. This course is designed to simulate the real-world experience of financial planners. This is a senior level course designed for, but not restricted to, students who have strong career interests in corporate financial management. The course utilizes cases and readings oriented toward short-term financial management problems. The student is continuously placed in the position of the decision-maker who must support his judgments by identifying each problem succinctly, marshaling appropriate data, analyzing the data, and ultimately arguing for one of the alternatives. Prerequisites: A minimum grade of C in FCS 316, FCS 406, FCS 407, FINC 464 and FINC 369 and Senior standing. (DEMAND). (F;S;SS)

**FINC 458. Securities Analysis and Management (formerly FIN 555) Credit 3(3-0)**

This course extends the security analysis and portfolio management discussion introduced in the basic investments course, FIN 455. This course of study should be especially valuable for students preparing for careers which involve (1) using or producing securities analyses and/or (2) managing securities portfolios, within financial institutions and treasury functions. Prerequisite: A minimum grade of C in FINC 355 (formerly FIN 455). (S)

**FINC 464. Risk and Insurance Credit 3(3-0)**

This course is an introduction to risk management with emphasis on varied applications of insurance as a technique for treating uncertainty. Prerequisite: A minimum grade of C in FINC 253 and Junior standing. (F)

#### DIRECTORY OF FACULTY

<b>Ronald Campbell</b> .....	<b>Assistant Professor</b>
B.A., Oakwood College; M.B.A., Ohio State University; Ph.D., Texas A & M University; CPA	
<b>Gwendolyn Highsmith-Quick</b> .....	<b>Associate Professor</b>
B.S., North Carolina A&T State University; M.B.A., University of Wisconsin – Madison; Ph.D., University of Houston; CPA	
<b>Kevin James</b> .....	<b>Associate Professor and Interim Provost</b>
B.B.A., M.B.A., Middle Tennessee State University; Ph.D., University of Tennessee; CPA	
<b>Cynthia Khanlarian</b> .....	<b>Assistant Professor</b>
B.A., Converse College; M.S., Ph.D., University of North Carolina at Greensboro; CPA, CMA	
<b>Charles Malone</b> .....	<b>Associate Professor</b>
A.B., Boston University College of Liberal Arts; J.D., Boston University School of Law; M.B.A., Columbia University Graduate School of Business; Ph.D., University of Missouri – Columbia; CPA	

<b>Gwendolyn McFadden-Wade</b> .....	<b>Associate Professor</b>
B.S., South Carolina State College; M. Acc., University of South Carolina; J. D., Stetson University College of Law; LL. M., University of Florida College of Law; CPA	
<b>Collins Okafor</b> .....	<b>Assistant Professor</b>
B.S., Stetson University; M.B.A., M.Sc., Texas A&M International University; MPacc, Ph.D., Texas A&M University	
<b>Lisa Owens-Jackson</b> .....	<b>Associate Professor and Associate Dean</b>
B.S., North Carolina A&T State University; M.A., The Ohio State University; Ph.D., Oklahoma State University; CPA	
<b>Brandis Phillips</b> .....	<b>Associate Professor</b>
B.A., Michigan State University; M.B.A., University of Iowa; Ph.D., Michigan State University; CPA	
<b>Joseph Reid</b> .....	<b>Assistant Professor</b>
B.S., Winston-Salem State University; M.S., Wake Forest University; Ph.D., The University of Memphis; CPA	
<b>Peter Theuri</b> .....	<b>Associate Professor</b>
B.S., Oakwood College; M.B.A., University of Central Oklahoma; D.B.A., Mississippi State University; CPA	
<b>Pamela Turner</b> .....	<b>Assistant Professor</b>
B.S., University of Mississippi; M.A., Ph.D., University of Alabama-Tuscaloosa; CFA, CFP	
<b>Danielle Winchester</b> .....	<b>Associate Professor</b>
B.S., M.B.A., University of North Carolina at Greensboro; Ph.D., Texas Tech University	

**Department of Business Education**

<http://www.ncat.edu/cobe/departments/bued/index.html>

**Lisa Gueldenzoph Snyder, Chairperson**

**MISSION**

The Department of Business Education prepares business educators and information technology professionals for the ever-changing workforce. The program builds students' business knowledge and enhances their skills in technology, communication, critical thinking, leadership, ethics, and team building. Graduates are prepared for careers in education, business, industry, government, and other organizations.

**ACCREDITATION**

The Business Education program is included in the programs accredited by AACSB International. Additionally, the Business Teacher Education concentration is accredited by the Council for Accreditation of Educator Preparation (CAEP) (previously known as the National Council for Accreditation of Teacher Education) and approved by the North Carolina State Department of Public Instruction.

**DEGREES OFFERED**

Business Education (Business Teacher Education) – Bachelor of Science – offered on campus and online  
 Business Education (Information Technology) – Bachelor of Science – offered on campus and online

**GENERAL PROGRAM REQUIREMENTS**

Students in the College of Business and Economics must earn a minimum grade of “C” in ENGL 100, 101, MATH 111, 112, ACCT 221, 222, BUED 260 (formerly BUED 360), ECON 200, 201, 206, FINC 343 (formerly FIN 253), MGMT 110 (formerly MGMT 220), MGMT 132 (formerly MIS 241), MGMT 201 (formerly MGMT 422), MGMT 303 (formerly MGMT 361), MGMT 315 (formerly MGMT 481), MGMT 495 (formerly MGMT 520), and MKTG 230 (formerly MKTG 430). Students in the College of Business and Economics must also earn a minimum grade of “C” in BUED 110 (formerly BUED 210).

**DEPARTMENTAL REQUIREMENTS**

Students in the department must earn a “C” (not C-) or better in the 18 credit hours listed on their curriculum guide as their required concentration courses. Students who select the Business Teacher Education concentration must choose one of three specialization areas: Computer Technology, Economics, or Marketing. Business Teacher Education majors complete general education courses, the required business core courses in the College of Business and Economics, and teacher preparation courses offered in the College of Education. Students must maintain an overall 2.80 GPA, pass both Praxis I and Praxis II exams, demonstrate proficiency through 400 hours of directed work experiences (or document two years of full-time work experience), and complete several field experiences in school placements including methods observations and a 16-week student teaching internship. To be approved for licensure, students must meet all the requirements of the College of Education’s Teacher Education Program. Students submit these requirements to the College through Taskstream, an online e-portfolio system.

Students who select the Information Technology concentration complete general education courses, the required business core courses in the College of Business and Economics, and select additional Information Technology electives from an approved list. Students are required to complete business work experience as part of their curriculum requirements.

**CAREER OPPORTUNITIES**

Depending on the concentration selected, graduates of the Department of Business Education are prepared for career opportunities as business teachers in middle and secondary grades or as information technology specialists in business, industry, government, and other organizations.

**Department of Business Education**  
**Bachelor of Science in Business Education – Information Technology**  
**Major Code: BUE\***  
**Concentration Code: INTH**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
MATH 111 <sup>1</sup>	4	MATH 112	4
ENGL 100	3	ENGL 101	3
MGMT 110 ( <i>formerly MGMT 220</i> )	3	BUED 110 ( <i>formerly BUED 210</i> )	3
Science w/Lab <sup>1</sup>	4	Science	3
FRST 101	1	African American Culture and History Elective <sup>2</sup>	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
ACCT 221	3	ACCT 222	3
ECON 200 <sup>4</sup>	3	ECON 201	3
ECON 206	3	MGMT 201 ( <i>formerly MGMT 422</i> )	3
MGMT 132 ( <i>formerly MIS 241</i> )	3	MKTG 230 ( <i>formerly MKTG 430</i> )	3
SPCH 250	3	Global Awareness Elective <sup>6</sup>	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
BUED 298 <sup>7</sup> ( <i>formerly BUED 670</i> )	1	HPED Elective	1
BUED 260 ( <i>formerly BUED 360</i> )	3	FIN 343 ( <i>formerly FIN 453</i> )	3
BUED 342	3	MGMT 303 ( <i>formerly MGMT 361</i> )	3
MGMT 315 ( <i>formerly MGMT 481</i> )	3	MGMT 321 ( <i>formerly MGMT 426</i> )	3
MGMT 335 ( <i>formerly MIS 440</i> )	3	MGMT 322 ( <i>formerly MGMT 522</i> )	3
Information Technology Elective	3	Information Technology Elective	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>16</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
BUED 400	3	BUED 447	3
BUED 444	3	MGMT 495 ( <i>formerly MGMT 520</i> )	3
Information Technology Elective <sup>8</sup>	3	Information Technology Elective	3
Free Elective <sup>9</sup>	3	Free Elective <sup>6</sup>	3
Free Elective <sup>9</sup>	3	<b>Semester Total</b>	<b>12</b>
<b>Semester Total</b>	<b>15</b>		

**Total Credit Hours: 120**

<sup>1</sup>MATH 111 can be replaced with the combination of MATH 103 and MATH 104; online students should take MATH 101 and MATH 102.

<sup>2</sup>Recommended science electives include BIOL for the four-credit lab, and EES 234 or ENVS 201 for the three-credit course.

<sup>3</sup>African-American Culture and History electives include ENGL 333, ENGL 334, LIBS 202, HIST 103, HIST 106, HIST 107, or MUSI 220.

<sup>4</sup>ECON 200 fulfills the General Education Social and Behavioral Sciences requirement.

<sup>5</sup>SPCH 250 fulfills the General Education Humanities and Fine Arts requirement.

<sup>6</sup>Global Awareness electives include PHIL 103, PHIL 201, HIST 130, HIST 207, HIST 216, or HIST 231.

<sup>7</sup>BUED 298 requires 100 internship hours in a business or IT-related position (or documentation of at least two years of related work experience).

<sup>8</sup>See the Department's list of recommended IT electives; at least two of the four IT electives must be upper-level (300-499) courses.

<sup>9</sup>Free electives include any three-credit undergraduate course at or above the 100 level.

## MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better (not C-) in the following courses:*

Concentration Courses – Information Technology	
BUED 110	BUED 447
BUED 342	MGMT 335 ( <i>formerly MIS 440</i> )
BUED 400	Information Technology Elective
BUED 444	Information Technology Elective
General Education Courses	
ENGL 100	MATH 111
ENGL 101	MATH 112
Core Courses – College of Business and Economics	
ACCT 221	MGMT 110 ( <i>formerly MGMT 220</i> )
ACCT 222	MGMT 132 ( <i>formerly MIS 241</i> )
BUED 260 ( <i>formerly BUED 360</i> )	MGMT 201 ( <i>formerly MGMT 422</i> )
ECON 200	MGMT 303 ( <i>formerly MGMT 361</i> )
ECON 201	MGMT 315 ( <i>formerly MGMT 481</i> )
ECON 206	MGMT 495 ( <i>formerly MGMT 520</i> )
FIN 343 ( <i>formerly FIN 453</i> )	MKTG 230 ( <i>formerly MKTG 430</i> )

**Department of Business Education**  
**Bachelor of Science in Business Education - Pre-Licensure Business Teacher Education**  
**Major Code: BUE\***  
**Concentration Code: PBTE**

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year - First Semester</b>		<b>Freshman Year - Second Semester</b>	
MATH 111	4	MATH 112	4
ENGL 100	3	ENGL 101	3
Science Elective w/Lab <sup>1</sup>	4	Science Elective <sup>1</sup>	3
African American Culture and History Studies Elective <sup>2</sup>	3	MGMT 110 ( <i>formerly MGMT 220</i> )	3
FRST 100	1	BUED 110 ( <i>formerly BUED 210</i> )	3
CUIN 102	2	CUIN 110 <sup>3</sup>	2
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>18</b>
<b>Sophomore Year - First Semester</b>		<b>Sophomore Year - Second Semester</b>	
ACCT 221	3	ACCT 222	3
ECON 200	3	ECON 201	3
ECON 205 ( <i>formerly ECON 305</i> )	3	ECON 210 ( <i>formerly ECON 310</i> )	3
MGMT 132 ( <i>formerly MIS 241</i> )	3	BUED 260 ( <i>formerly BUED 360</i> )	3
Global Awareness Elective <sup>4</sup>	3	SPCH 250	3
CUIN 210 <sup>5</sup>	2	CUIN 255 ( <i>formerly CUIN 310</i> )	2
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>17</b>
<b>Junior Year - First Semester</b>		<b>Junior Year - Second Semester</b>	

BUED 398 <sup>6</sup> (formerly BUED 670)	1	BUED 498 <sup>6</sup> (formerly BUED 671)	1
BUED 342 or ECON 311 (formerly ECON 410) or MGMT 343 (formerly MGMT 425) <sup>7</sup>	3	BUED 447 or ECON 315 (formerly ECON 415) or MKTG 332 (formerly MKTG 432) <sup>7</sup>	3
MGMT 303 (formerly MGMT 361)	3	MGMT 335 (formerly MIS 440),	
MKTG 230 (formerly MKTG 430)	3	ECON 313 (formerly ECON 420) or	
MGMT 315 (formerly MGMT 481)	3	MKTG 353 (formerly MKTG 435) <sup>7</sup>	3
CUIN 410 <sup>8</sup>	2	MGMT 201 (formerly MGMT 422)	3
<b>Semester Total</b>	<b>15</b>	FIN 343 (formerly FIN 453)	3
		CUIN 420 (formerly CUIN 520)	3
		<b>Semester Total</b>	<b>16</b>
<b>Senior Year - First Semester</b>		<b>Senior Year - Second Semester</b>	
BUED 400	3	CUIN 498 <sup>10</sup> (formerly CUIN 660)	9
BUED 424 (formerly BUED 624)	3	CUIN 470 <sup>10</sup> (formerly CUIN 670)	3
BUED 475 <sup>9</sup> (formerly BUED 675)	3	<b>Semester Total</b>	<b>12</b>
BUED 482 (formerly BUED 682)	3		
MGMT 495 (formerly MGMT 520)	3		
<b>Semester Total</b>	<b>15</b>		

**Total Credit Hours: 127**

<sup>1</sup>See General Education list for approved electives (recommend EES 234 or ENVS 201 for 3-credit science, and BIOL 100 for 4-credit science w/lab)

<sup>2</sup>Select one of the approved African-American Culture and History electives: ENGL 333, 334; LIBS 202; MUSI 220 to fulfill Humanities and Fine Arts requirement

<sup>3</sup>CUIN 110 requires an approved 20-hour field experience component

<sup>4</sup>Select one of the approved Global Awareness electives: PHIL 265, 315; HIST 130, 207, 216, 231

<sup>5</sup>CUIN 210 requires an approved 30-hour field experience component

<sup>6</sup>BUED 398 and BUED 498 require 200 internship hours each (400 hours total) in a business-related job OR two years of full-time work experience

<sup>7</sup>Select one of the following approved concentrations: **Computer Technology, Economics, or Marketing** and follow the course requirements on page 2

<sup>8</sup>CUIN 410 requires admission to the Teacher Education Program (including passing Praxis I scores) and an approved 40-hour field experience component

<sup>9</sup>BUED 475 requires 60 hours of observation in an assigned business education classroom

<sup>10</sup>CUIN 498 requires a 16-week full-time teaching placement and concurrent enrollment in CUIN 470

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C or better in the following courses:*

ACCT 221	MATH 111
BUED 260 (formerly BUED 360)	MATH 112
ECON 205 (formerly ECON 305)	MGMT 110 (formerly MGMT 220)
ENGL 100	MGMT 315 (formerly MGMT 481)
ENGL 101	MGMT 495 (formerly MGMT 520)

**BTE MAJOR PROGRAM REQUIREMENTS (pick one category)**

<b>COMPUTER TECHNOLOGY</b>	<b>ECONOMICS*</b>	<b>MARKETING</b>
BUED 110 (formerly BUED 210)	ECON 311 (formerly ECON 410)	MGMT 132 (formerly MIS 241)



BUED 342	ECON 315 (formerly ECON 415)	MGMT 303 (formerly MGMT 361)
BUED 424 (formerly BUED 624)	ECON 313 (formerly ECON 420)	MGMT 343 (formerly MGMT 425)
BUED 447	BUED 110 (formerly BUED 210)	MKTG 332 (formerly MKTG 432)
BUED 475 (formerly BUED 675)	BUED 424 (formerly BUED 624)	MKTG 335 (formerly MKTG 435)
BUED 482 (formerly BUED 682)	BUED 475 (formerly BUED 675)	BUED 110 (formerly BUED 210)
CUIN 498 (formerly CUIN 660)	BUED 482 (formerly BUED 682)	BUED 424 (formerly BUED 624)
MGMT 335 (formerly MIS 440)	MGMT 132 (formerly MIS 241)	BUED 475 (formerly BUED 675)
MGMT 132 (formerly MIS 241)	MGMT 303 (formerly MGMT 361)	BUED 482 (formerly BUED 682)
MGMT 303 (formerly MGMT 361)	CUIN 498 (formerly CUIN 660)	CUIN 498 (formerly CUIN 660)

*\*Students who select the Economics concentration must also earn a "C" or better in ECON 200, 201, and 210.*

## REMINDERS FOR BUSINESS TEACHER EDUCATION MAJORS

**Admission to Teacher Education Program.** To proceed smoothly in your program, you must be formally admitted to the Teacher Education program by the end of your sophomore year. Admission to the Teacher Education Program requires:

1. Completion of freshman and sophomore level courses, with a grade point average of 2.8 or better.
2. Passing scores on each section of Praxis I.
3. An active Taskstream account throughout your degree.
4. Submission of the Application for Admission to the Teacher Education Program.

You may not take 400-level BUED or CUIN courses until you have been admitted to the Teacher Education Program.

**Admission to Student Teaching.** Candidates may apply to be admitted to student teaching after they have obtained a passing score on the Praxis II exam in Business Education. A passing score on Praxis is required for admission to BUED 475 – Instructional Methods in Business Education.

### COURSE DESCRIPTIONS IN BUSINESS TEACHER EDUCATION

**BUED 101. Data Entry and Digital Input Applications (formerly BUED 301) Credit 2(1-2)**

This course is designed to develop speed and accuracy in data entry and the use of various digital input devices. Emphasis is placed on using software for formatting basic business documents. Requirements for successful completion: 40 gross words per minute. (On Demand)

**BUED 110. Business Computer Applications (formerly BUED 210, Microcomputer Usage in Business) Credit 3(3-0)**

This course emphasizes the theory and application of business computer applications to communicate information. Students will learn word processing, spreadsheets, database management, and presentation software. (F;S;SS)

**BUED 239. Computer-Mediated Communication (formerly BUED 329, Information Processing Applications) Credit 3(3-0)**

This course will examine fundamental aspects of computer-mediated communication and consider how different types of technologies impact communication. The course is designed to improve critical thinking skills when communicating online, giving the students the tools to consider how and why impressions are made differently in computer-mediated environments.

Prerequisite: ENGL 101 or approval of the chairperson. (F;S;SS)

**BUED 260. Business Communications (formerly BUED 360) Credit 3(3-0)**

This course focuses on the study and application of communication theory using state-of-the-art communication technology and techniques to develop correspondence and reports. Attention is also given to oral communication, business ethics, and global interaction. Prerequisite: ENGL 101 and sophomore standing. (F;S;SS)

**BUED 279. Personal Finance (formerly BUED 379) Credit 3(3-0)**

This course examines the problems faced by individuals in managing personal incomes and expenditures. Emphasis is also placed upon credit, budgeting, borrowing, saving, and insurance. Prerequisite: Sophomore standing. (S)

**BUED 298. Internship I Credit 1(1-0)**

This course provides credit for work experiences that contribute practically to the total development of the students' educational experiences. A minimum of 100 hours must be completed. Students will receive "S" for "Satisfactory" or "U" for "Unsatisfactory" grades. Prerequisite: Sophomore standing or approval of the chairperson. (F;S;SS)

**BUED 342. Business Programming Credit 3(2-1)**

This course introduces computer programming for management decision making. Emphasis is on using the computer as an aid to

problem solving and report generation essential to an efficient and effective management information system. Prerequisite: MGMT 132 or equivalent. (F;S;SS)

**BUED 398. Internship I (formerly BUED 670, Directed Work Experience) Credit 2(2-0)**

This course provides credit for work experiences that contribute practically to the total development of the students' educational experiences. A minimum of 200 hours must be completed. Students will receive "S" for "Satisfactory" or "U" for "Unsatisfactory" grades. Prerequisite: Junior standing or approval of the chairperson. (F;S;SS)

**BUED 400. Business Reports and Presentations Credit 3(3-0)**

This course focuses on advanced applications of business and technical writing principles. Reports, proposals, and procedures manuals are produced. Emphasis is placed on research, formal writing, and oral presentations supported by appropriate software and multimedia technology. Prerequisites: BUED 260 (formerly BUED 360) or approval of the chairperson. (F;S;SS)

**BUED 424. E-Commerce Design and Implementation (formerly BUED 624) Credit 3(3-3)**

This hands-on course focuses on the design and implementation of an e-business site on a live server. Emphasis is given to effective design of web pages, particularly the data collection forms such as the order and credit forms and how they interface with other business systems. A final project requires students to demonstrate the efficiency of their designs to a panel of external evaluators. (F)

**BUED 444. Data Communications and Networks Credit 3(3-0)**

This course emphasizes a formal approach to modern data communications and networks, including a theoretical and practical framework. It places special attention on enterprise and global systems covering voice, data, software, hardware, cellular/wireless, and mobile technologies. Prerequisites: BUED 110 or MGMT 132 or ECT 213 or approval of chairperson. (F)

**BUED 447. Advanced Microcomputer Applications Credit 3(2-1)**

This course focuses on advanced computing concepts and applications related to information design, production, and management. It includes hands-on applications using integrated software packages. The course also introduces project management skills and addresses trends in information and end-user computing. Prerequisite: BUED 110 or ECT 210 or approval of chairperson. (S)

**BUED 468. Business Research Methods and Technologies (formerly BUED 568, Organizational Information and Records Management) Credit 3(3-0)**

This course addresses contemporary research methods with an emphasis on gathering, analyzing, and communicating business-related data. Students will think critically about business problems, ethically design a research project, and use technology tools to gather and analyze data. Students will practice effectively communicating research findings to various audiences and stakeholders. Prerequisite: BUED 260 (formerly BUED 360) or PSYC 101 (formerly PSYC 320) or SPCH 250; and ECON 205 (formerly ECON 305) or ECON 206 or PSYC 322 or MATH 224. (F)

**BUED 475. Instructional Methods in Business Education (formerly BUED 675) Credit 3 (3-0)**

This course focuses on helping teacher candidates develop strategies for teaching and assessing business and information technology, including the development of units of instruction, lesson plans, enrichment materials, and assessments for effective teaching at the secondary level. Provisions are made for observing and participating in teaching demonstrations. This course includes 60 hours of observation in a public school business classroom. (F)

**BUED 482. Business Education Planning and Leadership (formerly BUED 682) Credit 3(3-0)**

This course focuses on the principles of effective administration and supervision of public school business education programs. It includes the foundations of career and technical education from the federal and state perspectives, major issues, and trends in business education. Prerequisite: Senior standing or consultation with chairperson. (S)

**BUED 498. Internship II (formerly BUED 671, Directed Work Experience) Credit 1(3-0)**

This course provides credit for work experiences that contribute practically to the total development of the students' educational experiences. A minimum of 300 hours must be completed. Students will receive "S" for "Satisfactory" or "U" for "Unsatisfactory" grades. Prerequisite: Junior standing or approval of the chairperson. (F;S;SS)

**DIRECTORY OF FACULTY**

<b>Sherrie Drye</b> .....	<b>Associate Professor</b>
B.S., M.S., Ph.D., University of North Carolina at Greensboro	
<b>Jorge A. Gaytan</b> .....	<b>Associate Professor</b>
B.B.A., Western Michigan University; M.B.A., Ed.D., The University of Texas at El Paso	
<b>Stephanie Kelly</b> .....	<b>Associate Professor</b>
B.S., M.S., Murray State University; Ph.D., University of Tennessee	
<b>Ewuukgem Lomo-David</b> .....	<b>Associate Professor</b>
B.S., Mankato State University; M.Ed., Ed.D., University of Memphis	
<b>Beryl C. McEwen</b> .....	<b>Professor and Dean</b>
B.Ed., University of Technology, Jamaica; M.S., Ph.D., Southern Illinois University at Carbondale	
<b>Lisa Gueldenzoph Snyder</b> .....	<b>Professor and Chairperson</b>
B.S., Northern Michigan University; M.Ed., Ph.D., Bowling Green State University	
<b>Alexander Yap</b> .....	<b>Associate Professor</b>
B.A., University of the Philippines; M.A., Williams College; M.B.A., Exeter University; Ph.D., Copenhagen Business School	

Scott Simkins, Interim Chairperson

### OBJECTIVES

The objectives of the Department of Economics are to prepare highly competent and globally competitive graduates in the areas of economics, and to develop students' potential for leadership positions in business, education, and the government.

### DEGREE OFFERED

Economics – Bachelor of Science  
 Economics (Business) – Bachelor of Science  
 Economics (Law) – Bachelor of Science

### GENERAL PROGRAM REQUIREMENTS

Economics majors are required to complete a minimum of 120 hours for a bachelor's degree consistent with the curriculum guide for the program selected. The following three program options are available to majors in Economics: (1) Economics, (2) Economics (Business), and (3) Economics (Law). Economics (Business) majors must earn a minimum grade of "C" in ENGL 100, 101, MATH 111, 112, ACCT 221, 222, BUED 260 (formerly BUED 360), ECON 200, 201, 206, FINC 343 (formerly FIN 253), MGMT 110 (formerly MGMT 220), MGMT 132 (formerly MIS 241), MGMT 201 (formerly MGMT 422), MGMT 303 (formerly MGMT 361), MGMT 315 (formerly MGMT 481), MGMT 495 (formerly MGMT 520), and MKTG 230 (formerly MKTG 430). Students in the College of Business and Economics must also earn a minimum grade of "C" in BUED 110 (formerly BUED 210).

### DEPARTMENTAL REQUIREMENTS

Students majoring in Economics must earn a minimum grade of "C" in the 10 (30 hours) courses listed as major program requirements. In Economics, the general option, the student is allowed 30 hours of free electives in order to develop other areas of interest, or prepare for graduate study. The Law concentration includes law, communications, and philosophy courses designed to prepare the student with critical thinking skills for entry into any graduate law program. The Economics (Business) requires the same core courses required of all majors in the College of Business and Economics.

### CAREER OPPORTUNITIES

Private companies hire economics majors for a range of duties and career paths. They are hired by manufacturing firms, banks, educational entities, insurance companies, securities and investment companies, transportation companies, economics research firms, and management consulting firms. Economics graduates also have career options in the public sector with career choices in transportation, banking and finance, labor, agriculture, urban economics, industrial organization, and international trade. Economics majors find that their training is very flexible and that their quantitative and critical thinking skills are in high demand. Many economics majors go on to be very successful in law school and to earn various graduate degrees.

### DEPARTMENTAL REQUIREMENTS

Students majoring in Economics must earn a minimum grade of "C" in the 10 (30 hours) courses listed as major program requirements. In addition, students must earn a minimum grade of "C" in all College of Business and Economics requirements: ENGL 100, 101; MATH 111, 112; ACCT 221, ACCT 222; BUED 260, ECON 206, FIN 253, MGMT 110, 201, 315, 495, and MKTG 230.

Department of Economics  
 Bachelor of Science in Economics  
 Major Code: ECON

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 101	1	Scientific Reasoning II <sup>2</sup>	3
MATH 111 <sup>1</sup>	4	MATH 112 <sup>1</sup>	4
ENGL 100	3	ENGL 101	3
Scientific Reasoning I <sup>2</sup>	3	SPCH 250	3
Scientific Reasoning I Lab <sup>2</sup>	1	BUED 110 (formerly BUED 210)	3
MGMT 110 (formerly MGMT 220)	3	HPED Elective	1
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>17</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
MGMT 132 (formerly MIS 241)	3	BUED 260 (formerly BUED 360)	3

ECON 200	3	ECON 201	3
ECON 206	3	ECON 212 (formerly ECON 312)	3
African American Culture and History Elective <sup>2</sup>	3	ECON Elective	3
Global Awareness Elective <sup>2</sup>	3	Elective	3
<b>Semester Total</b>	<b>15</b>	HPED Elective	1
<b>Junior Year: First Semester</b>		<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
ECON 311 (formerly ECON 410)	3	ECON 315 (formerly ECON 415)	3
ECON 314 (formerly ECON 440)	3	ECON 313 (formerly ECON 420)	3
BUED 400	3	ECON Elective	3
Foreign Language Elective	3	Foreign Language Elective	3
Elective	3	Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
ECON 452 (formerly ECON 505)	3	ECON 492 (formerly ECON 525)	3
Elective	3	Elective	3
Elective	3	Elective	3
Elective	3	Elective	3
Elective	3	Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>12</b>

**Total Credit Hours: 120**

<sup>1</sup>Two MATH courses are required for this discipline: MATH 111 and MATH 112. (MATH 103 & MATH 104 combined can substitute for MATH 111.) MATH 131 and/or MATH 132 can be used as substitutions for either course provided that two of these four courses are taken. All MATHs require a minimum of grade C or better. MATH 131 and MATH 132 are recommended for those planning to pursue graduate study. MATH 110 is not a substitute for MATH 111.

<sup>2</sup>For a list of courses satisfying the Scientific Reasoning, African-American Culture and History, and Global Awareness general education components, please refer to the department office or at

[http://www.ncat.edu/provost/general\\_education\\_resources/general\\_education\\_course\\_list/index.html](http://www.ncat.edu/provost/general_education_resources/general_education_course_list/index.html)

NOTE: The two (2) courses chosen to fulfill the African American Culture and History elective and the Global Awareness elective must include one African American Culture and History course and one Global Awareness course (that is, an African American Culture and History course must be chosen for one of these electives and a Global Awareness course must be chosen for the other elective)..

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C (not C-) or better in the following courses:*

ECON 200	ECON 313
ECON 201	ECON 314
ECON 206	ECON 315
ECON 212	ECON 492
ECON 311	BUED 400

Department of Economics  
 Bachelor of Science in Economics (Law)  
 Major Code: ECON  
 Concentration Code: LAW

## Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 101	1	Scientific Reasoning II <sup>4</sup>	3
MATH 111 <sup>1</sup>	4	MATH 112 <sup>1</sup>	4
ENGL 100	3	ENGL 101	3
Scientific Reasoning I <sup>4</sup>	3	SPCH 250	3
Scientific Reasoning I Lab <sup>4</sup>	1	BUED 110 (formerly BUED 210)	3
MGMT 110 (formerly MGMT 220)	3	HPED Elective	1
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>17</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
MGMT 132 (formerly MIS 241)	3	BUED 260 (formerly BUED 360)	3
ECON 200	3	ECON 201	3
ECON 206	3	ECON 212 (formerly ECON 312)	3
PHIL 102 (formerly PHIL 262)	3	ECON Elective	3
African American Culture and History Elective <sup>4</sup>	3	Global Awareness Elective <sup>4</sup>	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
ECON 311 (formerly ECON 410)	3	ECON 315 (formerly ECON 415)	3
ECON 314 (formerly ECON 440)	3	ECON 313 (formerly ECON 420)	3
BUED 400	3	Foreign Language Elective	3
Foreign Language Elective	3	ECON Elective	3
COMM Elective <sup>3</sup>	3	COMM Elective <sup>3</sup>	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
ECON 452 (formerly ECON 505)	3	ECON 492 (formerly ECON 525)	3
MGMT 303 (formerly MGMT 361)	3	MGMT 429 (formerly MGMT 462)	3
Elective	3	Law and Philosophy Elective <sup>2</sup>	3
Law and Philosophy Elective <sup>2</sup>	3	Law and Philosophy Elective <sup>2</sup>	3
<b>Semester Total</b>	<b>12</b>	<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 120**

<sup>1</sup>Two MATH courses are required for this discipline: MATH 111 and MATH 112. (MATH 103 & MATH 104 combined can substitute for MATH 111.) MATH 131 and/or MATH 132 can be used as substitutions for either course provided that two of these four courses are taken. All MATHs require a minimum of grade C or better. MATH 131 and MATH 132 are recommended for those planning to pursue graduate study. MATH 110 is **not** a substitute for MATH 111.

<sup>2</sup>Three Law and Philosophy electives must be chosen from the following courses: POLI 342, 343, CRJS 220, 312, PHIL 101, 201, 263, 266, 311, 314, 316, 402, 406.

<sup>3</sup>Two Communications electives must be chosen from the following courses: ENGL 240, SPCH 251, 401, 453. At least three of the LP and COMM electives must be from the 400 or 500 levels.

<sup>4</sup>For a list of courses satisfying the Scientific Reasoning, African-American Culture and History, and Global Awareness general education components, please refer to the department office or at

[http://www.ncat.edu/provost/general\\_education\\_resources/general\\_education\\_course\\_list/index.html](http://www.ncat.edu/provost/general_education_resources/general_education_course_list/index.html).

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C (not C-) or better in the following courses:*

ECON 206	ECON 314
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ECON 206	ECON 315
ECON 212	ECON 492
ECON 311	MGMT 303
ECON 313	BUED 400

**Department of Economics**  
**Bachelor of Science in Economics (Business)**  
**Major Code: ECON**  
**Concentration Code: BUSN**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 101	1	Scientific Reasoning II <sup>2</sup>	3
MATH 111 <sup>1</sup>	4	MATH 112 <sup>1</sup>	4
ENGL 100	3	ENGL 101	3
Scientific Reasoning I <sup>2</sup>	3	SPCH 250	3
Scientific Reasoning I Lab <sup>2</sup>	1	BUED 110 ( <i>formerly BUED 210</i> )	3
MGMT 110 ( <i>formerly MGMT 220</i> )	3	HPED Elective	1
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>17</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
MGMT 132 ( <i>formerly MIS 241</i> )	3	Global Awareness Elective <sup>2</sup>	3
ECON 200	3	ECON 201	3
ECON 206	3	ECON 212 ( <i>formerly ECON 312</i> )	3
ACCT 221	3	ACCT 222	3
African American Culture and History Elective <sup>2</sup>	3	ECON Elective	3
<b>Semester Total</b>	<b>15</b>	HPED Elective	1
		<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
ECON 311 ( <i>formerly ECON 410</i> )	3	ECON 315 ( <i>formerly ECON 415</i> )	3
ECON 314 ( <i>formerly ECON 440</i> )	3	ECON 313 ( <i>formerly ECON 420</i> )	3
Foreign Language Elective	3	MGMT 315 ( <i>formerly MGMT 481</i> )	3
FIN 343 ( <i>formerly FIN 253</i> )	3	Foreign Language Elective	3
MGMT 201 ( <i>formerly MGMT 422</i> )	3	BUED 260 ( <i>formerly BUED 360</i> )	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
ECON 452 ( <i>formerly ECON 505</i> )	3	MGMT 495 ( <i>formerly MGMT 520</i> )	3
ECON Elective	3	ECON 492 ( <i>formerly ECON 525</i> )	3
MGMT 303 ( <i>formerly MGMT 361</i> )	3	Elective	3
BUED 400	3	Elective	3
MKGT 230 ( <i>formerly MKTG 430</i> )	3	<b>Semester Total</b>	<b>12</b>
<b>Semester Total</b>	<b>15</b>		

**Total Credit Hours: 120**

<sup>1</sup>Two MATH courses are required for this discipline: MATH 111 and MATH 112. (MATH 103 & MATH 104 combined can substitute for MATH 111.) MATH 131 and/or MATH 132 can be used as substitutions for either course provided that two of these four courses are taken. All MATHs require a minimum of grade C or better. MATH 131 and MATH 132 are recommended for those planning to pursue graduate study. MATH 110 is **not** a substitute for MATH 111.

<sup>2</sup>For a list of courses satisfying the Scientific Reasoning, African-American Culture and History, and Global

Awareness general education components, please refer to the department office or at [http://www.ncat.edu/provost/general\\_education\\_resources/general\\_education\\_course\\_list/index.html](http://www.ncat.edu/provost/general_education_resources/general_education_course_list/index.html)

NOTE: The two (2) courses chosen to fulfill the African American Culture and History elective and the Global Awareness elective must include one African American Culture and History course and one Global Awareness course (that is, an African American Culture and History course must be chosen for one of these electives and a Global Awareness course must be chosen for the other elective).

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C (not C-) or better in the following courses:*

ECON 200	ECON 313
ECON 201	ECON 314
ECON 206	ECON 315
ECON 212	ECON 452
ECON 311	ECON 492

### COURSE DESCRIPTIONS IN ECONOMICS

**ECON 200. Principles of Economics (Micro)** **Credit 3(3-0)**  
 This course introduces principles of economics related to individual segments of the society. Emphasis will be placed upon scarcity, supply and demand, consumer behavior, business firms and market structures. (F;S;SS)

**ECON 201. Principles of Economics (Macro)** **Credit 3(3-0)**  
 This course introduces principles of economics related to the economy. National income determination, inflation, unemployment, monetary and fiscal policies, and the basics of international economic relations are examined. (F;S;SS)

**ECON 206. Statistics for Decision Making (combination of ECON 205 and ECON 210)** **Credit 3(3-1)**  
 This course focuses on descriptive and inferential statistics. Prerequisite: A minimum grade of C in MATH 111 and MATH 112 or MATH 131 and MATH 132. (F;S;SS)

**ECON 212. Quantitative Analysis (formerly ECON 312)** **Credit 3(3-0)**  
 This course provides a solid foundation to basic mathematical methods employed in macro and micro economic theory. It includes elementary application of calculus and analytical geometry, and matrix algebra to illustrate income - expenditure model, demand theory, production function, problems of cost minimization and profit maximization, and linear programming. Prerequisites: A minimum grade of C in ECON 200, and MATH 112 or MATH 131. (F;S)

**ECON 285. Topics in Economics for Non-Economics Majors** **Credit 3(3-0)**  
 This course examines current topics and issues in economics. It is designed for students with minimal knowledge of economics and is intended to introduce students to economic thinking processes and how they can be used to analyze and solve specific issues in society. (F;S;SS)

**ECON 303. Public Finance (formerly ECON 401)** **Credit 3(3-0)**  
 This course, analyzes the way federal, state, and local governments obtain and spend their revenues. Tax theories, incidence and impact are covered, as are factors influencing governmental fiscal policies. Prerequisites: A minimum grade of C in ECON 200, ECON 201, and ECON 206 or equivalent. (F;S)

**ECON 304. History of Economic Thought (formerly ECON 405)** **Credit 3(3-0)**  
 This course surveys the history of economic thought from the Middle Ages to John M. Keynes. It attempts to show how and under what conditions the more important laws and theories have become a part of the body of modern economics. Prerequisites: A minimum grade of C in ECON 200 and ECON 201. (DEMAND)

**ECON 311. Intermediate Microeconomic Theory (formerly ECON 410)** **Credit 3(3-0)**  
 This course examines the following: theoretical analysis of consumer demand; production and costs; optimum output and pricing behavior under various market conditions; allocation of factors of production and distribution of income; general equilibrium and welfare economics. Prerequisites: A minimum grade of C in ECON 200 and ECON 206. (F;S;SS)

**ECON 313. Intermediate Macroeconomic Theory (formerly ECON 420)** **Credit 3(3-0)**  
 This course provides an intermediate level exploration of macroeconomic phenomena. Topics include aggregate demand and supply, income determination, equilibria in money and commodity markets, expectations theories, consumption, investment, inflation and unemployment trade-off, and monetary and fiscal policies for stabilization. Prerequisites: A minimum grade of C in ECON 201 and ECON 206. (F;S)

**ECON 314. Introduction to Econometrics (formerly ECON 440)** **Credit 3(3-0)**  
 This course is intended to provide a working knowledge of applications of modern statistical tools for the formulation and the verification or refutation of economic theories. Primary attention is given to quantitative estimates of parameters in single

equation stochastic models. The course also introduces the student to simultaneous-equation models. Prerequisites: A minimum grade of C in ECON 200, ECON 201 and ECON 206 or consent of the instructor. (F;S;SS)

**ECON 315. Money and Banking (formerly ECON 415)** **Credit 3(3-0)**

This course introduces money, banking, and recent developments in the U.S. financial system. The functions and definitions of money, various types of financial intermediaries and instruments, commercial banking and credit creation, the Federal Reserve System, monetary theory and policy, and international banking are covered. Statistical analyses are included to enhance the understanding of monetary concepts. Prerequisites: ECON 200, ECON 201 and ECON 206. (F;S;SS)

**ECON 372. Economics and Society (formerly ECON 472)** **Credit 3(3-0)**

This course offers an in-depth treatment of a current area of special concern within the field of economics. The content varies from semester to semester. Prerequisites: A minimum grade of C in ECON 200 and ECON 201. (DEMAND)

**ECON 408. Managerial Economics (formerly ECON 608)** **Credit 3(3-0)**

This course applies the tools and methods of microeconomics theory to specific management decision making in the private sector. Particular emphasis is placed on pricing profit, maximization, capital budgeting and financial decisions in the long-run. Prerequisite: Senior standing, ECON 200, ECON 201, or consent of Instructor. (F;S)

**ECON 422. Consumer Economics (formerly ECON 610)** **Credit 3(3-0)**

This course acquaints the student with the nature, scope and tools of consumer economics. It is particularly oriented to minority groups, thus focusing on the economic choices currently affecting groups with rising incomes and aspirations. This course considers the economic choices faced by the consumers in maximizing satisfaction with limited means. Prerequisites: ECON 200 and ECON 201. (DEMAND)

**ECON 423. Economic, Political and Social Aspects of the Black Experience (formerly ECON 615)** **Credit 3(3-0)**

A study of the political, economic and social tools of current public policy treating the subject of race in America. This course examines the economic and social conditions of income, inequality and explores the national commitment to equal opportunity. Special emphasis is placed on illustrations from North Carolina and adjacent states. Prerequisites: Junior standing and permission of instructor. (DEMAND)

**ECON 451. Labor Relations (formerly ECON 501)** **Credit 3(3-0)**

This course introduces the economic analysis of labor markets. Labor economics is a field in applied microeconomics, and draws upon basic microeconomic and statistical concepts. Topics include the demand for and the supply of labor, labor market equilibrium, compensating wage differentials, acquisition of human capital, education as a signal, migration, discrimination, unions, incentive pay, and unemployment. Prerequisites: A minimum grade of C in ECON 206 and ECON 311. (F;S)

**ECON 452. International Economic Relations (formerly ECON 505)** **Credit 3(3-0)**

This course examines the national specialization and international exchange. The history and significance of international trade among nations of the world will be studied. Prerequisites: A minimum grade of C in ECON 210 and ECON 311. (F;S)

**ECON 453. Business Cycles (formerly ECON 510)** **Credit 3(3-0)**

This course examines the general instability of capitalism and its causes, seasonal fluctuations and the secular trend as well as business cycle history and theories and the influence of cycles on government fiscal policy. Prerequisites: A minimum grade of C in ECON 200, ECON 201, and ECON 314. (DEMAND)

**ECON 454. Comparative Economic Systems (formerly ECON 515)** **Credit 3(3-0)**

This course is a description and analytical study of the various systems that have developed in different countries at different times, motivations, production and distribution patterns. Prerequisites: A minimum grade of C in ECON 200 and ECON 201. (DEMAND)

**ECON 455. Economic Development (formerly ECON 520)** **Credit 3(3-0)**

This course surveys the problem of economic growth and development in modern times and analyzes the present efforts to increase the rate of economic growth. Selected case studies will be drawn from both highly developed nations and lesser developed nations. Special emphasis will be given to the disproportionate growth in sectors of the United States' economy. Prerequisites: A minimum grade of C in ECON 200, ECON 201, and ECON 206. (DEMAND)

**ECON 485. Special Topics in Economics (formerly ECON 690)** **Credit 3(3-0)**

This course examines current topics and issues in economics, focusing on a specific area in economics not covered in depth in other courses. Course content may vary from semester to semester. Prerequisite: ECON 200 and ECON 201. (F;S;SS)

**ECON 490. Independent Study (formerly ECON 599)** **Credit 3 or 6**

This course is designed to provide students the opportunity to acquire in-depth knowledge in special topics or areas of study in economics where the University does not offer a specific course. The following conditions must be met: (1) The student must select a topic with an economics faculty member and study that topic for at least three hours per week for one semester, and (2) The student is required to present a written report based on evaluation criteria by the supervising faculty member. Prerequisite: Consent of the supervising faculty and department chairperson. (F;S;SS)

**ECON 492. Economics Seminar (formerly ECON 525)** **Credit 3(3-0)**

This course utilizes economic tools in delineating, analyzing and presenting economic problems that are not included in other courses. It also includes exposure to recent developments in economics. Prerequisite: A minimum grade of C in ECON 311, ECON 313, ECON 314, and Senior standing. (F;S)

#### Advanced Courses

**ECON 602. Manpower Problems and Prospects** **Credit 3(3-0)**

This course is an analysis of manpower development problems and prospects, with particular reference to the problems of



unemployment, underemployment and discrimination. The course focuses on problem measurement, evaluation of existing policy and prospects for achievement of all human resource development. The course invites an interdisciplinary participation on the part of students and faculty. Prerequisite: ECON 200 or ECON 201; ECON 206 or equivalent, or consent of the instructor. **(DEMAND)**

**ECON 603. Manpower Planning** **Credit 3(3-0)**

Manpower planning centers chiefly on the adjustment necessary to adapt labor resources to changing job requirements and is designed to prepare students to create plans which will facilitate this adjustment. This course familiarizes students with labor force and labor market behavior to enable them to make planning decisions relating to job creation (increasing demand) and education and training (increasing supply). Planning will be done at both the national (macro) and local (micro) levels, with special emphasis on the latter. Students will further evaluate all planning decisions by use of Cost-Benefit Analysis or Multivariate Analysis. Prerequisite: ECON 200 or ECON 201; ECON 206 or equivalent, or consent of the instructor. **(DEMAND)**

**ECON 604. Economics Evaluation Methods** **Credit 3(3-0)**

The course covers needed tools of research design, statistical reporting, cost benefit analysis and other related techniques for internal and external evaluations of human resource development programs. It is designed both for in-service personnel currently employed by agencies, and for the regular student enrolled in a degree-granting program. Prerequisites: ECON 200 and ECON 201. **(DEMAND)**

**ECON 606. Foundation of Economics for Graduate Students (formerly ECON 789)** **Credit 3(3-0)**

This course introduces basic economic principles and their applications in business. Basic economic concepts, including marginal analysis of consumer and firm decisions, are covered, along with macroeconomic theories that support managers' understanding of the global economic environment and the economic policies affecting that environment. **(F;S;SS)**

**ECON 608. Managerial Economics (formerly ECON 708)** **Credit 3(3-0)**

This course will apply the tools and methods of microeconomics theory to specific management decision making in the private sector. Particular emphasis will be placed on pricing, maximization, capital budgeting and financial decisions in the long-run. Prerequisite: ECON 200 and ECON 201 or consent of instructor. **(S)**

**DIRECTORY OF FACULTY**

<b>Fafanyo Asiseh</b> .....	<b>Assistant Professor</b>
B.S., University of Ghana-Legon; M.S., University of Idaho; Ph.D., Washington State University	
<b>Mark Burkey</b> .....	<b>Professor</b>
B.S., Appalachian State University; Ph.D., Duke University	
<b>David Chen</b> .....	<b>Associate Professor</b>
B.S., National Taiwan University; M.S., New Mexico State University; Ph.D., University of Wisconsin	
<b>Johnny Ducking</b> .....	<b>Assistant Professor</b>
M.A., University of Mississippi; M.S., Ph.D., University of Kentucky	
<b>Jeffrey Edwards</b> .....	<b>Professor</b>
B.A., University of North Carolina at Chapel Hill; M.A., Ph.D., Virginia Polytechnic Institute and State University	
<b>Krishna Kasibhatla</b> .....	<b>Associate Professor</b>
B.A., S.K.B.R. College, India; M.A. Andhra University, India; Ph.D., Rutgers University	
<b>Lyubov Kurkalova</b> .....	<b>Professor</b>
B.S., Tajik State University (USSR); Ph.D., Iowa State University	
<b>Cephas Naanwaab</b> .....	<b>Assistant Professor</b>
B.S., University for Development Studies, Ghana; M.S., Ph.D., Auburn University	
<b>Alfredo Romero Aguirre</b> .....	<b>Associate Professor</b>
B.A., University of the Americas, Puebla, Mexico; M.A., Ph.D., Virginia Polytechnic Institute and State University	
<b>Ryoichi Sakano</b> .....	<b>Associate Professor</b>
B.S., Keio University; M.B.A., M.A., University of North Carolina at Greensboro; Ph.D., University of Alabama	
<b>Scott Simkins</b> .....	<b>Associate Professor and Interim Chairperson</b>
B.A., St. John's University; Ph.D., University of Iowa	
<b>Vereda Williams</b> .....	<b>Associate Professor</b>
B.A., Johnson C. Smith University; M.B.A., North Carolina Central University; Ph.D., Duke University	
<b>Jianfeng Yao</b> .....	<b>Assistant Professor</b>
B.S., Nantong University; M.A., Central Michigan University; Ph.D., University of North Carolina at Chapel Hill	

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**Department of Management**

<http://www.ncat.edu/cobe/departments/mgmt/index.html>

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**Silvanus J. Udoka, Chairperson**

**MISSION**

The mission of the Department of Management, aligned with that of the College of Business and Economics, is to: 1) provide foundational knowledge of management and organization science for all majors in the College of Business and Economics; 2) provide an integrated, innovative, and market-driven curricula for Department majors; 3) offer curricula delivered by faculty

committed to excellence in teaching; 4) engage in basic and applied research that address global challenges; and 5) engage in service to the College of Business and Economics, the University, professional organizations and the community.

### **DEGREES OFFERED**

Management – Bachelor of Science

Management (Entrepreneurship and Innovation) – Bachelor of Science

Management (International Management) – Bachelor of Science

Management (Management Information Systems) – Bachelor of Science

### **MINOR IN ENTREPRENEURSHIP**

The Minor in Entrepreneurship at North Carolina A&T State University teaches students the necessary skills that influence students to develop entrepreneurial mind-set. Through this minor, students are encouraged to take advantage of their knowledge, creative skills, and resources to identify and pursue opportunities, initiate change, and create sustainable value to positively impact their lives as well as society. This minor, which is open to all majors in the University, prepares the student to start successful ventures and encourages students to think and act entrepreneurially in any occupational setting. A minor in Entrepreneurship, coupled with any major within the student's College or the College of Business and Economics, is designed to enable students to enhance their skills in creative, innovative and entrepreneurial thought and entrepreneurial initiatives applied to their specific disciplinary interest.

### **CERTIFICATE IN ENTREPRENEURSHIP**

The Department of Management administers the Certificate in Entrepreneurship that offers a unique learning experience for students who aspire to start their own businesses or to secure employment with an entrepreneurial company. Coursework provides theoretical, experiential, and practical information about starting, operating, and managing entrepreneurial firms. Students will explore the entrepreneurial career option, examine the entrepreneurial process from the idea stage through business operations to harvest, discuss corporate intrapreneurship, examine the skills-set needed for entrepreneurial success, and develop and present a business plan. Opportunity to apply the knowledge and skills is provided to students through the Entrepreneurial Internship Program.

The Certificate in Entrepreneurship is available to students in all University majors. Interested students are required to complete 18 semester hours from the following: six (6) to nine (9) credit hours from MGMT 343, 349, 398, and 485; six (6) to nine (9) credit hours of electives selected by each department; and 6 additional credit hours of business courses (MGMT 201 and MKTG 230) required for non-business majors.

### **GENERAL PROGRAM REQUIREMENTS**

All majors in programs in the Department of Management must complete a minimum of 120 credit hours. Students in the College of Business and Economics must earn a minimum grade of "C" in ENGL 100, 101, MATH 111, 112, ACCT 221, 222, BUED 260 (formerly BUED 360), ECON 200, 201, 206, FINC 343 (formerly FIN 253), MGMT 110 (formerly MGMT 220), MGMT 132 (formerly MIS 241), MGMT 201 (formerly MGMT 422), MGMT 303 (formerly MGMT 361), MGMT 315 (formerly MGMT 481), MGMT 495 (formerly MGMT 520), and MKTG 230 (formerly MKTG 430). Students in the College of Business and Economics must also earn a minimum grade of "C" in BUED 110 (formerly BUED 210).

### **DEPARTMENTAL REQUIREMENTS**

Students in the Department of Management must select a major and concentration **Management, or Management with concentration in Entrepreneurship and Innovation, Management with a concentration in International Management, or Management with a concentration in Management Information Systems (MIS)**. Students in the department must earn a minimum grade of "C" in each of the 10 (30 credit hours) courses listed as major program requirements for the selected major in the applicable University Bulletin. In addition, all students must earn a minimum grade of "C" in all major program elective courses.

### **CAREER OPPORTUNITIES**

According to the U. S. Bureau of Labor Statistics, there is a strong demand for management majors, with a projected growth of 18.6% from 2012 to 2022 for entry-level management roles. Practically all organizations offer a variety of management career opportunities. The Bachelor of Science degree in management covers a number of business disciplines. Because of their broad exposure to all of the functional areas of business, graduates are prepared and qualified to apply for positions in a multitude of business fields. These include project management, organization development analysts, compensation systems analysts, ethics compliance officer, quality assurance systems manager, corporate planning staff and analysts, insurance adjusters, information technology professionals, and many more. Additionally, the Entrepreneurship curriculum is designed to prepare outstanding students for success as entrepreneurs and business leaders.

### **CENTER FOR ENTREPRENEURSHIP AND INNOVATION (CEI)**

The Center for Entrepreneurship and Innovation (CEI) provides academic and experiential learning opportunities for students interested in entrepreneurship, either starting their own for-profit or non-profit ventures, or pursuing a traditional job with large corporations that may involve creating new products/services or initiating expansion of the business into new markets.

The CEI is a program of the Department of Management. It collaborates with the Colleges to offer a Certificate in Entrepreneurship, a Concentration in Entrepreneurship & Innovation (for Management majors only), entrepreneurial internships and a lecture series. The Center hosts undergraduate, graduate, and high school business plan competitions, offers the Student Entrepreneur of the Year Award and the Entrepreneur-in-Residence Program that includes mentoring and counseling to assist students in starting businesses.

All programs of the Center, except the Concentration in Entrepreneurship, are open to all students in the University. All students participating in the activities of the Center are encouraged to become members of the Aggie Student Entrepreneurship Club. Visit: <http://www.ncat.edu/cobe/cei/index.html>.

**Department of Management  
Bachelor of Science in Management  
Major Code: MGMT**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
Scientific Reasoning Elective with/lab	4	MATH 112	4
FRST 101	1	Scientific Reasoning Elective w/out lab	3
MGMT 110 (formerly MGMT 220)	3	MGMT 132 (formerly MIS 241)	3
MATH 111	4	Free Elective	2
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
ECON 200 (Satisfies Social & Behavioral Sciences Elective)	3	ECON 201 (Satisfies Social & Behavioral Sciences Elective)	3
MGMT 201 (formerly MGMT 422)	3	MKTG 230 (formerly MKTG 430)	3
ECON 206 (formerly ECON 305/310)	3	ACCT 222	3
ACCT 221	3	BUED 260 (formerly BUED 360)	3
Humanities & Fine Arts (HFA) Elective	3	MGMT 221 (formerly MGMT 320) (Satisfies Global Awareness Elective)	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
MGMT 315 (formerly MGMT 481)	3	MGMT 303 (formerly MGMT 361)	3
MGMT 321 (formerly MGMT 426)	3	FIN 343 (formerly FIN 253)	3
MGMT 322 (formerly MGMT 522)	3	MGMT 330 (formerly MGMT 482)	3
MGMT 373	3	MGMT 375 (formerly MGMT 483)	3
ACCT 326 (formerly ACCT 446)	3	African Amer. Culture & Hist. Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
MGMT 429 (formerly MGMT 462)	3	MGMT 427	3
MGMT 430 (formerly MGMT 524)	3	MGMT 495 (formerly MGMT 520)	3
MGMT Elective	3	Management Elective	3
MGMT Elective	3	Free Elective	3
Free Elective	3	Free Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 120**

Incoming Freshmen are required to complete a three-hour (3) course in African-American Culture and History and a three-hour (3) course in Global Awareness, a three hour (3) course in Humanities and Fine Arts, and a three-hour (3) course in Social Sciences. These courses must be met as a part of the student's general education requirements, major course requirements, or free electives, from the approved General Education Course List.

## MAJOR PROGRAM REQUIREMENTS

*Students must earn a C (not C-) or better in the following courses:*

MGMT 221 (formerly MGMT 320)	MGMT 375 (formerly MGMT 483)
MGMT 321 (formerly MGMT 426)	MGMT 427
MGMT 322 (formerly MGMT 522)	MGMT 429 (formerly MGMT 462)
MGMT 330 (formerly MGMT 482)	MGMT 430 (formerly MGMT 524)
MGMT 373	ACCT 326 (formerly ACCT 446)

**Department of Management**  
**Bachelor of Science in Management (Entrepreneurship and Innovation)**  
**Major Code: MGMT**  
**Concentration Code: ENTP**

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
Scientific Reasoning Elective w/lab	4	MATH 112	4
FRST 101	1	Scientific Reasoning Elective w/o lab	3
MGMT 110 (formerly MGMT 220)	3	MGMT 132 (formerly MIS 241)	3
MATH 111	4	Free Elective	2
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
ECON 200 (Satisfies Social & Behavioral Sciences Elective)	3	ECON 201 (Satisfies Social & Behavioral Sciences Elective)	3
MGMT 201 (formerly MGMT 422)	3	MKTG 230 (formerly MKTG 430)	3
ECON 206 (formerly ECON 305/310)	3	ACCT 222	3
ACCT 221	3	BUED 260 (formerly BUED 360)	3
Humanities & Fine Arts (HFA) Elective	3	MGMT 221 (formerly MGMT 320)	3
<b>Semester Total</b>	<b>15</b>	(Satisfies Global Awareness (Elective))	
		<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
MGMT 315 (formerly MGMT 481)	3	MGMT 303 (formerly MGMT 361)	3
MGMT 321 (formerly MGMT 426)	3	MGMT 330 (formerly MGMT 482)	3
MGMT 343 (formerly MGMT 425)	3	FIN 253 (formerly FIN 453)	3
ACCT 326 (formerly ACCT 446)	3	African American Culture and History Elective	3
MGMT 442 (formerly MGMT 470)	3	MGMT 322 (formerly MGMT 522)	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
MGMT 427	3	MGMT 429 (formerly MGMT 462)	3
MGMT 430 (formerly MGMT 524)	3	MGMT 345 (formerly MGMT 472)	3
Management Elective	3	MGMT 495 (formerly MGMT 520)	3
Management Elective	3	MGMT 347 (formerly MGMT 468)	3
Free Elective	3	Free Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 120**

Incoming Freshmen are required to complete a three-hour (3) course in African-American Culture and History and a three-hour (3) course in Global Awareness, a three hour (3) course in Humanities and Fine Arts, and a three-hour (3) course in Social Sciences. These courses must be met as a part of the student's general education requirements, major course requirements, or free electives, from the approved General Education Course List.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C (not C-) or better in the following courses:*

MGMT 221 (formerly MGMT 320)	MGMT 355 (formerly MGMT 526)
MGMT 321 (formerly MGMT 426)	MGMT 427
MGMT 322 (formerly MGMT 522)	MGMT 429 (formerly MGMT 462)
MGMT 330 (formerly MGMT 482)	MGMT 430 (formerly MGMT 524)
MGMT 353	ACCT 326 (formerly ACCT 446)

**Department of Management**  
**Bachelor of Science in Management (International Management)**  
**Major Code: MGMT**  
**Concentration Code: INMG**

#### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
Scientific Reasoning Elective w/lab	4	MATH 112	4
FRST 101	1	Scientific Reasoning Elective w/o lab	3
MGMT 110 (formerly MGMT 220)	3	MGMT 132 (formerly MIS 241)	3
MATH 111	4	Free Elective	2
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
ACCT 221	3	ACCT 222	3
ECON 200 (Satisfies Social & Behavioral Sciences Elective)	3	BUED 260 (formerly BUED 360)	3
ECON 206 (formerly ECON 305/310)	3	ECON 201 (Satisfies Social & Behavioral Sciences Elective)	3
MGMT 201 (formerly MGMT 422)	3	MGMT 221 (formerly MGMT 320)	3
Humanities & Fine Arts (HFA) Elective	3	(Satisfies Global Awareness Elective)	
<b>Semester Total</b>	<b>15</b>	MGMT 234 (formerly MIS 352)	3
		<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
ACCT 326 (formerly ACCT 446)	3	FIN 253 (formerly FIN 453)	3
MGMT 315 (formerly MGMT 481)	3	MGMT 303 (formerly MGMT 361)	3
MGMT 321 (formerly MGMT 426)	3	MGMT 322 (formerly MGMT 522)	3
MGMT 333 (formerly MIS 447)	3	MGMT 330 (formerly MGMT 482)	3
MKTG 230 (formerly MKTG 430)	3	MGMT 337 (formerly MIS 448)	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
MGMT 429 (formerly MGMT 462)	3	MGMT 427	3
MGMT 430 (formerly MGMT 524)	3	MGMT 492 (formerly MIS 640)	3
MGMT 432 (formerly MIS 449)	3	MGMT 495 (formerly MGMT 520)	3
MGMT 434 (formerly MIS 500)	3	Free Elective	3

African American Culture & History Elective	3	Free Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 120**

Incoming Freshmen are required to complete a three-hour (3) course in African-American Culture and History and a three-hour (3) course in Global Awareness, a three hour (3) course in Humanities and Fine Arts, and a three-hour (3) course in Social Sciences. These courses must be met as a part of the student's general education requirements, major course requirements, or free electives, from the approved General Education Course List.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C (not C-) or better in the following courses:*

MGMT 221 (formerly MGMT 320)	MGMT 427
MGMT 234 (formerly MIS 352)	MGMT 429 (formerly MGMT 462)
MGMT 321 (formerly MGMT 426)	MGMT 430 (formerly MGMT 524)
MGMT 322 (formerly MGMT 522)	MGMT 434 (formerly MIS 500)
MGMT 330 (formerly MGMT 482)	ACCT 326 (formerly ACCT 446)

**Department of Management**  
**Bachelor of Science in Management (Management Information Systems)**  
**Major Code: MGMT**  
**Concentration Code: MIS**

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
Scientific Reasoning Elective w/lab	4	MATH 112	4
FRST 101	1	Scientific Reasoning Elective w/o lab	3
MGMT 110 (formerly MGMT 220)	3	MGMT 132 (formerly MIS 241)	3
MATH 111	4	Free Elective	2
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
ECON 200 (Satisfies Social & Behavioral Sciences Elective)	3	ECON 201 (Satisfies Social & Behavioral Sciences Elective)	3
MGMT 201 (formerly MGMT 422)	3	MKTG 230 (formerly MKTG 430)	3
ECON 206 (formerly ECON 305/310)	3	ACCT 222	3
ACCT 221	3	BUED 260 (formerly BUED 360)	3
Humanities & Fine Arts (HFA) Elective	3	MGMT 221 (formerly MGMT 320)	3
<b>Semester Total</b>	<b>15</b>	(Satisfies Global Awareness (Elective))	
		<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
MGMT 315 (formerly MGMT 481)	3	MGMT 303 (formerly MGMT 361)	3
MGMT 321 (formerly MGMT 426)	3	MGMT 330 (formerly MGMT 482)	3
MGMT 343 (formerly MGMT 425)	3	FIN 343 (formerly FIN 253)	3
ACCT 326 (formerly ACCT 446)	3	African American Culture and History Elective	3
MGMT 442 (formerly MGMT 470)	3		

<b>Semester Total</b>	<b>15</b>	MGMT 322 (formerly MGMT 522)	3
		<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
MGMT 429 (formerly MGMT 462)	3	MGMT 345 (formerly MGMT 472)	3
MGMT 430 (formerly MGMT 524)	3	MGMT 347 (formerly MGMT 468)	3
Management Elective	3	MGMT 427	3
Management Elective	3	MGMT 495 (formerly MGMT 520)	3
Free Elective	3	Free Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 120**

Incoming Freshmen are required to complete a three-hour (3) course in African-American Culture and History and a three-hour (3) course in Global Awareness, a three hour (3) course in Humanities and Fine Arts, and a three-hour (3) course in Social Sciences. These courses must be met as a part of the student's general education requirements, major course requirements, or free electives, from the approved General Education Course List.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C (not C-) or better in the following courses:*

MGMT 221 (formerly MGMT 320)	MGMT 345 (formerly MGMT 472)
MGMT 321 (formerly MGMT 426)	MGMT 427
MGMT 322 (formerly MGMT 522)	MGMT 429 (formerly MGMT 462)
MGMT 330 (formerly MGMT 482)	MGMT 430 (formerly MGMT 524)
MGMT 343 (formerly MGMT 425)	ACCT 326 (formerly ACCT 446)

### COURSE DESCRIPTIONS IN MANAGEMENT

**MGMT 110. Business Environment**

**Credit 3(3-0)**

The purpose of this course is to provide an understanding of the evolution of American business and an appreciation of the growing responsibilities facing both the company and its leaders. This course also covers business functions, the nature and problems of establishing a business enterprise, elementary mathematical problems and computer concepts for business. (F;S;SS)

**MGMT 132. Introduction to Management Information Systems**

**Credit 3(3-0)**

This course is an introduction to management information systems and their role in supporting and transforming modern organizations and management activities. Topics include: a survey of software, hardware, communication networks, and storage components used to support a wide variety of business processes and functions of the digital firm; ethical issues in the Information Age; as well as issues of social impact, privacy, and security. Current application software is used to solve typical business problems. Prerequisite: MGMT 110. (F;S;SS)

**MGMT 201. Principles of Management**

**Credit 3(3-0)**

This course focuses on developing an understanding of the basic management functions of planning, organizing, leading and controlling material and human resources to achieve organizational goals. It includes an overview of organization theory, multicultural global competitive environment, strategic management, ethics and social responsibility, and entrepreneurial processes. Prerequisite: Sophomore standing. (F;S;SS)

**MGMT 221. Global Business Environment**

**Credit 3(3-0)**

Global Business Environment provides students with both an understanding of the fast changing global society and an awareness of the challenges and opportunities in the global economy. It provides approaches to understanding international relationships among nations (the political, socio-cultural, legal, economic, and technological factors influencing international operations). Emphasis is placed on the cultural challenges of global business as well as maintenance of a global perspective in all business decision making. The course will include a 7-10 day experience abroad (spring break) whereby students can visit foreign business operations and cultural centers. Prerequisite: MGMT 110.

**MGMT 232. Business Decisions and Processing using Information Technology**

**Credit 3(3-0)**

This course uses advanced information technologies and techniques to model and solve business problems, make business

decisions, and implement business processes in information systems. Enterprise systems, such as SAP, and spreadsheet technologies will be utilized. Prerequisite: MGMT 132.

**MGMT 234. Object-Oriented Programming**

**Credit 3(3-0)**

The course will address Object-oriented programming principles for Business using an Object-oriented language. Topics will include object classes, inheritance, polymorphism, encapsulation, graphical user interface application development (GUI), and event driven programming. Additionally, the Model-View-Control (MVC), messaging objects, and approaches to server side programming will be introduced. Prerequisite: MGMT 132. (F)

**MGMT 303. Legal Environment of Business**

**Credit 3(3-0)**

This course is an introduction to the legal system and environment in which business and the government operate and examines the creation of rights, liabilities, and regulations under the law as expressions of social and economic forces. Substantive coverage includes the U.S. Constitution, court systems and procedure, federal market regulation, administrative agencies, consumer protection, contractual relations, agency, and employment law, including equal employment opportunity law. Prerequisite: Sophomore standing. (F;S;SS)

**MGMT 315. Management Science I**

**Credit 3(3-0)**

This course introduces the student to operations research. Basic concepts of management science will be covered, including selected quantitative models applicable to management decisions involving production, marketing, and finance functions. Coverage will also include analytical and theoretical techniques for production and job design, location and layout, scheduling, inventory, linear programming and network models. Prerequisites: MATH 112 and ECON 205, and Junior standing. (F;S;SS)

**MGMT 321. Organizational Behavior**

**Credit 3(3-0)**

This course introduces behavioral concepts of concern to management. Emphasis is placed upon the analysis of interpersonal relations, communication practices, and moral factors relative to their effect upon productivity, organizational effectiveness, and personnel systems. Prerequisite: MGMT 201. (F;S)

**MGMT 322. Human Resource Management**

**Credit 3(3-0)**

This course offers an introductory overview of human management functions, including the processes or systems that are designed to recruit, select, train, develop, motivate and retain a productive workforce. The emphasis is on management and utilization of people as organizational resources to achieve organizational objectives. The course covers relevant social, cultural, political, legal and global environment developments and provides the student with both general and specialized knowledge of the field and practice of human resource management in a variety of organizational settings. Prerequisites: MGMT 201 and advanced Junior status. (F;S;SS)

**MGMT 323. Leading Work Groups and Teams**

**Credit 3(3-0)**

This course is for students who will be responsible for managing, leading, or participating in task performing work groups and teams. Behavioral science concepts are used to explore how to lead and create effective group and team environments. Course topics will include theories on group and team development, group decision making process, leading work groups and teams, project management and the social construction of groups. A highly experiential teaching approach will be used to create a learning context. Course completion should enable students to lead task performing work groups and teams. Prerequisites: MGMT 201. (F;S;SS)

**MGMT 330. Operations Management**

**Credit 3(3-0)**

This course is a survey of the major production and operations functions of organizations using various productive systems. It stresses the identification of major problem areas associated with these functions (e.g., aggregate planning, scheduling, man-machine systems, inventory control) and the development of concepts and decision processes for achieving managerial solutions. It also emphasizes the application of modern quantitative techniques relevant to production management. Prerequisites: MGMT 315 and Junior status. (F;S;SS)

**MGMT 333. Object-Oriented Analysis & Design**

**Credit 3(3-0)**

The course will focus on the Object-oriented analysis and design approach to information systems analysis. Topics will include analysis and design, business object models, encapsulation, and inheritance using modern tools and concepts to help produce quality reusable software. Other emerging approaches to information systems analysis and design will also be reviewed. Prerequisite: MGMT 234. (F)

**MGMT 335. Management of Information Resources**

**Credit 3(3-0)**

This course extends the management information systems concepts studied in MGMT 132 about the use of information systems resources from a strategic perspective. The course integrates topics of management, organization, information, communication, and systems theories relevant to managing an organization's information resources. Specific topics covered include problem recognition and resolution, information systems outsourcing, justification for information systems investment, management of information systems human resources, data resource management, and information systems planning. Prerequisites: MGMT 132. (F;S)

**MGMT 337. Business Process and Systems Analysis**

**Credit 3(3-0)**

This course focuses on the requirements analysis, design, and implementation phases of systems development, using the traditional life cycle techniques and rapid application development techniques. Students will prepare formal design documents such as feasibility analysis, data flow diagrams, entity-relationship diagrams, interface designs, and a project management plan. Prerequisites: MGMT 132, MGMT 234, MGMT 333. (S)

**MGMT 343. Entrepreneurship**

**Credit 3(3-0)**

This course examines the unique aspects of small businesses. Attention will be given to competitive strategy, regulatory



environment, and sources of financing. The role of the small business within the macro economy is also explored. Prerequisite: Junior standing. (F;S)

**MGMT 345. Entrepreneurship Consulting**

**Credit 3(3-0)**

This course offers students a unique opportunity to develop consulting skills and entrepreneurial expertise by working as student consultants and interns, individually or in teams, with start-up and early-stage companies. Emphasis is placed on the consulting process including evaluation of various aspects of the business, identification of operational and strategic planning problems, development of recommendations, and preparation of a final report. A review of teamwork, report writing, business presentations, and ethical aspects of student consulting is also provided. Prerequisite: MGMT 343. (F;S;SS)

**MGMT 347. Entrepreneurial Financing**

**Credit 3(3-0)**

This course examines financing the start-up of a new business venture or growing venture. The advantages and disadvantages of the sources of new venture financing are studied from commercial banks, angel funding, private placement, venture capitalist, public equity markets and financial plan preparation. Prerequisite: MGMT 343 and FINC 253. (F;S;SS)

**MGMT 349. New Venture Creation**

**Credit 3(3-0)**

This course integrates theory and concepts from entrepreneurship and other courses to help students implement their business ideas. The course addresses such topics as conducting an in-depth market analysis, preparing a product or service design, developing a marketing campaign, building a realistic financial forecast, and completing other pre-launch activities. Working with mentors individually or in teams, students will refine their business ideas into effective written and oral presentations ready to seek funding and to begin operation. Prerequisites: MGMT 343; permission of instructor. (F;S;SS)

**MGMT 353. Cross Cultural Communication and Negotiation**

**Credit 3(3-0)**

Cross-cultural communications and negotiations introduces students to effective negotiation processes with a focus on different levels (government vs. government; business vs. business; NGO vs Government; etc.) of negotiation and the impact of cultural differences and communication styles on negotiation outcomes. Students will learn how to prepare and engage in interaction concerning cross cultural negotiation. They will develop the ability to recognize the cultural differences, the implications for effective negotiation, and the influence of government on business negotiation. Emphasis on impact of non-verbal and paralanguage will also be covered. Prerequisite: MGMT 221. (F;S;SS)

**MGMT 355. International Business Management**

**Credit 3(3-0)**

The course is comprehensive in nature and covers all international business. Appropriate consideration is given to current topics and/or concerns in international business. Case and area studies are utilized to make the course more practical than theoretical. Projects emphasizing major issues in international business are assigned and discussed. Prerequisite: Senior standing. (F;S)

**MGMT 373. Managing Process Improvement**

**Credit 3(3-0)**

This course is a synthesis of transformational business process improvement frameworks including Lean Thinking, Six Sigma, Lean Six Sigma, Hoshin Kanri, and Theory of Constraints. The course will develop the student's mind-set to consistently redefine customer quality requirements as measurable goal to effectively drive business process improvements. Students will learn how to identify critical work processes; measure, track, review and effectively manage business process improvement efforts, setting measurable improvement milestones and utilizing appropriate tools to acknowledge each milestone achieved. Prerequisite: MGMT 315. (F;S;SS)

**MGMT 375. Service Innovation and Project Management**

**Credit 3(3-0)**

This course examines the special requirements of managing projects that include service innovations. A central theme is the exploration of project management tools and strategies to facilitate service excellence and innovation in a diverse range of service industries. Prerequisite: MGMT 315. (F;S;SS)

**MGMT 398. Internship in Entrepreneurship**

**Credit 3(3-0)**

This course provides experiential learning in entrepreneurship. Students work directly with entrepreneurs and participate in activities which give them a comprehensive understanding about owning and operating a business. Prerequisite: MGMT 343. (SS)

**MGMT 427. Business, Ethics and Social Responsibility**

**Credit 3(3-0)**

This course explores and examines the role of business in modern civil societies from the perspectives of business ethics and corporate social responsibility. It studies theoretical, philosophical foundations and models of personal and managerial ethical decision-making process, and corporate social responsibility and philanthropy in a domestic and global business environment. The approach is to explore competing views. Prerequisites: MGMT 110, 303. (F;S;SS)

**MGMT 429. Business Law**

**Credit 3(3-0)**

Using the background provided in Management 303, topics related to the legal implications of business activity will be examined in detail. Coverage includes legal aspects of supply chain management, sales of goods, product liability, negotiable instruments, security and debt, bankruptcy, business organizations and society, securities regulation, and management of corporations. Prerequisites: MGMT 303 and Senior standing. (F;S;SS)

**MGMT 430. Organizational Design and Change**

**Credit 3(3-0)**

This course focuses on developing an understanding of how organizations function; the basics of organizational design, how to utilize organizational design principles to manage change and innovation; and to achieve strategic alignment in a changing competitive environment. It includes study and understanding of organizational structures, the basic work patterns of the organization through functional integration, organizational cultures, managerial roles, and the use of cross functional teams. Prerequisite: MGMT 201 and Senior Standing. (F;S;SS)

**MGMT 432. Advanced Programming for Business Systems**

**Credit 3(3-0)**

This course presents object oriented and procedural software engineering methodologies in data definition and measurement,

abstract data type construction and use in developing screen editors, reports and other information systems applications using data structures and indexed files. This course provides an understanding of algorithm development, programming, computer concepts and the design and application of data and file structures. Prerequisite: MGMT 132, MGMT 234 and MGMT 333. (F)

**MGMT 434. Database Application Development** **Credit 3(3-0)**

This course covers information systems design and implementation within a database management systems environment. Students will demonstrate their mastery of the design process acquired in earlier courses by designing and developing applications using database software to implement the logical design. Prerequisite: MGMT 234. (F;S;SS)

**MGMT 436. Strategic IT Service Management** **Credit 3(3-0)**

This is the capstone course for the management information systems concentration in management. Students will integrate their knowledge, skills and abilities developed in prerequisite coursework. The application of IT service management standards and best practices is emphasized. A course project is required. Prerequisites: MGMT 337, MGMT 434. (S)

**MGMT 442. Marketing for Entrepreneurs** **Credit 3(3-0)**

This course is designed to address the reality of marketing in a start-up venture. Topics in this course include, but are not limited to, marketing to investors, marketing products/services without a marketing budget, applying marketing concepts within the realm of entrepreneurial company challenges and developing and maintaining key internal and external marketing relationships. Prerequisite: MGMT 343. (F;S;SS)

**MGMT 446. Entrepreneurial Strategy** **Credit 3(3-0)**

This course focuses on development of skills for intrapreneurial and entrepreneurial opportunity recognition and evaluation to include integration of knowledge of the functional strategies needed to successfully develop and manage new entrepreneurial ventures. Topics to be covered include sources of ideas about potential new business ventures, new venture financing options, environmental analysis, assessing risk, resources, and marketing through the different stages of business growth. Prerequisite: MGMT 343. (F;S;SS)

**MGMT 463. Commercial Law** **Credit 3(3-0)**

In this course, the critical provisions of Uniform Commercial Code will be examined in detail. Other topics will include anti-trust, security law, suretyship, professional liability, bulk transfers, and labor law. Prerequisites: MGMT 303. (S)

**MGMT 466. Emerging Issues in Human Resource Management** **Credit 3(3-0)**

This course considers current and relevant emerging topics impacting the performance management of human resources in the global environment. Topics vary and depend on the current HRM environment and global trends. Experiential learning opportunities emphasized. Prerequisites: MGMT 322. (F;S;SS)

**MGMT 467. Human Resource Management Strategy and Practice** **Credit 3(3-0)**

This course focuses on the formulation and implementation of human resource management strategies. Emphasis is placed on the strategic dimensions of recruitment, selection, development and retention of a workforce needed to accomplish organizational strategic objectives. Issues considered will include HR information systems, HR analytics, mergers & acquisitions, outsourcing, consulting and topics relevant to the current Human Resource Management environment. In addition, this course will prepare students to take the Assurance of Learning Assessment administered by the Society of Human Resource Management Foundation. Prerequisites: MGMT 322. (F;S;SS)

**MGMT 473. Introduction to Business Analytics** **Credit 3(3-0)**

This course is designed to provide students with the fundamental concepts and tools needed to understand and use business analytics to support sound decision making in organizations. The use of large data sets allows students to develop the skills needed to select appropriate models, to use business analytic tools in a spreadsheet environment, to develop the skills needed to interpret results and to prepare and present the results in both written and oral presentations. The class will be structured using hands-on labs and student presentations. Prerequisites: ECON 210 and MGMT 315. (F;S)

**MGMT 474. Service Science** **Credit 3(3-0)**

This course prepares students to work in a variety of service systems that include both traditional service organizations and internal service systems that provide customer and product support. Service systems from the smallest entrepreneurial services to the largest multinational corporations depend on the interaction between the service provider and the customer to produce value. This course will focus on the creation of value through the integration of a variety of disciplines. Key issues including service system design, service quality assurance, scheduling, performance metrics and the management of customer interactions are covered. Prerequisites: MGMT 330. (F;S)

**MGMT 485. Special Topics in Management** **Credit 3(3-0)**

This course allows for the in-depth coverage of topics addressing emerging issues in the field of Management. Content will be selected before the beginning of the semester. Prerequisite: Senior Standing and Management Major. (F;S;SS)

**MGMT 490. Independent Study in Business** **Credit 3(3-0)**

Today's dynamic environment requires students to acquire both general and specific education. This course is designed to provide students the opportunity to acquire in-depth knowledge in special topics or area studies where the University does not offer a specific course. Examples include ethical issues, global area studies, culture, research skills, entrepreneurship, etc. The course will be offered on an independent study basis with topics developed between the students and the supervising faculty. Prerequisites: Advanced junior or senior standing. (DEMAND)

**MGMT 492. Senior Management Seminars** **Credit 3(3-0)**

This is a reading, research and discussion course for undergrad management majors. The course will include a research paper/project to be selected by student and instructor. Prerequisites: Senior standing and Management major. (F;S;SS)

**MGMT 495. Strategic Management****Credit 3(3-0)**

This is an integrative course that focuses on strategic planning, policy formulation and corporate-wide decision making. The performance objectives of this course involve analysis of complex organizations to: (1) identify major problems and opportunities; (2) establish strategic objectives; and (3) recommend implementation of plans and programs. The case method is applied to reveal the nuances of organizational issues. Projects are assigned to develop critical thinking and communication skills. Prerequisites: MGMT 201, MKTG 230; FINC 343 (formerly FIN 253); ACCT 221 and 222; Senior status. (F;S;SS)

**DIRECTORY OF FACULTY**

<b>Obasi H. Akan</b> .....	<b>Associate Professor</b>
B.A., Howard University; M.S., Ph.D., Case Western Reserve University	
<b>Hayward P. Andres</b> .....	<b>Associate Professor</b>
B.S., Southern University; M.S., University of West Florida; Ph.D., Florida State University	
<b>Adelle J. Bish</b> .....	<b>Associate Professor</b>
B.A., California State University, Long Beach; M.S., The University of Queensland, Brisbane, Australia; Ph.D., Queensland University of Technology, Brisbane, Australia	
<b>Verona P. Edmond</b> .....	<b>Associate Professor</b>
B. S., North Carolina A&T State University; M.B.A., University of Illinois; Ph.D., Syracuse University	
<b>Marka B. Fleming</b> .....	<b>Associate Professor</b>
B.S., Wake Forest; J.D., North Carolina Central School of Law	
<b>Roger J. Gagnon</b> .....	<b>Associate Professor</b>
B.S., Boston University; M.B.A., Clark University; Ph.D., University of Cincinnati	
<b>Lynette Hawkins</b> .....	<b>Instructor</b>
B.S., Hampton Institute; M.B.A., Northeastern University, Boston Massachusetts	
<b>Rhonda L. Hensley</b> .....	<b>Associate Professor</b>
B.S., M.B.A., James Madison University; Ph.D., Virginia Commonwealth University	
<b>Jeanne J. Holmes</b> .....	<b>Assistant Professor</b>
B.S., Miami University, Oxford Ohio; M.S., North Carolina State University; Ph.D., University of South Carolina	
<b>Alice M. Johnson</b> .....	<b>Associate Professor</b>
B.A., Winston-Salem State University; M.S., Winthrop University; Ph.D., University of Kentucky	
<b>Mary R. Lind</b> .....	<b>Professor</b>
B.S., Duke University; M.B.A., Ph.D., University of North Carolina at Chapel Hill	
<b>Maranda McBride</b> .....	<b>Associate Professor and Director of Transportation Institute</b>
B.S., M.S., North Carolina A&T State University; M.B.A., Wake Forrester University; Ph.D., North Carolina A&T State University	
<b>Thaddeus McEwen</b> .....	<b>Professor and Director of the Center for Entrepreneurship and Innovation</b>
B.S., University of Technology, Jamaica; M.S., Ph.D., Southern Illinois University at Carbondale	
<b>Shona D. Morgan</b> .....	<b>Associate Professor</b>
B.S., Spelman College; M.S., Ph.D., North Carolina State University	
<b>Frank Mullins</b> .....	<b>Assistant Professor</b>
B.S., Oakwood University; M.B.A., Ph.D. Syracuse University	
<b>Patrick Rogers</b> .....	<b>Associate Professor</b>
B.S., B.A., M.B.A., Western Carolina University; Ph.D., University of Tennessee at Knoxville	
<b>Belinda P. Shipp</b> .....	<b>Associate Professor</b>
B.A., Michigan State University; A.A.S., Richland College; M.S., Ph.D., University of Wisconsin-Milwaukee	
<b>Alice Stewart</b> .....	<b>Associate Professor</b>
B.B.A., M.B.A., University of Kentucky; Ph.D., University of North Carolina at Chapel Hill	
<b>George S. Swan</b> .....	<b>Associate Professor</b>
B.A., Ohio State University; J.D., University of Notre Dame; LL.M., S.J.D., University of Toronto Faculty of Law	
<b>Christina H. Tupper</b> .....	<b>Assistant Professor</b>
B.A., Louisiana Tech University; M.B.A., Jacksonville State University; Ph.D., Old Dominion University	
<b>Silvanus J. Udoka</b> .....	<b>Professor and Chairperson</b>
B.S., Weber State University; M.S., Ph.D., Oklahoma State University	
<b>Isaiah O. Ugboro</b> .....	<b>Professor</b>
B.S., Utah State University; M.B.A., Ph.D., University of North Texas	
<b>Hong Wang</b> .....	<b>Associate Professor</b>
B.S., Dalian University of Technology; M.A., Ph.D., The Ohio State University	

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**Department of Marketing, Transportation & Supply Chain**

<http://www.ncat.edu/cobe/departments/mkt/index.html>

**Joseph R. Huscroft, Jr., Chairperson**

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## **OBJECTIVES**

The objective of the Department of Marketing, Transportation & Supply Chain (MTSC) is to produce business leaders, in the marketing and supply chain professions, who increase the value and competitiveness of their organizations through the understanding and application of business concepts, processes and tools. We will achieve this objective through innovative instruction in the classroom and relevant, practical experience within the business profession, all within a diverse and inclusive, student-focused learning environment.

## **DEGREES OFFERED**

Marketing – Bachelor of Science  
Marketing (Sales) – Bachelor of Science  
Supply Chain Management – Bachelor of Science

## **MINORS OFFERED**

General Marketing  
Professional Sales

The minors in marketing and professional sales are open to all non-marketing majors and it provides students with a thorough understanding of the fundamental concepts of marketing and how to apply these concepts through case studies and company and non-profit organization projects. Students also gain an understanding of consumer behavior, along with the knowledge and tools needed to coordinate marketing elements into integrated campaigns. The professional sales minor educates students in sales concepts, which are vital in today's job market. Employers are looking for basic business communication and sales skills in all professions and these skills are an integral component of all occupations, whether you are selling yourself, an idea, a new business proposal or a new client.

## **GENERAL PROGRAM REQUIREMENTS**

All majors in programs in the Department of Marketing, Transportation and Supply Chain (MTSC) must complete a minimum of 120 credit hours. Students in the College of Business and Economics must earn a minimum grade of “C” in ENGL 100, 101, MATH 111, 112, ACCT 221, 222, BUED 260 (formerly BUED 360), ECON 200, 201, 206, FINC 343 (formerly FIN 253), MGMT 110 (formerly MGMT 220), MGMT 132 (formerly MIS 241), MGMT 201 (formerly MGMT 422), MGMT 303 (formerly MGMT 361), MGMT 315 (formerly MGMT 481), MGMT 495 (formerly MGMT 520), and MKTG 230 (formerly MKTG 430). Students in the College of Business and Economics must also earn a minimum grade of “C” in BUED 110 (formerly BUED 210).

## **DEPARTMENTAL REQUIREMENTS**

Majors in the department must earn a minimum grade of “C” in the 10 courses (30 hours) listed as major program requirements for their chosen major in the applicable University Bulletin. In addition, students must earn a minimum grade of “C” in all major program elective requirements.

## **CAREER OPPORTUNITIES**

Students majoring in Marketing are prepared for challenging marketing and sales careers in public and private business sectors such as account executive, account management support, advertising sales representative, data analytics, distribution gap analyst, customer service, customer relationship marketing, consumer market knowledge, front line professional sales (e.g. pharmaceutical, engineering, technology, corporate, medical), profit analyst, sales analyst, public relations specialist, market researcher, and merchandiser. They are also provided with an appropriate background for graduate degree programs.

Students majoring in Supply Chain Management are prepared for challenging careers in transportation, distribution, logistics, purchasing, account management, and materials management with major corporations, organizations, and the government. Career opportunities include buyers, import/export specialists, purchasers, logistics analysts, quality analysts, fleet liaisons, distribution gap analysts, rail logistics analysts, schedulers/planners, procurement analysts, sourcing analysts, and supplier managers. They are also provided with an appropriate background for graduate degree programs.

## **UPS ENDOWED CHAIR**

The UPS Endowed Chair was established in the College of Business and Economics to provide faculty support for curriculum and student development and to enhance research and other scholarly activities in transportation and supply chain management.

## **TRANSPORTATION INSTITUTE**

The Transportation Institute draws faculty, staff members and students from different departments in the College of Business and Economics and the College of Engineering to create an interdisciplinary unit that conducts research, public service, and offer training programs in the field of transportation. It also serves as a resource for planners, social scientists, public officials, and community groups to help them solve transportation problems.

The research program covers a wide range of areas, from investigating transportation needs of the groups with physical and socioeconomic challenges to analyzing transportation financing. The Institute has achieved a national reputation for its funded research in small urban and rural transportation.

The Transportation Institute offers students the opportunity to engage in research projects under the guidance of the faculty. The Institute also provides financial support for students who major in supply chain management and civil engineering. In

addition, several student enhancement and research mentoring activities are offered through the Institute to students who pursue these majors.

The Institute is a regional center that offers seminars, workshops, and short courses designed to provide instruction in current transportation techniques and concepts. These programs are designed for individuals outside the University who have an interest in transportation.

**Department of Marketing, Transportation and Supply Chain**  
**Bachelor of Science in Marketing**  
**Major Code: MKT**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 101	1	BUED 110 ( <i>formerly BUED 210</i> )	3
ENGL 100	3	ENGL 101	3
MATH 111 <sup>1</sup>	4	MATH 112	4
MGMT 110 ( <i>formerly MGMT 220</i> )	3	Scientific Reasoning II <sup>2</sup>	3
Scientific Reasoning I <sup>2</sup>	3	African-American Culture and History Elective	3
Scientific Reasoning I Lab <sup>2</sup>	1	<b>Semester Total</b>	<b>16</b>
<b>Semester Total</b>	<b>15</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
ACCT 221	3	ACCT 222	3
ECON 200	3	ECON 201	3
ECON 206	3	MGMT 132 ( <i>formerly MIS 241</i> )	3
PSYC 101 ( <i>formerly PSYC 320</i> )	3	MKTG 230 ( <i>formerly MKTG 430</i> )	3
SPCH 250	3	Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
FIN 343 ( <i>formerly FIN 253</i> )	3	BUED 260 ( <i>formerly BUED 360</i> )	3
MGMT 201 ( <i>formerly MGMT 422</i> )	3	MGMT 315 ( <i>formerly MGMT 481</i> )	3
MKTG 444 ( <i>formerly MKTG 538</i> )	3	MKTG 332 ( <i>formerly MKTG 432</i> )	3
TSCM 240* ( <i>formerly TSCM 340</i> )	3	MKTG 335 ( <i>formerly MKTG 435</i> )	3
Elective	2	MKTG 447 ( <i>formerly MKTG 537</i> )	3
<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
MGMT 303 ( <i>formerly MGMT 361</i> )	3	MGMT 495 ( <i>formerly MGMT 520</i> )	3
MKTG 338 ( <i>formerly MKTG 438</i> )	3	MKTG 333 ( <i>formerly MKTG 433</i> )	3
MKTG 445 ( <i>formerly MKTG 535</i> )	3	MKTG 489 ( <i>formerly MKTG 639</i> )	3
MKTG Elective	3	Global Awareness Elective	3
MKTG Elective	3	Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 120**

<sup>1</sup>Two MATH courses are required for this discipline: MATH 111 and MATH 112. (MATH 103 & MATH 104 combined can substitute for MATH 111.) MATH 131 and/or MATH 132 can be used as substitutions for either course provided that two of these four courses are taken. All MATHs require a minimum of grade C or better. MATH 131 and MATH 132 are recommended for those planning to pursue graduate study. MATH 110 is not a substitute for MATH 111.

<sup>2</sup>For a list of courses satisfying the Scientific Reasoning, African-American Culture and History, and Global Awareness general education components, please refer to the department office or at:

[http://www.ncat.edu/provost/general\\_education\\_resources/general\\_education\\_course\\_list/index.html](http://www.ncat.edu/provost/general_education_resources/general_education_course_list/index.html)

NOTE: The two (2) courses chosen to fulfill the African-American Culture and History elective and the Global Awareness elective must include one African-American Culture and History course and one Global Awareness

course (that is, an African-American Culture and History course must be chosen for one of these electives and a Global Awareness course must be chosen for the other elective).

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C (not C-) or better in the following courses:*

MKTG 230 (formerly MKTG 430)	MKTG 444 (formerly MKTG 538)
MKTG 332 (formerly MKTG 432)	MKTG 445 (formerly MKTG 535)
MKTG 333 (formerly MKTG 433)	MKTG 447 (formerly MKTG 537)
MKGT 335 (formerly MKTG 435)	MKTG 489 (formerly MKTG 639)
MKGT 338 (formerly MKTG 438)	TSCM 240 (formerly TSCM 340)

**Department of Marketing, Transportation and Supply Chain**  
**Bachelor of Science in Marketing (Sales)**  
**Major Code: MKT**  
**Concentration Code: SALE**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 101	1	BUED 110 (formerly BUED 210)	3
ENGL 100	3	ENGL 101	3
MATH 111 <sup>1</sup>	4	MATH 112 <sup>1</sup>	4
Scientific Reasoning I <sup>2</sup>	3	Scientific Reasoning II <sup>2</sup>	3
Scientific Reasoning I Lab <sup>2</sup>	1	African-American Culture and History Elective	3
MGMT 110 (formerly MGMT 220)	3	<b>Semester Total</b>	<b>16</b>
<b>Semester Total</b>	<b>15</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
ACCT 221	3	ACCT 222	3
ECON 200	3	ECON 201	3
ECON 206	3	MGMT 132 (formerly MIS 241)	3
PSYC 101 (formerly PSYC 320)	3	MKTG 230 (formerly MKTG 430)	3
SPCH 250	3	Elective	3
<b>Semester Total</b>	<b>18</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
FIN 343 (formerly FIN 253)	3	BUED 260 (formerly BUED 360)	3
MGMT 201 (formerly MGMT 422)	3	MGMT 315 (formerly MGMT 481)	3
MKTG 444 (formerly MKTG 538)	3	MKTG 332 (formerly MKTG 432)	3
TSCM 240 (formerly TSCM 340)	3	MKTG 335 (formerly MKTG 435)	3
Elective	2	MKTG Elective	3
<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
MGMT 303 (formerly MGMT 361)	3	MGMT 495 (formerly MGMT 520)	3
MKTG 338 (formerly MKTG 438)	3	MKTG 486 (formerly MKTG 636)	3
MKTG 334 (formerly MKTG 434)	3	MKTG 489 (formerly MKTG 639)	3
MKTG 445 (formerly MKTG 535)	3	Global Awareness Elective	3
MKTG Elective	3	Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 120**

<sup>1</sup>Two MATH courses are required for this discipline: MATH 111 and MATH 112. (MATH 103 & MATH 104 combined can substitute for MATH 111.) MATH 131 and/or MATH 132 can be used as substitutions for either course provided that two of these four courses are taken. All MATHs require a minimum of grade C or better. MATH 131 and MATH 132 are recommended for those planning to pursue graduate study. MATH 110 is not a substitute for MATH 111.

<sup>2</sup>For a list of courses satisfying the Scientific Reasoning, African-American Culture and History, and Global Awareness general education components, please refer to the department office or at

[http://www.ncat.edu/provost/general\\_education\\_resources/general\\_education\\_course\\_list/index.html](http://www.ncat.edu/provost/general_education_resources/general_education_course_list/index.html)

NOTE: The two (2) courses chosen to fulfill the African-American Culture and History elective and the Global Awareness elective must include one African-American Culture and History course and one Global Awareness course (that is, an African-American Culture and History course must be chosen for one of these electives and a Global Awareness course must be chosen for the other elective).

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

MKTG 230 (formerly MKTG 430)	MKTG 444 (formerly MKTG 538)
MKTG 332 (formerly MKTG 432)	MKTG 445 (formerly MKTG 535)
MKTG 334 (formerly MKTG 434)	MKTG 486 (formerly MKTG 636)
MKGT 335 (formerly MKTG 435)	MKTG 489 (formerly MKTG 639)
MKGT 338 (formerly MKTG 438)	TSCM 240 (formerly TSCM 340)

**Department of Marketing, Transportation and Supply Chain  
Bachelor of Science in Supply Chain Management  
Major Code: SCMG**

#### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 101	1	ENGL 101	3
ENGL 100	3	MATH 112 <sup>1</sup>	4
MATH 111 <sup>1</sup>	4	Scientific Reasoning II <sup>2</sup>	3
Scientific Reasoning I <sup>2</sup>	3	SPCH 250	3
Scientific Reasoning I Lab <sup>2</sup>	1	BUED 110 (formerly BUED 210)	3
MGMT 110 (formerly MGMT 220)	3	<b>Semester Total</b>	<b>16</b>
<b>Semester Total</b>	<b>15</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
ACCT 221	3	ACCT 222	3
ECON 200	3	ECON 201	3
ECON 206	3	MGMT 335 (formerly MIS 440)	3
MGMT 132 (formerly MIS 241)	3	MKTG 230 (formerly MKTG 430)	3
TSCM 240 (formerly TSCM 340)	3	TSCM 260 (formerly TSCM 360)	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
BUED 260 (formerly BUED 360)	3	MGMT 201 (formerly MGMT 422)	3
FIN 343 (formerly FIN 253)	3	MGMT 303 (formerly MGMT 361)	3
MGMT 315 (formerly MGMT 481)	3	MGMT 330 (formerly MGMT 482)	3
TSCM 325 (formerly TSCM 425)	3	TSCM 331 (formerly TSCM 431)	3
Elective	2	Elective	3

Semester Total	14	Semester Total	15
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
MKTG 445 (formerly MKTG 535)	3	MGMT 495 (formerly MGMT 520)	3
TSCM 350 (formerly TSCM 450)	3	TSCM 473 (formerly TSCM 672)	3
TSCM 471 (formerly TSCM 670)	3	TSCM 493	3
TSCM 480 (formerly TSCM 580)	3	TSCM Elective	3
Elective	3	African-American Culture and	
<b>Semester Total</b>	<b>15</b>	History Elective	3
		<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 120**

<sup>1</sup>Two MATH courses are required for this discipline: MATH 111 and MATH 112. (MATH 103 & MATH 104 combined can substitute for MATH 111.) MATH 131 and/or MATH 132 can be used as substitutions for either course provided that two of these four courses are taken. All MATHs require a minimum of grade C or better. MATH 131 and MATH 132 are recommended for those planning to pursue graduate study. MATH 110 is not a substitute for MATH 111.

<sup>2</sup>For a list of courses satisfying the Scientific Reasoning, African-American Culture and History, and Global Awareness general education components, please refer to the department office or at:

[http://www.ncat.edu/provost/general\\_education\\_resources/general\\_education\\_course\\_list/index.html](http://www.ncat.edu/provost/general_education_resources/general_education_course_list/index.html)

NOTE: The two (2) courses chosen to fulfill the African-American Culture and History elective and the Global Awareness elective must include one African-American Culture and History course and one Global Awareness course (that is, an African-American Culture and History course must be chosen for one of these electives and a Global Awareness course must be chosen for the other elective).

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C or better in the following courses:*

TSCM 240 (formerly TSCM 340)	TSCM 471 (formerly TSCM 670)
TSCM 260 (formerly TSCM 360)	TSCM 473 (formerly TSCM 672)
TSCM 325 (formerly TSCM 425)	TSCM 480 (formerly TSCM 580)
TSCM 331 (formerly TSCM 431)	TSCM 493
TSCM 350 (formerly TSCM 450)	MGMT 330 (formerly MGMT 482)

**COURSE DESCRIPTIONS IN MARKETING**

**MKTG 230. Marketing Concepts (formerly MKTG 430)**

**Credit 3(3-0)**

This course provides an introduction to marketing activities of organizations and individuals. It focuses on formulating viable market objectives, assessing opportunities, evaluating ethical issues, and developing a marketing strategy. The course also emphasizes a global orientation and the development of problem solving skills. Prerequisite: Sophomore standing. (F;S;SS)

**MKTG 332. Consumer Behavior (formerly MKTG 432)**

**Credit 3(3-0)**

This course develops the knowledge of the behavioral content of marketing in consumer, industrial, and international fields. It examines the applicable theory, research findings, and concepts that are provided by psychology, sociology, anthropology, and marketing. The course stresses the conceptual models of buyer behavior based upon sources of influence: individual, group, and cultural environment. Prerequisite: MKTG 230. (F;S)

**MKTG 333. Retailing (formerly MKTG 433)**

**Credit 3(3-0)**

This course emphasizes retail store management. Attention is given to store location, layout, personnel, organization, buying, inventory, sales promotion, customer services and operating expenses. Prerequisite: MKTG 230. (F;S)

**MKTG 334. Business-to-Business (B2B) Marketing (formerly MKTG 434)**

**Credit 3(3-0)**

Business-to-Business Marketing is concerned with business, government and organizational markets. Students will become knowledgeable concerning all aspects of the business-to-business marketing environment, business-to-business customer relationship management, the identification of market opportunities for intermediaries and organizational customers, business partnerships, and supply chain strategies. Prerequisite: MKTG 230. (F;S)



- MKTG 335. Selling and Sales Management (formerly MKTG 435)** **Credit 3(3-0)**  
 This course focuses on the functions and skills surrounding the personal selling effort associated with professional sales. The emphasis is on developing skills essential to persuasive communication in a buyer-seller context. The course also addresses topics such as sales recruiting, selecting, compensating, and evaluating sales personnel. Prerequisites: MKTG 230. (F;S)
- MKTG 338. Integrated Marketing Communications/Advertising (formerly MKTG 438)** **Credit 3(3-0)**  
 This course acquaints students with the fundamentals of the marketing communications activities of the firm. All marketing mix variables are treated as marketing communications variables. Distinction is made between promotion and communications. Attention is also given to the usage of advertising communications appeals and marketing communications strategies in designing advertising and marketing communications programs. Prerequisite: MKTG 332. (F;S)
- MKTG 398. Customer Relationship Marketing & Management (CRM&M) Internship (formerly MKTG 498)** **Credit 3(3-0)**  
 This course provides experiential learning in customer relationship marketing and management. Students work directly with organizations and participate in activities that provide a comprehensive understanding about customer and/or stakeholder relationships. The following conditions must be met to receive credit: (1) the student must be registered in this course during the full-time, off-campus assignment, (2) the student should spend a minimum of 8 weeks in the off-campus experience, and (3) the student will be required to present a written report and/or other evaluation criteria that will be submitted to the supervising instructor. Prerequisites: MKTG 230 and consent of the department chair and/or supervising instructor.
- MKTG 444. Marketing Research** **Credit 3(3-0)**  
 This course covers the types of research techniques used by businesses to coordinate marketing activities with consumer demand. Emphasis is placed upon survey, observational and experimental techniques used in market research. Prerequisites: ECON 206 and MKTG 230. (F;S;SS)
- MKTG 445. Customer Relationship Marketing & Management (CRM&M) Concepts (formerly MKTG 535)** **Credit 3(3-0)**  
 This course introduces students to the concepts of customer partnering relationships, such as buyer-seller relationships, supplier-manufacturer relationships and manufacturer-customer relationships. The learning goal of CRM&M is to teach the importance of metrics such as high customer satisfaction, market share, and net cash flow. Students will focus on integrating strategic, organizational, informational, operational and financial perspectives to build effective solution-based outcomes for the customer and the organization. Other topics could include key account management, negotiation strategies, and information data mining. Prerequisite: MKTG 230. (F;S;SS)
- MKTG 446. Customer Relationship Marketing & Management Technologies (formerly MKTG 536)** **Credit 3(3-0)**  
 This course examines technologies that enable companies to initiate and cultivate more advanced relationships and interactions with customers and suppliers. Students are introduced to key vendors supporting customer knowledge and enterprise resource planning (ERP) software for sales, marketing, and customer service. Prerequisite: MKTG 230, 445 and consent of the department chair and/or the instructor. (S)
- MKTG 447. International Marketing (formerly MKTG 537)** **Credit 3(3-0)**  
 This course examines the application of marketing, management, and research, with appropriate consideration given to consumer, institutional and environmental factors associated with aspects of international marketing. Case studies are used to enhance the study of international marketing concepts. Prerequisite: MKTG 230. (F;S;SS)
- MKTG 444. Marketing Research (formerly MKTG 538)** **Credit 3(3-0)**  
 This course covers the types of research techniques used by businesses to coordinate marketing activities with consumer demand. Emphasis is placed upon survey, observational and experimental techniques used in market research. Prerequisites: ECON 210 and MKTG 230. (F)
- MKTG 485. Special Topics in Customer Relationship Marketing & Management (formerly MKTG 539)** **Credit 3(3-0)**  
 This course examines current topics and issues for implementing CRM systems. Students will examine the triggers that provide the impetus for a CRM approach. Students will also focus on the challenges and rewards of CRM implementation. Prerequisite: MKTG 445 or permission of the instructor. (F;S)
- MKTG 486. Sales Leadership & Ethics (formerly MKTG 636)** **Credit 3(3-0)**  
 This sales concentration capstone course integrates and extends the professional selling and customer relationship management topics discussed in previous courses and is designed to build leadership competence while increasing awareness of business ethics from a professional selling perspective. Emphasis is placed on 1) delivering results, 2) influencing others internal and external to the organization, 3) fostering creativity and innovation, and 4) managing negotiations and resolving conflicts. Ethical business principles and conduct are emphasized given the autonomous sales environment. Prerequisites: MKTG 335 and MKTG 445. (F;S;SS)
- MKTG 489. Marketing Management (formerly MKTG 639)** **Credit 3(3-0)**  
 This marketing program capstone course provides an analysis of the fundamental and emerging trends, issues and topics that influence decisions involved in planning and managing marketing activities to create value for customers. It combines theory and application with case study to teach students the decision making process as it relates to segmentation, targeting, product, price, distribution, promotion, the marketing environment and electronic commerce. Prerequisite: MKTG 338. (F;S)

#### COURSE DESCRIPTIONS SUPPLY CHAIN MANAGEMENT

- TSCM 240. Introduction to Supply Chain Management a Logistics Approach (formerly TSCM 340)** **Credit 3(3-0)**  
 The management of the logistics function is examined with an emphasis on the impact on the firm and its supply chain network. The individual elements of logistics management including inventory management, transportation, purchasing, facility

location, distribution and materials handling, and information technology are examined. The integration of logistics activities across the supply chain is an important element of this course. (F;S;SS)

**TSCM 260. Introduction to Transportation (formerly TSCM 360)** **Credit 3(3-0)**

Transportation provides the basic service of moving people and freight, creating time and place utility. The transportation industry enables a value-added process throughout the supply chain. This course emphasizes the fundamental role of transportation, its strategic importance, the effect of technology, and the changing structure of the industry due to competition and consolidation. (F;S;SS)

**TSCM 325. Economics of Transportation (formerly TSCM 425)** **Credit 3(3-0)**

In this course, the application of the tools of economics to problems of the transportation industry will be examined. Topics include economic regulation, cost-benefit, rate structure, externalities and social vs. individual decision-making. Prerequisites: TSCM 260, ECON 200, or permission of instructor. (F;S)

**TSCM 331. Supply Chain Analysis (formerly TSCM 431)** **Credit 3(3-0)**

This course deals with the business area known as Supply Chain Management. The overall goal is to provide students with a high-level overview of the discipline from a conceptual perspective as well as the ability to apply analytical tools to solve supply chain problems. Use of the optimization tools imbedded in Excel software is emphasized. Prerequisites: TSCM 240, ECON 206 and MGMT 315. (F;S)

**TSCM 350. Carrier Management (formerly TSCM 450)** **Credit 3(3-0)**

This course examines the application of management principles, policies and practice to carriers in various transportation modes. The provision of competitive services at affordable prices that would add value throughout the supply chain is an important aspect of the course. Major areas examined in the course include carrier-shipper relations with a synopsis of major traffic management functions; and analyses of carrier planning and operations, pricing, marketing, finance and investment decisions, and personnel management. Prerequisites: TSCM 240, TSCM 260, and TSCM 325. (F;S)

**TSCM 370. Urban Transportation Concepts (formerly TSCM 470)** **Credit 3(3-0)**

This course analyses the role of transportation in the urban environment. Topics covered include the transportation needs, demand for modes of transportation, transit operations, intelligent transportation systems, and urban transportation planning methods. Prerequisite: ECON 206. (F;S)

**TSCM 451. Transportation Law (formerly TSCM 650)** **Credit 3(3-0)**

This course requires a detailed review of the development of transportation law, including an analysis of the Interstate Commerce Act and its impact on surface carriers. This course assists those students planning to take the bar exam for the Interstate Commerce Commission or those students studying for the Transportation Law exam in the American Society of Traffic and Transportation series. Prerequisite: MGMT 303 or equivalent. (F;S)

**TSCM 460. National Transportation Policy (formerly TSCM 660)** **Credit 3(3-0)**

This course is a seminar on national transportation problems. It will involve readings and research on several issues in transportation. Previous policy statements will be reviewed in light of current needs to determine what the current national transportation policy should be. Prerequisites: Consent of the department chair and/or the instructor. (F;S)

**TSCM 471. Materials Management (formerly TSCM 670)** **Credit 3(3-0)**

This course emphasizes the integration of the logistics functions with the operations of the firm through the planning and controlling of the materials flow to achieve the desired levels of operating efficiency and customer service throughout the supply chain. The activities of planning, scheduling, materials requirements planning, capacity management, and production activity control are integrated with issues of inventory control and distribution. Prerequisites: TSCM 240 and MGMT 315. (F;S)

**TSCM 473. Purchasing and Supply Management (formerly TSCM 672)** **Credit 3(3-0)**

This course emphasizes the importance of the procurement function for efficient operations, product quality, and supply chain integrations. The issues of supplier selection, performance measurement and relationship development/management, and their impact on the firm and fulfillment of customer expectations are emphasized. Prerequisite: TSCM 240. (F;S)

**TSCM 480. International Logistics and Supply Chain Management (formerly TSCM 580)** **Credit 3(3-0)**

This course examines the supply chain management partners and their respective responsibilities in international logistics and supply chain networks and the challenges involved in managing cultural differences, business practices, variances in systems of jurisprudence, terms of sale and payment, and governmental units. The course examines elements of international logistics such as inventory cost, transportation cost, and the complex documentation that is required in international trade. Prerequisite: TSCM 240. (F;S)

**TSCM 485. Special Topics in Transportation and Logistics (formerly TSCM 600)** **Credit 3(3-0)**

This course examines problems and analytical techniques in transportation and logistics. It covers the pursuit of a specific or problem-oriented area in transportation and logistics not covered in other courses. Course content may vary from semester to semester. This course may not be repeated for credit. Prerequisites: TSCM 240 and consent of the department chair and/or the instructor. (F;S;SS)

**TSCM 490. Independent Study (formerly TSCM 598)** **Credit 3(3-0)**

This course is designed for students who want to explore a supply chain or logistics topic in depth. The following conditions must be met. (1) The student must select a topic with a supply chain/logistics faculty and study it for at least three hours per week for one semester, and (2) The student is required to present a written report and/or other evaluation criteria that is evaluated by the supervising instructor. Prerequisite: Consent of the department chair and/or the instructor. (F;S;SS)

**TSCM 493. Supply Chain Solutions****Credit 3(3-0)**

This course provides a comprehensive application of Enterprise Resource Planning (ERP) to the functions of Supply Chain Management. An ERP application software is used for students to evaluate the benefits of ERP implementation and application to supply chain operational efficiency. A strategic alignment of Sales and Distribution (SD), Materials Management (MM), Production Planning (PP), Financial Accounting (FI) and Controlling (CO) is essential to supply chain operations. Prerequisites: Senior status, TSCM 240, TSCM 260, TSCM 471, MGMT 315, and MGMT 335. **(F;S)**

**DIRECTORY OF FACULTY**

<b>Kathryn Cort</b> .....	<b>Associate Professor</b>
B.S.Ed., M.A., The Ohio State University; M.B.A. and Ph.D., Kent State University	
<b>Joseph R. Huscroft</b> .....	<b>Associate Professor and Chairperson</b>
B.S., United States Air Force Academy; M.P.A, Troy University; M.S., Air Force Institute of Technology; Ph.D., Auburn University	
<b>Ahren Johnston</b> .....	<b>Associate Professor</b>
B.S., M.T.L.M., Ph.D., University of Arkansas	
<b>Roland Leak</b> .....	<b>Associate Professor</b>
B.S., North Carolina A&T State University; M.B.A., Wake Forest University; Ph.D., University of South Carolina	
<b>Laquanda Leaven</b> .....	<b>Assistant Professor</b>
B.S., University of Michigan; MS, Ph.D., North Carolina A&T State University	
<b>Kimberly R. McNeil</b> .....	<b>Associate Professor</b>
B.S., North Carolina A&T State University; Ph.D., Florida State University	
<b>Kofi Obeng</b> .....	<b>Professor</b>
B.Sc., University of Science & Technology (Kumasi, Ghana); M.U.P., McGill University (Montreal, Canada); A.M., Ph.D., University of Pennsylvania	
<b>George W. Stone</b> .....	<b>Associate Professor</b>
B.S., United States Military Academy, West Point; M.B.A., Boston University; Ph.D., University of Mississippi	
<b>Shengbin Wang</b> .....	<b>Assistant Professor</b>
B.A., Zhejiang University; M.S., New Jersey Institute of Technology; Ph.D., Rutgers University	
<b>Jacqueline Williams</b> .....	<b>Associate Professor</b>
B.S., Drexel University; M.B.A., University of Delaware; Ph.D., Florida State University	
<b>Omar Woodham</b> .....	<b>Assistant Professor</b>
B.Sc., University of the West Indies; M.B.A., Rochester Institute of Technology; Ph.D. Syracuse University	

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**COLLEGE OF EDUCATION**  
<http://www.ncat.edu/CEd/index.html>

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**Anthony Graham, Dean**

Through its four departments, the College of Education prepares students for careers in PK-12 schools, industry, government and other agencies. The Department of Educator Preparation, the Department of Counseling, the Department of Administration and Instructional Services, and the Department of Leadership Studies and Adult Education have programs leading to degrees at the undergraduate and graduate levels. All of our teacher education programs are accredited by the Council for the Accreditation of Educator Preparation (CAEP) and approved by the North Carolina Department of Public Instruction. In addition, our counseling programs are accredited by the Council for the Accreditation of Counseling and Related Educational Programs (CACREP). We were the first HBCU to receive CACREP accreditation.

The Dean of the College of Education is the designated authority (by NC Department of Public Instruction and UNC General Administration) for university-wide licensure programs for teachers, school administrators, school counselors, and other school personnel. As such, although most licensure programs are housed in other academic units, the College of Education is responsible for coordinating and monitoring admission, placements, and assessment for all professional education students at the university. N.C. A&T SU offers 38 licensure programs at the undergraduate (initial licensure) and graduate (advanced licensure) levels. The Dean chairs the Teacher Education Council, which is the governance structure for all professional education (licensure) programs at the university. The TEC approves and monitors implementation of curriculum development as well as admission, placement, and assessment policies and procedures for licensure programs. Consequently, the College of Education through the TEC is responsible for overseeing (a) state mandated revisioning of professional licensure programs and (b) attainment of state teacher productivity mandates.

The Department of Educator Preparation provides the professional studies component for the preparation of effective teachers and school personnel at the bachelor's and master's degree levels; the department cooperates with various departments within the university that offer teacher education programs. The Department of Educator Preparation offers a bachelor's degree in elementary education, with dual licensure in special education and in Child Development (Birth-to-Kindergarten). Master's degrees include the Master of Arts in Teaching (MAT) in each of the following discipline areas: Special Education, Elementary Education, Biology Education, Business Education, Chemistry Education, Child Development (Birth to Kindergarten), English Education, Family and Consumer Sciences, Health and Physical Education, History Education, Math Education, and Technology Education. Other master's degrees include the MAED in Elementary Education. The Department of School Administration and Instructional Services offers a bachelor's degree in Speech and Speech Pathology. Master's degrees include the MAED in Reading, the MS in Instructional Technology, and the Master of School Administration. The Department of Counseling offers master's level programs in School Counseling, Community/Agency Counseling, and Rehabilitation Counseling as well as the doctoral degree in Rehabilitation Counseling and Counseling Education. The Department of Leadership Studies and Adult Education is an interdisciplinary academic unit that offers the master's degree in Adult Education and the doctoral degree in Leadership Studies. This department seeks to foster excellence, integrity, creativity, learning, engagement and responsiveness to the challenges that face the local, regional and global constituents of North Carolina A&T State University. The mission of the Department of Leadership Studies and Adult Education is to make significant contributions to the growth and development of current and aspiring scholars and practitioners; to service learning and research communities on and off campus; to the development and implementation of innovative practice; and leadership with the purpose of solving complex challenges facing the multiplicity of individuals, industry and society. The Department of Adult Education and Leadership Studies is uniquely positioned to create synergies among academic and administrative units across the campus of North Carolina A&T State University.

### **MISSION**

The mission of the College of Education is to prepare educational and human service leaders who create, use, and share knowledge on equity, access, and advocacy in local, state, national, and global communities. Building on our historically Black university (HBCU) legacy of exemplary teaching and scholarship as well as effective public service, we offer degrees at the baccalaureate and master's levels. Our graduates are catalysts for learning and leading in diverse contexts who engage in collaborative practice with key stakeholders from local to global communities.

### **VISION**

The College of Education aspires to become a recognized national leader in the advancement of research and practice on equity, access, and advocacy through the preparation of scholars, practitioners, and innovators.

### **ACCREDITATION**

Teacher education programs were accredited initially in 1976 by the Council for the Accreditation of Educator Preparation (formerly the National Council for the Accreditation of Teacher Education). This national accreditation was reaffirmed in 2015. Our counseling programs are accredited by the Council for the Accreditation of Counseling and Related Educational Programs (reaffirmed in 2009) and the Council on Rehabilitation Education (reaffirmed in 2010).

### **DEGREES OFFERED**

Elementary Education – Bachelor of Science  
Speech/Speech Pathology – Bachelor of Science

## GENERAL PROGRAM REQUIREMENTS

General program requirements for School of Education programs can be found in this catalogue under the departmental sections.

### TEACHER EDUCATION

Teacher Education at North Carolina Agricultural and Technical (N.C. A&T) State University reflects the North Carolina Standards for Teachers and the 21<sup>st</sup> century knowledge, skills, and dispositions embedded in them through the University's Professional Education Conceptual Framework. Teacher Education degree programs are housed in five colleges and schools at the University; the licensure component is coordinated and managed by the School of Education. Each Teacher Education degree program is composed of the general program requirements as defined by the University Studies Program, the content area specialization, and the Professional Education core.

#### General Education

General Education provides experience and learning that meet the fundamental needs of all teachers as persons, in the role of teacher and citizen in a democracy. It provides the candidate with the opportunity to gain the understanding, knowledge, appreciation, and sensitivity attainable through the study of a broad range of materials and concepts ranging across the humanities, the arts, the social sciences, the natural sciences and mathematics. Furthermore, it provides a broad understanding of the cultural heritage and of the physical and social environments. General Education is an essential foundation for the teaching specialty and professional education.

#### Content Area Specialization

Subject-matter specialization provides opportunities for the student to understand the theoretical basis upon which subject content is developed and organized. It also provides the student an opportunity to accumulate and understand a vast body of facts which comprises one's selected discipline. The function of knowledge in the development of mature scholarship is emphasized in this segment of the prospective teacher's experiences also.

#### Professional Education Core

Teacher Education candidates engage in Professional Learning Communities (PLCs), or communities of practice where all members work collaboratively to create a shared vision as they matriculate through Teacher Education. The Shared Vision of the Professional Education Unit at North Carolina A&T State University was developed in collaboration with the academic colleges that house professional education degree programs – the College of Science and Technology, the College of Agriculture and Environmental Sciences, the College of Business and Economics, the College of Education, the College of Health and Human Sciences, and the College of Arts, Humanities, and Social Sciences – PK-12 education partners, and other stakeholders. Consistent with the mission of the University, the Unit strives to prepare 21<sup>st</sup> Century Professional Educators who understand the complex needs of a pluralistic global society and who respond to these needs by creating interdisciplinary learning environments where critical thinking, collaboration, communication, and commitment to service guide thinking and behavior. As such, the Professional Education Program at North Carolina A&T State University is committed to the development of 21<sup>st</sup> Century Professional Educators who are aware of diverse populations in their communities, who appropriately use and interpret assessment data to guide future decision making, who engage in the skillful art of reflection to transform thinking and practice, and who use various forms of technology to manage instruction and assessment.

The Professional Education Program has adopted the theme "21<sup>st</sup> Century Professional Educators: Catalysts for Learning and Leading" as its core belief to produce educators who work with learners of all ages with varying experiences and various approaches to learning. Relying on an inquiry approach to teaching and learning where candidates use critical thinking skills to work collaboratively with stakeholders, the Professional Education Program emphasizes the merging of theoretical and practical knowledge to develop educators who engage, inspire, and encourage learners to explore, discover, and become advocates for lifelong learning and service to humankind. Four core values interwoven throughout the Professional Education Program guide the development of professional educators at North Carolina A&T State University: Diversity, Assessment, Reflection, and Technology. Infused throughout the Professional Education Program are seven key principles necessary for the growth and development of an effective 21<sup>st</sup> Century Professional Educator. These principles emerge from and align with the Unit's core values: content mastery, professional knowledge, professionalism, leadership, equity, global awareness, and inquiry.

In the teacher education programs at NC A&T, all candidates study in Professional Learning Communities (PLCs), completing a developmental scope and sequence of courses collectively called the Professional Education Core (PEC). There are four PLCs – one associated with each academic year. The PLC associated with the freshman year (PLC 1) introduces candidates to the profession. Each candidate will be required to take the course *CUIN 110 Ethics of Teaching*, which has an accompanying twenty-hour field experience. Candidates are also required to take an additional course that addresses instructional technology for the 21<sup>st</sup> century classrooms. During the sophomore year, candidates develop a context for designing, presenting and assessing learning in PLC 2 by completing two courses – *CUIN 210 Culturally Relevant Pedagogy* and *CUIN 255 Assessment for 21<sup>st</sup> Century Classrooms*. A thirty-hour field experience is required in *CUIN 210 Culturally Relevant Pedagogy*. In PLC3, candidates in the junior year will learn to implement instructional plans for all students. The two required courses are: *CUIN 410 Differentiated Instruction* and *CUIN 420 Content Area Literacy*. The forty-hour field experience in PLC 3 focuses on application of theories in the school. PLC 4 will be completed during the candidate's senior year and will provide candidates with the opportunity to practice the teaching profession. During PLC 4, candidates will complete *CUIN 487 Methods of Teaching for 21<sup>st</sup> Century*

Classrooms, and/or specific content area methods courses, *CUIN 498 Clinical Practice in Teacher Education*, and *CUIN 470 Clinical Application Capstone*. While completing *CUIN 487 Methods of Teaching for 21<sup>st</sup> Century Classrooms*, and/or specific content area methods course, the sixty-hour field experience focuses on pedagogical strategies within the content area. In *CUIN 498 Clinical Practice in Teacher Education* candidates will be assigned to a school Monday through Friday for the entire school day. *CUIN 470 Capstone Experience in Teacher Education* is taken in conjunction with *CUIN 498* and enables candidates to reflect upon their practice and learn from one another while participating in the clinical experience. At the culmination of each PLC, candidates are expected to have completed specific modules, evidences, and other requirements to transition to the next PLC. These transition points are the basis for monitoring candidates' progress toward program completion. Candidates receive annual written status reports detailing their progress toward completing each transition point. Additionally, candidates begin developing evidences for their final candidate portfolio during PLC 1 and deposit these into electronic portfolios. Specified evidences are added to the portfolios during each PLC. The evidences will be assessed using a team composed of university faculty and administrators and public school partners.

### **Enrollment In Advanced Courses**

**Only formally admitted candidates may enroll in advanced courses in the Professional Education Sequence.** Students enrolled in all field experience courses and clinical practice courses must show proof of educator's liability insurance at the beginning of the semester.

The Professional Studies Sequence includes: *CUIN 101* (or equivalent), 110, 210, 255, 410, 420, 487, 498, and 470. All courses numbered 300 and above in this sequence require formal admission to the Teacher Education Licensure Program.

### **Clinical Practice**

*(Students are required to complete all licensure tests prior to admission to beginning clinical practice.)*

Admission to Clinical Practice requires (1) formal admission to the Teacher Education Licensure Program, (2) an approved Student Teaching or MAT Internship Application submitted in TaskStream (3) a cumulative GPA of 2.80, (4) copy of individual scores on the Praxis II examination in the licensure area or individual scores on the Reading Foundations and General Curriculum tests (elementary education and special education majors only), and (5) proof of educator's liability insurance.

All candidates are required to take *CUIN 470 Clinical Application in Teacher Education* in conjunction with the Clinical Practice course. Students enrolled in a clinical practice course that is 6 credit hours are permitted to take only one additional 3 credit hour course during the clinical practice semester. This additional course cannot be scheduled during the public school day nor during the student/internship teaching seminar. All students enrolled in a student teaching course are **REQUIRED** to pay a student teaching fee.

### **Candidate Dispositions**

All Teacher Education candidates are expected to exhibit appropriate dispositions at all times. Candidates are expected to embrace and abide by tenets described in the "Aggie Pact", the NEA Code of Ethics, and professional dispositions described in the Conceptual Framework that are integrated throughout the program. The display of appropriate dispositions is especially significant for candidates enrolled in clinical, field, or internship experiences to ensure that candidates' behavior represents appropriate and acceptable professional standards of conduct at all times. Examples of inappropriate dispositions include, but are not necessarily limited to, inappropriate language, dress, immoral conduct, tardiness, dishonesty, etc. Documented instances/episodes of inappropriate behavior may be grounds for a candidate's dismissal from Teacher Education. Persons who have been convicted of a felony will not be recommended for licensure; therefore, all candidates should be able to submit to a criminal background check at their own expense, if necessary.

### **Admission, Retention, and Licensure**

The Dean of the School of Education is the designated University Official with the authority and responsibility to recommend to the State Department of Public Instruction candidates who apply for licensure in the following fields:

1. Agriculture Education
2. Art Education
3. Biology Education
4. Birth through Kindergarten
5. Business Education
6. Chemistry Education
7. Comprehensive Social Studies
8. Elementary Education
9. English Education
10. Family and Consumer Sciences
11. Mathematics Education
12. Music Education
13. Physics Education
14. School Social Work
15. Spanish Education
16. Special Education (Add on)
17. Trade Preparatory Programs

### **ADMISSION**

All candidates who are recommended for licensure must be admitted to the Teacher Education Licensure Program. Undergraduate candidates are expected to be admitted to the Teacher Education Licensure Program during their Freshman year. Failure to be formally admitted to Teacher Education will limit candidates' progress in completing the Professional Education core (see section on Enrollment in Advanced Courses). The application for admission includes:

- A TaskStream account;
- A completed Notification and Acknowledgement of Criminal Background Form;
- A completed application for admission to Teacher Education, which can be obtained from the Dean's Office;
- A minimum 2.8 cumulative GPA on a 4.0 scale;

- Basic skills competency demonstration, most frequently illustrated by Praxis Core;
- Successful completion of a Dispositions Survey; and
- Successful completion of an interview with a Teacher Education faculty panel.

It is the candidate's responsibility to ensure the application for admission and proof of basic skills competency are provided to the Office of the Dean of the School of Education. Additionally, the candidate should schedule an interview with a Teacher Education faculty panel using the publicized method. The GPA is verified before the candidate is admitted to Teacher Education.

#### **Retention**

To remain in Teacher Education, candidates must maintain a minimum cumulative academic overall grade point average of 2.80. Students are encouraged to meet with their advisors a minimum of three times per semester to discuss their progress in the program. A candidate who fails to maintain a 2.8 cumulative GPA will be placed on probation for one semester. If the candidate's GPA does not increase to a minimum 2.8 GPA after the semester, the candidate will be dropped from the program. Candidates are notified in writing of their probationary status and/or subsequent removal from the program by the Office of the Dean of the School of Education.

#### **Readmission To Teacher Education**

Once a candidate has been dropped from the Teacher Education Licensure Program for any reason, the following steps must be taken before a student will be readmitted:

1. The students must file a formal application for re-admittance to the Teacher Education Program and have a cumulative 2.80 GPA.
2. The application of the student along with the student's complete profile must be reviewed by the Teacher Education Council for action.
3. The student, program coordinator, department chairperson, and dean of the school involved will be notified in writing of the Teacher Education Council's decision on the student's application for readmission to the Teacher Education Program.

#### **Licensure**

Upon completing the Teacher Education degree, candidates are eligible to apply for state licensure in the Office of the Dean of the School of Education. Upon receipt of the candidate's application, approval or endorsement of the licensure application is secured from the candidate's major department. After processing the application, the completed application form is forwarded to the Office of Registration and Records, who attaches a copy of the candidate's official transcript to the application form and forwards it to the State Department of Public Instruction in Raleigh, North Carolina.

Note: The candidate is required to take and pass all appropriate PRAXIS II tests or the Reading Foundations and General Curriculum tests before being recommended for licensure. The candidate should consult with his/her advisor, department chairperson or dean to determine passing scores on Praxis Tests for licensure. The University reserves the right to refuse to recommend any applicants for licensure when they are deficient in mental or physical health, scholarship, character, or other qualifications deemed necessary for success in the education profession.

#### **Transfer To The Teacher Education Program**

All students transferring into the Teacher Education Program must have a cumulative GPA of 2.80 (on a 4.0 scale) and must meet all other requirements for entry to the Teacher Education Program.

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### **Department of Administration and Instructional Services**

<http://www.ncat.edu/CEd/departments/ais/index.html>

**Ereka Williams, Interim Chairperson**

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#### **OBJECTIVES**

The Department of Administration and Instructional Services prepares professionals as school principals, educational executives, speech practitioners, instructional technologists, reading specialists, and other school personnel. At the undergraduate level, the department offers degree programs in Speech Communication Studies and Speech Language Pathology and Audiology. The objectives of the department are twofold: (1) to prepare its candidates to impact people's lives in a variety of contexts via their knowledge and skills and (2) to develop visionary leaders with the critical thinking skills necessary to transform a diverse society.

#### **MISSION**

The mission of the Department of Administration and Instructional Services is to prepare knowledgeable and skilled visionary leaders for an ever-changing diverse society in the areas of speech, instructional technology, reading, and school administration.

#### **VISION**

The Department of Administration and Instructional Services strives to prepare nationally competitive scholars, practitioners, and innovators who positively impact their professions and society through their knowledge, skills, and dispositions.

#### **SPEECH PROGRAM**

**Deana Lacy McQuitty, Interim Program Director**

#### **OBJECTIVES**

The objectives of Speech Communication Studies/Speech Language Pathology and Audiology are as follows:

1. To assist students in developing critical thinking skills through a disciplined process of actively and skillfully applying, analyzing, synthesizing and evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication.
2. To provide students with the knowledge of basic human communication, to include normal and abnormal processes within the domains of biological, psychological, developmental and culturally and linguistically based functions.
3. To provide students with the knowledge of communication philosophy which examines the ontological, epistemological, existential implications of the fact that humans are communicative beings and the symbolically mediated exchange of ideas, beliefs, information and attitudes is essential to defining individuals, groups, organizations, and institutions
4. To encourage scholarly publications and creative productions.
5. To provide instruction in the major theories of communication and the relevance of these theories to the students' concentration.
6. To provide students with the knowledge of ethical dimensions of communicative acts ranging from classical Aristolian ethics to the numerous points of ethical contact that exist in human communication today.
7. To encourage the use of technologies associated with communication and how these technologies are used in the students' concentration, particularly the technical applications necessary in the field of communication sciences and disorders for diagnosis and treatment of future clients.

#### **DEGREES OFFERED**

Speech (Communication Studies) – Bachelor of Arts

Speech (Speech/Language Pathology & Audiology) – Bachelor of Arts

#### **MINOR OFFERED**

Speech (Communication Studies) – Minor

#### **GENERAL PROGRAM REQUIREMENTS**

The admission of students to the undergraduate degree programs in Speech Communication Studies/Speech Language Pathology and Audiology are based upon the general admission requirements of the University. All students are expected to maintain a cumulative grade point average of at least 2.50 overall in the major.

#### **DEPARTMENTAL REQUIREMENTS**

*Speech Communication Studies.* A student admitted in the speech program must successfully complete a minimum of 120 hours and:

- a. Maintain a minimal 2.50 grade point average in the course of study.
- b. Repeat any major course in which a grade of “D” or lower was achieved and receive a grade of “C” or better only once.

*Speech (Speech / Language Pathology & Audiology):* A student admitted in the Speech Language Pathology & Audiology program must successfully complete a minimum of 120 hours and:

- a. Maintain a minimal 3.0 grade point average or better in the course of study.
- b. Maintain a minimal 3.0 grade point average overall.
- c. Make a grade of “C” or better in all major core courses.
- d. Repeat any core courses or clinical practicum courses in which a grade of “D” or lower was achieved and receive a grade of “C” or better, only once.
- e. Be admitted to Clinical Phase with Privileges (i.e., admission to the clinical component of the program) prior to the junior year. This consists of a minimal 3.0 grade point average in all freshman and sophomore level major courses as well as the required application.

#### **CAREER OPPORTUNITIES**

A Bachelor of Arts degree in Speech Communication Studies will prepare students to pursue advanced degrees in communication, business, and law. The specific areas of emphasis include preparing students to become researchers, educators, advocates, and business and communication leaders.

A Bachelor of Arts degree in Speech/Language Pathology and Audiology will prepare students to enter a graduate program in Speech / Language Pathology, Audiology, or Speech and Hearing Sciences. Undergraduates have to be prepared to attend and gain admittance to prestigious graduate schools to prepare them for their area of expertise. The specific areas of emphasis include preparing students to become researchers, educators, clinicians and community leaders that prevent, assess, and treat speech, language, and/or hearing disorders in a culturally diverse population. Students must receive the master's degree in Speech/Language Pathology and Audiology in order to gain employment in clinics, schools, hospitals, state and federal government agencies. Teaching positions in colleges and universities are possible with 18 credit hours of graduate courses.

**Department of Administration and Instructional Services (Speech Program)**

**Bachelor of Arts in Speech (Communication Studies)**

**Major Code: SPH\***

**Concentration Code: SPCM**



## Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 101 (SS)	1	ENGL 101 (WC)	3
ENGL 100 (WC)	3	MATH 102 (MLAR)	3
MATH 101 (MLAR)	3	FOLA xxx <sup>1</sup>	3
FOLA xxx <sup>1</sup>	3	SOCI 100 (SBS)	3
BIOL 100/L (SR)	4	CST 101	3
HPED	1	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>15</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
SPCH 250 (HFA)	3	SPCH 251	3
LIBS 202 (AA)	3	HIST 207 (GL)	3
ENGL 226	3	MGMT 110	3
SOCI 204	3	POLI 110	3
ECON 200 or 201	3	ENVS 201* (SR)	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
PSYC 101	3	SPCH 316	3
SPCH 301 or LIBS 300	3	SPCH 335	3
SPCH 401	3	ENGL 331	3
SOCI 224 or 411	3	SPCH 314	3
Free Elective	3	Free Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
SPCH 410	3	SPCH 402	3
SPCH 453	3	ENGL 411	3
SPCH 498 (formerly SPCH 575)	3	SPCH 461	3
SPCH 441 (formerly SPCH 541)	3	SPCH 408	3
Elective	3	Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 120**

<sup>1</sup>Foreign Language courses must be in the same language (6.0 credit hours).

\*A student may take any other three-hour General Education approved Scientific Reasoning (SR) course.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

SPCH 214	SPCH 401
SPCH 250	SPCH 402
SPCH 251	SPCH 410
SPCH 301	SPCH 441
SPCH 314	SPCH 453
SPCH 316	SPCH 461
SPCH 335	SPCH 498

**Department of Administration and Instructional Services (Speech Program)**

**Bachelor of Arts in Speech-Pathology & Audiology**  
**Major Code: SPH\***  
**Concentration Code: SPTH**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 101 (SS)	1	ENGL 101 (WC)	3
ENGL 100 (WC)	3	PHYS 110/111 (SR)	3
MATH 101 (MLAR)	3	MATH 102 (MLAR)	3
BIOL 100/L (SR)	4	FOLA xxx <sup>1</sup>	3
FOLA xxx <sup>1</sup>	3	Free Elective	3
SPCH 116	1	HPED	1
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
LIBS 202 (AA)	3	SPCH 309	3
HIST 207 (GL)	3	SPCH 316	3
ENGL 226	3	SPCH 319	3
SPCH 250 (HFA)	3	PSYC 101 (SBS)	3
SPCH 259	3	SPED 250	3
HPED Elective	2	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>17</b>		
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
PSYC 322	3	SPCH 318	3
Free Elective	3	SPCH 424	3
SPCH 379	3	SPCH 469	3
SPCH 382	3	SPCH 484	3
<b>Semester Total</b>	<b>12</b>	<b>Semester Total</b>	<b>12</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
SPCH 409	3	SPCH 483	3
SPCH 421	3	SPCH 432 ( <i>formerly SPCH 530</i> )	3
SPCH 426	3	SPCH 487	3
SPCH 429 ( <i>formerly SPCH 529</i> )	3	SPCH 478	3
SPCH 410	3	SPCH 498/SPCH 490	3
SPCH 427 ( <i>formerly SPCH 522</i> )	3	( <i>formerly SPCH 575/580</i> ) or 3 credit hours course	
<b>Semester Total</b>	<b>18</b>	<i>related to the field of Speech-Language Pathology and/or Audiology</i>	
		<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 120**

<sup>1</sup>Foreign Language courses must be in the same language (6.0 credit hours); Sign Language I can be taken through the UNCG Consortium.

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C or better in the following courses:*

SPCH 116	SPCH 469
SPCH 250	SPCH 478
SPCH 259	SPCH 483
SPCH 309	SPCH 484

SPCH 316	SPCH 509
SPCH 319	SPCH 521
SPCH 379	SPCH 522
SPCH 381	SPCH 529
SPCH 382	SPCH 530
SPCH 410	SPCH 575/580
SPCH 424	SPCH 587
SPCH 426	

### COURSE DESCRIPTIONS IN SPEECH

- SPCH 116. Voice and Diction Lab I** **Credit 1(0-2)**  
This is a course in speech improvement with emphasis on articulation, pronunciation and projection. **(F;S)**
- SPCH 203. Introduction to Communication Studies** **Credit 3(3-0)**  
This course introduces the student to the Communication Studies discipline as a diverse field that includes inquiry by humanists, social scientists, and critical and cultural studies scholars. The core body of scholarship and theory about forms of human communication will be introduced. In addition, the course will survey career options for students majoring in Speech/Communication Studies and include strategies for student success in the major.
- SPCH 240. Communication in the Digital Age** **Credit 3(3-0)**  
This course examines the influence of technology on human communication and interpersonal relationships, and explores the cultural, technical, philosophical, political, global, and legal implications of digital communication.
- SPCH 250. Speech Fundamentals** **Credit 3(3-0)**  
This course is an introduction to the theoretical bases of human communication including verbal and nonverbal communication, preparation and practice in intrapersonal, interpersonal, group and public communication, critical listening and critical thinking. **(F;S;SS)**
- SPCH 251. Public Speaking** **Credit 3(3-0)**  
This course examines methods of developing, organizing, and effectively delivering public speeches. Emphasis is placed on informative, persuasive, and ceremonial addresses. Prerequisite: SPCH 250. **(F;S;SS)**
- SPCH 259. Introduction to Speech-Language Pathology** **Credit 3(3-0)**  
This course is designed for those entering the field of communication sciences and disorders. It is an introduction to the basic concepts and theories of assessment, diagnosis, and treatment of speech and language disorders. **(F;S)**
- SPCH 301. Social Science Research Methods** **Credit 3(3-0)**  
This course is a study of the basic qualitative and quantitative methods used in communication studies. Emphasis is placed on research methods and organization. Prerequisites: SPCH 250. **(F)**
- SPCH 307. Phonetics for Non-Majors** **Credit 3(3-0)**  
This course is the study of the physiological and acoustical bases of speech production with a practical application of phonetics in developing a General American Dialect using the International Phonetic Alphabet. (Not open to Speech / Language Pathology and Audiology majors). **(F;S)**
- SPCH 309. Phonetics** **Credit 3(3-0)**  
This course is an introduction to the acoustical and physiological bases of speech production, and is designed to help students acquire basic broad and narrow phonetic transcription skills for clinical application. (Speech-Language Pathology and Audiology majors only). Prerequisite: SPCH 259, 319, 379. **(S)**
- SPCH 310. Development of Speech and Language in Children for Non-Majors** **Credit 3(3-0)**  
This course is designed to provide student (non-majors) with theories of acquisition, growth, and development of speech/language skills in children. This course is available for Education, Child Development, and Applied Arts and Sciences majors. (Not open to Speech-Language Pathology and Audiology majors.) **(S;SS)**
- SPCH 314. Intercultural Communication** **Credit 3(3-0)**  
This course examines interpersonal and public communication among people from different cultures. Explores the personal narratives of individuals from various co-cultures. **(F)**
- SPCH 316. Interpersonal Communication** **Credit 3(3-0)**  
This course examines how communication builds and sustains interpersonal relationships. Explores the role of gender, ethnicity, and sexual orientation in interpersonal relationships. Prerequisites: SPCH 250. **(S)**
- SPCH 317. Gender Communication** **Credit 3(3-0)**  
This course examines communication styles and patterns relating to gender, as well as the intricate relationships among gender, culture, and communication that inform perceptions and conceptions of gender.
- SPCH 319. Development of Speech and Language in Children** **Credit 3(3-0)**  
This course is designed to provide the student with the theories of acquisition, growth, and development of speech and language

skills in children and the bases for speech and language problems. Topics will include the observable developmental milestones and the identification, consequences, and management of speech and language behaviors. (Speech/ Language Pathology and Audiology majors only). Prerequisite: SPCH 259. (F)

**SPCH 335. Rhetoric of American Thought** **Credit 3(3-0)**

This course is an introduction to the study of rhetorical discourse. It is a critical study of selected American orators – their speeches on controversial social and political issues. The main concentration is on audience, delivery and historical context. Prerequisite: SPCH 102 and 250. (S)

**SPCH 379. Anatomy and Physiology of the Speech and Hearing Mechanism** **Credit 3(3-0)**

This course is a study of the organs and systems of the body related to the processes of hearing and speech. Prerequisite: Sophomore standing, BIOL 100, SPCH 259. (F)

**SPCH 381. Diagnostic Testing and Measurements in Speech-Language Pathology** **Credit 3(3-0)**

This course emphasizes basic concepts of standardized and nonstandardized evaluation procedures for children and adults with communicative disorders. Theory and application of clinical writing, including the case history and the assessment report will be emphasized. Prerequisites: Taken concurrently with SPCH 424; Prerequisites: SPCH 259, 309, 319, 379, 382. (S)

**SPCH 382. Observation in Communication Disorders** **Credit 3(3-0)**

This course involves observation of the evaluation and management of speech/ language and hearing disorders. 25 hours of diagnostic/therapeutic observation are required. Instruction in case management fundamentals is emphasized. Prerequisites: Sophomore standing, SPCH 259, 309, 319, 379. (F;S)

**SPCH 401. Argumentation and Debate** **Credit 3(3-0)**

This course includes study and practice in analysis, gathering of material, briefing, ordering of arguments and evidence, refutation, and delivery. Prerequisite: SPCH 250. (S)

**SPCH 408. Business and Professional Communication** **Credit 3(3-0)**

This course is designed to introduce you to communication contexts, skills, and methods of assessment that are commonly used in business and professional settings. Our aim is to provide you with information designed to stimulate self-improvement in the areas of interviewing, group/teamwork, and formal presentational speaking and writing. Prerequisites: SPCH 102, 250. (F)

**SPCH 410. Ethical Issues in Communication** **Credit 3(3-0)**

This course studies ethical problems in public, group, and interpersonal communication; criteria for their resolution. Prerequisite: None (F;SS)

**SPCH 424. Practicum in Diagnostics in Communication Disorders** **Credit 3(3-0)**

Practicum in the evaluation of individuals with communicative disorders. Taken concurrently with SPCH 381. Prerequisites: SPCH 259, 309, 319, 379, and 382. (S)

**SPCH 426. Voice and Fluency Disorders** **Credit 3(3-0)**

This course is the study of the etiology, characteristics, clinical assessment, and therapeutic management of voice and fluency disorders in children and adults. Prerequisites: SPCH 259, 309, 319, 379, 381, 382. (F)

**SPCH 427. Aural Rehabilitation (formerly SPCH 522)** **Credit 3(3-0)**

This course is a study of the principles and methods of intervention used in the rehabilitation of communication difficulties associated with hearing loss. Topics include hearing aids, assistive listening devices, cochlear implants, effects of hearing loss on the perception of speech and assessment of communication strategies. Prerequisites: Junior standing; SPCH 259, 309, 319, 379, 381, 382, 424, 426, 469, 478, 483, 484, 409, 421, 429, 475. (S)

**SPCH 429. Clinical Practicum I (formerly SPCH 529)** **Credit 2(0-2)**

This course provides a supervised clinical experience in the assessment, diagnosis, and treatment of speech-language and hearing disorders in children and adults. Prerequisites: Senior standing, admission into clinical phase, SPCH 259, 309, 379, 381, 382, 424, 426, 478, 483, 484. (F;SS)

**SPCH 432. Clinical Practicum in Speech-Language Pathology II (formerly SPCH 530)** **Credit 2(0-2)**

This course will provide an advanced supervised clinical experience in the assessment, diagnosis, and treatment of speech language and hearing disorders in children and adults. Prerequisites: Senior Standing; SPCH 259, 269, 309, 319, 379, 381, 382, 424, 426, 469, 483, 484, 421, 429, 475. (S;SS)

**SPCH 455. Organizational Communication** **Credit 3(3-0)**

This advanced course provides students with the opportunity to integrate theoretical perspectives on communication in organizations by applying concepts to case studies, with a focus on adaptive communication for the organizational environment.

**SPCH 461. Small Group Communication** **Credit 3(3-0)**

This course introduces the theory and the practice of communicating in small group settings. Topics may include group development, conformity and deviation, cohesion, power and cultural issues, problem solving and leadership. Prerequisite: SPCH 250. (F;S;SS)

**SPCH 469. Introduction to Audiology** **Credit 3(3-0)**

This course is a study of hearing, both normal and abnormal, with information on the nature, causes, identification and rehabilitation treatment of persons with hearing disorders. Prerequisite: Junior or senior standing. (F)

**SPCH 475. Computer Applications in Communication Disorders (formerly SPCH 587)** **Credit 3(3-0)**

This course emphasizes basic concepts and applications of computers in the field of Speech/Language Pathology and Audiology, including diagnostic and rehabilitative procedures, statistical and research applications, record keeping, and word processing.

Review of contemporary computer hardware and software is emphasized. Prerequisites: Senior standing, acceptance to clinical phase, SPCH 259, 309, 310, 319, 381, 424, 483, 484. (F)

**SPCH 478. Hearing and Speech Science** **Credit 3(3-0)**

This course involves a study of acoustic principles of speech and hearing; analysis of acoustic characteristics of speech and physiological correlates; speech perception. Prerequisites: Senior standing, SPCH 259, 309, 319, 379, 381, 382, 424 (S)

**SPCH 483. Language Disorders** **Credit 3(3-0)**

This course is designed for students majoring in Speech / Language Pathology and Audiology. The focus will be to explore the phenomenon of language/communication disorders from a developmental point of view. The emphasis will be upon the fundamental understanding of the theoretical bases, growth patterns, and deficits identified in language behavior through early intervention programs, family ecology, multicultural assessment measures, clinical and educational accountability and efficacy. Prerequisite: SPCH 259, 309, 319, 379, 381, 382, 424. (F)

**SPCH 484. Phonological and Articulatory Disorders** **Credit 3(3-0)**

This course examines theories of normal and disordered acquisition of phonology and articulatory production as well as basic phonologic assessment methods and treatment planning. Both functional and structural disorders are emphasized. Prerequisites: Junior standing, admission to clinical phase, SPCH 259, 309, 319, 379. (S)

**SPCH 490. Independent Study in Speech (formerly SPCH 580)** **Credit 3(3-0)**

This course is an independent study in the area of Speech Communication Studies or Speech/Language Pathology and Audiology. Content to be determined by the student in consultation with the instructor. Prerequisites: Permission of chairperson and instructor, junior and senior standing. (DEMAND)

**SPCH 498. Internship (formerly SPCH 575)** **Credit 3(3-0)**

Students work in a corporate, non-profit, political, university, or departmental environment where learned skills can be implemented. Prerequisites: Senior standing, instructor's permission. (F;S;SS)

**SPCH 499. Senior Seminar / Capstone** **Credit 3(3-0)**

This course integrates knowledge gained through previous coursework, and builds on the conceptual foundation by guiding students in investigating one relevant topic of their choice. This may be conducting original research, a comprehensive review of literature, or another independent project. Students will develop a written report as well as an oral presentation in a public forum. Other tasks include assembling a portfolio and participation in seminar discussions.

**SPCH 502. Bargaining and Negotiation** **Credit 3(3-0)**

Communication in bargaining and negotiation in organizational settings. Cognitive and motivational theories emphasizing bargaining and negotiation strategies. Prerequisites: SPCH 102, 250, 427. (F)

**SPCH 509. Introduction to Organic and Neurogenic Communication Disorders (Capstone Course)** **Credit 3(3-0)**

This course is an introduction to the study of theories, principles, and procedures for the evaluation and treatment of disordered communication behaviors that accompany organically and neurologically based anomalies. Prerequisites: SPCH 259, 309, 319, 379, 381, 382, 424. (F)

**SPCH 521. Early Speech and Language Intervention** **Credit 3(3-0)**

This course is an advanced study of speech and language disorders, assessment procedures, and intervention management of developmentally-delayed children from birth to five years. Prerequisites: Senior standing, admission to clinical phase, SPCH 259, 309, 319, 379, 381, 382, 424, 426, 469, 478, 483, 484, 509. (F)

**SPCH 552. Persuasive Communication** **Credit 3(3-0)**

This course is structured to provide the student with an organized study of the theories, principles, and strategies basic to attitude and behavior change. An attempt is made to balance the emphasis between the persuader's concerns and an understanding of various persuasive efforts directed at the consumer. A variety of persuasive contexts will be covered which include our society, the use of reasoning, advertising, and interpersonal persuasion. Prerequisite: SPCH 250. (F;S;SS)

**SPCH 565. Speech Writing** **Credit 3(3-0)**

This course introduces the student to the principles of writing speeches. Attends especially to audience adaptation, occasion analysis, and oral styles. Prerequisites: SPCH 250, 251. (S)

## DIRECTORY OF FACULTY

<b>Kathryn Barrett</b> .....	<b>Adjunct Professor</b>
B.S., M.S., East Carolina University; Ph.D., University of Wisconsin at Madison	
<b>June Bethea</b> .....	<b>Adjunct Professor</b>
B.A., M.S., South Carolina State University; Ph.D., University of North Carolina at Greensboro	
<b>Michelle Cavanagh</b> .....	<b>Adjunct Lecturer</b>
B.A., Norfolk State University; M.A., Northeastern University	
<b>Jhonna Chavis</b> .....	<b>Adjunct Lecturer</b>
B.A., North Carolina A&T State University, M.A., Appalachian State University	
<b>Sam Cook</b> .....	<b>Adjunct Lecturer</b>
B.A., M.A., University of North Carolina at Greensboro	
<b>Byron Craig</b> .....	<b>Assistant Professor</b>
B.A., Wright State University; M.A., Ph.D., Indiana University	
<b>Dwight Davis</b> .....	<b>Adjunct Lecturer</b>
B.A., High Point University; M.A., University of North Carolina at Greensboro	

<b>Regina Williams Davis</b> .....	<b>Associate Professor</b>
B.A., Hampton University, M.H.R. University of Oklahoma, Ph.D., University of North Carolina at Greensboro	
<b>Ingram Land-Deans</b> .....	<b>Adjunct Lecturer</b>
B.A., North Carolina State University; M.A., Michigan State University	
<b>Deana Lacy McQuitty</b> .....	<b>Assistant Professor and Interim Program Director</b>
B.A., North Carolina A&T State University; M.S., Southern Connecticut University; SLPD, Nova Southeastern University	
<b>Daniel Richardson</b> .....	<b>Adjunct Lecturer</b>
B.A., M.A., University of North Carolina at Greensboro	
<b>Robin Terry-Armstrong</b> .....	<b>Adjunct Lecturer</b>
B.S., Shaw University; M.A., Ohio State University	
<b>Sharita Williams-Crossen</b> .....	<b>Adjunct Lecturer</b>
B.A., North Carolina A&T State University; M.A., North Carolina Central University; Ph.D., Nova Southeastern University	

**Department of Educator Preparation**

<http://www.ncat.edu/CEd/departments/edpr/index.html>

**Robert Ferguson, Chairperson**

**OBJECTIVES**

The Department of Educator Preparation provides the professional studies component for the preparation of effective teachers and school personnel at the bachelor's degree and master's degree levels. The department cooperates with the various academic departments of the University for teacher education preparation. In addition, the department offers graduate programs in the areas of elementary education, and special education.

**ACCREDITATION**

The Elementary Education programs are accredited by The National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction under the University wide accreditation and approval of teacher education programs.

**DEGREE OFFERED**

Elementary Education – Bachelor of Science

**PROFESSIONAL STUDIES COMPONENT**

The professional studies component of the Teacher Education Program is designed to provide for the development of those competencies essential to the professional role of the teacher. Integrated throughout the professional component are standards for teacher education programs which are diversity, assessment, reflection and technology (DART).

*Undergraduate.* Approximately eighteen percent of the undergraduate curriculum constitutes the professional studies component. Specific teacher competencies are developed through the provision of:

1. A study of the processes and theories of human growth development, learning and teaching with field experiences.
2. A humanistic study of the problems, issues and trends in education within a historical, philosophical, sociological, economical and governmental framework.
3. Instruction and experiences in creating and using learning environments.
4. A study of the process and techniques for analyzing and evaluating the teaching learning environment.
5. Experiences for the acquisition of knowledge, attitudes, and skills for positive human and social relationships (dispositions).
6. Integrating technology throughout the program.

**ELEMENTARY EDUCATION PROGRAM**

The objectives of the undergraduate elementary education program are: to provide a course of study to prepare students for teaching; to offer a course of study which promotes the development of general content and professional knowledge that serves as a foundation for appropriate educational practices; and to provide opportunities which develop knowledge, skills and disposition.

The emphasis of the program is on the application of learning theory, pedagogy as it relates to instructional practice. The program provides opportunities for prospective teachers to plan, organize, and implement developmentally appropriate instructional experiences. Experiences that expedite development and learning in the following areas are emphasized: cognitive, language, physical, social, psychological and aesthetic. Also, the program provides for sequentially planned field experiences, which enables potential teachers to apply knowledge and skill to actual learning situations (theory to practice).

Candidates must meet the requirements for admission, retention, and exit from the University's Teacher Education Program.

**INITIAL LICENSURE REQUIREMENTS**

*Undergraduate Students* – The candidate is required to take and pass the Praxis Core test in reading, writing, and mathematics. For licensure, candidates must take and pass the Reading Foundations and General Curriculum tests. Candidates must attain passing scores on these respective tests as established by the State Board of Education.

*Graduate Students* – Individuals who have graduated from an accredited college/university and did not pursue a program of study or complete requirements leading to teacher certification should file application for admission to the School of Graduate Studies. Refer to the section, *Procedures or Graduates Who Completed A Non-Teacher Education (undergraduate) Program* for explicit instructions.

Candidates majoring in elementary education at the undergraduate level must complete (120) hours consistent with the curriculum guide. The curriculum guide for elementary education includes corollary study hours in a basic academic discipline. Candidates must meet the requirements for admission to teacher education. Individuals should refer to the section entitled *Teacher Education Admission and Retention Standards (Undergraduate Bulletin)* for pertinent information relative to requirements as a teacher education candidate. Students must accumulate a minimum of “C” in major courses and specialty area courses.

### COROLLARY STUDIES

Elementary Education Majors MUST Select One Area (12 hours)

*Diverse Learners Corollary:* CUIIN 302, SPED 255, SPED 254, and six approved/or hours from FCS, SOCI, SOWK, or HIST that addresses different cultural groups, languages, global international experiences and/or engagement and involvement of parents and communities.

*STEM Corollary:* ELED 357, INST 605, or *Choose from the following:* PHYS 101, or PHYS 105, *Choose three hours from the following:* ENVS 209 or EES 234 or or six credits in consultation with Academic advisor, approved TECH, INST, ENVS, BIOL, MATH, WMI or other STEM aligned courses may be taken for a total of 12 credit hours.

*Special Education Corollary:* SPED 254, 255, 260, 339, Special Education licensure seekers will take two additional courses: SPED 448 and 464. Candidates who decide to pursue SPED licensure must report this decision to the ELED Coordinator and SPED Coordinator no later than the first semester of the Sophomore Year coursework. Failure to do so will further extend the time required to complete licensure requirements.

### COURSES TO BE COMPLETED

SPED 254 – Urban Schools (3 hours)

SPED 255 – Introduction to Mild Disabilities (3 hours)

SPED 260 – Teaching Adolescents with Learning and Behavior Disorders (3 hours)

SPED 339 – Teaching Students with Persistent Reading Problems (3 hours)

Special Education concentration licensure candidates will take the following two additional courses:

SPED 448 – Diag. Assessment & Prescriptive Techniques for Except. Individuals (3 hours)

SPED 464 – Methods & Materials & Problems in Teach. Special Needs Child (3 hours)

## Department of Curriculum and Instruction Bachelor of Science in Elementary Education Major Code: ELEM

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
BIOL 100	4	CUIIN 101	1
PHIL 103 or PHIL 201	3	CUIIN 110 <sup>1</sup>	2
ELED 101 (formerly ELED 201)	3	MATH 102	3
MATH 101	3	ENVS 201	3
CUIIN 102	2	SSFM 226	3
<b>Semester Total</b>	<b>18</b>	<b>Semester Total</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
CUIIN 210 <sup>1</sup>	2	CUIIN 255 (formerly CUIIN 310)	2
SPED 250 (formerly SPED 350)	3	ELED 215 (formerly ELED 415)	2
ELED 120	3	ENGL 200 or ENGL 230	3
HIST 103 or HIST 106 or HIST 107	3	ELED 121	3
ELED 216	3	ELED 300	3
Corollary Study <sup>2,3</sup>	3	Corollary Study <sup>2,3</sup>	3
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	

SPED 341 (formerly SPED 441)	3	ELED 310 (formerly ELED 510)	2
CUIN 442	3	ELED 311 (formerly ELED 511)	3
ELED 314	3	ELED 312 (formerly ELED 512)	3
CUIN 400	3	ELED 313 (formerly ELED 513)	3
Corollary Study <sup>2,3</sup>	3	CUIN 410 2	
<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>14</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
ELED 404	0	ELED 498	12
CUIN 443 (formerly CUIN 543)	3	<b>Semester Total</b>	<b>12</b>
ELED 444 (formerly ELED 544)	3		
CUIN 305	3		
ELED 487	2		
Corollary Study <sup>2,3</sup>	3		
<b>Semester Total</b>	<b>14</b>		

**Total Credit Hours: 120**

<sup>1</sup>Course requires a field experience component where hours are completed in a public school classroom.

<sup>2</sup>See academic advisor for approved courses.

<sup>3</sup>College transfer students may substitute 6 approved credit hours - consult academic advisor.

<sup>4</sup>Students may select PHIL (103) World Religions or PHIL (201) Business Ethics.

<sup>5</sup>Course requires a 15-week full-time supervised student teaching experience in a public school classroom.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

CUIN 101	ELED 216
CUIN 110	ELED 310
CUIN 210	ELED 311
CUIN 255	ELED 312
CUIN 305	ELED 313
CUIN 410	ELED 314
CUIN 442	ELED 404
CUIN 443	ELED 459
ELED 215	ELED 487

### COURSE DESCRIPTIONS IN CURRICULUM AND INSTRUCTION

#### **CUIN 101. Technology for 21<sup>st</sup> Century Classrooms**

**Credit 1(0-2)**

This course examines the authentic use of various technological applications for 21st Century classrooms. Teacher candidates are introduced and exposed to current technological tools used to engage PK-12 students in 21st Century learning environments. (S;SS)

#### **CUIN 102. Introduction to Teacher Education I**

**Credit 2(2-0)**

This course is designed to provide prospective (new and freshman) teacher education students with an orientation to the Teacher Education Program requirements and to assist them in preparation for the Praxis I (mathematics, reading and writing) examinations. This course is required of all undergraduate prospective teacher education majors. Students are required to have 6 hours of computer practice time per week. Grade: Pass/Fail. (F;S;SS)

#### **CUIN 104. Introduction to Teacher Education II**

**Credit 0(1-0)**

This course provides students with information relative to the application process for formal admission to the Teacher Education Program. Students are required to take the Praxis I (mathematics, reading, and writing) examinations either on the scheduled Educational Testing Service (ETS) dates or on the Computer Based Test (CBT) format. Grade: Satisfactory/Unsatisfactory. (F;S)



- CUIN 110. Ethics of Teaching** **Credit 2(2-1)**  
 This course introduces students to the teaching profession. Major emphasis is placed on the ethical and moral responsibility of the classroom teacher to meet the needs of the learner in increasingly diverse school environments. Teacher candidates explore the philosophical and historical context of public schooling and the importance of supporting overall PK-12 student development. A 20-hour service learning experience is required. (S;SS)
- CUIN 210. Culturally Relevant Pedagogy** **Credit 2(2-1)**  
 This course examines culturally responsive learning environments that engage and empower PK-12 students. Emphasis is placed on using the context of the learning environment to make instructional decisions. A 30-hour field experience in an approved learning environment is required. Prerequisite: CUIN 101 or equivalent and CUIN 110. (F;SS)
- CUIN 255. Assessment for 21<sup>st</sup> Century Classrooms** **Credit 2(2-0)**  
 This course introduces teacher candidates to basic assessment principles and practices. Emphasis will be placed on formative and summative evaluation processes. Prerequisite: CUIN 210 and admission to Teacher Education. (S;SS)
- CUIN 301. Philosophical and Sociological Foundations of Education** **Credit 2(2-0)**  
 This course provides a view of the educative process and its philosophical foundations with emphasis on the philosophical implications of education as they relate to student curriculum, teacher and the institution. There will be classroom observation/participation experiences. (F;S;SS)
- CUIN 302. Field Experiences and Community Services** **Credit 1-3**  
 This course provides field experiences as tutor, assistant participant or employee in a school or education related institution, organization, agency, community, church, business or industrial program involving interaction with children, youth or adults. Evaluation and written reports planned in consultation with an instructor will be required. (F;S;SS)
- CUIN 303. Socio-Philosophical Aspects of Education** **Credit 4(4-0)**  
 This course examines past and contemporary factors in American education through philosophical and sociological perspectives. Problems and possibilities inherent in relating theory and practice in education will be explored. (F;S;SS)
- CUIN 305. Classroom and Behavioral Management** **Credit 3(3-0)**  
 This course is designed to give preservice elementary and special education majors a broad range of philosophies and concepts about classroom and student behavior management. Concepts will include preventive, diagnostic, and prescriptive behavior planning and implementation for classroom management. (F;S;SS)
- CUIN 315. Family, Community, and School** **Credit 3(3-0)**  
 This course studies the relationships of the family, community, and school that involve the learner, with emphasis on the young child. Attention will be given to family structure, parent education and involvement with the school and community, community development and participation in education. Research and identification of current problems and issues will be considered and projects relating to the local community will be completed. (F;S;SS)
- CUIN 400. Psychological Foundations of Education – Growth and Development** **Credit 3(2-2)**  
 This course is restricted to Teacher Education students and studies the psychological principles governing the interests and needs of pre-adolescence and adolescence; emphasis is placed on general principles of growth and development, physical, motor, intellectual, social, emotional and moral aspects. Observing, recording and interpreting human behavior including functional conceptions of learning will be provided in laboratory settings. (Field Experience Required). Prerequisite: CUIN 102 (Formal admission to Teacher Education). (F;S;SS)
- CUIN 402. Extramural Studies I** **Credit 1-3**  
 This course provides off-campus experiences, testing or exploring relevance of education to real world situations in an agency, organization, institution or business. There will be a project report and evaluation by permission of department. (F;S;SS)
- CUIN 410. Differentiated Instruction** **Credit 2(2-1)**  
 This course focuses on how classroom teachers address the needs of learners using a variety of instructional approaches. Emphasis will be placed on using ongoing formal and informal assessment to design, implement, and modify instruction appropriate for the learner. A 40-hour field experience in an approved PK-12 school is required. Prerequisites: CUIN 310 and admission to Teacher Education. (F)
- CUIN 412. Classroom Management** **Credit 3(3-0)**  
 This course examines major schools of thought involved in classroom management and motivation. Alternative ways to help children develop self-control and acquire practical strategies and techniques for successful classroom management to maximize student learning will be explored. Prerequisites: CUIN 102. (F;S;SS)
- CUIN 413. Learning and Practice** **Credit 3(3-0)**  
 This course is a survey and analysis of learning theories and the learning process with applications to education. The integration of theoretical viewpoints and research findings with observations and experience in classroom situations will be studied. Prerequisite: PSYC 320. (F;S;SS)
- CUIN 420. Content Area Literacy** **Credit 2(2-0)**  
 This course provides teacher candidates with the strategies to assess and diagnose literacy skills and provide effective instruction to improve student learning. Prerequisite: CUIN 310 and admission to Teacher Education. (S;SS)
- CUIN 425. Methods of Teaching Art** **Credit 3(3-0)**  
 This course is a study of aims, objectives, methods and techniques of art teaching in the modern schools. Special attention given to planning courses of material and correlation. Required of those wishing to qualify as art teachers. Prerequisites: 30 hours of Art and 15 hours of education and psychology. (F;S)

<b>CUIN 426. Methods of Teaching English</b>	<b>Credit 3(3-0)</b>
This course is a study of materials and methods of teaching English in the high school. Required of those planning to teach English. Prerequisites: ENGL 450, 430; 24 additional hours of ENGL courses above ENGL 100 and 15 semester hours in education and psychology. (F;S)	
<b>CUIN 429. Methods of Teaching Mathematics</b>	<b>Credit 3(3-0)</b>
This course is an evaluation of subject matter, materials, methods, and techniques and objectives in the teaching of mathematics in the junior and senior high schools. Required of those planning to teach the subject. Prerequisites: 30 hours of mathematics and 15 hours of education and psychology. (F;S)	
<b>CUIN 430. Public School Music Methods</b>	<b>Credit 2(2-0)</b>
This course is a comprehensive study of materials and methods in the teaching of public school music. (F;S)	
<b>CUIN 431. Vocal Methods and Materials</b>	<b>Credit 3(3-0)</b>
The teaching of vocal music in the public schools and vocal literature for vocal combinations in the public schools is studied in this course. (F;S)	
<b>CUIN 432. Band Methods</b>	<b>Credit 3(3-0)</b>
This course is a study of the school band organization and administration. (F)	
<b>CUIN 435. Methods of Teaching of Science</b>	<b>Credit 4(3-1)</b>
This course is a study of methods, materials and techniques of teaching biology, chemistry, physics, general science, and environmental science in the high school. Required of all those planning to teach in this field. Prerequisites: 27 hours of science and 15 semester hours of education and psychology. (F;S;SS)	
<b>CUIN 436. Evaluation and Assessment</b>	<b>Credit 3(2-2)</b>
This course is a basic study of standardized and teacher-made measuring devices, acceptable methods selecting, administering, and interpreting all types of tests applicable to the school and classroom. Prerequisite: CUIN 102. (F;S;SS)	
<b>CUIN 439. Methods of Teaching Social Sciences</b>	<b>Credit 3(3-0)</b>
This course is a study of the techniques of social science instruction on the high school level. Required of those planning to teach the subject. Prerequisites: 27 hours of Social Studies and 15 semester hours of education and psychology. (F;S;SS)	
<b>CUIN 442. Children's Literature and Instructional Media</b>	<b>Credit 3(3-0)</b>
This course provides multimedia approaches to literature for children with emphasis on the integration of literature across the curriculum. (F;S;SS)	
<b>CUIN 443. Educational Media</b>	<b>Credit 3(3-0)</b>
This course deals with the integration of educational media in the classroom. Candidates will examine how to promote effective teaching through the use of technology in the curriculum. (F;S;SS)	
<b>CUIN 451. Foundations of Early Childhood Education</b>	<b>Credit 2(2-0)</b>
This course is the study of the historical background and the sociological, philosophical, economic factor and current issues relating to early childhood education; (the physical plant, equipment, supplies and other facilities necessary for appropriate experiences). (F;S;SS)	
<b>CUIN 470. Clinical Application Capstone</b>	<b>Credit 3(3-0)</b>
Teacher candidates will analyze topics related to professional practice, in the context of their culminating clinical experience. They will refine evidences of professional knowledge, skills, and dispositions through presentation in a capstone portfolio. Prerequisite: CUIN 487 and admission to Teacher Education. Corequisite: CUIN 498. (F;S)	
<b>CUIN 487. Methods of Teaching for 21<sup>st</sup> Century Classrooms</b>	<b>Credit 3(3-1)</b>
This course provides the opportunity for teacher candidates to design, deliver and assess effective instruction. Emphasis will be placed on the use of multiple methodologies to inform instruction to meet the needs of culturally and linguistically diverse populations. A 60-hour field experience in an approved PK-12 school is required. Prerequisites: CUIN 410 and CUIN 420 and admission to Teacher Education. (F;S)	
<b>CUIN 498. Student Teaching</b>	<b>Credit 6-9(0-18)</b>
This course is the culminating clinical experience for teacher candidates. Teacher candidates must complete a full-time supervised teaching experience in an approved PK-12 classroom. This course must be taken in conjunction with the capstone experience. Prerequisite: CUIN 487 or equivalent and admission to Teacher Education. Corequisite: CUIN 470. (F;S)	
<i>All courses numbered 500 and above require formal admission to the Teacher Education Program and methods courses require a 60 hour field experience.</i>	
<b>CUIN 500. Principles and Curricula of Secondary Schools</b>	<b>Credit 3(3-0)</b>
This course examines the history, nature, and function of the secondary school and its relationship to the elementary school and adult life. Prerequisite: 12 semester hours in education and psychology. (F;S;SS)	
<b>CUIN 501. Methods of Research and Evaluation in Health Physical Education</b>	<b>Credit 2(1-2)</b>
This course utilizes various research methods as applied to health education and physical education and the study of methods of evaluating biological, social, and physiological outcomes for health education and physical education. Elementary statistical procedures are utilized. Prerequisite: CUIN 436. (F;S;SS)	
<b>CUIN 519. Preschool Materials, Methods and Practicum</b>	<b>Credit 3(2-2)</b>
This course examines methods, materials and program planning for the preschool child. There will be directed observation and participation in an established pre-school program such as a day care center, nursery or kindergarten. (F;S;SS)	
<b>CUIN 527. Methods of Teaching Foreign Languages</b>	<b>Credit 3(3-0)</b>

This course is a study of the problems and strategies in teaching foreign languages. Special attention given to the matter of classroom aids, equipment, etc. Required of those students planning to teach the subject. Prerequisites: 27 hours of French and 15 semester hours of education and psychology. (F;S;SS)

**CUIN 528. Methods of Teaching Home Economics** **Credit 3(3-0)**

This course is a study of the objectives, methods, and techniques necessary for teaching vocational home economics on the secondary level. (F;S)

**CUIN 533. The Teaching of Physical Education** **Credit 3(3-0)**

This course is a study of the teaching/learning process in health and physical education within the middle and secondary school. It emphasizes the planning, implementation and evaluation of health and physical education activities within the school setting. Prerequisites: Admission to Teacher Education and approval of the HPER chairperson. (F;S;SS)

**CUIN 534. The Teaching of Health Education** **Credit 2(2-0)**

This course examines methods, materials and procedures for the teaching of health in the elementary and secondary schools. Field experiences will include: observation, and service as aides and assistants. Prerequisites: Health Education 220, 440, and 442; Zoology 469 and 560. (F;S;SS)

**CUIN 539. Methods of Teaching Speech and Theatre** **Credit 3(3-0)**

This course is a study of the aims, objectives, problems and difficulties experienced in teaching speech in the modern school. Special attention is given to the organization and coordination of both speech and theatre curriculums, to planning courses of study, its presentation, and to the selection of materials and equipment required of all speech and Theatre Education majors. Prerequisites: 27 hours of Speech and 15 hours of Education and Psychology. (F;S;SS)

**CUIN 556. Curriculum and Methods in Literature, Language Arts, and Social Studies in Early Childhood Education** **Credit 3(2-2)**

This course is the study of basic principles underlying the social studies and language arts curriculum, children's literature, appropriate materials and methods for kindergarten-primary grades. Concepts and skills relating to the scope and importance of social studies and language arts in the total program will be developed. There will also be laboratory and observation experiences. (F;S;SS)

**CUIN 558. Student Teaching and Seminar in Early Childhood Education** **Credit 6(2-8)**

This course includes the observation and study of the guided teaching experiences in the kindergarten through grade three to include ninety or more clock hours of actual teaching. The study of the application and practice of methods, techniques and materials of instruction in a real classroom situation under supervision, includes purposeful observation, organization of teaching materials, participation in other activities will be included. (F;S;SS)

**CUIN 562. Seminar in Elementary Education** **Credit 3(1-0)**

A consideration of selected topics and current trends in the field of elementary education. Topics differ in response to current interests, issues and research findings. Candidates will participate in-group sessions during the student teaching experience. The sessions may be conducted at a selected school or on campus. (F;S;SS)

**CUIN 611. Utilization of Education Media** **Credit 3(2-2)**

Applies basic concept to problems in teaching and learning with school and adult audiences. Relates philosophical and psychological bases of communications to teaching. Discusses the role of communications in problem-solving, attitude formation, and teaching. Methods of selecting and using educational media materials effectively in teaching. Experience in operating equipment, basic techniques in media preparation. Practice in planning and presenting a session. Prerequisite: CUIN 102. (F;S;SS)

**CUIN 613. Media and Literature for Children** **Credit 3(3-0)**

This course will entail a study of children's literature with emphasis on aids and criteria for selection of books and other materials for preschool through late childhood ages; story-telling, and an investigation of reading interests. Prerequisite: CUIN 102. (F;S;SS)

**CUIN 623. Methods and Materials in Teaching Reading in Elementary School** **Credit 3(3-0)**

The application of principles of learning and child development of the teaching of reading and the related language arts. Methods and Approaches to the teaching of reading in the elementary school; including phonics, developmental measures, informal testing Procedures, and construction and utilization of instructional materials. (F;S;S)

**CUIN 624. Teaching Reading in the Secondary School** **Credit 3(3-0)**

Nature of a developmental reading program, initiating and organizing a high school reading program, the reading curriculum, including reading in the content subjects, critical reading, procedures and techniques, and corrective and remedial aspects. (F;S;S)

**CUIN 625. Theory of American Public Education** **Credit 3(3-0)**

An examination of the philosophical resources, objectives, historical influences, social organization, administration, support, and control of public education in the United States. (F;S;S)

**CUIN 627. Literacy in the Content Areas** **Credit 3(3-0)**

This course is designed to prepare secondary school teachers to plan and deliver literacy-focused instruction in all content areas. Students will examine current research and instructional models for improving 21<sup>st</sup> century literacy skills. (F;S;S)

**CUIN 628. Seminar and Practicum in Urban Education** **Credit 3(1-4)**

A synthesis of practical experiences, ideas and issues pertinent to more effective teaching in urban areas. (F;S;S)

**CUIN 629. Classroom Diagnosis in Reading Instruction** **Credit 3(3-0)**

Methods, techniques and materials used in the diagnosis of reading problems in the kindergarten-primary area through the intermediate level. Attention upon the pupil and the interpretation of physiological, psychological, sociological, and educational factors affecting learning to read. Opportunity for identification, analysis, interpretation on, and strategies for fulfilling the reading needs of all pupils. Prerequisite: CUIIN 511. (F;S)

**CUIIN 630. Reading Practicum** **Credit 3(3-0)**

Application of methods, materials and professional practices relevant to teaching pupils. Provisions for participation in and teaching of reading. Designed to coordinate the student's background in reading, diagnosis, learning and materials. Supervised student teaching. Prerequisite: 12 credit hours in reading. (F;S;S)

**CUIIN 631. Reading for the Atypical Learner** **Credit 3(3-0)**

Attention to the gifted child, the able retarded, the slow learner, the disadvantaged, and the linguistically different child. Special interest groups will be formed for investigation reports. (F;S;S)

**CUIIN 632. Basic Technology Literacy for K-12 Educators** **Credit 3(3-0)**

This course provides instruction in basic computer literacy skills and classroom integration for K- 12 educators. The instruction is designed to meet the North Carolina Department of Public Instruction's requirements for basic level computer competencies for public school teachers. Topics include word processing, spreadsheet usage, database design and management, teacher utilities, and fundamentals of modem computing. (F;S;SS)

**CUIIN 640. Methods of Teaching for 21<sup>st</sup> Century Classrooms** **Credit 3(3-1)**

This course provides the opportunity for teacher candidates to design, deliver and assess effective instruction. Emphasis will be placed on the use of multiple methodologies to inform instruction to meet the needs of culturally and linguistically diverse populations. A 60-hour field experience in an approved PK-12 school is required. Prerequisites: CUIIN 410 and CUIIN 520 and admission to Teacher Education. (F;S)

**CUIIN 660. Clinical Practice in Teacher Education** **Credit 6-9(0-18)**

This course is the culminating clinical experience for teacher candidates. Teacher candidates must complete a full-time supervised teaching experience in an approved PK-12 classroom. This course must be taken in conjunction with the capstone experience. Prerequisite: CUIIN 640 or equivalent and admission to Teacher Education' Co-requisite: CUIIN 670. (F;S)

**CUIIN 670. Capstone Experience in Teacher Education** **Credit 3(3-0)**

Teacher candidates will analyze topics related to professional practice, in the context of their culminating clinical experience. They will refine evidences of professional knowledge, skills, and dispositions through presentation in a capstone portfolio. Prerequisite: CUIIN 640 and admission to Teacher Education. Corequisite: CUIIN 660. (F;S)

**CUIIN 681. Issues in Education** **Credit 3(3-0)**

A critical review of the background and functions of the school as a social institution. (F;S;S)

#### ELEMENTARY EDUCATION

**ELED 101. Communication for the Elementary Teacher** **Credit 3(3-0)**

This course will provide opportunities for the candidates to develop their communication skills as relates to efficient, responsible, professional dispositions needed by competent teachers of the 21<sup>st</sup> century classroom. (F;S;SS)

**ELED 120. Shape of Space in Our World** **Credit 3(3-0)**

This course will provide elementary education candidates with an activity and project-based exploration. In formal geometry in two and three dimensions. Topics include geometric analysis, transformations, geometric analysis, similarity, tessellations, flat and curved spaces and topology. (F;S;SS)

**ELED 121. Mathematical Reasoning for Elementary Teachers** **Credit 3(3-0)**

This inquiry based course examines concepts, operations, and structures occurring in number systems, number theory and algebra. Prerequisite: ELED 120. (F;S;SS)

**ELED 215. Curriculum Design and Instructional Planning in the Elementary School** **Credit 2(2-0)**

This course emphasizes planning a developmentally appropriate and integrated classroom program, which reflects proven educational, practices and researches. The course includes exposure to various sources of curriculum relative to content, organization and instruction. (S;SS)

**ELED 216. Creative Arts, Healthful Living and Movement Activities for the Elementary Classroom** **Credit 3(3-0)**

This course addresses the creative process and co-relation/integration of the arts (visual, dance, music, and theatre) to enhance student learning in other subject areas. The course will present a study in art education of sufficient depth to enable the student to understand what the arts are and their value, especially in relationship to the development of positive attitudes, perceptual awareness, and higher-order thinking skills. Students will demonstrate an understanding of the basic concepts, elements, and knowledge of resources and materials for use in the K-6 classroom. (S;SS)

**ELED 300. Introduction to the English Language Learner Experience** **Credit 3(3-0)**

This course will focus on theory and research in second language acquisition for 21<sup>st</sup> century classroom instructional practices that follow national and state standards. Prerequisite: Admitted to Teacher Education. (F;S;SS)

**ELED 310. Language Arts in the Elementary School** **Credit 2(2-0)**

This course focuses on content, resources and materials for teaching language arts in grade K-6. Emphasis is on the interrelatedness of listening, speaking, viewing, reading, and writing. To be taken with 511, 512, 513, 514. Prerequisite: CUIIN 102. (F;S)

**ELED 310. Language Arts Lab** **Credit 0(0-0)**

Candidates will complete 2 hours of field experience per week.

- ELED 311. Reading in the Elementary School** **Credit 3(3-0)**  
 This course focuses on content and materials used in reading instruction grades K-6. Attention to the acquisition, development and extension of language will be emphasized in this course. To be taken with 510, 512, 513, 514. Prerequisite: CUIN 102. (F;S)
- ELED 312. Social Studies in the Elementary School** **Credit 2(2-0)**  
 This course addresses the instructional program in social studies for grades K-6. Emphasis is on content, resources, and materials in this course. To be taken with 510, 511, 513, 514. Prerequisite: CUIN 102. (F;S)
- ELED 313. Science in the Elementary School** **Credit 2(2-0)**  
 This course stresses an integrated discovery-centered program with developmentally appropriate experiences for children in grades K-6. Emphasis is on the processes of science and assessment of student learning. To be taken with 510, 511, 512, 514. Prerequisite: CUIN 102. (F;S)
- ELED 314. Mathematics in the Elementary School** **Credit 2(2-0)**  
 This course focuses on the elementary mathematics content and materials. Emphasis is on developing an understanding of concepts and skills through discovery. To be taken with 510, 511, 512, 513. Prerequisite: CUIN 102. (F;S)
- ELED 404. Teacher Licensure – Review Seminar** **Credit 0(1-0)**  
 This course offers students an opportunity to discuss, review and prepare for the required state licensure examinations. Students will be expected to acquire the passing score on the specialty area licensure examination in order to receive a “Satisfactory” in this course. Grade: Satisfactory/Unsatisfactory. Prerequisite: Admission to Teacher Education. (F;S;SS)
- ELED 444. Diagnostic-Prescriptive Reading Instruction in Elementary Education** **Credit 3(3-0)**  
 The study of diagnostic instruments, formal and informal testing procedures, report writing, and development of educational prescriptions. The candidates will work with individual students or small groups identified as problem readers. (F;S;SS)
- ELED 487. Methods of Teaching** **Credit 2(2-0)**  
 This course emphasizes an interdisciplinary approach to the course of study in various subject-matter areas. It is designed to enable students to observe master teachers and to test methods, materials, resources and techniques to facilitate student learning. This course should be taken in conjunction with the content courses preceding the student-teaching experience. Students are required to participate in a minimum of a 60 hour field experience in a classroom setting. Prerequisite: CUIN 102. (F;S)
- ELED 498. Student Teaching in the Elementary School** **Credit 12(0-24)**  
 This course provides candidates observation and supervised teaching experiences in the elementary grades (K-6). It includes the study of application and practice of methods, techniques and materials of instruction in a classroom situation will be demonstrated and observed. Students must be admitted to the Teacher Education Program. Students will meet periodically during student teaching for purposes of group discussion. This is a full semester experience. (F;S)
- ELED 557. Curriculum and Methods in Science and Mathematics in Early Childhood Education** **Credit 3(2-2)**  
 This course is a study of the underlying basic principles are underlying the science and mathematics curriculum. Consideration of appropriate materials and methods for kindergarten through primary grades will be given. Concepts and skills relating to the scope and importance of science and mathematics in the schools programs will be developed. There will be simulated teaching experiences. (F;S;SS)
- ELED 601. Theory and Techniques of Planning and Instruction** **Credit 3(3-0)**  
 This course requires the candidate to analyze theories of instruction, methods, and materials in the elementary school curriculum; observe classroom procedures; and participate in teaching demonstrations. Emphasis is placed on the application of effective instructional theory and practice, sound decision-making and multicultural education in a field-based content. (F;S;S)
- ELED 602. Language Arts through Children’s Literature** **Credit 3(3-0)**  
 This course is a study of models of teaching the English Language Arts at the elementary (K-6) level. Guided Reading, Integrated Instruction, Writers Workshop and Literature-Based Reading, Literature Circles and Writing Instruction will be featured. The writing process is emphasized. (F;S;S)
- ELED 603. Elementary Curriculum: Science/Social Studies/Health** **Credit 3(3-0)**  
 This course explores the scope and sequence of the elementary curriculum areas of science, social studies, and health. Instructional strategies studied include content integration, cooperative grouping and effective questioning techniques. Hands on guided discovery teaching as well as the use of children’s literature will be the major focus. (F;S;S)
- ELED 604. Mathematics Curriculum and Assessment** **Credit 3(3-0)**  
 This course is designed to develop the knowledge and skills to effectively teach math concepts to the young child through grade six. Methods will be presented in a developmental sequence that supports children’s construction of the concepts essential to understanding mathematics. Each new concept will be introduced with concrete materials and exploratory activities. (F;S;SS)
- ELED 605. Reading in the Elementary Classroom** **Credit 3(3-0)**  
 This course provides a framework for understanding the development of language and literacy in children. It is designed to help students learn to build on what children bring to oral language, reading and writing, and to enhance developmentally appropriate language and literacy activities. Literacy learning is presented as a language-learning process that is best acquired through functional, purposeful use of print. (F;S;S)
- ELED 607. Multiple Intelligences** **Credit 3 (3-0)**  
 This course utilizes the Multiple Intelligences Theory posited by Howard Gardner to provide effective classroom instruction that meets the needs of a wide variety of students. This course will also aid candidates in meaningful integration of visual arts, music, drama, dance, and movement throughout the elementary curriculum by providing a basic arts and movement knowledge base, clear reasons for integration, and specific arts integration principles. (F;S;S)

- ELED 608. Clinical Application of Instruction** **Credit 6(6-0)**  
 This course is an internship which emphasizes the development and use of teaching strategies, methods, skills, and assessments as they relate to the principles of teaching and learning, and the decision making process. Time will be spent on applying planning management skills to instruction discipline, behavioral concerns and decision making in instruction, the instruction of small groups and whole class. The student will use a variety of teaching strategies, methods skills, and instructional resources. (F;S;S)
- ELED 610. Knowledge of the Elementary Learner in the Differentiated Classroom** **Credit 3(3-0)**  
 This course is designed to provide candidates with the basic skills for effective classroom teaching. These skills include writing instructional objectives, planning for instruction, developing higher order questions, utilizing effective communication skills, understanding theories of learning and classroom management, and developing effective evaluation methods relative to the differentiated elementary classroom. Prerequisites: SPED 661, INST 605. (F;S;SS)
- ELED 611. Balanced Literacy for Elementary Learners I** **Credit 3(3-0)**  
 This course provides a framework for understanding the development of language and literacy in children. It is designed to help students learn to build on what children bring to oral language, reading and writing, and to enhance developmentally appropriate language and literacy activities. Prerequisites: SPED 661, INST 605. (F;S;SS)
- ELED 612. Mathematics Curriculum & Pedagogy I** **Credit 3(3-0)**  
 This course is designed to develop the knowledge and skills to effectively teach math concepts to the young child through grade six. Methods will be presented in a developmental sequence that supports children's construction of the concepts essential to understanding mathematics. Specifically, this course will provide elementary education candidates with an activity and project-based exploration of informal geometry in two and three dimensions. Prerequisites: INST 605, SPED 661 and ELED 610. (F;S;SS)
- ELED 613. Classroom Management** **Credit 1(1-0)**  
 This course provides the candidates with an opportunity to develop, synthesize, and implement a classroom management plan in their field experience. (F;S;SS)
- ELED 614. A Conceptual Approach to Teaching Mathematics for Elementary Teachers** **Credit 3(3-0)**  
 This course is designed to develop knowledge and skills to effectively teach mathematical concepts to young children from kindergarten through grade six. (F;S;SS)
- ELED 615. Balanced Literacy for Elementary Learners II** **Credit 3(3-0)**  
 This course is part 2 of ELED 611 Balanced Literacy I and emphasizes a study of models of teaching the English Language Arts at the elementary level. Prerequisite: ELED 611. (F;S;SS)
- ELED 616. Social Studies and Science Curriculum & Pedagogy** **Credit 3(3-0)**  
 This course explores the scope and sequence of the elementary curriculum areas of science, social studies and health. Prerequisite: ELED 610. (F;S;SS)
- ELED 617. Mathematics Curriculum & Pedagogy II** **Credit 3(3-0)**  
 This course is designed to develop the knowledge and skills needed to effectively teach math concepts to the young child through grade six. Methods will be presented in a developmental sequence that supports children's construction of the concepts essential to understanding mathematics. Prerequisite: ELED 612. (F;S;SS)
- ELED 618. Clinical Practices for 21<sup>st</sup> Century Elementary Classrooms** **Credit 6(6-6)**  
 A field experience which emphasizes the development and use of teaching strategies, methods, skills, and assessments as they relate to the principles of teaching and learning, and the decision making process. The student will use a variety of teaching strategies, methods, skills, and instructional resources. Prerequisites: All Phase I Course work. (F;S)
- ELED 619. Action Research for the Elementary Education Classroom** **Credit 2(2-0)**  
 This course will provide candidates an opportunity to look at the role of the teacher as researchers, emphasizing the use of research to inform practice. (F;S;SS)
- CUIN 629. Classroom Diagnosis in Reading Instruction** **Credit 3(3-0)**  
 Methods, techniques and materials used in the diagnosis of reading problems in the kindergarten-primary area through the intermediate level. Attention upon the pupil and the interpretation of physiological, psychological, sociological, and educational factors affecting learning to read. Opportunity for identification, analysis, interpretation on, and strategies for fulfilling the reading needs of all pupils. Prerequisite: CUIN 511. (F;S)
- CUIN 632. Basic Technology Literacy for K-12 Educators** **Credit 3(3-0)**  
 This course provides instruction in basic computer literacy skills and classroom integration for K- 12 educators. The instruction is designed to meet the North Carolina Department of Public Instruction's requirements for basic level computer competencies for public school teachers. Topics include word processing, spreadsheet usage, database design and management, teacher utilities, and fundamentals of modern computing. (F;S;SS)
- ELED 641. Teaching and Learning in a Multicultural Classroom** **Credit 3(3-0)**  
 The course focuses on curricular and pedagogical practices that embrace the intellectual, emotional, and contextual realities of a multicultural classroom, Holistic teaching methods that stress an inclusive, democratic, cooperative and multicultural environment consistent with a social justice framework will be emphasized in this course. (F;S;SS)

#### COURSE DESCRIPTIONS IN SPECIAL EDUCATION

- SPED 250. Introduction to Exceptional Children** **Credit 3(3-0)**  
 This course provides an overview of the laws, characteristics and instructional accommodations for individuals with low and high incidence disabilities served in diverse educational and community settings. (F;S;SS)

- SPED 254. Urban Schools** **Credit 3(3-0)**  
 This course explores issues confronting urban schools from a socio cultural perspective. Effective culturally responsive strategies and ways to involve parents in the urban school setting will be emphasized through case method instruction. (F;S;SS)
- SPED 255. Introduction to Mild Disabilities** **Credit 3(3-0)**  
 This course provides general approaches to teaching diverse students with mild disabilities to moderate disabilities in inclusive settings. A broad overview of individualized programming, instructional adaptation and modification, consultation and collaboration and use of research based strategies will be addressed. A 20 hour field experience is required. Prerequisite: SPED 250. (F;S;SS)
- SPED 260. Teaching Adolescents with Learning and Behavior Disorders**  
 This course focuses on effective teaching and learning strategies for secondary students with mild to moderate learning needs. The course emphasizes strategies that reflect a cognitive/metacognitive instructional approach to learning and behavior. Data management and software tools will be utilized to assess and monitor student progress. A 20 hour field experience in an approved learning environment is required. Prerequisites: Admission to Teacher Education, SPED 250. (F;S;SS)
- SPED 325. Orientation to Special Education** **Credit 1(1-0)**  
 This orientation course seeks to expose the freshman special education major to the diverse exceptional students and the settings in which they are served in the public schools. (F;S;SS)
- SPED 339. Teaching Students with Persistent Reading Problems** **Credit 3(3-0)**  
 This course offers explicit instructional techniques on how to teach phonemic awareness, phonics, word study, fluency, vocabulary and comprehension using research-based teaching strategies. Emphasis is placed on using assessment to monitor academic progress and guide instructional decision making in reading. Prerequisite: Admission to Teacher Education. (F;S;SS)
- SPED 340. Research Based Strategies for Teaching Mathematics** **Credit 3(3-0)**  
 This course provides knowledge of research based math instructional strategies for learners with special needs. Teacher candidates will understand how to instruct the essential components of mathematics. Assessment and progress monitoring techniques will be included. Prerequisites: Admission to Teacher Education, ELED 120, ELED 121. (F;S;SS)
- SPED 341. Teacher-Parent Community Resources for Exceptional Children** **Credit 3(3-0)**  
 This course examines the socio cultural factors affecting students, children and their families. Emphasis is placed on strategies for effective communication and collaborative planning with families, community agencies and teacher leadership skills used toward school improvement. Prerequisite: Admission to Teacher Education. (F;S;SS)
- SPED 351. Introduction to Learning Disabilities** **Credit 3(3-1)**  
 The identification and education of children and youth with learning disabilities, including teaching strategies, theories, programs and materials. (Field Experience). (F;S;SS)
- SPED 352. Introduction to Emotional Disturbance** **Credit 3(3-0)**  
 An introductory course in the education of students with behavioral and emotional disorders. Psychological, sociological, and educational implications will be emphasized. (F;S;SS)
- SPED 353. Introduction to Mental Retardation** **Credit 3(3-0)**  
 A study of the diagnosis and classification of mental retardation, including historical development, curriculum, and theoretical strategies. (F;S;SS)
- SPED 439. Behavior Management of Exceptional Children and Youth** **Credit 3(3-0)**  
 A survey of relevant research and techniques that are applicable for positive behavior support systems in learning situations for exceptional children and youth. (F;S;SS)
- SPED 442. Research Seminar** **Credit 1(1-0)**  
 Students will learn basic research skills and APA writing format. A mini collaborative research project will be conducted, analyzed, and written for journal submission. (F;S;SS)
- SPED 448. Diagnostic Assessment and Prescriptive Techniques for Exceptional Individuals** **Credit 3(3-0)**  
 This course utilizes a strength based approach in assessment, identification, IEP development and family involvement for diverse learners. The roles of assessment in the prereferral and referral process, placement, and overrepresentation of culturally different students in special education is a major focus. Prerequisite: Admission to Teacher Education. (F;S;SS)
- SPED 452. Assistive Technology for Students with High Incidence Disabilities** **Credit 3(3-0)**  
 This course introduces social history, policy and legal directives related to assistive technologies. Curriculum content will include assistive technology and application of Universal Design principles and strategies for the diverse and culturally different learner. Techniques to foster parental and community involvement will be discussed. Prerequisites: Admission to Teacher Education, SPED 250. (F;S;SS)
- SPED 464. Methods and Materials and problems in Teaching the Special Needs Child** **Credit 3(3-0)**  
 This course is designed to present an array of evidenced based practices for students with learning and behavioral challenges. Through assessment monitoring, candidates will document the positive impact of teaching on student learning. A 60 hour field experience in an approved learning environment is required. Prerequisite: Admission to Teacher Education. (F;S;SS)
- SPED 465. Teaching Exceptional In Inclusive Settings** **Credit 3(3-0)**  
 This course is designed for the general and special educator working with students with special needs in the inclusive classroom. Emphasis will be placed on collaboration and consultation utilizing response to intervention as a method of monitoring student progress. A 40 hour field experience in an approved learning environment is required. Prerequisites: Admission to Teacher Education and SPED 255. (F;S;SS)

- SPED 545. Special Education Seminar** **Credit 2(2-0)**  
 This course is designed for the participant to examine the major components of those teaching acts which research has associated with effectiveness in the classroom. Instructional practices and student experiences that are consistently productive in the classroom of our most effective teachers will be presented. (F;S;SS)
- SPED 546. Occupational Orientation and Training for the Exceptional Youth** **Credit 2(2-0)**  
 Background development of on-the-job training and transition planning, covering aspects of occupational adjustments in terms of practical academic experiences and employment opportunities. (F;S;SS)
- SPED 549. Student Teaching in the Special Education Setting** **Credit 12(12-0)**  
 This course provides special education teacher candidates with observation and supervised teaching experiences in special education grades K-12. It includes the study of effective teaching strategies as well as the application and practice of methods, techniques and materials for instruction in the classroom. Students will meet periodically during the semester experience for the purpose of group discussion, reflection and feedback. Prerequisites: Teacher Education Admission and PRAXIS II passage. (F;S)
- SPED 660. Introduction to Exceptional Children** **Credit 3(3-0)**  
 A survey of children and youth with special needs focusing on historical and current treatment. Emphasis will be on psychological, sociological, physiological, and educational needs of special needs children. (F;S;SS)
- SPED 661. Psychology of the Exceptional Child** **Credit 3(3-0)**  
 An analysis of psychological factors affecting identification and development of individuals with high and low incidence disabilities. (F;S;SS)
- SPED 662. Mental Deficiency** **Credit 3(3-0)**  
 An overview of mental retardation across the life span including causes, characteristics of at various functioning levels, testing, classification, and legal issues, and current “best practices” for school and community inclusion. (F;S;SS)
- SPED 663. Measurement and Evaluation in Special Education** **Credit 3(3-0)**  
 The selection, administration, and interpretation of individual tests; intensive study of problems in testing exceptional students. (F;S;SS)
- SPED 667. Specific Learning Disabilities** **Credit 3(3-0)**  
 This course will address specific learning problems associated with reading, writing, language, cognition, perception, attention, mathematics, social and emotional disabilities. (F;S;SS)
- SPED 668. Children & Youth with Behavioral Disorders** **Credit 3(3-0)**  
 A survey of various behavioral disorders including causes, characteristics, classification and legal issues, and interventions designed to permit functioning in least restrictive school and community environments. (F;S;SS)
- SPED 536. Adaptive and Inclusive Practices in Early Childhood** **Credit 3(3-0)**  
 This course is designed to develop assessment, individualized, program planning and intervention skills for working with young children with special needs and their families. Emphasis is placed on developmentally appropriate best practices in natural and inclusive environments and working with other professionals. A 20 hour field experience in an approved setting is required. Prerequisite: Admission to Teacher Education. (F;S;SS)

#### DIRECTORY OF FACULTY

- Barbara Butler** ..... **Assistant Professor**  
 B.S., Chapman University; M.S., St. Joseph University; Ed.D., Morgan State University
- Tyrette S. Carter** ..... **Associate Professor**  
 B.A., University of Virginia; M.Ed., Averett College; Ph.D., University of Virginia
- Charlesetta Dawson**..... **Clinical Faculty**  
 B.A., M.A., University of Northern Iowa; Ph.D., University of North Carolina at Greensboro
- Nicole Dobbins**..... **Assistant Professor**  
 B.A., M.A., Spelman College; Ph.D., University of Nevada at Las Vegas
- Kimberly Erwin**..... **Assistant Professor**  
 B.S., M.S., North Carolina A&T State University; Ph D., Virginia Polytechnic Institute and State University
- Robert Ferguson**..... **Associate Professor and Chairperson of the Department of Educator Preparation**  
 B.A., San José State University; M.S., Ph.D., Purdue University
- Louroy Floyd** ..... **Associate Professor and Assistant Dean**  
 B.S., North Carolina A&T State University; M.S., University of Wisconsin-LaCrosse; Ph.D., College of William and Mary
- Pamela I. Hunter** ..... **Associate Professor**  
 B.A., Livingston College; M.Ed., University of North Carolina at Greensboro; Ph.D., Ohio State University
- Sharon Hunter** ..... **Clinical Faculty**  
 B.S., North Carolina A&T State University; M.A., University of North Carolina at Charlotte; Ed.D., Nova Southern University
- Cathy Kea** ..... **Professor**  
 B.A., North Carolina Central University; MS., University of Wisconsin-LaCross; Ph.D., University of Kansas
- Dawn Waegerle**..... **Clinical Faculty**  
 B.A.,M.A., Oral Roberts University; Ed.D., College of Williams and Mary
- Kellee Watkins**..... **Assistant Professor**  
 B.S., Livingstone College; M.Ed., Ph.D., University of North Carolina at Greensboro
- Brian Williams**..... **Assistant Professor**



B.S., University of North Carolina at Greensboro; M.A.T., Ph.D., University of North Carolina at Charlotte  
**Ereka Williams** ..... **Associate Professor and Interim Chairperson**  
**of the Department of Administration and Instructional Services**  
B.S., M.A; Fayetteville State University; Ph.D., University of North Carolina at Greensboro

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## COLLEGE OF ENGINEERING

<http://www.ncat.edu/coe/index.html>

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**Robin N. Coger, Dean**

**Bala Ram, Associate Dean for Academic Affairs**

**Leotis Parrish, Assistant Dean of Student Affairs**

**Amanda McIver, Assistant Dean**

The College of Engineering at NC A&T State University is proud of our rich legacy of academic and research excellence and civic engagement. The College consists of the Departments of Chemical, Biological, and Bio Engineering; Civil, Architectural, and Environmental Engineering; Computer Science; Electrical & Computer Engineering; Industrial & Systems Engineering; and Mechanical Engineering; and the interdisciplinary Computational Science & Engineering program. These departments together offer ten (10) Bachelor of Science, eight (8) Master of Science and five (5) Doctor of Philosophy degree programs.

The College of Engineering at North Carolina A&T State University is the nation's leading producer of African American engineers at the undergraduate level, and ranks 5<sup>th</sup> in the percentage of undergraduate degrees awarded to women. Also, the College is 1<sup>st</sup> in the nation in the number of African-American tenured and tenure-track faculty (2014 ASEE survey).

### ACCREDITATION

The Bachelor of Science degrees in Architectural, Bioengineering, Chemical, Civil, Computer, Electrical, Industrial & Systems, and Mechanical Engineering are accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. The Bachelor of Science in Computer Science is accredited by the Computing Accreditation Commission of ABET, <http://www.abet.org>.

### DEGREES OFFERED

Architectural Engineering – Bachelor of Science

Bioengineering – Bachelor of Science

Biological Engineering\* – Bachelor of Science

Chemical Engineering – Bachelor of Science

Civil Engineering – Bachelor of Science

Computer Engineering – Bachelor of Science

Computer Science – Bachelor of Science

Electrical Engineering – Bachelor of Science

Industrial and Systems Engineering – Bachelor of Science

Mechanical Engineering – Bachelor of Science

\*Administered jointly with the College of Agriculture and Environmental Sciences

### MISSION

Our mission is to provide College of Engineering graduates with a command of engineering and computer science fundamentals, skilled in applying systems and diverse perspectives, and able to lead in the creation of innovative and collaborative solutions for the complex global challenges of society.

### ADMISSION

Admission into the college of engineering is coordinated through the University's Office of Admissions. Admission decisions are based on SAT or ACT scores, and High School GPA (weighted). For admission to all undergraduate programs in the college of engineering, the applicant must present the following minimum units of high school credit:

1. English – 4 units emphasizing grammar, composition and literature
2. Science – 3 units (including at least one unit in a biological or life science, one unit in a physical science, and one unit in Chemistry. At least one unit should have a laboratory component.)
3. Mathematics – 4 units (including Algebra I, Algebra II, Geometry, and an additional unit beyond Algebra II – e.g., Trigonometry, Math Analysis, etc.). Students entering with a deficiency in mathematics must begin with Pre-Engineering Mathematics, which is not counted towards the required semester hours for graduation. In this case the normal mathematics sequence is shifted one semester.
4. Social Sciences – 2 units (including at least one unit in United States History)
5. Foreign Language – 2 units are recommended in one foreign language.
6. Electives – 3 units (no more than 2 units in vocational subjects and 2 units in the disciplines of Music and Physical Education)

Transfer students are accepted into the college of engineering if the applicant has a minimum 2.5 GPA.

### TRANSFER CREDIT EVALUATION

Students are advised to receive prior approval from their academic advisor and department chairperson for courses to be considered for transfer credit from other colleges and universities. The Office of Transfer Articulation will transfer credits for general education courses. However, the authority and responsibility for the final decision for approval of departmental transfer credits rests with the academic departments.

## ADVISING

All students will be assigned an academic advisor. Students are expected to meet with their advisor for help with the following:

- Interpreting university, college and department regulations
- Providing general information, advice, and academic recommendations
- Planning course selections. Students must consult their advisor before registering for courses.
- Ensuring that students take electives that satisfy degree requirements
- Helping students to understand the degree to which they must assume responsibility for their academic program planning
- Providing academic and career guidance
- Referring students to appropriate individuals and offices when further assistance is needed.

## MATHEMATICS AND CHEMISTRY PLACEMENT

Admitted students must demonstrate proficiency in mathematics and chemistry before being permitted to take freshman Mathematics and Chemistry courses. Mathematics proficiency can be demonstrated through acceptable scores on SAT or ACT Math, AP Calculus, or Math Placement test. Likewise, Chemistry proficiency can be demonstrated through acceptable scores on High School Chemistry, AP Chemistry, or Chemistry Placement Test.

## ACADEMIC PROGRESSION POLICIES

The following policies apply to all engineering programs in the college of engineering and specifically refer to courses designated as Engineering Fundamentals (EF) courses. EF courses include Mathematics and Science courses required of all engineering majors as well as several introductory engineering and engineering science courses that are part of the Fundamentals of Engineering examination. The EF courses in the Mathematics and Science category are listed below; other EF courses subject to the policies stated below, are included in the Curriculum Guides for each undergraduate program.

- CHEM 106
- CHEM 107
- GEEN 100
- MATH 123
- MATH 131
- MATH 132
- MATH 224
- MATH 231
- MATH 431
- PHYS 241
- PHYS 242

### Minimum C Grade Policy

When an engineering program requires students to take any of the listed EF courses, students will be required to obtain a minimum grade of “C” in each such course to meet graduation requirements. Further, a minimum grade of “C” on any such course will be required to satisfy prerequisite requirements of subsequent courses. This applies both to courses that are explicitly required and those that are recommended as elective courses. Individual programs may have additional courses (identified as Gateway courses or otherwise) that also require a minimum grade of “C”. Please refer to the requirements for each program stated in this bulletin or in the program handbook available from the academic advisor or the department chairperson.

## PREREQUISITES

Students are advised to follow their prescribed curriculum, especially noting the prerequisite requirements. It should be noted that prerequisites are subject to change and will normally be effective immediately. It is the responsibility of the student to understand and follow prerequisite requirements. The department chairperson reserves the right to drop a student from an engineering course if the proper prerequisites are not satisfied. Any prerequisite waivers must be approved by the student’s advisor and department chairperson.

## LICENSURE AS A PROFESSIONAL ENGINEER

The North Carolina Board of Examiners for Engineers and Surveyors is charged with the responsibility of issuing a certificate of licensure to those determined to be properly qualified. In order to be licensed to practice engineering in North Carolina, an individual, in addition to paying the required fees, must be of good character and reputation, must satisfactorily pass the examinations administered by the Board, and must submit evidence of education, and a specific record of progressive engineering work of a nature and level acceptable to the Board.

To prepare for engineering licensure, all engineering majors are encouraged to prepare for and take the Fundamentals of Engineering (FE) Examination during their Senior Year. An FE review course is offered to all seniors in the college of engineering. After successful completion of the Fundamentals Examination, and upon completion of a minimum of four (4) years of progressive engineering experience, applicants are eligible to apply for the Engineering Principles and Practice Examination. Upon successful completion of the requirements for licensure, the Board will approve the applicant for licensure. For more information, visit the website [www.ncbels.org](http://www.ncbels.org).

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Department of Chemical, Biological, and Bioengineering

<http://www.ncat.edu/coe/departments/cbbe/index.html>

Stephen B. Knisley, Chairperson

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## DEGREES OFFERED

Bioengineering – Bachelor of Science  
Biological Engineering – Bachelor of Science  
Chemical Engineering – Bachelor of Science

Chemical Engineering, Biological Engineering and Bioengineering are core engineering disciplines and are central to the College of Engineering and the University's mission and its land grant heritage. The breadth of these disciplines affords us many natural links to other academic programs within and outside the College of Engineering. These interdisciplinary links have allowed us to develop strengths in emerging areas of engineering, while maintaining our excellence in more traditional areas. Each of the three Bachelor of Science programs is a four-year engineering program open to new college entrants and transfer students.

### **BIOENGINEERING PROGRAM (Biomedical Engineering)**

Bioengineering is the application of engineering principles and techniques to problems in medicine and healthcare. Bioengineering seeks to close the gap between engineering and medicine. It combines the design and problem solving skills of [engineering](#) with medical and biological sciences to improve healthcare diagnosis and treatment. Bioengineering has recently emerged as a distinct engineering discipline, compared to many other engineering fields. Such an evolution occurs as a new field transitions from being an interdisciplinary area of study among established fields, to being a discipline in itself. Much of the work in bioengineering consists of [research and development](#), incorporating knowledge from a broad array of fields such as healthcare, ethics, life sciences, natural sciences, mathematics, biosystems analysis and engineering design. Prominent bioengineering contributions include the development of [prosthetics](#) to restore limb function, [medical devices](#) such as surgical repair devices and implanted stimulators to restore heart and motor function, imaging systems such as [MRI](#) and ultrasound scanners to diagnose diseases, biotechnologies and biomaterials for tissue regeneration and surgical therapies, and systems for targeted [drug](#) delivery in the body.

### **MISSION**

The mission of the Bachelor of Science in Bioengineering program at North Carolina A&T State University is to prepare our students for the broad practice of bioengineering and for graduate education in bioengineering and the related fields of graduate study as well as professional schools.

### **EDUCATIONAL OBJECTIVES**

Within a few years after graduating from the Bachelor of Science in Bioengineering Program, the graduates are expected to have:

1. Performed effectively in bioengineering related positions in industry or in graduate/professional schools.
2. Demonstrated teamwork and leadership skills in using interdisciplinary approaches for solving problems.
3. Become active in their communities and in professional societies.
4. Enhanced their professional credentials through life-long learning.

### **PROGRAM REQUIREMENTS**

The Bioengineering major must complete 125 credit hours following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements.

### **ACCREDITATION**

The undergraduate program in Bioengineering, leading to the Bachelor of Science in Bioengineering degree, is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

### **CAREER OPPORTUNITIES**

According to the Bureau of Labor Statistics, Occupational Outlook Handbook, July 2016, the three largest employment areas for Biomedical Engineers are medical equipment and supplies manufacturing, research and development in the physical, engineering, and life sciences, and pharmaceutical and medicine manufacturing. Additional employment areas include electromedical and control instruments manufacturing, general medical and surgical hospitals, government agencies such as the Food and Drug Administration and National Institutes of Health, and research organizations. A 23% growth in jobs is projected through 2024 for this occupation, compared with 7% growth for all occupations combined and 4% growth for the engineering occupations combined. Examples of specialty areas within the field of biomedical engineering are Bioinstrumentation, Biomaterials, Biomechanics, Clinical engineering, Rehabilitation engineering, and Systems physiology. Bioengineering is often a good choice for students who wish to pursue further studies after graduation such as Masters and Ph.D. programs and Medical Schools.

### **BIOLOGICAL ENGINEERING PROGRAM**

(Collaborative between the College of Agriculture and Environmental Sciences and College of Engineering)

[http://www.ncat.edu/caes/departments/nars/BS\\_bio\\_eng.html](http://www.ncat.edu/caes/departments/nars/BS_bio_eng.html)

Biological Engineering (BIOE) is the application of sciences, mathematics, engineering and biological principles to advance human health and environmental sustainability. The BIOE program at N.C. A&T has two concentrations: Bioprocess Engineering and Natural Resources Engineering. Bioprocess Engineering focuses on plant and microbial biology, and biomanufacturing techniques to produce biofuels (e.g., ethanol and biodiesel), bioproducts (e.g., proteins and biodegradable polymers), biochemicals (e.g., biodetergents and adhesives) and pharmaceuticals (e.g., vaccine and antibiotics). Natural Resources Engineering involves soil and water conservation engineering; water resources management which includes drainage, irrigation, natural resources management, or environmental/ecological restoration; water quality, surface and sub-surface hydrology, and land management. Graduates are trained to design and evaluate biological systems to enhance human well-being and environmental health. Our

graduates are trained to embrace lifelong learning so that they can continue to be productive long after graduation, to meet the needs of an ever-changing global society. The BIOE program meets all pre-academic requirements for attending medical school.

#### **MISSION**

The mission of the Biological Engineering program is to provide its students with a quality Biological Engineering education and to satisfy the educational and technical needs of society on local, national and international levels.

#### **EDUCATIONAL OBJECTIVES**

Biological Engineering graduates are expected to attain the following within a few years of graduation:

- 1) Be competent in creative and contemporary engineering designs to advance environmental sustainability and human health,
- 2) Have disciplinary knowledge and skills to conduct engineering practice or pursue graduate studies,
- 3) Work effectively, inclusively and ethically in multidisciplinary teams,
- 4) Be active in professional societies and continuing engineering education through lifelong learning.

#### **PROGRAM REQUIREMENTS**

The Biological Engineering major must complete 120 credit hours following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements.

#### **ACCREDITATION**

The undergraduate program in Biological Engineering, leading to the Bachelor of Science in Biological Engineering (BS-BLEN) degree, is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC-ABET). <http://main.abet.org/aps/AccreditedProgramsDetails.aspx?OrganizationID=410&ProgramIDs=967>. Biological Engineering at North Carolina Agricultural and Technical State University was the first to obtain national accreditation at a Historically Black University in the USA. The program of study leading to the Bachelor of Science in Biological Engineering degree is accredited by the Engineering Accreditation Commission of ABET.

#### **CAREER OPPORTUNITIES**

A degree in this field prepares a student for careers in engineering design, management, research, consulting, sales, teaching, and product development, governmental agencies (federal and state), industries and foreign services.

#### **CHEMICAL ENGINEERING PROGRAM**

Chemical engineers have a broad enough background to do almost anything they choose. All branches of engineering emphasize the application of the principles of mathematics and physics to solve problems and create products for the community at large. Chemical engineers, however, are unique in emphasizing applications that are also founded in chemistry and biology. Chemical engineers are primarily concerned with processes and equipment in which material undergoes a change in composition or state. Chemical engineers often become employed by a company which manufactures a variety of chemical products, including plastics, forest products, gasoline, food, textile fibers, and pharmaceuticals. Chemical engineers also find career opportunities in the fabrication of microelectronic devices, the control of industrial and municipal wastes, and the application of biological science to produce chemicals from biomass through genetic engineering.

#### **MISSION**

The mission of the Bachelor of Science in Chemical Engineering program is to provide students with a learning experience in chemical engineering that will instill in them a lifelong sense of learning, social responsibility, and commitment to improving the quality of life for all people. The Department seeks to provide an atmosphere of dedicated service to the student by providing instruction, counseling, program planning, career guidance, and other supportive student services to facilitate their growth and success in the academic and professional communities.

#### **EDUCATIONAL OBJECTIVES**

After graduating from the Bachelor of Science in Chemical Engineering program, the graduates are expected within a few years of graduation to have:

1. Performed effectively in a chemical engineering related position in industry or in graduate/professional schools.
2. Demonstrated teamwork and leadership skills in using interdisciplinary approaches for solving problems.
3. Been active in their communities and professional societies.
4. Enhanced their professional credentials through life long learning.

#### **PROGRAM REQUIREMENTS**

The chemical engineering major must complete 128 credit hours following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements.

#### **ACCREDITATION**

The undergraduate program in Chemical Engineering, leading to the Bachelor of Science in Chemical Engineering (BSChE) degree, is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

## CAREER OPPORTUNITIES

A highly diverse set of professional opportunities exists for chemical engineers, ranging from design, construction, operations research, and product development to technical sales and management. A career in chemical engineering is often a route to top management. In addition to the industrial opportunities that await chemical engineering graduates, opportunities exist for graduate study in engineering as well as such diverse areas as medicine, law, business and biotechnology. In view of the many options open to its graduates, chemical engineering can be a particularly good choice for students who have broad interests, but have not yet defined their career objectives.

The chemical engineering curriculum is designed to give students the knowledge and scientific tools needed to prepare them for a career in industry or to go on to graduate school. It is also intended to be flexible enough to accommodate a broad range of educational interests. An option for chemical engineering students with advanced placement is a dual degree in Chemistry, Bioengineering or Biological Engineering.

### Department of Chemical, Biological, and Bioengineering Bachelor of Science in Bioengineering Major Code: BIEN

#### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
GEEN 111	1	GEEN 121	1
ENGL 100	3	ENGL 101	3
CHEM 106	3	PHYS 241	3
CHEM 116	1	PHYS 251	1
MATH 131	4	MATH 132	4
GEEN 100	2	BIOL 101	4
<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
Social / Behavioral Science	3	Humanities / Fine Arts	3
BMEN 220	3	MATH 341	3
MATH 231	4	CHEN 218	3
MEEN 104	2	CHEM 221	3
CHEM 107	3	CHEM 223	1
CHEM 117	1	GEEN 161	2
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
BMEN 310	3	BMEN 320	3
CHEN 300	3	BMEN 325	2
MEEN 230	3	ECEN 340	3
BIOL 301	4	BMEN 311	3
PHYS 242	3	BMEN 321	3
PHYS 252	1	BMEN 322	3
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>17</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
Global Awareness	3	African, American Culture / History	3
BMEN 480	3	BMEN 481	3
BMEN 411	4	Advance Engineering Elective	3
CHEN 312	4	Advance Science or Engineering Elective	3
<b>Semester Total</b>	<b>14</b>	Open Elective	3
		<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 124**

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

CHEM 106	MATH 132
CHEM 107	MATH 231
GEEN 100	MATH 341
MEEN 230	PHYS 241
ECEN 340	PHYS 242
BMEN 220	BIOL 101
BMEN 320	BIOL 301
MATH 131	

**Department of Natural Resources and Environmental Design  
Bachelor of Science in Biological Engineering (Bioprocess Engineering Track)  
Major Code: BLEN**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
GEEN 111	1	GEEN 121	1
ENGL 100	3	ENGL 101	3
CHEM 106	3	CHEM 107	3
CHEM 116	1	MATH 132	4
MATH 131	4	PHYS 241	3
GEEN 100	2	PHYS 251	1
<b>Semester Total</b>	<b>14</b>	CHEM 117	1
		<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
MEEN 230	3	African/American Studies Elective	3
MATH 231	4	BIOL 101	4
PHYS 242	3	CAEE 334	2
PHYS 252	1	MATH 341	3
Humanities Elective	3	GEEN 161	2
<b>Semester Total</b>	<b>14</b>	BIOE Elective	2
		<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
CHEN 200	4	Global Studies Elective	3
CAEE 362	3	ECEN 340	3
BIOL 221	4	BIOE 330	4
CHEN 312	4	CHEM 221	3
BIOE 440	3	CHEM 223	1
<b>Semester Total</b>	<b>18</b>	<b>Semester Total</b>	<b>14</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
Statistics Elective	3	BIOE 425	3
BIOE 422	3	BIOE 423	3
BMEN 411	4	BIOE 496	2
ISEN 260	2	BIOE Elective	3
BIOE 495	1	Social Behavioral Science Elective	3
CAEE 400	1	<b>Semester Total</b>	<b>14</b>

<b>Semester Total</b>	<b>14</b>	
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**Total Credit Hours: 120**

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C or better in the following courses:*

BIOE 330	GEEN 100
BIOE 423	ISEN 260
BIOE 495	ISEN 370
BIOE 496	ECON 305
CAEE 304	MATH 131
CAEE 334	MATH 132
CAEE 362	MATH 224
CHEM 106	MATH 231
CHEM 107	MATH 341
ECEN 340	PHYS 241
MEEN 230	PHYS 242

BIOE Electives:

BIOE 404, BIOE 415, BIOE 432, BIOE 426, BIOE 485, BIOE 490, CIEN 310 or other junior and senior level engineering courses approved by the faculty advisor.

Statistics Electives:

MATH 224, ECON 305, CAEE 304, and INEN 370

Humanities/Fine Arts:

ENGL 200, ENGL 201, ENGL 230, ENGL 231, ENG 333, ENG 334, MUSI 216, PHIL 101, PHIL 266, PHIL 267, SPCH 250, LIBS 202, MUSI 220, PHIL 104, PHIL 267, PHIL 103, PHIL 201 or courses approved by the faculty advisor.

Social/Behavioral Sciences:

BUED 279, ECON 200, ECON 201, FCS 134, FCS 181, FCS 260, HIST 103, HIST 104, HIST 105, HIST 106, HIST 107, HIST 130, HIST 206, HIST 207, HIST 216, HIST 231, JOMC 240, POLI 110, PSYC 101, SOCI 10, SOCI 200, SSFM 226 or courses approved by the faculty advisor.

**Department of Natural Resources and Environmental Design  
Bachelor of Science in Biological Engineering (Natural Resources Engineering Track)  
Major Code: BLEN**

**Curriculum Guide Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
GEEN 111	1	GEEN 121	1
ENGL 100	3	ENGL 101	3
CHEM 106	3	MATH 132	4
CHEM 116	1	PHYS 241	3



MATH 131	4	PHYS 251	1
GEEN 100	2	CHEM 107	3
<b>Semester Total</b>	<b>14</b>	CHEM 117	1
		<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
MEEN 230	3	African/ American Studies Elective	3
MATH 231	4	CAEE 334	2
PHYS 242	3	BIOE 216	3
PHYS 252	1	BIOL 101	4
Humanities Elective	3	GEEN 161	2
<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>14</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
BIOE 204	3	BIOE 360/CAEE 364	3
CAEE 362	3	BIOE 432/ SLSC 632	3
MEEN 441	3	BIOE 330	4
Global Studies Elective	3	BIOL 221	4
BIOE 440	3	MATH 341	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>17</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
Statistics Elective	3	BIOE 424	3
BIOE 400	3	BIOE 423	3
ISEN 260	2	BIOE 496	3
ENVS 422	3	BIOE Elective	4
ECEN 340	3	Social Behavioral Science Elective	3
BIOE 495	1	<b>Semester Total</b>	<b>14</b>
CAEE 400	1		
<b>Semester Total</b>	<b>16</b>		

Total Credit Hours: 120

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

BIOE 330	ISEN 370
BIOE 400	INEN 370
BIOE 423	MATH 131
BIOE 495	MATH 132
BIOE 496	MATH 224
CAEE 334	MATH 231
CHEM 106	MATH 341
CHEM 107	MEEN 441
ECEN 340	PHYS 241
ECON 305	PHYS 242
GEEN 100	CAEE 362

BIOE Electives:

BIOE 404, BIOE 415, BIOE 425, BIOE 426, BIOE 485, BIOE 490, CIEN 310, or other junior or senior level engineering courses approved by the faculty advisor.

Statistics Electives:

MATH 224, ECON 305, INEN 370, and CAEE 304

Humanities/Fine Arts:

ENGL 200, ENGL 201, ENGL 230, ENGL 231, MUS 216, PHIL 260, PHIL 266, PHIL 267, PHIL 268, SPCH 250, LIBS 202, MUSI 220, PHIL 265 or PHIL 315 or courses approved by the faculty advisor.

Social/Behavioral Sciences:

BUED 279, ECON 200, ECON 201, FCS 134, FCS 181, FCS 260, HIST 103, HIST 104, HIST 105, HIST 106, HIST 107, HIST 130, HIST 206, HIST 207, HIST 216, HIST 231, JOMC 240, POLI 110, PSYC 101, SOCI 10, SOCI 200, SSFM 226 or courses approved by the faculty advisor.

**Department of Chemical, Biological, and Bioengineering  
Bachelor of Science in Chemical Engineering  
Major Code: CHEN**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
GEEN 111	1	GEEN 121	1
ENGL 100	3	ENGL 101	3
MATH 131	4	MATH 132	4
CHEM 106	3	BIOL 101	4
CHEM 116	1	PHYS 241	3
GEEN 100	2	PHYS 251	1
<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
SBS / HFA*	3	SBS / HFA*	3
MATH 231	4	CHEN 220	3
CHEM 107	3	MATH 341	3
CHEM 117	1	CHEM 221	3
CHEN 200	4	CHEM 223	1
MEEN 260	2	CHEN 218	3
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
SBS / HFA*	3	CHEN 320	3
CHEN 300	3	CHEN 325	1
CHEN 312	4	CHEN 330	2
CHEM 441	3	CHEN 340	3
PHYS 242	3	MEEN 230	3
PHYS 252	1	ECEN 340	3
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
CHEN 430	3	CHEN 440	3
CHEN 400	3	CHEN 448	3
CHEN 410	2	CHEN Elective	3
CHEN 422	3	CHEN Elective	3
Advanced CHEM Elective	3	Advanced CHEM Elective	3
SBS / HFA*	3	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>17</b>		

**Total Credit Hours: 127**

\*Of the 12 hours of Social/Behavioral Sciences (SBS) and Humanities/Fine Arts (HFA) courses, at least 3 hours of African-American Studies and 3 hours of Global Studies are required; all courses must be from the approved general education list of courses.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

CHEM 106	GEEN 100
CHEM 107	GEEN 111
MATH 131	GEEN 121
MATH 132	MEEN 230
MATH 231	MEEN 260
MATH 341	ECEN 340
BIOL 101	CHEN 200
PHYS 241	CHEN 300
PHYS 242	CHEN 320

### COURSE DESCRIPTIONS IN BIOENGINEERING

**BMEN 220. Introduction to Biomedical Engineering****Credit 3(3-0)**

This course is an introduction to the application of engineering principles (including numerical methods) to solve problems in medicine, the integration of engineering with biology, and the emerging industrial opportunities. Examples from a variety of engineering disciplines will be provided. The ethical concerns associated with some emerging life science applications will be explored. Prerequisite: MATH 131, CHEM 106. Corequisite: BIOL 101. (F;S)

**BMEN 310. Biomaterials****Credit 3(3-0)**

This course is designed to introduce various biomaterials such as polymers, metals, and ceramics with the focus on their synthesis, characterization, structure-property relationship and surface modification. The biocompatibility issues of biomaterials will be discussed from different aspects such as protein adsorption, foreign body reaction, immune and inflammatory response and sterilization. Prerequisite: BIOL 101, BMEN 220, CHEM 221. (F;S)

**BMEN 311. Biomedical Imaging and Devices****Credit 3(2-2)**

In this course, students learn about the major imaging modalities used in clinical medicine and biomedical research. The physical principles including photon absorption, acoustic reflection, and nuclear magnetic resonance that produce contrast in each modality, and the devices, signals and analyses used to acquire images are discussed. Each student performs direct measurements on and analyzes data from living systems using an imaging system or device. Prerequisites: BMEN 220. Corequisites: BMEN 320, ECEN 340. (F;S)

**BMEN 320. Engineering Analysis of Human Physiological Systems****Credit 3(3-0)**

In this course engineering analyses are applied to cellular systems, the electrical and mechanical activity of the heart, the structure and function of the respiratory, nervous and cardiovascular systems, and basic reaction kinetics, pharmacokinetic modeling and tracer kinetics. Differential equations and quantitative predictive approaches such as those used in modeling electronics, fluid dynamics, solid mechanics and control theory describe organ system functions and parameters, integration into the larger function of homeostasis, adaptations during disease, and responses to medical devices and other therapies. Prerequisite: BMEN 220. (F;S)

**BMEN 321. Biomechanics****Credit 3(3-0)**

This course applies concepts of statics, dynamics, and mechanics of materials to human activities and tissues. Course topics will include musculoskeletal anatomy; analysis of forces in static biological systems; linear and angular dynamics of human movement; application of stress and strain analysis to biological tissues. Prerequisite: BMEN 220, Corequisite MEEN 230 or consent of instructor. (F;S)

**BMEN 322. Linear Systems in Bioengineering****Credit 3(3-0)**

Fundamentals of linear systems analysis as applied to problems in biomedical modeling and instrumentation. Topics covered include properties of biomedical systems and signals; representation of continuous- and discrete-time signals and system response; convolution; Fourier analysis in continuous and discrete domains; Laplace transform; Frequency response and its application in biomedical systems; filter design; circuit analogs to mechanical and thermodynamics systems and their applications in modeling

biomedical systems; applications in biomedical instrumentation; use of MATLAB to simulate and analyze biomedical linear systems. Prerequisites: GEEN 161, BMEN 310. (F;S)

**BMEN 325. Bioengineering Lab**

**Credit 2(1-2)**

This course provides the student with the ability to perform measurements on and analyze data from living systems. Principles of bioengineering are applied in multiple laboratory modules oriented toward in-vivo measurements and data analysis. Each student performs laboratory experiments and creates a professional-quality laboratory report including tables and graphs, images, data analysis, and statistics that document each module. Prerequisite: BMEN 220 (F;S)

**BMEN 411. Biotransport**

**Credit 4(2-2)**

This course explores the similarities between the fundamental principles of momentum, heat, and mass transfer, develops analogies between the fundamentals that apply at microscopic and macroscopic scales, and uses the fundamentals in conjunction with conservation laws to develop mathematical descriptions of physiological and engineering systems. Prerequisites: CHEN 300. Corequisite: CHEN 312. (F;S)

**BMEN 412. Introduction to Tissue Engineering**

**Credit 3(3-0)**

This course is designed to introduce students to an understanding of tissue engineering (TE), and the biomaterials, cells and growth factors used in TE. Specific applications include skin, nerve, bone, and soft tissue regeneration. Throughout the course ties are made between the topic of study and clinically relevant situations. Prerequisites: Senior standing or consent of instructor. (F;S)

**BMEN 421. Biomechanics of Organs, Tissues and Cells**

**Credit 3(3-0)**

Biomechanics encompasses the mechanics of the human body all the way to the cellular and molecular levels. This course covers the application of solid mechanics to describe the mechanical behavior of organs, soft biological tissues, and cells. The course introduces at the undergraduate level fundamental concepts and techniques of mechanics (e.g. stress, strain, constitutive relations), and of the structure and composition of tissues and cells. Prerequisites: Senior standing or consent of instructor. (F;S)

**BMEN 480. Senior Capstone Design I**

**Credit 3(2-2)**

In this first course in a two-semester design course sequence, students synthesize and extend the skills and knowledge acquired during undergraduate education toward a biomedical product or service in a team environment. Students learn key facets of medical product design including needs identification, engineering standards, identification of multiple realistic constraints, user requirements, prototyping and alternative solutions. By the end of this course students have an understanding of the unique requirements of this profession. Prerequisite: BMEN 325, BMEN 310, BMEN 320, BMEN 321. (F;S)

**BMEN 481. Senior Capstone Design II**

**Credit 3(1-4)**

This is the second half of the two-semester design course sequence in which the student synthesizes and extends the skills and knowledge acquired during undergraduate education toward designing a biomedical product or service. Student teams implement key facets of the medical product design process involving needs and user requirements, analyses leading to designs that meet stated constraints, appropriate codes and engineering standards, and consideration of alternative solutions. Prerequisite: BMEN 480. (F;S)

**BMEN 485. Special Topics/Projects in Bioengineering**

**Credit 3(1-4)**

Selected Bioengineering topics of interest to students and faculty. The topics will be selected before the beginning of the course and will be pertinent to the programs of the students enrolled. Projects may include design, analysis, testing, and/or experimental work. Prerequisites: Senior standing in BMEN or consent of instructor. (F;S)

**BMEN 498. Co-op Industrial Experience in Engineering**

**Credit 3-6(0-12)**

This course is a supervised learning experience in a private or governmental medical facility or a company that produces Biomedical products or services for the Biomedical industries. Students must complete a combination of three co-op/internship with at least one session being a semester co-op. Course requirements include the student's evaluation of each co-op/intern session and an oral report summarizing the work experiences will be presented to a faculty committee. Prerequisites: Senior standing in BMEN or consent of instructor. (F;S)

**COURSE DESCRIPTIONS IN BIOLOGICAL ENGINEERING**

**BIOE 114. Home and Farm Maintenance**

**Credit 3(1-4)**

This course provides instruction in the selection, sharpening, care and correct use of shop tools and equipment; woodworking and simple carpentry; simple electrical repairs; sheet metal work; electric arc and oxyacetylene welding; pipe fitting and simple plumbing repairs. (F;S)

**BIOE 204. Principles & Applications of Land Surveying**

**Credit 3(1-4)**

This course covers basic surveying knowledge, theories and practices of plane and topographic surveying, measurement (accuracy and errors), differential and profile leveling, stadia traverse, and an introduction to site planning and development. The integration of Global Positioning Systems along with field layout, orientation, land leveling to facilitate development and water management (Irrigation and Drainage) will be emphasized. Horizontal and vertical roadway layout will also be discussed. Prerequisite: MATH 102 or MATH 110 or MATH 131. (F;S;SS)

**BIOE 216. Geographic Information Systems**

**Credit 3(1-4)**

This course introduces Geographic Information System (GIS) concepts and applications. GIS theory is presented, and hands-on exercises are used to demonstrate the application and use of GIS in agriculture, arts and sciences, health, political sciences, engineering, technology, and other disciplines. (F;S)

- BIOE 330. Engineering Systems Analysis and Design** **Credit 4(2-4)**  
 This course introduces the analysis and the design of engineering systems. Concepts, methods, and procedures associated with the engineering design process are studied. Specific topics include project management; customer need identification; team behavior; concept generation and evaluation; embodiment design; modeling and simulation; finite element analysis software; material selection; engineering statistics; and legal and ethical issues in design. Prerequisites: CAEE 232 or MEEN 232 or equivalent. (F;S)
- BIOE 360. General Hydrology** **Credit 3(2-2)**  
 This course is an introduction to the study of surface and subsurface hydrology. Topics include hydrologic cycle, rainfall-runoff relationships, precipitation measurements and hydrographs, unit hydrograph analysis, flood routing, planning and design of runoff/detention systems, and computer applications in hydrology. Prerequisites: CAEE 362 or MEEN 316. (F;S;S)
- BIOE 400. Soil and Water Engineering** **Credit 3(2-2)**  
 This course studies the sustainable soil and water use by evaluating and applying present conservation practices and models. Water conveying and retaining structures, and soil conservation, drainage and irrigation systems are discussed and designed. The course emphasizes sound environmental design practices. Prerequisite: BIOE 360 or equivalent. (F;S;S)
- BIOE 404. Structures and the Environment** **Credit 3(1-4)**  
 This course covers the fundamentals of timber-framed building design and construction. Topics include, selection of materials, design of foundations, beams and columns, reinforced concrete, and environmental considerations, such as temperature, humidity, condensation, and ventilation. Prerequisite: CAEE 232 or MEEN 232 or equivalent. (F;S;S)
- BIOE 415. Water Management & Conservation** **Credit 3(3-0)**  
 The primary purpose of the course is to examine basic concepts and practices dealing with water issues, agricultural pollutants, irrigation and drainage, water conservation methods, and design and evaluation of water management systems at the field and watershed scale. This course will also evaluate the effects of management practices on yield, water quality and water use efficiency. The course will review basic principles of hydrology, erosion, saturated and unsaturated flow, soil-water-air-plant relationships, land planning and development. Prerequisite: SLMG 350 or equivalent, Senior standing. (F;S;SS)
- BIOE 422. Introduction to Bioprocess Engineering** **Credit 3(3-0)**  
 This course covers the engineering concepts for biological conversion of raw materials to food, pharmaceuticals, fuels, and chemicals. Emphasis is placed on energy balance, material balance, fluid flow and mixing, heat and mass transfer, bioreaction kinetics, design, analysis, instrumentation, and control of bioreactors. Prerequisites: BIOE 330 or equivalent. (F;S;S)
- BIOE 423. Fundamentals of Renewable Energy Systems** **Credit 3(2-2)**  
 This course discusses the production, utilization, and system design for energy in food and agricultural productions. Specific topics include: biogas, biomass, solar energy, energy analysis, conservation and management, and electric power supply and motor control. Energy production through photosynthesis and energy flow in biological systems are studied. Prerequisite: MEEN 241 or CHEN 312 and BIOL 221 or equivalents. (F;S;S)
- BIOE 424. Water Resources Engineering** **Credit 3(2-2)**  
 This course emphasizes the analysis and design of water resources systems. Topics include water resources planning and development, hydraulic structures, introduction to aquifer analysis and contamination, well development, pump evaluation and selection, water quality, best management practices, total maximum daily load, water laws, detention and retention ponds, wastewater management, and remediation. Prerequisite: BIOE 360 or equivalent. (F;S;S)
- BIOE 425. Instrumentation for Biological Systems** **Credit 3(1-4)**  
 Basic concepts of instrumentation for monitoring of biological systems will be studied. Specific topics include: selection and use of sensors and data acquisition systems for measuring various parameters of biological systems (temperature, pressure, flow and pH value), monitoring and control of bioreactors, analytic instruments for measuring cells and biomolecules (light and fluorescence microscopes, GC-MS, HPLC and elemental analyzer), and analysis of experimental data. Prerequisite: BIOE 330. (F;S;SS)
- BIOE 426. Food Engineering** **Credit 3(2-2)**  
 The general engineering principles of solids, fluids, and process equipment are discussed. Topics include energy, heat, enthalpy, psychrometrics, heat and mass transfer, drying and refrigeration of food products. Prerequisite: CHEM 107. (F;S;S)
- BIOE 432. Physical and Engineering Properties of Soils** **Credit 3(2-2)**  
 This course addresses the fundamental principles of soil physical properties and processes; movement of water in soil; soil dynamics; measurement and analysis of soil physical properties and processes; methods of analysis applicable to solving practical problems relative to agriculture, hydrological and environmental problems. Prerequisite: BIOE 360 or consent of instructor. (F;S;S)
- BIOE 440. Engineering Properties of Biological Materials** **Credit 3(2-2)**  
 This course covers engineering properties of plant and animal materials. Specific topics include structure and composition of plant and animal materials, elastic and viscoelastic properties, food rheology and thermal properties, aerodynamic and hydrodynamic properties, and electromagnetic properties. Prerequisites: BIOL 101 or equivalent; CAEE 232 or MEEN 232 or equivalent. (F;S;S)
- BIOE 485. Selected topics in Biological Engineering** **Credit 3(3-0)**  
 An in-depth lecture course covering several advanced topics in Biological Engineering. Topics are selected to match student interest and faculty expertise. A specific course description will be made available at the time such a course is offered. Prerequisite: Senior standing in Biological Engineering. (F;S;S)

**BIOE 490. Independent Study in Biological Engineering****Credit 1-3(0-6)**

An independent study course is completed on a single topic in Biological Engineering / Topics are selected to fit the mutual interests of students and faculty advisor. The study includes the design of an apparatus, a process, or a procedure. Final written report and an oral presentation of the work are required. Prerequisites: Permission of Instructor (F;S;S)

**BIOE 495. Engineering Design I****Credit 1(1-0)**

In this course, each student identifies a design project, defines the problem, collects all required resources and databases and outline the work plan. This project integrates design concepts from previous courses. Prerequisite: BIOE 330. (F;S;S)

**BIOE 496. Engineering Design II****Credit 2(2-0)**

In this course students complete the work plan established in BIOE 495. Prerequisite: BIOE 495. (F;S;S)

**COURSE DESCRIPTIONS IN CHEMICAL ENGINEERING****CHEN 200. Chemical Process Principles****Credit 4(3-2)**

This course is an introduction to the analysis of chemical processes with an emphasis on mass and energy balances. Stoichiometric relationships, ideal and real gas behavior are also covered. Topics also include an introduction to the first law of thermodynamics for open and closed systems and the solution of problems with comprehensive mass and energy balance equations. Prerequisites: CHEM 106, GEEN 100 (with a grade of "C" or higher). Corequisites: CHEM 107, MATH 132, and PHYS 241. (F;S;SS)

**CHEN 218. Analysis of Chemical Process Data****Credit 3(2-2)**

The course introduces contemporary computational methods and tools for designing experiments and analysis of data, frequency distribution and probability concepts. The course covers statistical inference, empirical models, strategies for efficient experimentation and their applications in chemical engineering process analysis. Statistical methods including error analysis, curve fitting and regression, analysis of variance, confidence intervals, hypothesis testing, and control charts are covered. Prerequisites: MATH 132 (with C or better). (F;S;SS)

**CHEN 220. Analytical Methods in Engineering****Credit 3(2-2)**

This course introduces contemporary computational methods and tools for numerical analysis in engineering. It includes numerical methods in differentiation, integration, interpolation, root-finding, linear and nonlinear regression. Linear algebra topics include matrix manipulation, solution of linear simultaneous equations, and solution of ordinary differential equations. Each topic involves projects with numerical computations using MATLAB. Prerequisites: MATH 132 (with a grade C or higher). (F;S;SS)

**CHEN 300. Fluid Mechanics****Credit 3(2-2)**

This course examines the continuum concept, fluid statics, mass and momentum balances, the Bernoulli Equation, dimensional analysis, pipe flow problems, the design and the selection of pumps and the three forms of drag. Boundary layer flows, compressible flow and flow measurement devices are reviewed. Prerequisites: MATH 231, PHYS 241 (both with C or higher). (F;S;SS)

**CHEN 310. Fundamentals of Thermodynamics****Credit 3(2-2)**

This is a basic course in fundamental thermodynamic principles. The topics covered include energy, heat and work, thermodynamic properties of substances, real and ideal gases, first and second laws of thermodynamics, introduction of power cycle and refrigeration cycle. Prerequisites: CHEN 200, MATH 231, PHYS 241 (all with C or higher). (F;S;SS)

**CHEN 311. Thermodynamics of Chemical and Phase Equilibria****Credit 3(2-2)**

This course consists of a systematic study of chemical reaction equilibria and phase equilibria. Use of fugacity, activity and chemical potential concepts for predicting the effect of such variables as temperature and pressure on equilibrium compositions are studied. Methods for measuring and estimating thermodynamic properties important to equilibrium calculations in real systems are also examined. Single component and multi-component systems are addressed. Students are introduced to the ASPEN PLUS chemical process simulation package and are trained to use the package to access and estimate thermodynamic properties of pure components and mixtures. Prerequisite: CHEN 310. (F;S)

**CHEN 312. Chemical Engineering Thermodynamics****Credit 4(3-2)**

The course is a study of thermodynamics principles with special emphasis on chemical process applications and equilibria. Topics included are the first and second laws, properties of single and multi-component systems, expansion and compression of fluids, heat engines, thermodynamics of flow processes, phase equilibria and chemical reaction equilibria. Prerequisites: CHEN 200, MATH 231 (both with C or higher grade) or consent of instructor. (F;S;SS)

**CHEN 320. Heat Transfer****Credit 3(2-2)**

The course covers the fundamentals of heat conduction, convection, radiation, boiling and condensation, and heat exchangers. Design and safety aspects of heat transfer equipment will be covered. Prerequisites: CHEN 300, MATH 431 (with a grade of "C" or higher). (F;S;SS)

**CHEN 325. Introduction to Chemical Process Simulation****Credit 1(0-2)**

The course is an introduction to the use of a chemical process simulator. Computer-aided mass and energy balances are emphasized. Ideal models for mixing, reaction and separation are used. Students learn to prepare process streams to feed the above processing operations. Students are introduced to computer-aided thermodynamic property analysis for pure and multi-component systems. Students study vapor-liquid and liquid-liquid equilibrium using various thermodynamic models. Currently, the ASPEN PLUS simulation package is used. Prerequisites: CHEN 200 (with C or higher grade), Corequisite: CHEN 312. (F;S;SS)

- CHEN 330. Chemical Engineering Laboratory I** **Credit 2(0-5)**  
 Students conduct laboratory studies on unit operations involving fluid mechanics, thermodynamics, and heat transfer. The studies include open-ended experiments and comparisons between theory and experimental results. Statistical analysis of data, experimental design, laboratory safety and quality reporting are stressed. Students are required to complete formal and informal reports and make oral presentations with visual aids. Prerequisites: CHEN 218, Corequisite: CHEN 320. (F;S)
- CHEN 340. Process Dynamics and Control** **Credit 3(2-2)**  
 The course covers the methods for controlling chemical process equipment including the dynamic response of process equipment and systems. Simulation methods are stressed in the design of control systems. Modes of control, controller characteristics and control loop design are stressed. Computer control and statistical process control are introduced. Prerequisites: MATH 431, CHEN 300 (with a grade of "C" or higher) and CHEN 312. Corequisite: CHEN 320. (S)
- CHEN 400. Mass Transfer Operations** **Credit 3(2-2)**  
 The course is a study of diffusion, diffusional operations and stagewise separation principles. Topics include the quantitative treatment and design of mass transfer equipment involving equilibrium stage contacting. Operations included are distillation, absorption, and extraction. Additional operations, such as, ion exchange, drying, humidification, chromatography and membrane separation may be included at the instructor's discretion. Prerequisite: CHEN 320 (with a grade of "C" or higher), CHEN 220, CHEN 312. (F,S,SS)
- CHEN 409. Introduction to Bioseparations** **Credit 3(3-0)**  
 The course is an introduction to the separation and purification of biochemicals. Separation processes are characterized as removal of insolubles, isolation of products, and purification or polishing. Processes covered include filtration, centrifugation, cell disruption, extraction, absorption, elution chromatography, precipitation, ultrafiltration, electrophoresis and crystallization. Students are required to complete a design project on a bioseparation process. Prerequisite: Senior standing in CHEN or consent of instructor. (F;S;SS)
- CHEN 410. Chemical Engineering Laboratory II** **Credit 2(0-5)**  
 The course is a continuation of CHEN 330 with emphasis on open-ended laboratory studies and comparisons between theory and experimental results. Topics include mass transfer, process dynamics and control, reaction kinetics, and reactor design. Statistical analysis of data, experimental design, laboratory safety and quality reporting are stressed. Students are required to complete formal and informal reports and make oral presentations with visual aids. Prerequisites: CHEN 320 (with a grade of "C" or higher), CHEN 330. Corequisites: CHEN 400, CHEN 422. (F;S)
- CHEN 412. Introduction to Green Engineering** **Credit 3(3-0)**  
 Students are introduced to the concept of green engineering and its application through industrial ecology, risk assessment and life-cycle assessment methodologies. Topics include green engineering at the macroscale (industrial sector), mesoscale (unit operations), and microscale (molecular interactions). Students will design an engineering process with emphasis on preserving and improving environmental quality. Prerequisite: Senior standing in CHEN or consent of instructor. (F;S;SS)
- CHEN 415. Overview of Energy and Fuels** **Credit 3(3-0)**  
 Students are exposed to the estimates of past and current fuel consumption in the United States and the world. Future projections of the global energy needs and the fuels likely to be utilized to meet these needs are discussed. These fuels include fossil fuels, synfuels, and fuels from renewable resources, such as, wind, solar and biomass. Students learn about processing of fuels for energy production. The course includes design of a fuel process with emphasis on economic and environmental impact. Prerequisite: Senior standing in CHEN or consent of instructor. (F;S;SS)
- CHEN 422. Chemical Reaction Engineering** **Credit 3(2-2)**  
 This course covers the fundamentals of chemical kinetics, rate theories and chemical reactor design. Homogeneous reactors are emphasized. Heterogeneous systems and catalysis are introduced. Students design chemical reactors for batch and flow systems. Prerequisites: CHEN 320 (with a grade of "C" or higher), CHEN 312, CHEM 221. (F;S)
- CHEN 425. Basic Food Process Engineering** **Credit 3(3-0)**  
 This course covers basic food processing and development. Topics include the different food groups, food preparation operations, process operations, new food developments, health hazards and their effects on humans. Prerequisite: Senior standing in CHEN or consent of instructor. (F;S;SS)
- CHEN 430. Process Design I** **Credit 3(2-2)**  
 The steps in creating a chemical process design from concept to completion and plant operation are studied. Topics included are engineering economics, simulation, process equipment design, ethics, and process safety. Students complete an open-ended process component design. Prerequisites: CHEN 320 (with a grade of "C" or higher), CHEN 312, CHEN 325; Corequisites: CHEN 400, CHEN 422. (F;S)
- CHEN 435. Introduction to Process Scaleup** **Credit 3(3-0)**  
 This course is designed to teach students how to 1) scaleup a process or model and 2) perform model, pilot and plant studies for translation of processes from model, laboratory and pilot plant information to the plant. The course will cover the different scaleup methods and how to establish viable process objectives. A general scaleup method is presented and a number of examples are worked as illustrations. Prerequisite: Senior standing in CHEN or consent of instructor. (F;S;SS)
- CHEN 440. Process Design II** **Credit 3(1-4)**  
 This capstone design course emphasizes the design of a complete chemical process including a literature survey, mass and energy balances, flow diagrams, equipment selection and design, and cost and economic analysis. Students develop and use computer-aided simulation to model process equipment design. Projects include extensive use of the ASPEN PLUS simulation package.

Oral and written presentations of the design projects are required. Prerequisites: CHEN 400, 422, 430, CHEM 441; Corequisite: CHEN 340 (F;S)

**CHEN 441. Computer-Aided Process Design** **Credit 3(3-0)**

Computer models of varying complexity are used to simulate the behavior of many unit-operations. Students complete computer-aided mass and energy balances for complete chemical plants. Selecting the best computer model for each process step is stressed. Simulation of the computer-aided design of a chemical process is included. Students learn to retrieve and plot physical property, thermodynamic and VLE data. Currently, the ASPEN PLUS simulation package is used. Prerequisite: Senior standing in CHEN or consent of instructor. (F;S;SS)

**CHEN 445. Introduction to Environmental Remediation** **Credit 3(3-0)**

The course introduces students to traditional and developmental methods for removal and detoxification of hazardous wastes at contaminated sites and from industrial waste streams. Chemical, thermal, biological and physical methods of remediation are covered. The course deals with hazardous wastes in soils, groundwater, surface water, wastewater ponds and tanks. The emphasis is on destruction, removal and containment methods using mathematical models for contaminate fate and transport. Recent advances in emerging technologies are also discussed. Each student will complete an environmental remediation design project. Prerequisite: Senior standing in CHEN or consent of instructor. (F;S;SS)

**CHEN 448. Process Safety, Health and Environment** **Credit 3(3-0)**

Fundamentals of chemical process safety and designing for the environment are introduced in this course. Topics include toxicology, industrial hygiene, source models, toxic release and dispersion models, fires and explosions, relief systems, hazard identification and risk analysis, environmental fate and transport, waste generation, pollution prevention, and regulatory requirements. Prerequisite: Senior standing in CHEN or consent of instructor. (F;S;SS)

**CHEN 455. Engineering Applications of Nanostructured Materials** **Credit 3(3-0)**

This course introduces students to modern chemical engineering material processing technologies. Chemical vapor deposition, crystallization, electrochemical deposition, electroplating and supercritical fluid-based processing techniques for the production of nanostructured materials are discussed. This course also reviews the effects of parameters (such as lattice structure, material composition, nucleation, crystal growth phenomena, chemical bonding, etc.) on the catalytic, electronic, optical and physical properties of metallic and ceramic materials. Prerequisite: Senior standing in CHEN or consent of instructor (F;S;SS)

**CHEN 464. Nuclear Fluid Mechanics and Heat Transfer** **Credit 3(3-0)**

This course provides discussions of thermal hydraulic characteristics of power reactors, thermal design principles, reactor heat generation, transport equations for single phase flow and two-phase flow. Analyses of fuel elements, two phase flow dynamics, two phase heat transfer, single heated channels, steady state flow and heat transfer analysis are given. Prerequisite: Senior standing in CHEN or consent of instructor. (F;S;SS)

**CHEN 465. Introduction to Polymer Science and Engineering** **Credit 3(3-0)**

This course introduces students to engineering technology of polymeric materials, and science and engineering of large molecules. Students learn about control of significant variables in polymer synthesis, and physical methods for characterization of molecular weight, morphology, rheology and mechanical behavior. Engineering applications include additives, blends and composites, natural polymers and fibers, thermoplastics, elastomers and thermosets, polymer degradation and stability, polymers in the environment, and polymers for advanced technologies, such as, membrane separations, biomedical devices, electronic and photonic industry. Prerequisite: Senior standing in CHEN or consent of instructor. (F;S;SS)

**CHEN 470. Introduction to Solids Processing and Particle Technology** **Credit 3(3-0)**

This course is an introduction to solids processing and particle technology. Topics included are properties of particles, size reduction, size enlargement, filtration, drying of solids, crystallization and flotation. Industrial examples will be emphasized. Prerequisite: Senior standing in CHEN or consent of instructor. (F;S;SS)

**CHEN 474. Interdisciplinary Design** **Credit 3(1-4)**

This course gives senior students the opportunity to work in interdisciplinary teams. Lectures will include ethics, teamwork and professional practice. Student teams complete an industry-based design project that is broader in scope than is normally available in CHEN 440. An oral presentation and a written report are required. This course may be taken as a substitute for CHEN 440. Prerequisite: CHEN 430. (F;S)

**CHEN 485. Selected Topics in Chemical Engineering** **Credit 3(3-0)**

An in-depth lecture course covering several advanced topics in chemical engineering. Topics will be selected to match student interest and faculty expertise. A specific course description will be available at the beginning of each semester that the course is offered. Prerequisite: Senior standing in CHEN or consent of instructor. (F;S)

**CHEN 490. Independent Study in Chemical Engineering** **Credit 3(0-6)**

An independent study project is completed on a single topic in chemical engineering. Topics are arranged to fit the mutual interests of the student and a faculty advisor. The study includes the design of an apparatus, a process, or a procedure. Final written and oral presentations of the work to a faculty committee are required. Prerequisites: Permission of instructor. (F;S)

**CHEN 498. Internship in Chemical Engineering** **Credit 3(3-0)**

This course consists of selected chemical engineering topics of interest to students and faculty. The topics will be defined in the course syllabus at the time when the course is offered. Prerequisite: Senior standing in CHEN or consent of instructor. (F;S;SS)

**DIRECTORY OF FACULTY IN CHEMICAL, BIOLOGICAL AND BIOENGINEERING**

**Yusuf G. Adewuyi** ..... **Professor**  
B.S., Ohio University; M.S., Ph.D., University of Iowa



<b>Niroj Aryal</b> .....	<b>Assistant Professor</b>
B.S., Tribhuvan University, Nepal; M.S.; Ph.D. Michigan State University	
<b>Narayan Bhattarai</b> .....	<b>Associate Professor</b>
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<b>Godfrey A. Gayle</b> .....	<b>Professor</b>
B.S., North Carolina A&T State University; M.S., Ph.D., North Carolina State University	
<b>Shamsuddin Ilias</b> .....	<b>Professor</b>
B.S., Bangladesh University of Engineering and Technology, Dhaka; M.S., University of Petroleum and Minerals; Ph.D., Queen's University; Professional Engineer	
<b>Vinayak N. Kabadi</b> .....	<b>Professor</b>
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B.S., Duke University; Ph.D., University of North Carolina at Chapel Hill	
<b>Jianzhong Lou</b> .....	<b>Professor</b>
B.S., M.S., Zhejiang Institute of Technology; M.S., Ph.D., University of Utah	
<b>Matthew McCullough</b> .....	<b>Associate Professor</b>
B.S., North Carolina A&T State University, Ph.D., University of Iowa	
<b>Abolghasem Shahbazi</b> .....	<b>Professor</b>
B.S., University of Tabriz; M.S., University of California at Davis; Ph.D., Pennsylvania State University (EIT)	
<b>Gary B. Tatterson</b> .....	<b>Professor</b>
B.S., University of Pittsburgh; M.S., Ph.D., Ohio State University; Professional Engineer	
<b>Leonard C. Uitenham</b> .....	<b>Professor</b>
B.S., M.S., Ph.D., Case Western Reserve University	
<b>Lijun Wang</b> .....	<b>Professor</b>
B.S., Zhengzhou University; M.Sc., South China University of Technology; Ph.D., National University of Ireland, Dublin	
<b>Yocheung Yun</b> .....	<b>Associate Professor</b>
B.S., M.S., Chonbuk National University, Ph.D., University of Cincinnati	
<b>Donghui Zhu</b> .....	<b>Associate Professor</b>
B.S., East China University of Science & Technology; M.S., Washington University; M.S., Florida State University; Ph.D., University of Missouri-Columbia	

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**Department of Civil, Architectural and Environmental Engineering**

<http://www.ncat.edu/coe/departments/caee/index.html>

**Stephanie Luster-Teasley, Chairperson**

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**DEGREES OFFERED**

Architectural Engineering – Bachelor of Science

Civil Engineering – Bachelor of Science

**ARCHITECTURAL ENGINEERING PROGRAM**

**MISSION**

The mission of the Bachelor of Science program in Architectural Engineering is to provide a quality educational experience through which students develop the technical and communication competencies, awareness of the profession, and work ethic expected of an entry-level architectural engineer. The educational program also prepares students with acceptable GPA's (typically 3.0, or higher) for admission to graduate school as an engineer or as an architect. The Educational Mission is to meet, or exceed, the educational requirements for Architectural Engineering programs as defined by the Accreditation Board for Engineering and Technology.

**EDUCATIONAL OBJECTIVES**

Recent graduates of the Architectural Engineering Program will distinguish themselves in their chosen discipline. To properly fulfill the mission, the program educational objectives of the Bachelor of Science program in Architectural Engineering are the following:

- Our graduates will be assigned progressively increasing technical responsibility by their supervisor.
- Our graduates will be recognized for their interdisciplinary perspective to problem-solving and for their teamwork and leadership skills.
- Our graduates will be active in a professional society and be involved in continuing education, making progress towards professional registration.
- Our graduates will contribute to society and to the diversity of their company and their profession by actively mentoring new engineering graduates.

**PROGRAM REQUIREMENTS**

The Architectural Engineering major must complete 120 credit hours following the approved departmental curriculum. Majors

must also satisfy all University and College of Engineering requirements. Included in the 120 semester hours are 6 semester hours of architectural engineering courses selected from one of four optional blocks – Structures, Energy and Building Environmental Systems, Construction Engineering, and Architectural Design & City and Urban Planning. To be eligible to enroll in advanced architectural design courses, a student must (a) have an accumulated GPA of 2.65 for unconditional enrollment, (2) have completed all prerequisites, and (3) be of senior standing. A student, with a GPA below 2.65, may petition the Departmental Design Committee for permission to enroll in Design III. The petition must be reviewed by the Design Committee and approved by the department before the student will be allowed to enroll in Design III.

#### **ACCREDITATION**

The undergraduate program in Architectural Engineering, leading to the Bachelor of Science in Architectural Engineering (BSAE) degree, is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC-ABET).

#### **CAREER OPPORTUNITIES**

Completion of the architectural engineering program provides training for a career in the engineering profession as related to the engineering design and construction of building systems. Training in architectural engineering prepares graduates to pursue a professional career in engineering practice or business. Graduates are also employed in offices of professional engineers engaged in building systems design which include the design of structural, mechanical, lighting, and electrical systems for buildings. In addition, graduates are employed as engineers in the offices of professionals engaged in engineering systems design for architectural projects. Architectural engineering graduates also have opportunities for careers with construction firms and building materials manufacturers where their architectural engineering training is a significant asset.

#### **DUAL DEGREE IN CIVIL ENGINEERING**

Some Architectural Engineering graduates may decide to pursue careers in areas that are traditionally Civil Engineering. Employment with the NC Department of Transportation is one example. For these students, a dual degree in Architectural Engineering and Civil Engineering will enhance their opportunities for career advancement. Since the two curricula are very similar, it is possible for an Architectural Engineering student to earn a second degree in Civil Engineering by completing two additional semesters of coursework.

#### **CIVIL ENGINEERING PROGRAM**

##### **MISSION**

The mission of the Bachelor of Science program in Civil Engineering is to provide an educational program attuned to the unique abilities of students that will prepare them to become productive civil engineers contributing to the welfare, quality of life, protection, and advancement of the community.

##### **EDUCATIONAL OBJECTIVES**

Recent graduates of the Civil Engineering Program will distinguish themselves in their chosen discipline. To properly fulfill the mission, the program educational objectives of the Bachelor of Science program in Civil Engineering are the following:

- **Educational Objective 1** – Our graduates will be gainfully employed as civil engineers, with designations of, at least, *Engineer Interns*, and will demonstrate the ability to work productively in the main areas of civil engineering.
- **Educational Objective 2a** – Our graduates will demonstrate expertise in a primary area of civil engineering and the ability to function effectively on intra-disciplinary and multi-disciplinary teams, or be in the process of completing post-baccalaureate studies or expanding their proficiency in civil engineering.
- **Educational Objective 2b** – Our graduates will continue to learn and adapt to changing technologies, procedures and concepts in civil engineering.
- **Educational Objective 3** – Our graduates will demonstrate that they possess the skills and knowledge necessary to function effectively in roles of leadership and service in the communities where they will live and work, and that they are contributing to the welfare, quality of life, protection, and advancement of the community.

##### **PROGRAM REQUIREMENTS**

The Civil Engineering major must complete 120 credit hours following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements.

The Civil Engineering program requires students to take design courses in at least four of the following major areas within Civil Engineering:

- Environmental Engineering
- Geotechnical Engineering
- Structural Engineering
- Construction Engineering
- Transportation Engineering
- Water Resources Engineering

#### **ACCREDITATION**

The undergraduate program in Civil Engineering, leading to the Bachelor of Science in Civil Engineering (BSCE) degree, is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC-ABET).

### CAREER OPPORTUNITIES

Civil engineers are employed in the planning, designing, construction and management of transportation, environmental, water resources, geotechnical and structural systems. They may work in private practice, government, and industry. Many civil engineers are licensed as professional engineers in the state in which they practice. Some civil engineers are employed in universities, teaching and research, which usually requires an advanced degree. Civil engineers are in demand in construction, transportation, and government, and Bachelor of Science degree holders in Civil Engineering generally receive excellent starting salaries.

### Department of Civil, Architectural and Environmental Engineering Bachelor of Science in Architectural Engineering Major Code: AREN

#### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
GEEN 100	2	ENGL 101	3
MATH 131	4	Math 132	4
CHEM 106	3	African American Electives	3
CHEM 116	1	PHYS 241	3
GEEN 111	1	PHYS 251	1
ENGL 100	3	CAEE 121	0
CAEE 101	2	<b>Semester Total</b>	<b>14</b>
<b>Semester Total</b>	<b>16</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
MATH 231	4	MATH 341	3
CAEE 231	3	MEEN 241	3
CAEE 230	1	AREN 281	2
PHYS 242	3	ECEN 340	3
PHYS 252	1	CAEE 232	3
AREN Elective (AREN 112 or CM 214/224)	3	CAEE 240	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>17</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
CAEE 362	3	AREN 387	3
CAEE 363	1	CAEE 304	3
AREN 382	3	CAEE 325	3
AREN 348	3	AREN 364	2
CAEE 330	3	AREN 363	1
CAEE 335	1	Social Science Elective	3
AREN 344	1	CAEE 401	0
AREN 343	2	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>17</b>		
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
AREN 480	2	AREN 483 ( <i>formerly AREN 486</i> )	2
AREN Electives (CAEE 436 or 481)	3	AREN 467	2
AREN 462	3	CAEE 334	2
Global Studies Elective	3	CAEE 450	3
CAEE 430	3	Humanities Elective	3
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>12</b>

Total Credit Hours: 120

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

CAEE 100	GEEN 161
CAEE 231	CHEM 106
CAEE 232	MATH 131
CAEE 240	MATH 132
CAEE 304	MATH 231
CAEE 334	MATH 341
CAEE 362	PHYS 241
ECEN 340	PHYS 242
MEEN 241	Science Electives
GEEN 100	

**Department of Civil, Architectural and Environmental Engineering  
Bachelor of Science in Civil Engineering  
Major Code: CIEN**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
GEEN 100	2	ENGL 101	3
MATH 131	4	MATH 132	4
CHEM 106	3	Social Science Electives	3
CHEM 116	1	PHYS 241	3
GEEN 111	1	PHYS 251	1
ENGL 100	3	CAEE 121	1
CAEE 101	2	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>16</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
MATH 231	4	MATH 341	3
CAEE 231	3	MEEN 241	3
PHYS 242	3	Humanity Electives	3
African American Studies	3	CIEN 281	1
CIEN 212	2	CAEE 232	3
PHYS 252	1	CAEE 240	3
CAEE 230	1	<b>Semester Total</b>	<b>16</b>
<b>Semester Total</b>	<b>17</b>		
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
CAEE 362	3	CIEN 320	3
CAEE 325	3	CAEE 304	3
CAEE 204	3	CAEE 364	3
CAEE 335	1	CAEE 430	3
CIEN 350	3	CIEN 310	3
CAEE 363	1	CIEN 311	1
CAEE 330	3	CIEN 321	1
CAEE 401	0	<b>Semester Total</b>	<b>17</b>
<b>Semester Total</b>	<b>17</b>		
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	

CIEN 483	1	CIEN 484 (formerly CIEN 499)	2
CAEE 436	3	CAEE 334	2
CAEE 450	3	Science Electives	3
CIEN 410	3	CIEN 450	3
Humanity Electives	3	CIEN Design Elective	3
CIEN 420	3	CIEN 401	1
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>14</b>

**Total Credit Hours: 128**

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

CAEE 100	GEEN 161
CAEE 231	PHYS 241
CAEE 232	PHYS 242
CAEE 240	MATH 131
CAEE 304	MATH 132
CAEE 334	MATH 231
CAEE 362	MATH 341
MEEN 241	CHEM 106
GEEN 100	Science Electives

### COURSE DESCRIPTIONS IN CIVIL, ARCHITECTURAL, AND ENVIRONMENTAL ENGINEERING

**CAEE 100. Fundamentals of Civil, Architectural, and Agricultural Engineering** **Credit 2(2-0)**

This course gives an overview of the three engineering professions housed within the CAEE department. The topics include careers in these engineering fields, professional registration, application of math to engineering, engineering design process as it applies to each program, units and measuring including both US and metric, written and oral communications, and an introduction to word processing, presentation software, and spreadsheets. (F;S)

**CAEE 101. Graphics in CAEE** **Credit 2(0-4)**

This course is critical to the development of visualization skills, which are important in engineering. Covered by the course are hand drawing skills including drafting, freehand sketching, perspective sketching, and lettering. Visualization skills are developed by stressing freehand techniques. Drafting skills will include plans, elevations, details, scaling, and units (US and Metric) and will relate to the three professions housed in the department. In addition to orthographic projections, oblique and isometric drawings will be taught. A brief introduction to computer graphics package such as AutoCAD will also be presented. (F;S)

**CAEE 102. Fundamentals of Computer Applications for Civil, Architectural, and Agricultural Engineering** **Credit 2(0-4)**

This course introduces the student to computer hardware and software and to basic operating systems. Spread sheet programs and other computational packages, such as MathCAD, are introduced and applied to the solution of practical engineering problems. Programming and algorithms are introduced as well as the Visual Basic language. (F;S)

**CAEE 121. Colloquium** **Credit 0(0-1)**

This course includes lectures, seminars and activities important to the retention and matriculation of civil and architectural engineering students. Topics covered include learning styles, group dynamics, and career development. Students are also provided with group advisement regarding department, college, and university-level policies and procedures. (F;S)

**CAEE 202. Sophomore Colloquium** **Credit 0(0-1)**

This colloquium assists students in their preparation for the End-of-Year exam required for CAEE Sophomores. Topics covered include: Math, Chemistry, Statics, Dynamics, and Strength of Materials. The course is pass/fail. (SS)

**CAEE 204. Fundamentals of Surveying** **Credit 3(2-3)**

This course covers the theory and practice of plane, boundary, and topographic surveying instruments, theory of measurements, differential and profile leveling, traverse calculations, and topographical surveying and mapping. An introduction to horizontal and vertical roadway layout, site planning and development, and an overview of Geographic Information Systems and Global

Posting Systems is also included. Prerequisite: MATH 102 or consent of instructor. (F;S)

**CAEE 215. Computer Aided Design**

**Credit 2(0-4)**

This course provides an introduction to a computer based design/drawing application such as AutoCAD. The student will learn how to use computers to develop 2D presentation drawings. Prerequisites: CAEE 102 and CAEE major or consent of the instructor. (F;SS)

**CAEE 230. Statics Lab**

**Credit 1(0-3)**

This course provides hands-on practical approaches for solving engineering problems. Students will work in groups for solving engineering statics problems. Students must take this course as a co-requisites to CAEE 231. (F;S)

**CAEE 231. Mechanics I – Statics**

**Credit 3(3-0)**

This course introduces the theory and application of engineering mechanics as it relates to statically determinant systems. Topics include basic forces, free body diagrams, vectors, resultants, equilibrium, pulley systems, rigid bodies, truss analysis, frame, pulleys, machines, internal forces in structural members, friction, center of gravity and centroids, moment of inertia, and composite bodies and areas. Prerequisites: MATH 131, PHYS 241 and CAEE 101. (F;S)

**CAEE 240. Numerical Methods and MATLAB**

**Credit 3(0-6)**

This course covers the basic of MAT LAB programming language and the use of the language in solving problems in linear algebra, matrix theory, and manipulation of polynomials, interpolation, differentiation and integration. Computational methods for the solution of mathematical problems are presented. Prerequisites: MATH 231, Co-requisite MATH 431. (F;S)

**CAEE 302. Junior Colloquium**

**Credit 0(0-1)**

This colloquium assists students in their preparation for the End-of-Year exam required for CAEE Juniors. Topics covered include: Math, Chemistry, Statics, Dynamics, and Strength of Materials, Thermodynamics, Fluid Mechanics, Electrical Circuits, Engineering Economics. The course is pass/fail. (SS)

**CAEE 304. Applied Statistics Reliability Decision Theory in CAEE**

**Credit 3(3-0)**

This course will introduce the students to probability theory and statistics. Reliability theory and Decision analyses are introduced. The course will incorporate simplified examples of applications of decision analysis, modeling of system response, and system reliability in the different areas of the civil and architectural engineering. The use of common statistical tools in the selection of design parameters will be presented. Students will be introduced to concepts of sampling distributions and confidence intervals. Prerequisite: Junior standing. (S)

**CAEE 325. Structural Analysis**

**Credit 3(3-0)**

This course introduces the concepts of structural analysis for determinate and indeterminate structural systems using both hand calculations and computer applications. Prerequisite: CAEE 232. (F;S)

**CAEE 330. Construction Materials and Methods**

**Credit 3(3-0)**

The course covers the manufacture and properties of mineral and bituminous cements and mineral aggregates. It explores the mechanical and chemical properties of Portland cement concrete, bituminous concrete, masonry units, and timber products. Also, this course will introduce the student to the use of construction materials in buildings. Prerequisites: CAEE 204 and CAEE 332. (F)

**CAEE 334. Engineering Mechanics II Dynamics**

**Credit 3(3-0)**

This course covers the basic principles of classical mechanics applied to the motion of particles, systems of particles, and rigid bodies; kinematics; rectilinear and curvilinear motions; kinetics: force, mass, and acceleration; energy and momentum principles. Topics include coordinate systems, work-energy, impulse-momentum, and selected topics from three-dimensional rigid bodies. The course also includes the use of computational software to solve numerical problems. Prerequisites: MATH 132, PHYS 242 and CAEE 331. (F;S)

**CAEE 335. Construction Materials Laboratory**

**Credit 1(0-2)**

This course offers an introduction to testing techniques for construction materials including concrete, masonry, wood, and bitumen and introduce the student to experimental to evaluate behavior of structural systems such as reinforce structural members. Prerequisite: CAEE 232. Corequisites: CIEN 330. (F)

**CAEE 350. Junior Fundamentals Review Seminar**

**Credit 1(0-2)**

This course will provide a review of the math, science, and engineering science concepts covered on the CAEE Junior Competency Exam. The course will culminate in re-examination using the CAE Junior Competency Exam. The course is pass/fail. Prerequisite: Consent of department chairperson. (SS)

**CAEE 362. Engineering Fluid Mechanics and Hydraulics**

**Credit 3(3-0)**

This is the first level engineering fluid mechanics course which also integrates fundamental hydraulics concepts and applications pertinent to Civil, Architectural, and Agricultural Engineering. Topics include properties of fluids, hydrostatic pressure and manometry, forces on submerged surfaces, Pascal's Law, Archimedes' Principle, the Bernoulli and energy equation for steady state flow, Reynolds transport theorem, energy and hydraulic grade lines, head loss calculations, momentum principle, flow and velocity measurement, pumps, branched and looped pipe systems and analysis of open channel flow, sub and super-critical flow, hydraulic jump, and dimension analysis. Prerequisites: CAEE 231 and MATH 231. (F;S)

**CAEE 363. Engineering Fluid Mechanics and Hydraulics Laboratory**

**Credit 1(0-2)**

This course includes a set of laboratory exercises designed to reinforce and demonstrate engineering fluid mechanics and hydraulics concepts. Topics include graphical analyses of experimental data, fluid properties, manometry, and hydrostatic forces on surfaces. Bernoulli and energy equations demonstrations, impact of a jet, orifice flow and coefficients of contraction, velocity

and discharge, pipe friction, broad and sharp-crested weirs, water surface profiles, Hydraulic jump, and flow through sills and throats. Prerequisite: CAEE 362 or consent of instructor. (F;S)

**CAEE 364. Engineering Hydrology** **Credit 3(3-0)**

This is a study of hydrologic cycle with emphasis on the application of surface and subsurface hydrology in water systems. Topics include hydrologic cycle and hydrologic abstractions, Rainfall-runoff relationships, characterization of watersheds, unit hydrograph analysis, stream flow measurement, flood routing, storm water management and design of detention systems, and frequency analysis of hydrologic data. Prerequisite: Junior standing. (S)

**CAEE 400. Engineering Topics Review** **Credit 1(1-1)**

This course covers and reviews the engineering topics included in the General Engineering Sections of the Fundamentals of Engineering (FE) exam. The course emphasizes extensive problem solving and helps students prepare for the FE exam. Prerequisite: CAEE 232. (F;S)

**CAEE 401. Engineering Topics Review II** **Credit 0(0-2)**

This course is a review course for students taking the Fundamentals of Engineering Exam. (F;S)

**CAEE 436. Reinforced Concrete** **Credit 3(3-0)**

This course is a continuation of CAEE 430 emphasizing the concepts of reinforced concrete theory. The design of doubly reinforced beams, continuous beams, and beam-column behavior of concrete columns is addressed. Such topics as beam deflections, reinforcing bar bond stresses, and development lengths are also presented. Prerequisite: CAEE 325. (F)

**CAEE 450. Construction Engineering and Management** **Credit 3(3-0)**

This course is an introduction to construction engineering emphasizing project site and field engineering and construction cost estimating, including project planning methodology, management and material testing. The course will also introduce construction equipment and methods, contracts, project specifications, general conditions and requirements including project safety and environmental health and other related topics. Prerequisite: Senior standing. (F;S)

**CAEE 480. Geospatial Data Concepts and Applications** **Credit 3(3-0)**

This course provides a broad overview of the geospatial data, its acquisition, use and maintenance for various types of applications. It includes the integration of geographic information systems (GIS), the global positioning system (GPS), photogrammetry, and remote sensing and image analysis. GIS, GPS, airborne and satellite imagery, and the use of applicable software and equipment are also covered. Prerequisites: BOIE 216, GEOM 310 or consent of instructor. (F;S)

**CAEE 481. Construction Engineering** **Credit 3(3-0)**

This course is an introduction to construction engineering emphasizing project site and field engineering and construction cost estimating, including project planning methodology, management and material testing. The course will also introduce construction equipment and methods, contracts, project specifications, general conditions and requirements including project safety and environmental health and other related topics. Prerequisite: Senior standing. (F)

**CAEE 482. Construction Project** **Credit 3(1-4)**

This course is an introduction to engineering project management, with particular emphasis placed on the project planning and control of the engineered design project and systems including buildings and other engineered structures. Topics covered include, project planning, control, resource leveling and optimization. Manual and automated methods will be addressed. Prerequisite: CAEE 481. (S)

**CAEE 485. Special Topics in Civil and Architectural Engineering** **Credit 3(3-0)**

Study is arranged on a special civil and architectural engineering topics of interest to students and faculty. Topics are to reflect new technologies on the civil and architectural engineering areas. (DEMAND)

**CAEE 496. Special Projects in Civil and Architectural Engineering** **Credit 3(3-0)**

Study is arranged on special civil and architectural engineering projects of interest to students and faculty. Projects discussed can be design, analysis or experimental studies. (DEMAND)

## ARCHITECTURAL ENGINEERING

**AREN 112. History of American Architecture** **Credit 3(3-0)**

This course is an illustrated lecture course. It provides an analytical study of the major architectural and engineering developments that have shaped the American built environment from the arrival of the Europeans to the present. (F)

**AREN 221. Building Sanitation and Fire Protection** **Credit 3(3-0)**

This course is the study of the following: waste water, water supply and distribution; plumbing systems and fixtures; soil, water and venting systems; pipe sizing fire protection systems for buildings and pumps, sprinklers, gravity and pressure vessels, and controls. Lecture-problems course. (S)

**AREN 231. Materials and Methods of Construction** **Credit 3(3-0)**

This course will introduce the student to the use of construction materials in buildings. An evaluation of both the function and form of the major building systems such as walls, floors and roofs will be presented. (F)

**AREN 281. BIM and Introduction to Building Systems** **Credit 2(0-4)**

This course presents an advanced series of problems for study of space analysis, space organization, form and function. The student applies the integration of design, construction methods, and methods of the organization of structural components to a design project. Prerequisite: CAEE 101. (S;F)

**AREN 315. Advanced BIM** **Credit 1(0-3)**

An advanced comprehensive building design course integrating architectural and engineering skills. This course is a course focused on Building Information Modeling (BIM) implementation on building design and construction projects. This course will

explore how implementing BIM's new technology in the building design toward a collaborative building approach and how this relationship can lead to better project outcomes and maximize efficiency. Prerequisites: AREN 215. (S)

**AREN 326. Structural Engineering Laboratory** **Credit 1(0-2)**

This laboratory course will introduce the student to laboratory methods in experimental structural analysis and tests to reinforce structural behavior. Prerequisite: CAEE 232. Corequisite: CAEE 325. (F;S)

**AREN 342. Fundamentals of Illuminating Engineering** **Credit 2(2-0)**

A study of the basic principles of illumination, lighting concepts, analysis, design, and the application of these principles to luminous environments. Topics include physics of light, vision, and visibility, units and terminology, light sources, numerical methods, and the application of these principles to lighting design. Prerequisites: PHYS 242, AREN major or consent of the instructor. Corequisite: AREN 344. (F)

**AREN 343. Heat Transfer and Applied Thermodynamics** **Credit 2(2-0)**

This course provides the concepts of thermodynamics and heat transfer. Throughout the course, applications of these concepts will be discussed. In particular, real world applications include heating and cooling buildings, and refrigeration. Specifically, the course covers the various forms of energy, how energy is transformed from one form to another, and the laws that govern energy transfer. Prerequisite: MEEN 241.(F)

**AREN 344. Lighting and Electrical Power Laboratory** **Credit 1(0-2)**

This laboratory provides hands on experiences that supplement the topics presented in AREN 448. Corequisite: AREN 348. (F;S)

**AREN 345. Electrical Systems for Buildings** **Credit 2(2-0)**

This course includes the analysis and design of electrical systems utilizing the National Electrical Code. The topics include basic circuits, ac and dc single phase, three-phase power, transients, capacitance and inductance, branch circuits, panelboards, motors, and electrical distribution in buildings. The course also covers design topics of system sizing, overcurrent protection, and voltage drop as they apply to electrical systems design for a building. Prerequisites: MATH 132 and PHYS 242, AREN major or consent of the instructor. Corequisite: AREN 347. (S)

**AREN 347. Electrical Systems for Buildings Laboratory** **Credit 1(0-2)**

This laboratory provides hands on experiences that supplement the topics presented in AREN 445. Corequisite: AREN 345. (F;S)

**AREN 348. Fundamentals of Illumination and Electrical Power** **Credit 3(3-0)**

This course combines the basic study of building lighting and electrical distribution systems. Topics include light sources, numerical methods for lighting design, energy efficiency, basic electric circuits, single and three phase power, panel boards, circuit design and protection, motors loads, and transformers. Prerequisite: 242. Corequisite: AREN 344. (F;S)

**AREN 361. Heating, Ventilation, and Air Conditioning Principles** **Credit 2(2-0)**

This course is the study of the basic concepts of energy and building systems design. The course covers the subjects of psychrometrics and human comfort in buildings. The topics include heat transfer functions, heating loads, cooling loads, and the refrigeration cycle. Prerequisites: MATH 131 and PHYS 242. Corequisite: AREN 363. (S)

**AREN 363. HVAC Principles / Systems Laboratory** **Credit 1(0-2)**

This laboratory provides hands on experiences that supplement the topics presented in AREN 364. Corequisite: AREN 364. (S;F)

**AREN 364. HVAC Principles and Systems** **Credit 2(2-0)**

This course is the study of heating, ventilation, and air conditioning (HVAC) principles and systems. Topics include heating loads, cooling loads, psychrometrics, the refrigeration cycle, energy efficiency; residential, commercial, and industrial HVAC systems; and air distribution. Prerequisites: PHYS 242, AREN 343, Corequisite: AREN 363. (F;S)

**AREN 382. Architectural Design I** **Credit 3(0-6)**

The student is introduced to the basic fundamentals of design, which includes space relationships, form, and visible structure. The course includes perspective drawing, plans, elevations, sections, shades, and shadows. Prerequisites: MATH 132, CAEE 232, and junior standing. (F)

**AREN 387. Architectural Design II** **Credit 3(0-6)**

This course presents a series of problems in space organization and planning. Presentation composition and the integration of structures in the design process are studied. Prerequisite: AREN 382 or junior standing. (S)

**AREN 462. Heating, Ventilation, and Air Conditioning Systems** **Credit 2(2-0)**

This course includes heating, ventilating, and central air conditioning system components, all air and water systems, and packaged systems. It covers the introduction to air-side and water-side system design concepts, space air diffusion, and energy recovery systems. Prerequisites: AREN 361, AREN major or consent of the instructor. Corequisite: AREN 464. (F)

**AREN 462. HVAC Design and Plumbing Systems** **Credit 3(3-0)**

The course offers a complete and practical introduction to the design and operation of mechanical and plumbing systems in buildings. Prerequisite: AREN 364. (F;S)

**AREN 464. HVAC Systems Laboratory** **Credit 1(0-2)**

This laboratory provides hands on experiences that supplement the topics presented in AREN 462. Corequisite: AREN 462. (F;S)

**AREN 470. Energy and the Environment** **Credit 3(3-0)**

The course includes readings and discussions about energy, its origins, supply, transportation and use. The effect of fossil fuels on the environment and environmental protection regulations are discussed. Renewable energy and the impact of energy costs on economic growth are investigated. Prerequisite Senior standing or Consent of Instructor. (DEMAND)

**AREN 472. Energy Conservation in Buildings** **Credit 3(3-0)**

The energy use patterns in schools and hospitals are studied in terms of the relevant IES and ASHRAE Standards. The course



presents various utility rate structures and energy auditing techniques along with the effect of operation and maintenance on the building energy use. Various retrofit options and computerized energy management systems are investigated culminating in design projects. Prerequisite: AREN 364, AREN 448, or consent of instructor.

**AREN 480. Senior Project I - Design Development** **Credit 2(0-6)**

This course teaches students how to prepare the preliminary and design development documents for a building project. The materials covered include engineering calculations, preliminary and design development drawings, and preliminary cost estimate. Computer programs are used to assist the students with program development, floor plan development, site plan development, and the conceptual cost estimate. Prerequisites: Senior standing, AREN 382, CAEE 430, AREN 364, and 348 or consent of chairperson. Corequisite: AREN 462. (F)

**AREN 481. Senior Project II - Construction Documents** **Credit 3(0-6)**

This course teaches the student how to prepare a final set of discipline specific construction documents, including engineering calculations production drawings, and specifications. The student will discuss contracts, ethics, and construction administration as they relate to the project. Prerequisite: Senior standing, AREN 364, or AREN 383, or CAEE 430, or AREN 348 or consent of chairperson. (S)

**AREN 498. HVAC Design and Hydronic System Design** **Credit 3(3-0)**

The course offers a complete and practical introduction to the design and operation of mechanical and plumbing systems in buildings. Prerequisite: AREN 364. (F;S)

**AREN 542. Lighting Applications** **Credit 3(0-6)**

This course applies the principles of lighting design to the engineering of lighting systems. It also develops methodology for solving problems in both interior and exterior lighting. (DEMAND)

**AREN 545. Electrical Systems for Buildings II** **Credit 3(3-0)**

This course is a continuation of AREN 542. It covers the design of safe and reliable electrical distribution systems for commercial and industrial buildings. The topics included are circuit protection, feeder and branch circuit design, and fault analysis. Prerequisite: AREN 448. (DEMAND)

**AREN 550. Engineering Project Management** **Credit 3(3-0)**

This course is an introduction to engineering project management, with particular emphasis placed on the planning and control of the engineering design of buildings. Topics covered include estimating, contracts, planning, resource leveling, and project control. Manual and automated methods will be addressed. Prerequisites: AREN 231, senior standing or consent or instructor. (F;S)

**AREN 554. Facilities Management** **Credit 3(3-0)**

This course deals with long range and master planning for facilities, including space forecasting, project management, and post occupancy evaluation. (DEMAND)

**AREN 562. HVAC Systems Design** **Credit 3(3-0)**

This course addresses the design methodology, sizing, and selection techniques of pumps, fans, heat-exchanges, and air washers, cooling towers and terminal units. Duct and pipe design methods are covered. Primary and secondary hydronic systems are covered, including system air-control techniques. Design projects are required. Prerequisite: AREN 364 and senior standing. (DEMAND)

**AREN 570. Energy and the Environment** **Credit 3(3-0)**

The course includes readings and discussions about energy, its origins, supply, transportation and use. The effect of fossil fuels on the environment and environmental protection regulations are discussed. Renewable energy and the impact of energy costs on economic growth are investigated. Prerequisite Senior standing or consent of Instructor. (DEMAND)

**AREN 572. Energy Conservation in Buildings** **Credit 3(3-0)**

The energy use patterns in schools and hospitals are studied in terms of the relevant IES and ASHRAE Standards. The course presents various utility rate structures and energy auditing techniques along with the effect of operation and maintenance on the building energy use. Various retrofit options and computerized energy management systems are investigated culminating in design projects. Prerequisite: AREN 364, AREN 448, or consent of instructor. (DEMAND)

**AREN 575. Energy Management for Buildings** **Credit 3(3-0)**

This course involves the study of renewable and nonrenewable energy sources for buildings, energy estimating methods (manual and automated) optimizing building envelop design and comparative energy requirements for various HVAC systems. The student utilizes the solar energy F-chart method and design of efficient lighting and electrical systems to solve design problems. Topics include Energy Management and Control Systems (EMCS) waste heat recovery, energy audit procedures for existing buildings, life cycle cost and techniques. Prerequisite: Senior standing or consent of instructor. (DEMAND)

**AREN 582. Architectural Design III** **Credit 3(0-6)**

This course presents a series of problems for study of space analysis, space organization, form and function. The student learns how to integrate the architectural and the structural components. The course introduces the student to computer-aided drafting and design. Prerequisite: AREN 483, MEEN 336, senior standing. (DEMAND)

## CIVIL ENGINEERING

**CIEN 101. Civil Engineering Professional Issues & Problem Solving** **Credit 1(0-2)**

This course provides the student with some exposure to civil and environmental engineering problems. Lectures from faculty and consulting engineers are components of this course as well as working in teams and presentation techniques. This course will provide help in engineering applications of calculus, chemistry, and physics. In addition, issues related to civil engineering licensure and professional practice will be discussed. Prerequisite: Freshman standing. (F;S)

- CIEN 102. Professional Issues & Problems in Civil Engineering** **Credit 1(0-2)**  
 This course provides the student with exposure to civil and environmental engineering issues and problems. This is accomplished with lectures from faculty and professional engineers and other practicing civil engineers. This course will provide help in engineering applications of Calculus II, and/or Physics I and Chemistry. Prerequisite: Freshman standing. **(F;S)**
- CIEN 212. Fundamental Principles in Environmental Engineering** **Credit 3(3-0)**  
 This course is an introduction of biological, chemical, and physical principles that are foundational in environmental engineering. Topics include mass balance, biological and microbiological processes, solution precipitation reactions, Henry's law, chemical kinetics, diffusion, and mass transfer. Prerequisites: CHEM 106, MATH 131 and 132. Corequisite: MATH 431. **(F;S)**
- CIEN 280. Civil Engineering Graphics and Computer Aided Design** **Credit 3(1-4)**  
 This course is critical to the development of important visualization skills in Civil Engineering (CE). Covered in the course are hand-drawing skills including engineering lettering, orthographic projections, oblique and isometric drawings. A brief introduction to computer graphics package such as AutoCAD will also be presented. This course will also provide an introduction to a computer based design/drawing application such as AutoDesk and AutoCAD or Bentley Microstation. A land-based design software package such as Land Development Desktop (LDD) will be used to enter, create, edit and analyze point, line and polygon objects relevant to CE applications. Basic functions include creating surfaces, contours, calculation of cut and fill volumes and the generation of finished cross-sections. Prerequisites: CAEE 100, CIEN 101 **(F;S)**
- CIEN 281. Civil Engineering Land CAD** **Credit 1(0-2)**  
 A land-based design software package such as Land Development Desktop (LDD) will be used to enter, create, edit and analyze point, line and polygon objects relevant to CE applications. Basic functions include creating surfaces, contours, calculation of cut and fill volumes and the generation of finished cross-sections. Prerequisite: CAEE 101. **(F;S)**
- CIEN 310. Environmental Engineering** **Credit 3(3-0)**  
 This course provides an introduction to environmental pollution. Topics include physical, chemical and biological water quality parameters, water purification processes in natural systems, air pollution and solid waste management, and general design of waste control systems. Prerequisite: Junior standing. **(F;S)**
- CIEN 311. Environmental Engineering Laboratory** **Credit 1(0-3)**  
 This course provides selected experiments on the measurement of environmental pollutants. Topics include use of microscope, Gram stain, conform analysis, pH, alkalinity, hardness, DO, BOD, and control of microorganisms. Corequisite: CIEN 310. **(F)**
- CIEN 320. Geotechnical Engineering** **Credit 3(3-0)**  
 This course introduces the following topics: engineering mechanics and properties of soils, stresses and settlements in soils, earth pressures on structures, stability of slopes and embankments, and fundamentals of foundation selection and design. Prerequisites: CIEN 366 and CAEE 363. **(S)**
- CIEN 321. Geotechnical Engineering Laboratory** **Credit 1(0-3)**  
 This course will provide laboratory experiences in soil identification, classification, permeability, consolidation, indexing, and laboratory evaluation of shear and bearing strength of soils. Prerequisites: CAEE 362 and 363. Corequisite: CIEN 320. **(S)**
- CIEN 350. Transportation Engineering** **Credit 3(3-0)**  
 This course focuses on one mode of transportation, highway engineering. The major aspects of highway engineering covered are administration and finance, traffic engineering, traffic operations and safety, geometric design, highway materials, structural design, and highway planning and economics. Corequisite: CAEE 204. **(S)**
- CIEN 364. Hydraulics and Hydrology** **Credit 3(2-2)**  
 This is an integrated course in basic hydraulics and hydrologic applications. Topics include fluid statics, the continuity, momentum, and energy equations, friction, headloss, pressurized and open channel flow, rainfall, abstractions, travel time, runoff, municipal regulations, stormwater sewer design, and stormwater management design. Prerequisites: MATH 132 and PHYS 226. **(F;S;SS)**
- CIEN 403. Senior Seminar** **Credit 1(0-2)**  
 This course is used to prepare the student for the Senior Exam, which is given as the final exam for the course. Included also are discussions on the ethics and professionalism. Each student prepares and presents to the class an original paper on a topic of engineering importance. Prerequisite: Senior standing. **(F)**
- CIEN 404. Applications of Statistics, Reliability and Decision Theory in Civil Engineering** **Credit 2(2-0)**  
 This course will introduce the students to probability theory and statistics. Reliability theory and Decision analyses are introduced. The course will incorporate simplified examples of applications of decision analysis, modeling of system response, and system reliability in the different areas of the civil engineering curriculum. The use of common statistical tools in the selection of design parameters will be presented. Prerequisites: Senior standing. **(S)**
- CIEN 412. Environmental Engineering Design** **Credit 3(3-0)**  
 This course defines the analysis and design of water and wastewater treatment systems. Topics included in the course are analysis and functional design of physical, chemical and biological treatment processes, pump stations, and sludge treatment processes. CIEN 310. **(S)**
- CIEN 416. Solid Waste Management** **Credit 3(3-0)**  
 This course is the study of the collection, storage, transport and disposal of solid wastes. Examination of various engineering alternatives with appropriate consideration for air and water pollution control and land reclamation will take place. Prerequisite: Senior standing. **(DEMAND)**

- CIEN 422. Geotechnical Engineering II** **Credit 3(3-0)**  
 This course is a continuation of CIEN 320 with emphasis on the behavior and design of retaining walls and shallow and deep foundations. Also, it will introduce the following topics: earth pressure, bearing capacity, settlement, behavior and design of anchored bulkheads, excavation bracing and buried structures, and response of deep foundations to vertical and horizontal loads. Prerequisites: CIEN 320 and 321. **(F)**
- CIEN 453. Transportation Design** **Credit 3(3-0)**  
 This course introduces students to the transportation design process through a series of comprehensive transportation design projects. Emphasis is placed on the utilization of existing facilities and creation of efficient new facilities through transportation systems management techniques. Energy, environment, mobility and community impacts are considered as measures of effectiveness in the design process. Prerequisite: CIEN 350. **(F)**
- CIEN 460. Water Resources Engineering** **Credit 3(3-0)**  
 This course is the study of the application of hydrologic and hydraulic principles in the analysis and design of water resources systems. Topics include hydraulic structures, system economics, water law, irrigation, hydroelectric power, navigation, flood control, and water resources planning. Prerequisite: CIEN 360. **(DEMAND)**
- CIEN 480. Construction Engineering** **Credit 3(3-0)**  
 This course is an introduction to construction engineering emphasizing heavy and highway construction; organization of construction industry; construction equipment, methods, and management; safety and environmental health in construction; and project planning and scheduling. Prerequisite: Senior standing. **(DEMAND)**
- CIEN 482. Construction Project** **Credit 3(1-4)**  
 This course provides an integrated approach by student teams to designing, estimating, planning, scheduling and management of construction projects. Prerequisite: CIEN 480. **(DEMAND)**
- CIEN 483. Civil Engineering Systems Design I** **Credit 1(0-3)**  
 In this course students work in teams to solve a practical and comprehensive civil engineering design project. Real world parameters including local codes, ordinances, and pertinent engineering practices are emphasized. Professional-level team presentation of civil engineering design projects using modern presentation tools/software is required. A final report and presentation are required. Corequisite: At least 2 of: CIEN 510, 520, 550, 560, CAEE 430, 536. **(F;S)**
- CIEN 484. Civil Engineering Systems Design II (Capstone)** **Credit 2(0-4)**  
 This is the capstone design course for the Civil Engineering program. Team solution, working with inter/intra-disciplinary sub-teams, and professional-level team presentation and reporting are emphasized. A comprehensive final report with professional-quality drawings and a presentation to a panel of faculty and local professionals is required. Prerequisite: CIEN 598. **(F;S)**
- CIEN 522. Foundation Design** **Credit 3(3-0)**  
 This course emphasizes the design of foundations for structural systems using geotechnical analysis and subsurface explorations. Designs considered include shallow and deep foundations, retaining structures, earth slope stability systems, and soil and site improvements. Prerequisite: CIEN 320. **(DEMAND)**
- CIEN 540. Structural Engineering Design** **Credit 3(3-0)**  
 This course will introduce the student to the design of reinforced concrete, steel, and timber structures. Consideration will be given to simple structural systems as designed for each material. Prerequisite: CIEN 340. **(S;DEMAND)**
- CIEN 560. Water Resources Engineering Design** **Credit 3(2-2)**  
 This course involves the application of hydrologic and hydraulic principles in the analysis and design of water resources systems. The measurement of ground water parameters and general water quality parameters is covered. Topics covered include water supply and distribution, reservoirs, water law, hydroelectric power, flood control, water resources planning and development, and storm water drainage. The use of HEC-RAS software for flood plain modeling is introduced. Prerequisites: CIEN 366 or equivalent; and CAEE 363. **(F;S;DEMAND)**
- CIEN 570. Construction Design** **Credit 3(3-0)**  
 This course covers construction engineering design applications in the construction of buildings, highways, and other civil and industrial facilities. Emphasized materials include Portland cement concrete mix design and asphalt cement mix design. Construction problem solutions include crane selection, positioning, and loading; scheduling of construction materials and personnel; and computer aided design and construction management. Prerequisites: CIEN 330, CIEN 335, CAEE 325, and CIEN 341. Corequisites: CIEN 320 and 321. **(DEMAND)**

#### DIRECTORY OF FACULTY

- Taher Abu-Lebdeh**.....**Associate Professor**  
 B.S., M.S., Yarmouk University, Jordan; Ph.D., Louisiana State University; Professional Engineer
- Ronnie S. Bailey**.....**Associate Professor**  
 B.A., Howard University; M.U.P., University of Wisconsin
- Shouu-Yuh Chang**.....**Professor Emeritus**  
 B.S., M.S., National Taiwan University; M.S., University of North Carolina at Chapel Hill; Ph.D., University of Illinois at Urbana-Champaign; Professional Engineer
- Ellie Fini**.....**Associate Professor**  
 B.S., Isfahan University of Technology; M.S., Sharif University of Technology; Ph.D., University of Illinois Urbana Champaign
- Sameer A. Hamoush**.....**Professor and Chairperson**  
 B.S., University of Damascus; M.S., University of Nebraska; Ph.D., North Carolina State University; Professional Engineer

<b>Manoj K. Jha</b> .....	<b>Associate Professor</b>
B.E., Tribhuvna University; M.E. Asian Institute of Technology; M.S., Ph.D., Iowa State University	
<b>Stephanie Luster-Teasley</b> .....	<b>Professor and Chairperson</b>
B.S., North Carolina A&T State University; M.S., Ph.D., Michigan State University	
<b>Ahmed Megri</b> .....	<b>Associate Professor</b>
B.S., Constantine University (Algeria); M.S., Ph.D., INSA (Lyon Institute of Technology) at Lyon (France), HDR (Habilitation), Pierre-and-Marie-Curie University, Sorbonne Universities (Paris VI), France	
<b>Nabil Nassif</b> .....	<b>Associate Professor</b>
B.S., M.S., University of Damascus; Ph.D., Quebec University, Canada	
<b>Miguel Picornell</b> .....	<b>Professor</b>
B.S., Madrid Polytechnic University; M.S., Ph.D., Texas A&M University; Professional Engineer	
<b>Robert Powell</b> .....	<b>Associate Professor</b>
B.S., Stanford University; M.Arch., M.I.T.	

**Department of Computer Science**

<http://www.ncat.edu/coe/departments/comp/index.html>

**Xiaohong Dorothy Yuan, Interim Chairperson**

**DEGREES OFFERED**

Computer Science – Bachelor of Science

**MISSION**

The mission of the Bachelor of Science Program in Computer Science is to provide the opportunity for its students to acquire the educational background necessary to pursue professional careers in the wide variety of positions in which Computer Science is required, or to continue their education toward advanced degrees in computer science. The primary purpose of the Department is to teach theory, abstraction, and design related to the field of computer science.

**EDUCATIONAL OBJECTIVES**

The educational objectives of the Computer Science Undergraduate Program are that each graduate of the program should be able to:

1. Perform effectively in a computer science related position in industry.
2. Perform effectively in graduate programs where an undergraduate degree in computer science is required.
3. Communicate ideas and interact effectively with others to accomplish desired goals.

**EDUCATIONAL OUTCOMES**

The Computer Science Program enables students to achieve the following outcomes by the time of graduation:

- a. An ability to apply knowledge of computing and mathematics appropriate to the discipline.
- b. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
- c. An ability to design, implement and evaluate a computer-based system, process, component, or program to meet desired needs.
- d. An ability to function effectively on teams to accomplish a common goal.
- e. An understanding of professional, ethical, and social responsibilities.
- f. An ability to communicate effectively.
- g. An ability to analyze the impact of computing on individuals, organizations, and society, including ethical, legal, security, and global policy issues.
- h. Recognition of the need for and an ability to engage in continuing professional development.
- i. An ability to use current techniques, skills, and tools necessary for computing practice.
- j. An ability to apply mathematical foundations, algorithmic principles and computer theory in modeling and design of computer-based systems.
- k. An ability to design and development principles in construction of software systems of varying complexity.
- l. An understanding of the basics of computer hardware and how software interacts with computer hardware.

**PROGRAM REQUIREMENTS**

The Computer Science major must complete 120 credit hours following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements. Included in the 120 semester hours are 58 hours in Computer Science courses and 20 hours in mathematics.

**ACCREDITATION**

The undergraduate program in Computer Science, leading to the Bachelor of Science in Computer Science (BSCS) degree, is accredited by the Computer Science Accreditation Commission of the Accreditation Board for Engineering and Technology (CAC-ABET).

## CAREER OPPORTUNITIES

The Bureau of Labor Statistics of the U.S. Department of Labor in its “Occupational Outlook for College Graduates” continues to report that the employment outlook for computer-oriented graduates is very good. Opportunities in the area are expected to grow faster than the average of all occupations through the next decade.

### Minimum Grade of “C” Policy

Computer Science students must earn a grade of “C” or better in the following courses to graduate or to satisfy prerequisite requirements of subsequent courses: COMP 163, and 167, COMP 180, 267, 280, 285, 322, 350, 360, 365, 375, 385, 390, 410, 476, and 496, MATH 131.

### Department of Computer Science Bachelor of Science in Computer Science Major Code: COMP

#### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
Social/Behavior Science Elective	3	Knowledge of African American Culture & History Elective	3
COMP 163	3	COMP 180	3
COMP 121	1	COMP 167	3
GEEN 111	1	MATH 132	4
MATH 131	4	<b>Semester Total</b>	<b>16</b>
<b>Semester Total</b>	<b>15</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
Approved Science Elective	4	Approved Science Elective	4
SPCH 250	3	Global Awareness Elective	3
MATH 341	3	COMP 285	3
COMP 280	3	Approved MATH Elective	3
Business Elective	3	COMP 267	3
<b>Semester Total</b>	<b>16</b>	COMP 200	1
		<b>Semester Total</b>	<b>17</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
Approved Science Elective	4	ENGL 331	3
Approved Statistics Elective	3	COMP 322	3
COMP 360	3	COMP 365	3
COMP 375	3	COMP 350	3
Approved COMP Elective	3	COMP 390	3
<b>Semester Total</b>	<b>16</b>	COMP 300	1
		<b>Semester Total</b>	<b>16</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
COMP 385	3	COMP 496 ( <i>formerly COMP 596</i> )	3
COMP 410	3	Approved COMP Elective	3
COMP 476	3	Approved COMP Elective	3
Free Elective	3	Free Elective	3
<b>Semester Total</b>	<b>12</b>	<b>Semester Total</b>	<b>12</b>

**Total Credit Hours: 120**

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

MATH 131	COMP 360
COMP 163 ( <i>formerly GEEN 163</i> )	COMP 365

COMP 167 ( <i>formerly GEEN 163</i> )	COMP 375
COMP 180	COMP 385
COMP 267	COMP 390
COMP 280	COMP 410 ( <i>formerly COMP 510</i> )
COMP 285	COMP 476
COMP 322	COMP 496 ( <i>formerly COMP 596</i> )
COMP 350	

## COURSE DESCRIPTIONS IN COMPUTER SCIENCE

### **COMP 120. Computers and Their Use**

**Credit 3(2-2)**

This course provides a survey of the basic principles of computer hardware, computer communications, application software, operating systems, security, impact on society, use in organizations and systems development. Principles of programming are introduced. Information is at a level for the students to become informed users. This course cannot be taken for credit by Computer Science majors. **(F;S;SS)**

### **COMP 121. Computer Science Freshmen Colloquium**

**Credit 1(1-0)**

This course includes lectures, seminars and activities important to the retention and matriculation of computer science students. Topics covered include learning styles, group dynamics, computer science history, and career development. Students are also provided with group advisement regarding department, college, and university-level policies and procedures. **(F;S;SS)**

### **COMP 160. Computer Program in C++ for Engineers (formerly GEEN 160)**

**Credit 2(2-2)**

This is an introductory course in C++ computer programming for engineering students. Problem solving techniques and coding algorithms will be stressed. Students will write programs for such tasks as engineering decision-making and numerical computation. Material relevant to the Fundamentals of Engineering exam will be covered. **(F;S;SS)**

### **COMP 163. Introduction to Computer Programming (formerly GEEN 163)**

**Credit 3(2-2)**

This is an introductory course in computer programming. Problem solving techniques and writing algorithms will be stressed. Students will write programs for such tasks as engineering decision-making and numerical computation. **(F;S;SS)**

### **COMP 167. Computer Program Design (formerly GEEN 165)**

**Credit 3(2-3)**

This is a second course in computer programming for students with an interest in computers. Students will learn to write programs in a high level programming language. Prerequisite: COMP 163. **(F;S;SS)**

### **COMP 170. Introduction to Web Engineering**

**Credit 3(3-0)**

This course introduces basic web development using HTML and client-side and server-side scripting. Students also learn how to incorporate security features into web sites as well as how to access and manage online databases. This course also covers the role of the web in disseminating knowledge, community formation, training, collaboration, and other social activities. **(F;S;SS)**

### **COMP 180. Discrete Structures**

**Credit 3(3-0)**

Students will be introduced to formal systems, including propositional and predicate logic, that can be used to reason about computer algorithms. Students will develop an understanding of how to read and construct valid proofs of the properties of algorithms. Important discrete data structures, such as sets, relations, discrete functions, graphs and trees, will be introduced. Prerequisite: MATH 110 or MATH 131. **(F;S;SS)**

### **COMP 200. Computer Science Sophomore Colloquium**

**Credit 1(1-0)**

This course provides the student with exposure to current issues in computer science. Colloquium speakers shall include visitors and faculty. Prerequisite: Sophomore standing. **(F;S;SS)**

### **COMP 267. Data Base Design**

**Credit 3(3-0)**

This course focuses on logical and physical organizations of large sets of related data. It covers issues in file structures as well as file and database management systems. It explores relational models, hierarchical models, directed graph models, data definition and manipulation languages, and relational calculus. Application oriented projects are required. Prerequisite: COMP 280. **(F;S)**

### **COMP 280. Data Structures**

**Credit 3(3-0)**

This is the third course in the computer science sequence. It introduces abstractions (algorithm, data type, complexity) and programming tools (pointers, dynamic memory, and linked data structures). The course also examines essential data structures, (stacks, queues, trees, linked lists, and graphs). It analyzes and implements techniques such as hashing, sorting, searching, and priority queues, to solve general problems. The emphasis of the course is on building modular programs that can be changed to use different data structures and algorithms. Prerequisites: COMP167 and (COMP 180 or MATH 123 or ECEN 227). **(F;S;SS)**

### **COMP 285. Design and Analysis of Computer Algorithms**

**Credit 3(3-0)**

This course covers analysis of efficient algorithms for sorting, searching, dynamic structure manipulation, path-finding, fast multiplication, and other problems. It introduces algorithmic techniques such as recursion, divide-and-conquer, and dynamic programming. It develops the following tools for algorithmic analysis: correctness proofs, algorithm synthesis, and discusses issues in non-computability. The course also overviews non-deterministic algorithms, and develops techniques to classify

computationally hard problems. The concept of non-deterministic polynomial (NP)-completeness is introduced, and basic issues related to NP-completeness are discussed. Prerequisites: COMP 280, MATH 131. (F;S;SS)

**COMP 300. Computer Science Junior Colloquium**

**Credit 1(1-0)**

This course provides the student with exposure to current issues in computer science. Colloquium speakers shall include visitors and faculty. Prerequisite: Junior standing. (F;S;SS)

**COMP 320. Fundamentals of Information Assurance**

**Credits 3(3-0)**

This course covers concepts in computer network and information security. Topics include: software strategies for exchanging secure data and encryption standards. Strategies for the physical protection of information assets are explored. Issues involving information security management within an enterprise are covered, including suitable organizational policy, plans, and implementation strategies. Ethical issues, such as monitoring employee computer use and proper limitations on the use of customer data, are also discussed. Prerequisite: COMP 280. (F;S;SS)

**COMP 321. Computer System Security**

**Credit 3(3-0)**

This course introduces the principles of information systems security and examines security policies, models, mechanisms for secrecy, integrity, availability and access controls. Topics include common system vulnerabilities and countermeasures, data availability and usage control, authentication technologies, design secure systems, operating systems security, network security, programming language security, and distributed systems security. Prerequisite: COMP 285. (F;S;SS)

**COMP 322. Internet Systems**

**Credit 3(3-0)**

This course addresses the structure and functionality of the Internet and software that exploits it. Topics include mark up languages, Web tools, static, dynamic and active web pages, multimedia in Web applications, communication protocols, client-server, computing, scripting, group communication support, e-commerce, and security. Topics also include systems for organizing and coordinating work at different sites, multiagent systems that exploit the Internet, and architectures to exploit the distributed computational power offered by the Internet. Prerequisite: COMP 280. (F;S;SS)

**COMP 323. Introduction to Health Care Information Systems**

**Credits 3(3-0)**

This course introduces broad aspects of health care information systems. The goal is to prepare students with knowledge for effectively managing health care information systems. The main topics of this class include: types of health care information and data, regulations, standards, and laws of health care information, history of health care information systems, technologies in health care information systems, health care information systems standards, security in health care information systems, management of health care information systems. Prerequisite: Junior standing (F;S;SS)

**COMP 340. Game Intelligence**

**Credits 3(3-0)**

This course provides an overview of concepts used in game intelligence. Topics will include intelligent game agents, game state representation, search, and machine learning. Prerequisite: COMP 280. (F;S;SS)

**COMP 350. Operating Systems**

**Credit 3(3-0)**

This is an introduction to the theory and practice of operating system design and implementation. Algorithmic techniques are presented for implementing process management, storage management, processor management, file systems, security, distributed systems, performance evaluation, and real time systems. Prerequisite: COMP 375. (F;S)

**COMP 356. Computational Hip-Hop and Object-Oriented Design**

**Credits 3(3-0)**

This course introduces students to the fundamentals of the Unified Modeling Language (UML) from a Hip-Hop perspective. Students will learn how to use UML to reverse and forward engineer design artifacts for Hip-Hop music, and software applications. Prerequisite: COMP 163 or instructor's permission. (F;S;SS)

**COMP 360. Programming Languages**

**Credit 3(3-0)**

This course focuses on formal specification of programming languages, including definition of syntax and semantics: simple statements including precedence, infix, prefix, and postfix notations. It highlights global properties of algorithmic languages including sequence control, data structure implementation, scoping, storage management, grouping of statements, binding time, sub-routines, co-routines, and tasks. Prerequisite: COMP 285. (F;S)

**COMP 363. Object Oriented Programming**

**Credit 3(3-0)**

This is a course in object oriented program development. The main topics include encapsulation, polymorphism, inheritance, debugging and performance tuning. Prerequisite: COMP 280. (F;S)

**COMP 365. Programming Methodologies & Concepts**

**Credit 3(3-0)**

This course covers advanced programming techniques in order to enhance the student's knowledge and experience in programming. This course includes techniques dealing with advanced object oriented programming, human computer interaction, computer graphics and current programming trends. This course will also cover AI techniques such as search strategies and knowledge representation. Prerequisite: COMP 285. (F;S;SS)

**COMP 368. Object-Oriented Software Development**

**Credit 3(3-0)**

This course studies object-oriented software development. Object-oriented modeling, software design by pattern, software design by generic component, software reuse and object-oriented application frameworks are introduced. Problems in large software systems are discussed, and students learn how to integrate object-oriented language features into object-oriented software development. Prerequisite: COMP 280. (F;S;SS)

**COMP 375. Computer Architecture and Organization**

**Credit 3(3-0)**

This course explores the design of computer systems and their architectures. Topics include central processing unit architecture, microcode, system interconnections, memory systems, Input/Output systems, interrupt handling, peripherals and communications networks. Prerequisite: COMP 280 or ECEN 327. (F;S)

- COMP 385. Theory of Computing** **Credit 3(3-0)**  
 This course is the study of topics which include theory of finite state machine and automata; regular expressions; Turing machines; grammars; parsing; language hierarchy; machine design and construction; computability; unsolvability; halting problem; computational complexity; and recursive functions. The course also discusses issues in equivalence of various computational models, minimization, and characterizations. Prerequisite: COMP 360. (F;S)
- COMP 390. Social Implications of Computing** **Credit 3(3-0)**  
 This course examines the increasingly complex interaction between computer systems, our social fabric and ethics. Software and microprocessors control automobiles, banks, brokerage trading, aircraft, medical equipment, and just about every other device used in industrialized nations. Impacts of computerized systems upon personal privacy and citizen involvement in governance are examined in relation to the public policy questions of the day. The role and opportunity for historically under-represented groups will be explored. Interdisciplinary readings are stressed, along with required written and oral presentations and class debates. (F;S)
- COMP 397. Cooperative Industrial Experience I** **Credit 3(3-0)**  
 This is a supervised learning experience in an approved private or governmental facility. The student must be employed full-time for at least one semester and must perform supervised work that will enhance his/her educational background in an area related to computer science. In addition to the supervisor's evaluation in the field, the student's performance will be evaluated by a departmental faculty committee, based upon the recommendation of the Director of the Co-operative Education Program reports, informal portfolios and forum and / or seminar presented by the student upon his/her return to the university. Prerequisite: Permission by advisor. (F;S)
- COMP 410. Software Engineering** **Credits 3(3-0)**  
 This course is an introduction to the principles underlying software specification, implementation, validation, and management. It addresses application of software engineering concepts to large software systems. Team effort is emphasized throughout the course. Prerequisite: COMP 360. (F;S)
- COMP 411. Introduction to System Testing and Evaluation (formerly COMP 511)** **Credits 3(3-0)**  
 This course is an introduction to methods, techniques and procedures for system testing and evaluation. The main topics include reliability measurement, testing small and large systems, black box software testing, white box software testing, testing of concurrent and real-time systems, client-server testing, test case design methods, and automated testing tools. Prerequisite: COMP 410. (F;S;SS)
- COMP 420. Applied Network Security** **Credit 3(3-0)**  
 This course covers network security concepts and various network security practices and solutions. Topics include cryptography, Public Key Infrastructure (PKI), taxonomy of various attack methods, firewalls, intrusion detection and prevention, Internet Protocol (IP) security, and web security. Prerequisite: COMP 285. (F;S;SS)
- COMP 421. Security Management for Information Systems** **Credit 3(3-0)**  
 This course covers in-depth examination of topics in the management of information systems security including access control systems & methodology, risk management, business continuity and disaster recovery planning, legal and ethical issues in information system security, computer operations security, physical security, and information security maintenance. Prerequisite: COMP 285. (F;S;SS)
- COMP 440. Game Design** **Credit 3(3-0)**  
 This course will provide an introduction to current techniques used in game design. Topics will include game engines, game mechanics, autonomous game agents, and multi-player games. Prerequisite: COMP 340. (F;S;SS)
- COMP 445. An Introduction to Artificial Intelligence** **Credit 3(3-0)**  
 This course is an introduction to the theory of artificial intelligence and a survey of artificial intelligence application areas. It covers the foundational concepts related to knowledge representation and search strategies. An artificial intelligence language is presented to give programming experience in implementing basic artificial intelligence concepts. Some of the applications areas that are discussed include: game playing, expert systems, theorem proving, natural language understanding, machine learning, planning, and robotics. Prerequisite: COMP 285. (DEMAND)
- COMP 453. Introduction to Computer Graphics (formerly COMP 553)** **Credits 3(3-0)**  
 This is an introductory course in fundamental principles and method in the design, use, and understanding of computer graphic systems. Topics include coordinate representations, graphics in functions, graphics algorithms and software standards. It also introduces basic two-dimensional transformations, reflection, shear; windowing concepts, clipping algorithms, window-to-viewpoint transformations, segment concept and interactive picture-construction techniques. Prerequisite: COMP 285. (F;S;SS)
- COMP 463. Introduction to Compiler Design (formerly COMP 563)** **Credit 3(3-0)**  
 This course gives an introduction to the theoretical and practical aspect of constructing compilers for computer programming languages. The course covers principles, models and techniques used in the design and implementation of compilers, interpreters, and assemblers. Each student will develop and implement a compiler. Prerequisite: COMP 285 and COMP 375. (F;S;SS)
- COMP 468. Introduction to Data Mining (formerly COMP 567)** **Credit 3(3-0)**  
 This course introduces the modern computer application of data mining. The theory of data mining is presented as well as applications of its principles in industry. This course covers the basics of techniques and applications such as cluster detection, market basket analysis, decision tree derivation, genetic algorithms, artificial neural networks, memory-based reasoning, and data warehouses. Students learn a variety of algorithms for discovering meaningful patterns and rules in large quantities of data. Prerequisite: COMP 280. (F;S;SS)



**COMP 469. Introduction to Parallel Programming** **Credit 3(3-0)**  
 This course provides an introduction to parallel programming and problem solving. Topics include parallel programming design, parallel programming models, programming on multicore architectures, parallel computational thinking, and introduction to performance analysis of parallel algorithms. Prerequisite: COMP 350 or consent of instructor. (F;S;SS)

**COMP 476. Networked Computer Systems** **Credit 3(3-0)**  
 This course presents an overview of the technology, architecture and software used by systems of network-connected computers. The course will cover data transmission, local area network architecture, network protocols, internetworking, security, and World Wide Web technology. Students will write programs that run concurrently on multiple computers. Prerequisite: COMP 375. (F;S)

**COMP 485. Special Topics in Computer Science (formerly COMP 590)** **Credit 3(3-0)**  
 This course permits the exploration of advanced topics pertinent to student's program of study in a seminar setting. (F;S)

**COMP 495. Senior Project I (formerly COMP 595)** **Credit 3(3-0)**  
 This course is the first course in a two-semester sequence, which allows students the opportunity to design and implement a software project from start to finish. Projects started in this course will be completed in COMP 496, giving the student the opportunity to work on a project of significant size. Students taking this course must take COMP 496. Prerequisite: COMP 285; Corequisite: COMP 410. (F;S;SS)

**COMP 496. Senior Project II (formerly COMP 596)** **Credit 3(3-0)**  
 This course allows students the opportunity to design and implement a software project from start to finish. Projects started in COMP 495 must be completed in this course for students working on a yearlong project. Student choosing to do a semester project must start and complete the project in this course. This course gives the student the opportunity to work on a software project of significant size. Prerequisite: COMP 410. (F;S;SS)

#### DIRECTORY OF FACULTY

<b>Mohd Anwar</b> .....	<b>Associate Professor</b>
B.S., Winona State University; M.S., North Dakota State University; Ph.D., University of Saskatchewan	
<b>Shearon A. Brown</b> .....	<b>Teaching Associate Professor and Director of Undergraduate Studies</b>
B.S., M.S., North Carolina A&T State University; M.S., University of Illinois	
<b>Kelvin Bryant</b> .....	<b>Assistant Professor</b>
B.S., M.S., Ph.D., North Carolina State University	
<b>Edward Carr</b> .....	<b>Teaching Assistant Professor</b>
B.S., Wingate University; M.S., Western Carolina University; M.S., Ph.D., North Carolina A&T State University	
<b>Albert Esterline</b> .....	<b>Associate Professor</b>
B.A., Lawrence University; M.Litt., Ph.D., University of St. Andrews; M.S., Ph.D., University of Minnesota	
<b>Jung Hee Kim</b> .....	<b>Associate Professor</b>
B.A., Korea University, M.S., Ph.D., Illinois Institute of Technology	
<b>Kaushik Roy</b> .....	<b>Assistant Professor</b>
B.S., M.S., University of Rajshahi; M.S., Ph.D., Concordia University	
<b>Kenneth A. Williams</b> .....	<b>Associate Professor</b>
B.S., M.S., Michigan Technological University; Ph.D., University of Minnesota	
<b>Jinsheng Xu</b> .....	<b>Associate Professor</b>
B.S., Nanjing University; M.S., Beijing University; Ph.D., Michigan State University	
<b>Huiming Anna Yu</b> .....	<b>Professor and Director of Graduate Studies</b>
B.S., Xiamen University; M.S., Hefei Polytechnic University; Ph.D., Stevens Institute of Technology	
<b>Xiaohong Dorothy Yuan</b> .....	<b>Professor and Interim Chairperson</b>
B.S., Huazhong University of Science and Technology; Ph.D., Institute of Automation, Chinese Academy of Sciences; Ph.D., Florida Atlantic University	

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**Department of Electrical and Computer Engineering**

<http://www.ncat.edu/coe/departments/elen/index.html>

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**John C. Kelly, Jr., Chairperson**

#### DEGREES OFFERED

Electrical Engineering – Bachelor of Science  
 Computer Engineering – Bachelor of Science

#### COOPERATIVE EDUCATION PROGRAM IN ELECTRICAL AND COMPUTER ENGINEERING

Participation in Cooperative Education (Co-op) is highly recommended for students in the Department of Electrical and Computer Engineering. The Co-op program is an effective means of providing industrially relevant experiences beyond what can easily be accomplished in the classroom. Participation in the Co-op program serves both as a form of financial aid for students and provides them an advantage in seeking full-time employment opportunities. To facilitate student participation in the Co-op program, most department courses required for graduation are offered twice per year. Please refer to the undergraduate student handbooks for the Electrical Engineering and Computer Engineering programs for information on specific Co-op policies.

#### ELECTRICAL ENGINEERING PROGRAM

### MISSION

The mission of the Bachelor of Science program in Electrical Engineering is to educate our students with the knowledge and skills relevant to the practice of electrical engineering, to instill in them the desire for continuing education, and to maintain a supportive environment for the students, faculty and staff.

### EDUCATIONAL OBJECTIVES

Graduates of the Electrical Engineering program will:

1. Be employed in the electrical engineering profession or continue with graduate education.
2. Demonstrate teamwork and leadership skills in solving interdisciplinary problems.
3. Be active in their communities and professional societies.
4. Enhance their professional development through life-long learning.

### PROGRAM REQUIREMENTS

The electrical engineering major must complete 122 credit hours following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements.

### ACCREDITATION

The undergraduate program in Electrical Engineering, leading to the Bachelor of Science in Electrical Engineering (BSEE) degree, is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC-ABET).

### CAREER OPPORTUNITIES

A degree in this field prepares a student for careers in electronics, communications and signal processing, robotics, power and control engineering, or for graduate study in electrical or computer engineering.

### COMPUTER ENGINEERING PROGRAM

#### MISSION

The mission of the Bachelor of Science program in Computer Engineering is to educate our students with the knowledge and skills relevant to the practice of computer engineering, to instill in them the desire for continuing education, and to maintain a supportive environment for the students, faculty and staff.

#### EDUCATIONAL OBJECTIVES

Graduates of the Computer Engineering program will:

1. Be employed in the computer engineering profession or continue with graduate education.
2. Demonstrate teamwork and leadership skills in solving interdisciplinary problems.
3. Be active in their communities and professional societies.
4. Enhance their professional development through life-long learning.

#### PROGRAM REQUIREMENTS

The computer engineering major must complete 123 credit hours following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements.

#### CAREER OPPORTUNITIES

A degree in this field prepares a student for careers in computer system design, networks and data communications, or for graduate study in electrical or computer engineering. Specific opportunities include Application Specific Integrated Circuit (ASIC) and Very Large Scale Integrated Circuit (VLSI) design, digital signal processing, electro-mechanical system design, data and signal communication, controls, embedded systems, biological and chemical system modeling/analysis, computer graphics, artificial intelligence, avionics, robotics, compiler and operating system design, computer system architecture, fault-tolerant system design, and software engineering and design.

**Department of Electrical and Computer Engineering**  
**Bachelor of Science in Electrical Engineering**  
**Major Code: ELEN**

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
ECEN 101	3	Social/Behavioral Science Elective	3
GEEN 100	2	PHYS 241	3

CHEM 106	3	PHYS 251	1
CHEM 116	1	MATH 132	4
MATH 131	4	COMP 163	3
GEEN 111	1	<b>Semester Total Hours</b>	<b>17</b>
<b>Semester Total Hours</b>	<b>17</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
PHYS 242	3	Knowledge of African-American Culture and History	3
PHYS 252	1	MATH 450	3
MATH 231	4	ECEN 300	3
MATH 431	3	ECEN 306	1
ECEN 200	3	ECEN 327	3
ECEN 206	1	ECEN 328	1
<b>Semester Total Hours</b>	<b>15</b>	ECEN 325	3
		<b>Semester Total Hours</b>	<b>17</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
ECEN 400	3	ECEN 427	3
ECEN 356	3	ECEN 433	1
ECEN 320	3	ECEN 460	3
ECEN 326	1	ECEN 466	1
MEEN 313	3	ECEN 450	3
SPCH 250 <sup>c</sup>	3	Global Awareness	3
<b>Semester Total Hours</b>	<b>16</b>	<b>Semester Total Hours</b>	<b>14</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
ECEN 478 <sup>a</sup>	3	ECEN 479 <sup>a</sup>	3
ECEN 4xx <sup>b</sup>	3	ECEN 4xx <sup>b</sup>	3
ECEN 4xx <sup>b</sup>	3	ECEN 4xx <sup>b</sup>	3
ECEN 410 or ECEN 430	3	ECEN 4xx <sup>b</sup>	3
ISEN 260	2	<b>Semester Total Hours</b>	<b>12</b>
<b>Semester Total Hours</b>	<b>14</b>		

**Total Credit Hours: 122**

<sup>a</sup>Capstone Design Course

<sup>b</sup>Technical Elective (maximum of 2 courses from a given area); (ECEN 449, ECEN 452, ECEN 459), (ECEN 426, ECEN 408, ECEN 470), (ECEN 423, ECEN 441, ECEN 447, ECEN 421), (ECEN 474, ECEN 477, ECEN 468, ECEN 461)

<sup>c</sup>This course satisfies the Humanities/Fine Arts Elective requirement.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

ECEN 101	ECEN 410
ECEN 200	ECEN 427
ECEN 206	ECEN 430
ECEN 300	ECEN 433
ECEN 306	ECEN 450
ECEN 320	ECEN 460
ECEN 325	ECEN 466
ECEN 326	ECEN 478

ECEN 327	COMP 163
ECEN 356	All Technical Electives
ECEN 400	

**Department of Electrical and Computer Engineering  
Bachelor of Science in Computer Engineering  
Major Code: CPEN**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
ECEN 101	3	PHYS 241	3
CHEM 106	3	PHYS 251	1
CHEM 116	1	MATH 132	4
MATH 131	4	COMP 163	3
GEEN 111	1	GEEN 100	2
<b>Semester Total Hours</b>	<b>15</b>	<b>Semester Total Hours</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
ECEN 227	3	MATH 231	4
COMP 167	3	ECEN 327	3
PHYS 242	3	ECEN 328	1
PHYS 252	1	COMP 280	3
MATH 431	3	ECEN 300	3
ECEN 200	3	ECEN 306	1
ECEN 206	1	<b>Semester Total Hours</b>	<b>15</b>
<b>Semester Total Hours</b>	<b>17</b>		
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
ECEN 423	3	Knowledge of African-American Culture and History	3
ECEN 429	1	ECEN 320	3
ECEN 427	3	ECEN 326	1
ECEN 433	1	ECEN 356	3
Social/ Behavioral Science Elective <sup>d</sup>	3	ECEN 375	3
COMP 285	3	ECEN 400	3
<b>Semester Total Hours</b>	<b>14</b>	<b>Semester Total Hours</b>	<b>16</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
ECEN 478 <sup>a</sup>	3	ECEN 479 <sup>a</sup>	3
Technical Elective <sup>b</sup>	3	Technical Elective <sup>b</sup>	3
Technical Elective <sup>b or c</sup>	3	Technical Elective <sup>b or c</sup>	3
ECEN 421	3	COMP 350	3
SPCH 250	3	Global Awareness	3
<b>Semester Total Hours</b>	<b>15</b>	<b>Semester Total Hours</b>	<b>15</b>

**Total Credit Hours: 123**

<sup>a</sup>Capstone Design Courses

<sup>b</sup>Must choose from these courses: ECEN 424, ECEN 441, ECEN 447, ECEN 457, ECEN 459, or ECEN 485 (approved case-by-case)

<sup>c</sup>Must choose from these courses: COMP 322, COMP 360, COMP 4xx, or ECEN 4xx

<sup>d</sup>At least (3) credit must come from African-American studies, and (3) credit from Global Studies.

## MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

ECEN 101	ECEN 400
ECEN 200	ECEN 421
ECEN 206	ECEN 423
ECEN 227	ECEN 427
ECEN 300	ECEN 429
ECEN 306	ECEN 433
ECEN 320	ECEN 478
ECEN 326	ECEN 479
ECEN 327	COMP 163
ECEN 328	COMP 167
ECEN 356	COMP 280
ECEN 375	All Technical Electives

### COURSE DESCRIPTIONS IN ELECTRICAL AND COMPUTER ENGINEERING

**ECEN 101. Engineering Problem Solving with MATLAB**

**Credit 3(3-0)**

This course introduces MATLAB through solving electrical engineering related problems. MATLAB Topics Covered: 1D, 2D vectors and manipulations, mathematical and logical operations, loops, flow control, custom function, structures, string regular expression, Graphical User Interface design, and plotting. Study habits appropriate to engineering will be emphasized. Students will also develop their life-long learning skills. (F;S;SS)

**ECEN 200. Electric Circuit Analysis**

**Credit 3(3-0)**

This course covers circuit analysis using Kirchhoff's Laws, loop and nodal analysis, Thévenin's and Norton's theorems, etc., for resistive circuits with DC sources. The transient behavior of first and second order (RC, RL, and RLC) circuits and steady state sinusoidal analysis are also covered. Prerequisites: ECEN 101 and MATH 132. (F;S;SS)

**ECEN 206. Instrumentation and Networks Laboratory**

**Credit 1(0-3)**

Network measurements and applications, introduction to laboratory equipment and techniques. Weekly hardware laboratory utilizing multimeter, function generator, oscilloscope and spectrum analyzer and custom hardware for experiments on various circuits and systems. Prerequisite: ECEN 101. (F;S;SS)

**ECEN 227. Introduction to Finite Automata and Discrete Math**

**Credit 3(3-0)**

This course is an introduction to applied discrete mathematics. Topics include set theory, introduction to logic, functions, recursion, relations, Boolean algebra, applications of elementary graph theory, trees and applications, and mathematical techniques for algorithm analysis.

**ECEN 300. Electric Circuit Analysis II**

**Credit 3(3-0)**

This course is a continuation of ECEN 200. It covers sinusoidal steady state solutions to linear circuits in the time and frequency domain. Laplace transforms, transfer functions, Fourier series, Bode plots, passive and active filters, transformers, two-port circuits, and polyphase circuits will also be covered. Prerequisite: ECEN 200 and MATH 431.

**ECEN 306. Circuits and Systems Laboratory**

**Credit 1(0-3)**

This course covers the proper use of laboratory instrumentation, principles of measurements, experimental verification of transient and steady state response, frequency response, and resonance of systems with linear passive elements. Theoretical analyses and computer simulations of networks are compared with laboratory experimental results using actual circuits. Prerequisite: ECEN 200 and ECEN 206.

**ECEN 320. Electronics I**

**Credit 3 (3-0)**

This course is an introduction to electronic circuit design. It covers basic amplifiers, diode circuits, dc biasing and mid-frequency response of bipolar junction transistor (BJT) and field effect transistor (FET) amplifiers. The terminal behavior, and linear and nonlinear modeling of these devices are emphasized. Prerequisite: ECEN 200 and PHYS 242. (F;S)

**ECEN 325. Introduction to Electromagnetics**

**Credit 3(3-0)**

A study of electromagnetic concepts and effects using vector analysis. Prerequisite: MATH 231. (F;S)

- ECEN 326. Electronics I Laboratory** **Credit 1(0-3)**  
 Characteristics of PN junctions, BJT, MOS Field Effect Transistors and OpAmps. Weekly hardware laboratory utilizing multimeter, function generator, oscilloscope and spectrum analyzer and custom board hardware for experiments on various microelectronic components and circuits. Prerequisites: ECEN 300 and ECEN 306. (F;S;SS)
- ECEN 327. Digital Logic** **Credit 3 (3-0)**  
 This course involves the study of fundamental combinational and sequential logic circuit analysis/design. Combinational concepts covered include Boolean algebra, k-maps, basic logic gates, and small/medium scale integrated circuits. Sequential concepts covered include basic latches/flip-flops, counters, memory registers, and basic synchronous systems. (F;S)
- ECEN 328. Digital Logic Laboratory** **Credit 1 (0-3)**  
 This course deals with the implementation of basic combinational and sequential logic systems. Small and Medium scale integrated circuits utilized in addition to Programmable logic devices. Corequisite: ECEN 327. (F;S)
- ECEN 356. Stochastic Processes and Random Variables** **Credit 3 (3-0)**  
 This course covers sample space and events, conditional probabilities, independent events, Bayes formula, discrete random variables, expectation of random variables, joint distribution, conditional expectation, Markov chains stationary processes, ergodicity, correlation and power spectrum of stationary processes, and Gaussian processes. Prerequisite: MATH 132. (S)
- ECEN 375. Computer Architecture and Organization** **Credit 3(3-0)**  
 This course covers the design, organization and architecture of computer systems. Topics include central processing unit architecture, instruction set architecture, instruction level parallelism, microcode, system interconnections, memory systems, input/output systems; interrupt handling, peripherals and communications networks. Prerequisite: ECEN 227 and ECEN 327.
- ECEN 400. Linear Systems and Signals** **Credit 3(3-0)**  
 This course is a continuation of ECEN 300 that covers the time-domain and Fourier analysis of discrete-time signal and discrete-time systems, state-space analysis, frequency response, digital filter design and introduction to discrete signal processing techniques. Prerequisite: ECEN 300. (F;S)
- ECEN 408. Analog Electronics** **Credit 3(3-0)**  
 This course covers the analysis, design and implementation of analog integrated circuits. These circuits may include operational amplifiers, voltage comparators, voltage regulators, monolithic power amplifiers, Digital-to-Analog (D/A) and Analog-to-Digital (A/D) converters, voltage-controlled oscillators, phase-locked loops, and other special-function integrated circuits. Prerequisite: ECEN 460 or consent of instructor. (F;S)
- ECEN 410. Linear Control Systems** **Credit 3(3-0)**  
 Introduction to control theory course that includes: control system modeling and representation, features of feedback control systems, state space representation, time domain analysis, root locus, and design compensation. Prerequisite: ECEN 400. (S)
- ECEN 421. Introduction to Embedded Systems** **Credit 3(3-0)**  
 This course exposes students to the design of microprocessor-based application-specific systems. Hardware/software co-design is dealt with extensively, which includes interfacing to digital and analog peripheral devices. A popular contemporary high-level language is used for the majority of the software development, with some use of assembly language as well. An integrated development environment (IDE) popular in industry is utilized for practical experience. Several contemporary, everyday examples of embedded systems are referenced throughout the course. Prerequisite: ECEN 427. (S)
- ECEN 423. Introduction to Digital Systems** **Credit 3(3-0)**  
 This course exposes the students to principles, techniques, and applications of modern digital systems. Design and analysis techniques for combinational and sequential circuits will be discussed. In particular, students will be exposed to: digital system top-down design and analysis, timing, power and performance issues in digital circuits. In addition, the student will be exposed to the Very High Speed Integrated Circuit Hardware Description Language (VHDL)-based system analysis and synthesis, hardware-software co-design, data-flow models, and digital system primitives. Prerequisite: ECEN 327. (S)
- ECEN 424. Advanced Digital Systems** **Credit 3(3-0)**  
 Digital systems top-down design and analysis will be presented. Topics include timing, power and performance issues in digital circuits, Very High Speed Integrated Circuit Hardware Description Language (VHDL)-based system analysis and synthesis, hardware-software co-design, dataflow models, and digital system primitives. Prerequisite: ECEN 423. (F)
- ECEN 427. Introduction to Microprocessors** **Credit 3(3-0)**  
 This course introduces the fundamentals of microprocessors, microcomputers, and microcontrollers. Both software and hardware concepts are dealt with. Software concepts include assembly language, machine code, flowcharts, and development/debugging techniques. Hardware concepts included communication ports, interrupts, memory, and common microcontroller subsystems. Prerequisite: ECEN 327. (F;S)
- ECEN 429. Introduction to Digital Systems Laboratory** **Credit 1(0-3)**  
 This lab gives students experience in applying the concepts learned in the accompanying class to build actual circuits. Lab experiments include writing applications using a hardware description language (HDL) and observing simulated results. Labs also include the use of Field Programmable Gate Arrays (FPGA) for building circuits described in the HDL. Prerequisite: ECEN 327 and ECEN 328. Corequisite: ECEN 423. (S)
- ECEN 430. Power Systems, Energy Conversion and Electric Machinery** **Credit 3(3-0)**  
 Study of the electric power system as an interconnection of energy conversion and transmission devices; electric machinery;

energy and power; and operation of a power system. Prerequisites: ECEN 300 and 325. (F;S)

**ECEN 433. Microprocessors Laboratory**

**Credit 1(0-3)**

This course provides practical experience in microprocessor hardware and software, interfacing, and applications. Microprocessor evaluation boards and simulators are utilized throughout the course. Prerequisite: ECEN 328. Corequisite: ECEN 427. (F;S)

**ECEN 436. Power Systems, Energy Conversion and Electric Machinery Laboratory**

**Credit 1(0-3)**

A study of power circuits and the behavior of motors and generators by laboratory experimentation. Prerequisite: ECEN 306. Corequisite: ECEN 430. (F;S)

**ECEN 440. Electrical Circuits and Systems**

**Credit 3(3-0)**

This course covers power and energy concepts; basic R, RC, RL, and RLC circuits; three phase circuits; ideal transformers; diodes and ideal op amp circuits; and logic circuits. The Laplace transform method will be introduced and used to solve circuit problems. Prerequisites: MATH 431 and PHYS 242.

**ECEN 441. Very Large Scale Integrated Circuits**

**Credit 3(3-0)**

This course introduces CMOS technology and devices for design and implementation of digital integrated circuits. Propagation delay and power dissipation of static and dynamic combinational and sequential logic circuits are studied. Method of Logical Effort is introduced for predicting path delays. Layout design rules and verification tools are introduced. Design examples include Arithmetic Units and Memory and Array Structures. Prerequisites: ECEN 320 and 327. (F;S)

**ECEN 447. Introduction to Telecommunication Networks**

**Credit 3(3-0)**

This course covers the fundamental concepts of telecommunication networks. The architecture, technology, operation, and application of telecommunication networks are discussed including design and analysis of networks for voice, data, and video applications. Prerequisite: ECEN 400. (F;S)

**ECEN 449. Introduction to Communication Systems**

**Credit 3(3-0)**

This course covers the fundamental principles of modulation theory including amplitude, single- and double-sideband, frequency, phase, pulse amplitude, pulse duration, pulse code modulation methods; and their applications to communication systems with random signals and noise. Prerequisite: ECEN 400.

**ECEN 450. Electromagnetic Wave Propagation and Transmission**

**Credit 3(3-0)**

This course examines principles, methods and techniques in the application of electromagnetic waves in RF, microwave and millimeter wave unguided and guided propagation and transmission. It is designed to familiarize students with the best practices in component and network design using wave and circuit theories. Prerequisite: ECEN 325. (F;S)

**ECEN 451. Digital Signal Processing**

**Credit 3(3-0)**

This course introduces fundamental theory and applications for digital signal processing including topics such as digital signals and systems, digital filtering, spectral analysis, and Discrete Fourier Transforms (DFT). Prerequisite: ECEN 400. (F)

**ECEN 452. Wireless Communication Systems**

**Credit 3(3-0)**

This course is an introductory level of wireless communications. Fundamental theory and analysis of wireless mobile communication systems are introduced, including characterization of radio propagation, channel modeling and coding, and a summary of wireless communication standards and multiple access techniques. Also covered are an overview of information networks and a comparison of wireless and conventional communication systems. Prerequisite: ECEN 400. (F)

**ECEN 457. Digital Image Processing**

**Credit 3(3-0)**

This course deals with concepts and techniques for digital image analysis and processing. Topics include image representation, image enhancement, edge extraction, image segmentation, geometric structure, feature extraction, knowledge representation, and image understanding. Prerequisite: ECEN 400. (F)

**ECEN 459. Digital and Data Communications**

**Credit 3(3-0)**

This course is an introduction to digital and data communications. The fundamental theory and applications of modem communication systems are discussed, including a general overview of the data communications area, telephone systems, channel coding, concept of data link protocols, interface standard, modems, multiplexing, multiple access and ISDN. Prerequisite: ECEN 400. (F)

**ECEN 460. Electronics II**

**Credit 3(3-0)**

This course is a continuation of Electronics I. It covers the frequency response of single-stage and multi-stage transistors amplifiers, power amplifiers and the basics of analog integrated circuits. Prerequisite: ECEN 320. (F;S)

**ECEN 461. Power System Analysis**

**Credit 3(3-0)**

This course studies power system representation, transmission lines, symmetrical and asymmetrical faults, electrical power flow, power systems control and stability. Prerequisite: ECEN 300. (F)

**ECEN 466. Electronics II Laboratory**

**Credit 1(0-3)**

This course includes design and analysis of semiconductor electronic circuits using discrete and integrated circuits. Emphasis is on design and experimental verification of amplifiers switching circuits, etc. using linear active devices. Prerequisite: ECEN 306. Corequisite: ECEN 460. (F;S)

**ECEN 470. Properties of Materials for Electrical Engineering**

**Credit 3(3-0)**

The effects of atomic, molecular, and crystal structure on the electrical and physical properties of conducting, insulating and semiconductor materials used in electrical engineering. Prerequisite: ECEN 425. (F)

**ECEN 474. Genetic Algorithms**

**Credit 3(3-0)**

This course covers the theory and application of genetic algorithms. Genetic algorithms combine a Dawwinian survival-of-the-

fittestest with a randomized, yet structured, information exchange to form an improved search mechanism with suprising robustness. Engineering applications of genetic algorithms for design and control will be presented. Prerequisite: ECEN 410. (F)

**ECEN 475. Applied Engineering Analysis** **Credit 3(3-0)**

This course will cover application of linear algebra, complex variable, and discrete mathematics in solving engineering problems. Prerequisites: MATH 231, 431. (F;S)

**ECEN 477. Introduction to Artificial Neural Networks** **Credit 3(3-0)**

This course introduces neural network design and development. Emphasis is on designing and implementing information processing systems that autonomously develop operational capabilities in adaptive response to an infonnation environment. Prerequisite: ECEN 400. (F)

**ECEN 478. Senior Design Project I** **Credit 3(2-3)**

This is part one of a two-part capstone design course for the undergraduate electrical and computer engineering programs. Topics covered include the design process as applied to electrical and computer systems, application of technical design tools, and application of professional skills. Teamwork, technical writing, communications, and project management are stressed throughout the semester. Prerequisites: ECEN 433 or 466 or consent of instructor. (F;S)

**ECEN 479. Senior Design Project II** **Credit 3(1-6)**

This is a continuation of ECEN 598, Senior Design Project I. The course deals with design implementation, system block testing, interfacing, and prototype testing. Teamwork, technical writing, communications, and project management are stressed throughout the semester. Prerequisite: ECEN 478. (F;S)

**ECEN 485. Selected Topics in Engineering** **Credit 3(3-0)**

This lecture course is used to introduce engineering topics of current interest to students and faculty. The subject matter will be identified before the beginning of the course. Prerequisite: Consent of instructor. (F;S)

**ECEN 486. Special Projects** **Credit 1-3 variable**

This is an investigation of an engineering topic, which is arranged between a student and a faculty advisor. Project topics may be analytical and/or experimental and should encourage independent study. Prerequisite: Consent of instructor. (F;S)

#### DIRECTORY OF FACULTY

<b>Ward J. Collis</b> .....	<b>Emeritus Associate Professor</b>
B.S., M.S., Northwestern University; Ph.D., The Ohio State University	
<b>Numan Dogan</b> .....	<b>Professor</b>
B.S., Karadeniz Technical University, M.S., Polytechnic Institute of New York, Ph.D., University of Michigan	
<b>Christopher Doss</b> .....	<b>Associate Professor</b>
B.S.E.E., M.S.E.E., Ph.D., North Carolina State University	
<b>William Edmonson</b> .....	<b>Professor</b>
B.S., GMI; M.S., Georgia Tech; Ph.D., North Carolina State University	
<b>Gregory C. Gilmore</b> .....	<b>Instructor</b>
B.S. North Carolina State University; M.S., Georgia Institute of Technology	
<b>Corey Graves</b> .....	<b>Associate Professor</b>
B.S.E.E., M.S.E.E., North Carolina A&T University; Ph.D., North Carolina State University	
<b>Abdollah Homaifar</b> .....	<b>Duke Energy Eminent Professor</b>
B.S., M.S., State University of New York-Stony Brook; Ph.D., University of Alabama	
<b>Shanthi Iyer</b> .....	<b>Research Professor</b>
B.S., M.S., Delhi University; Ph.D., Indian Institute of Technology	
<b>Ali Karimodini</b> .....	<b>Assistant Professor</b>
B.S., Polytechnic University; M.S., Petroleum University of Technology; Ph.D., National University of Singapore	
<b>John C. Kelly, Jr.</b> .....	<b>Associate Professor and Chairperson</b>
B.S., Ph.D., University of Delaware	
<b>Jung Kim</b> .....	<b>Professor</b>
B.S., Yonsei University, M.S., Ph.D., North Carolina State University	
<b>Gary Lebby</b> .....	<b>Research Professor</b>
B.S., M.S., University of South Carolina, Ph.D., Clemson University	
<b>Clinton Lee</b> .....	<b>Associate Professor</b>
B.S., California Institute of Technology; M.S., North Carolina A&T State University; Ph.D., North Carolina State University	
<b>Robert Li</b> .....	<b>Professor</b>
B.S., Duke University; M.S., Purdue University; Ph.D., University of Kansas	
<b>Daniel Limbrick</b> .....	<b>Assistant Professor</b>
B.S., Texas A&M University; M.S., Ph.D., Vanderbilt University	
<b>Harold L. Martin, Sr.</b> .....	<b>Professor and Chancellor</b>
B.S., M.S. North Carolina A&T State University, Ph.D. Virginia Polytechnic Institute and State University	
<b>Zhijian Xie</b> .....	<b>Associate Professor</b>
B.S., M.S. University of Science and Technology of China, Ph.D. Princeton University	
<b>Chung Yu</b> .....	<b>Emeritus Professor</b>
B.Eng., McGill University; M.S., Ph.D., The Ohio State University	



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**Department of Industrial and Systems Engineering**

<http://www.ncat.edu/coe/departments/inen/index.html>

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**Tonya Smith-Jackson, Chairperson**

**DEGREES OFFERED**

Industrial and Systems Engineering – Bachelor of Science

**MISSION**

The mission of the BS in Industrial and Systems Engineering (ISE) program is to transform the industrial and systems engineering pipeline by providing educational and research experiences relevant to societal and industry needs and enabling individual development into technically proficient, culturally competent, collaborative leaders making a positive difference for their employers, communities, and the discipline; always embracing excellence in performance and conduct.

**EDUCATIONAL OBJECTIVES**

The BS in ISE Program Objectives are established by the faculty of the industrial and systems engineering department. In determining these objectives, the stakeholders of the BS in ISE Program are consulted at least once every three years. Furthermore, the objectives are verified for consistency with the mission, goals and objectives of the University and the College of Engineering. The objectives of the BS in ISE Program are to produce graduates who:

1. Apply technical and business skills based on industrial and systems engineering principles for a variety of employers in the manufacturing and service industries.
2. Apply information technology tools and systems engineering methods.
3. Lead and function in interdisciplinary, culturally and/or globally diverse teams.
4. Contribute to their communities, the profession of industrial and systems engineering, and the University.
5. Engage in life-long learning including the pursuit of graduate studies.

**PROGRAM REQUIREMENTS**

The Industrial and Systems Engineering major must complete 120 credit hours following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements.

**ACCREDITATION**

The undergraduate program in Industrial and Systems Engineering, leading to the Bachelor of Science in Industrial and Systems Engineering degree, is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC-ABET).

**CAREER OPPORTUNITIES**

Industrial and systems engineering is one of the major engineering fields in the United States with a significant need. Starting salaries for industrial and systems engineers are competitive with those of other engineering disciplines. The education that industrial and systems engineers receive also prepares them for rapid advancement to higher level managerial positions.

**Department of Industrial and Systems Engineering  
Bachelor of Science in Industrial and Systems Engineering  
Major Code: ISEN**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
CHEM 106	3	Humanities/Fine Arts Elective <sup>1</sup>	3
CHEM 116	1	ISEN 162	2
MATH 131	4	MATH 132	4
GEEN 100	2	PHYS 241	3
GEEN 111	1	PHYS 251	1
<b>Semester Total</b>	<b>14</b>	ISEN 121	1
		<b>Semester Total</b>	<b>17</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	

PSYC 101 <sup>1</sup> (formerly PSYC 320)	3	Global Awareness Elective <sup>1</sup>	3
ISEN 102	2	African-American Culture /	
ISEN 246	3	HIST Elective	3
MATH 351	3	MEEN 260	2
PHYS 242	3	ISEN 255	3
PHYS 252	1	ISEN 286	1
<b>Semester Total</b>	<b>15</b>	MATH 231	4
		<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
ISEN 380	3	ISEN 324	3
ISEN 430	3	ISEN 386	1
ISEN 361	3	ISEN 435	3
ISEN 370	3	ISEN 465	3
ISEN 471	2	ISEN 472	2
<b>Semester Total</b>	<b>14</b>	MEEN 230	3
		<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
ISEN 425	3	ISEN 440	3
ISEN 455	3	ISEN 486	1
ISEN 415	3	ISEN 495	3
ISEN 475	3	ISEN 480	3
ISEN 400	1	ISE Technical Elective <sup>1</sup>	3
ISE Technical Elective <sup>1</sup>	3	<b>Semester Total</b>	<b>13</b>
<b>Semester Total</b>	<b>16</b>		

**Total Credit Hours: 120**

<sup>1</sup>See your academic advisor for a list of eligible courses to satisfy these requirements.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

CHEM 106	GEEN 100
MATH 131	ISEN 361
MATH 132	ISEN 370
MATH 231	MEEN 260
PHYS 241	MEEN 230
PHYS 242	

### COURSE DESCRIPTIONS IN GENERAL ENGINEERING AND INDUSTRIAL AND SYSTEMS ENGINEERING

#### General Engineering

#### **GEEN 100. Engineering Design and Ethics**

**Credit 2(2-0)**

This course introduces students to engineering and computer science disciplines and functions, professional licensure, the Fundamentals of Engineering exam, code of ethics, safety, the design process, creative thinking, teamwork, and technical writing. A case study on ethics and the application of the design process through a team project are required. **(F;S;SS)**

#### **GEEN 111. College of Engineering Colloquium I**

**Credit 1(1-0)**

This course includes lectures, seminars, and activities important to the retention and matriculation of students in the college of engineering. Students are introduced to various engineering and computer science degree programs and their respective professions, and are also provided with group advisement regarding department, college, and university-level policies and procedures.

**GEEN 161. Computer Programming in MatLab for Engineers** **Credit 2(0-4)**  
This course introduces computer programming using MatLab. Topics include flow chart construction and interpretation, procedural control flow, algorithm coding development, and spreadsheets.

**GEEN 164. Engineering Programming II** **Credit 1(0-2)**  
This is an independent study formatted course to prepare engineering students to take further computer courses. Students will write programs in an object-oriented programming language. (F;S;SS)

#### **INDUSTRIAL AND SYSTEMS ENGINEERING**

**ISEN 102. Graphical Visualization for Industrial Engineers** **Credit 2(1-2)**  
This course introduces computer-aided drafting in two dimensions, multi-view drawings, plant and building layouts, reading blueprints and interpreting engineering drawings, flow process charts, and plotting functions in 2 and 3 dimensions.

**ISEN 121. Industrial and Systems Engineering Colloquium** **Credit 1(1-0)**  
This course includes lectures, seminars and activities important to the retention and matriculation of industrial and systems engineering students. Topics covered include learning styles, group dynamics, industrial and systems engineering history, and career development. Students are also provided with group advisement regarding department, college, and university-level policies and procedures.

**ISEN 162. Computer Programming in VisualBasic for Engineers** **Credit 2(0-4)**  
This course introduces computer programming using VisualBasic. Topics include flow chart construction and interpretation, procedural control flow, user and application interface development, and spreadsheets.

**ISEN 246. Industrial Production Processes** **Credit 3(2-2)**  
This course introduces various types of manufacturing processes including metal casting, forming, shaping, material removal and joining. The course also covers basic jig, fixture and gage design. Material removal rates and machining formulas are also explored. Laboratory projects are required. Prerequisite: GEEN 100.

**ISEN 255. Methods Engineering** **Credit 3(2-2)**  
This course introduces the concepts of methods analysis, documentation and improvement, time and motion study, determination of time standards using time study, work sampling and predetermined times standards. The course also discusses job evaluation, productivity measures, and learning curves. Laboratory projects are required. Prerequisite: GEEN 100.

**ISEN 260. Engineering Economy** **Credit 2(2-0)**  
This course introduces the concept of time value of money, cash flows, and the methods of evaluating alternatives based on present worth, annual worth, rate of return, payback period and cost benefit analysis. The course also introduces breakeven analysis, replacement analysis, depreciation methods and the effect of income taxes and inflation on economy studies. Prerequisite: Sophomore standing.

**ISEN 286. Engineering Teams and Leadership** **Credit 1(1-0)**  
This course covers industrial relations and organizational structures, project management, teamwork, interpersonal skills, and leadership in an engineering organization. Prerequisites: GEEN 100 and ENGL 100.

**ISEN 324. Computer Aided Design and Manufacturing** **Credit 3(2-2)**  
This course covers Computer-Aided Design (CAD), Computer-Aided Manufacturing (CAM), and their integration. Topics include computer-aided design, process planning, Numerical Control (NC) programming and operation, Group Technology (GT), rapid prototyping, integrated production planning and control, and integrated manufacturing data systems. Design projects will be required. Prerequisites: ISEN 246.

**ISEN 361. Engineering Economic and Cost Analysis** **Credit 3(3-0)**  
This course covers the time value of money, cash flows, and methods of evaluating alternatives based on present worth, annual worth, rate of return, payback period and benefit/cost analysis including consideration for depreciation, taxes and inflation. The course also introduces cost determination for decision-making, breakeven analysis, and replacement analysis. Prerequisite: Sophomore standing.

**ISEN 370. Engineering Statistics** **Credit (3-0)**  
This course introduces data presentation and analysis, frequency distributions, probability concepts and axioms of probability. Random variables, discrete and continuous probability distributions, calculus based probability calculations, joint distributions, conditional probability and independence are covered. Independence of events is applied to engineering system reliability. Students are introduced to concepts of sampling, sampling distributions, estimation, confidence intervals, and hypothesis testing. Prerequisite: MATH 132.

**ISEN 380. Information Technology for Industrial and Systems Engineers** **Credit 3(2-2)**  
This course introduces the planning and design techniques used for enterprise information systems. The course addresses basic concepts of database systems, network systems, system analysis and planning, and human-computer systems. Systems concepts, fundamentals of VBA, and the role of computers in industrial and systems engineering are stressed. Prerequisite: ISEN 162.

**ISEN 386. Systems Approaches for Industrial and Systems Engineers** **Credit 1(1-0)**  
This course introduces current techniques for systems design, analysis and improvement. Prerequisite: Junior standing as ISEN major.

**ISEN 400. Problem Solving in Industrial and Systems Engineering** **Credit 1(0-2)**  
This course emphasizes open-ended problem solving. Students work in teams to solve problems spanning a variety of industrial and systems engineering topics. Prerequisites: Senior standing as ISE major, ISEN 361, ISEN 430, ISEN 465, ISEN 471.

- ISEN 415. Discrete Event Systems Modeling and Simulation** **Credit 3(2-2)**  
 Concepts of random variate generation, Monte Carlo and discrete event simulation will be introduced. Simulation languages are introduced in this course. One general simulation language is taught in depth. The use of simulation modeling in design and improvement of production and service is emphasized. Projects are required. Prerequisites: ISEN 380, and senior standing as ISEN major.
- ISEN 425. Quality Assurance** **Credit 3(3-0)**  
 This course introduces the concepts of quality control and assurance. Topics include statistical control charts, attributes and variable sampling plans, quality philosophies, process capability, quality function deployment, ISO 9000 and quality auditing. Prerequisite: ISEN 370.
- ISEN 428. Lean Six Sigma** **Credit 3(3-0)**  
 This course focuses on the practical application of lean techniques in conjunction with the Six Sigma DMAIC (define, measure, analyze, improve, control) roadmap. This involves application of process flow, quality and data analysis techniques to solve business and operations problems. This course provides the training basis for achieving the skill level of a Six Sigma Green Belt. Prerequisite: ISEN 370.
- ISEN 430. Deterministic Operations Research** **Credit 3(3-0)**  
 Deterministic models of operations research are discussed with special emphasis on linear programming. Topics covered include formulation and computer solution of mathematical programs, simplex algorithm, transportation problem, and network flow. Prerequisite: MATH 350.
- ISEN 435. Stochastic Operations Research** **Credit 3(3-0)**  
 This course introduces the concepts of probabilistic operations research models and solution techniques. Specific topics covered include Poisson process, Markov chains, queuing models and their applications, decision and risk analysis, and dynamic programming. Prerequisites: ISEN 370 and MATH 350.
- ISEN 440. Decision Support Systems for Industrial and Systems Engineers** **Credit 3(3-0)**  
 This course covers the design of decision support systems for production and service systems based on quantitative models. Applications of spreadsheets, databases, and integrated software development environments are emphasized. Prerequisites: ISEN 380, ISEN 430, and senior standing.
- ISEN 446. Automation and Production Systems** **Credit 3(2-2)**  
 This course covers automation systems including programmable controllers and robotics, design for manufacturing and assembly, material selection, flexible manufacturing systems, group technology, just-in-time manufacturing, process planning, and economics of manufacturing. Prerequisite: ISEN 324.
- ISEN 453. Technical Entrepreneurship** **Credit 3(3-0)**  
 This course introduces technology entrepreneurial perspective and technology venture creation. The course addresses concepts essential to the entrepreneurial process such as taking a technology idea and finding a commercial opportunity, gathering resources, leading the team, building a business plan, marketing the concept, and managing rapid growth. Prerequisites: Senior standing.
- ISEN 455. Production Control** **Credit 3(3-0)**  
 This course introduces the concepts of demand forecasting, aggregate production planning, inventory control, project planning, line balancing and job scheduling. Relationships with demand-driven methods, enterprise resource planning, and supply chain management are covered. Corequisite: ISEN 430.
- ISEN 458. Management of Engineering Projects** **Credit 3(3-0)**  
 This course provides an overview of activities required of a technical project manager. Such activities include project life cycle, team formation and leadership, planning, scheduling, budgeting, and control. Project management software is utilized. Prerequisite: Senior standing.
- ISEN 465. Facilities Design** **Credit 3(2-2)**  
 The course presents a study of the theory and practice of facilities design: activity and flow analysis, space requirements, layout techniques, material handling, warehousing, location selection, and problem-solving with computer-aided layout techniques. Design projects in facilities layout required. Prerequisite: ISEN 255.
- ISEN 468. Material Handling Systems Design** **Credit 3(3-0)**  
 This course focuses on design, and analysis of materials handling and flow in manufacturing facilities and warehouses. Principles, functions, equipment and theoretical approaches in materials handling are discussed. Tools for the automation of materials handling are introduced. Design projects are required. Prerequisite: ISEN 465.
- ISEN 471. Ergonomics** **Credit 2(1-2)**  
 This course introduces ergonomics and biomechanics concepts. Topics include psychomotor work capabilities, anthropometry, environmental stressors, physical workload, safety, hazard and risk factor identification, work station design, and material handling. Data collection methods and report writing are emphasized. Lab projects are required. Prerequisite: Junior standing as ISEN major.
- ISEN 472. Cognitive Human Factors Engineering** **Credit 2(1-2)**  
 This course introduces elements of cognitive human factors. Topics include human sensation and perception, cognition, information processing, attention, signal detection theory, mental workload, and decision-making. Lab projects are required. Prerequisite: Junior standing as ISEN major.

- ISEN 473. Occupational Biomechanics** **Credit 3(3-0)**  
 This course introduces the underlying principles behind the mechanical behavior of the musculoskeletal system during industrial work situations. Their applications in the evaluation and design of industrial jobs are emphasized. Course topics include the musculoskeletal system, biomechanical models, work capacity, and bioinstrumentation. Prerequisite: ISEN 471.
- ISEN 475. Design of Experiments** **Credit 3(3-0)**  
 This course introduces various experimental designs to analyze data for research projects, process improvements, human factors studies and surveys. Designs covered include complete and incomplete randomized designs, Latin squares and factorial designs. Suitable laboratory apparatus is used to study the effect of design parameters on selected responses. Statistical software is utilized to analyze results. Parametric statistics such as analysis of variance are introduced. Prerequisite: ISEN 370.
- ISEN 480. Systems Engineering** **Credit 3(3-0)**  
 This course covers applications and case studies that address cost, human factors, energy, information, and materials as it applies to the design of production and service systems. Group work will be emphasized. Selection of appropriate analytical, computational and experimental techniques will be required. A design project is required. Prerequisites: ISEN 465, 471, 472, and senior standing.
- ISEN 485. Selected Topics in Industrial and Systems Engineering** **Variable Credit 1-3**  
 Selected engineering topics of interest to students and faculty. The topics will be selected before the beginning of the course and will be pertinent to the programs of the students enrolled. Prerequisite: Senior standing.
- ISEN 486. Professionalism and Ethics for Industrial and Systems Engineers** **Credit 1(1-0)**  
 This course covers professional licensing, professional practice, ethics, laws and regulations such as the Americans with Disabilities Act, and the role of continuing education. Prerequisites: Senior standing.
- ISEN 495. Design Projects in Industrial and Systems Engineering** **Credit 3(0-6)**  
 This course requires students to work on a real-life design project from industry. The project requires students to analyze, design, and recommend through economic justification the best design alternative. A final report and an oral presentation are required. Students demonstrate the feasibility of their designs in terms of safety, aesthetics, reliability, cost, social and ethical values. This course is only open to ISE majors. Prerequisite: Senior standing as ISE major, ISEN 361, 415, 430, 465, 471.

#### DIRECTORY OF FACULTY

- Lauren Davis**..... **Associate Professor**  
 B.S., Rochester Institute of Technology; M.S., Rensselaer Polytechnic Institute; Ph.D., North Carolina State University
- Salil Desai**..... **Professor**  
 B.S., University of Mumbai; M.S., Ph.D., University of Pittsburgh
- Steven X. Jiang** ..... **Associate Professor**  
 B.S.M.E., East China Institute of Technology; MS, Nanjing University of Science & Technology; Ph.D., Clemson University
- Hyung Nam Kim** ..... **Assistant Professor**  
 B.S., Kansei Engineering, University of South Korea; M.S., Ph.D., Virginia Tech
- Zhichao Li**..... **Associate Professor**  
 B.S., M.S., Tianjin University of Technology and Education; Ph.D., Kansas State University
- Stephen Oneyear** ..... **Adjunct Associate Professor**  
 B.S., M.S., University of Wisconsin
- Eui H. Park** ..... **Professor**  
 B.S., Yonsei University; M.S., Ph.D., Mississippi State University, M.B.A., City University
- Xiuli Qu**..... **Associate Professor**  
 B.E.E.E., M.S.E.E., University of Science and Technology Beijing; M.S.I.E., Ph.D., Purdue University
- Bala Ram**..... **Professor and Associate Dean For Academic Affairs**  
 B.S., M.S., Indian Institute of Technology Madras; Ph.D., State University of New York; Professional Engineer
- Sanjiv Sarin**..... **Professor and Dean, The Graduate College**  
 B.S., M.S., Indian Institute of Technology Delhi; Ph.D., State University of New York; Professional Engineer
- Younho Seong**..... **Associate Professor**  
 B.S.I.E., M.S.I.E., Inhwa University; Ph.D., State University of New York
- Tonya Smith-Jackson**..... **Professor and Chairperson**  
 B.A., University of North Carolina at Chapel Hill; M.S., Ph.D., North Carolina State University; Certified Professional Ergonomist
- Paul Stanfield**..... **Associate Professor**  
 B.S., M.S., North Carolina State University; M.B.A., University of North Carolina at Greensboro; Ph.D., North Carolina State University; Professional Engineer

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**Department of Mechanical Engineering**  
<http://www.ncat.edu/coe/departments/meen/index.html>

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**Frederick Ferguson, Chairperson**

#### MISSION

The mission of the Bachelor of Science program in Mechanical Engineering is to prepare its students for the broad practice of

mechanical engineering and for graduate education in mechanical engineering and the many related fields such as materials engineering and aerospace engineering.

### EDUCATIONAL OBJECTIVES

The objectives of the Mechanical Engineering Undergraduate Program are to produce graduates who will:

1. Demonstrate knowledge, skills and attributes needed to perform effectively in mechanical engineering related positions in industry or in graduate/professional schools.
2. Demonstrate teamwork and leadership skills, and an understanding of multidisciplinary, multicultural and global perspective for solving engineering problems.
3. Exhibit active involvement in their professional and technical societies and in their communities.
4. Demonstrate an appreciation for professional development and enhancements through lifelong learning.
5. Communicate effectively with a variety of audiences by oral, listening, written and graphic means.
6. Demonstrate ability to employ critical thinking skills in the performance of their duties.

### DEGREE OFFERED

Mechanical Engineering – Bachelor of Science

### PROGRAM REQUIREMENTS

The Mechanical Engineering major must complete 125 credit hours by following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements.

### ACCREDITATION

The undergraduate program in Mechanical Engineering, leading to the Bachelor of Science in Mechanical Engineering (BSME) degree, is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC-ABET).

### CAREER OPPORTUNITIES

The mechanical engineering program provides students with the knowledge, skills and attributes that will allow immediate entry into industry, government, and private practice as or graduate work. A large proportion of graduates are employed in industry with classifications such as design, test, development, production or research engineer, and positions in technical marketing and management. Career opportunities for mechanical engineers are, arguably, the most diverse of all the engineering disciplines.

**Department of Mechanical Engineering  
Bachelor of Science in Mechanical Engineering  
Major Code: MEEN**

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
CHEM 106	3	PHYS 241	3
CHEM 116	1	PHYS 251	1
MATH 131	4	MATH 132	4
GEEN 100	2	Global Awareness Elective	3
GEEN 111	1	MEEN 121	1
MEEN 104	2	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>16</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
MATH 231	4	African-American Studies Elective	3
MEEN 202	1	PHYS 242	3
MEEN 210	3	PHYS 252	1
MEEN 231	3	MEEN 267	1
MEEN 261	3	MEEN 232	3
<b>Semester Total</b>	<b>14</b>	MEEN 233	3
		MEEN 241	3
		<b>Semester Total</b>	<b>17</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	

ISEN 260	2	ECEN 340	3
MATH 341	3	MEEN 317	1
ISEN 370	3	MEEN 324	3
MEEN 316	3	MEEN 341	3
MEEN 363	3	MEEN 343	3
MEEN 361	3	MEEN 321	3
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>16</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
Humanities Elective	3	Social Sciences Elective	3
MEEN 424	3	MEEN 425	1
MEEN 421	3	MEEN 404/492	1
MEEN 401	1	MEEN 481	3
MEEN 480	3	Math/Science Elective	3
MEEN 4xx Technical Elective	3	MEEN 4xx Technical Elective	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>14</b>

**Total Credit Hours: 125**

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

GEEN 100	MEEN 315
ECEN 340	MEEN 316
ISEN 260	CHEM 106
ISEN 370	MATH 131
MEEN 231	MATH 132
MEEN 232	MATH 231
MEEN 233	MATH 341
MEEN 241	PHYS 241
MEEN 261	PHYS 242

### COURSE DESCRIPTIONS IN MECHANICAL ENGINEERING

**MEEN 104. Graphics for Mechanical Engineering**

**Credit 2(0-4)**

This is an introductory course in computer aided graphics and design for mechanical engineers. This course will familiarize students with conventions of 2-D graphical representation of mechanical components and 3-D solid modeling. **(F;S)**

**MEEN 121. Mechanical Engineering Colloquium**

**Credit 1(1-0)**

This course includes lectures, seminars and activities important to the retention and matriculation of mechanical engineering students. Topics covered include learning styles, group dynamics, and career development. Students are also provided with group advisement regarding department, college, and university-level policies and procedures. **(F;S)**

**MEEN 202. ME Sophomore Project**

**Credit 1(0-2)**

This is a hands-on course to enable students apply knowledge gained in the freshmen courses to realize a physical device. Topics include machining, tolerances, surface finish, assembly and selection of common mechanical components. Prerequisites: MEEN 104 and MEEN 121 **(F;S)**

**MEEN 210. Numerical Methods Using MATLAB**

**Credit 3(2-2)**

This course introduces contemporary computational methods and tools for numerical analysis in engineering. It includes numerical methods in differentiation, integration, interpolation, root-finding, linear and nonlinear regression. Linear algebra topics include matrix manipulation, solution of linear simultaneous equations, and solution of ordinary differential equations. Each topic involves projects with numerical computations using MATLAB. Prerequisite: MATH 132. **(F;S;SS)**

- MEEN 230. Statics and Mechanics of Materials** **Credit 3(2-2)**  
 This is an introductory course in statics and mechanics of materials for non-mechanical engineering majors. It provides a just-in-time approach to the study of characteristics of forces and couples, and their effects on equilibrium, strains, and stresses in solid bodies. Relationships between loads and deformations are also presented. Prerequisites: MATH 131, PHYS 241. (F;S;SS)
- MEEN 231. Mechanics I, Statics** **Credit 3(2-2)**  
 Basic vector concepts of force, moment of a force; analytical and graphical techniques in the analysis of force and moment; conditions of equilibrium in frames, trusses, machine members under static loads; laws of friction; distributed forces, determination of centroid, mass center, area and mass moment of inertia. Prerequisites: MATH 131, PHYS 241. (F;S;SS)
- MEEN 232. Strength of Materials** **Credit 3(2-2)**  
 This course covers the analysis of stress and strain; stress-strain relation; applications; torsional and flexural loadings; flexural deflections; combined loading; columns. Prerequisite: MEEN 231. (F;S;SS)
- MEEN 233. Mechanics II, Dynamics** **Credit 3(2-2)**  
 This introductory course covers the motions of particles and rigid bodies and the forces that accompany or cause those motions. Topics include Newton's laws, the work and energy principle, and the impulse and momentum principle. The course includes the use of computational software to solve numerical problems. Prerequisites: MEEN 231 and MATH 231. (F;S;SS)
- MEEN 241. Fundamentals of Thermodynamics** **Credit 3(2-2)**  
 This is a basic course in fundamental thermodynamic principles. The topics covered include energy, heat and work, thermodynamic properties of substances, real and ideal gases, first and second laws of thermodynamics from a macroscopic viewpoint, the basic Rankine power cycle, and the basic vapor compression refrigeration cycle. Prerequisites: MATH 132 and CHEM 106. (F;S;SS)
- MEEN 260. Materials Science** **Credit 2(2-0)**  
 This basic course in materials science covers the fundamental nature of materials including their physical, mechanical and chemical characteristics. Topics include: atomic arrangements and atomic bonding; structure property relationships, phase diagrams, engineering properties and basic failure modes. Prerequisite: CHEM 106, MATH 131. (F;S;SS)
- MEEN 261. Fundamentals of Materials Science** **Credit 3(3-0)**  
 This course deals with the relationships between the structure of materials and their properties and performance. Topics include: (1) atomic structure and chemical bonding, (2) crystal structure, (3) defects, (4) phase diagrams, and (5) physical properties including mechanical, electrical, and magnetic. Prerequisites: CHEM 106 and MATH 131. (F;S)
- MEEN 267. Mechanics and Materials Laboratory** **Credit 1(0-2)**  
 This is the first in the sequence of three mechanical engineering laboratory courses. It covers experiments in materials science and engineering, and materials testing. Prerequisites: MEEN 231 and MEEN 261. (F;S)
- MEEN 315. Aerodynamics** **Credit 3(3-0)**  
 The course begins with the fundamentals of fluid statics and dynamics followed by an introduction to inviscid flow theory with applications to incompressible flows over airfoils, wings and flight vehicle configurations. Prerequisites: MATH 231 and MEEN 233. (F)
- MEEN 316. Fluid Mechanics** **Credit 3(2-2)**  
 This course examines the continuum concept, fluid statics, mass and momentum balances, the Bernoulli Equation, dimensional analysis, pipe flow problems, the design and the selection of pumps and the three forms of drag. Boundary layer flows, compressible flow and flow measurement devices are discussed. Prerequisites: PHYS 241, MATH 231. (F;S;SS)
- MEEN 317. Thermal-Fluid Systems Laboratory** **Credit 1(0-2)**  
 This is the second course in the sequence of three mechanical engineering laboratory courses. The course includes selected experiments in the area of fluid mechanics, thermodynamics, and heat transfer. Prerequisites: MEEN 316 and MEEN 241. (F;S)
- MEEN 318. Propulsion** **Credit 3(3-0)**  
 This course covers internal flow of compressible fluids, normal shock, flow with friction, and simple heat addition. The concepts are applied to aircraft and rocket propulsion systems. Prerequisites: MEEN 315, MEEN 241 and MATH 231. (S)
- MEEN 319. Aerodynamics and Propulsion Laboratory** **Credit 1(0-2)**  
 This is a laboratory course which provides experiments to reinforce concepts learned in aerodynamics and propulsion courses. Prerequisite: MEEN 315. (S)
- MEEN 321. Mechanical Engineering Design** **Credit 3(3-0)**  
 This course provides an introduction to mechanical design. Emphasis is placed on the design of machine elements for static and fatigue strength. Other topics such as codes and standards, project planning and communication are also covered. Team design projects are assigned. Prerequisite: MEEN 232. (F;S)
- MEEN 324. System Dynamics** **Credit 3(3-0)**  
 This course gives a treatment of dynamic systems composed of mechanical, electrical, thermal and fluid elements. General analytical and design tools for physical systems are developed. Topics include time response, frequency response, linearization, numerical analysis, and computer simulation. Projects are assigned to investigate the scope and limitations of the basic concepts. Prerequisites: MEEN 210, MEEN 233, and MATH 341. (F;S)
- MEEN 341. Applied Thermodynamics** **Credit 3(3-0)**  
 This course involves applications of basic thermodynamic principles to real systems. The topics covered include: gaseous mixtures, psychrometrics, combustion, power cycles and refrigeration cycles. Prerequisites: MEEN 241 and MATH 231. (F;S)



- MEEN 343. Heat Transfer** **Credit 3(2-2)**  
 The course covers the fundamentals of heat conduction, convection, radiation, boiling and condensation, and heat exchangers. Design and safety aspects of heat transfer equipment are covered. Prerequisites: MEEN 316 (or 315), 241, MATH 341. (F;S;SS)
- MEEN 361. Modern Engineering Materials** **Credit 3(3-0)**  
 This course covers the role of materials in engineering; properties of materials; nonferrous and ferrous systems and applications; heat treatment and strengthening mechanisms; various polymeric, ceramic, composite materials biomaterials and their applications; failure theories; characterization; corrosion and environmental issues; project work involving selection and design with various material systems.. Prerequisite: MEEN 261. (F;S)
- MEEN 363. Manufacturing Processes** **Credit 3(3-0)**  
 The course deals with principles, analysis, and selection of manufacturing processes. Topics include casting, molding, forming, particulate processing, material removal and joining. Design for manufacturing and manufacturing economics are introduced. Prerequisites: MEEN 202, MEEN 261 and MEEN 232. (F;S)
- MEEN 401. General Engineering Topics Review** **Credit 1(0-3)**  
 This course reviews the engineering topics normally covered in the General Engineering sections of the Fundamentals of Engineering Examination. The course emphasizes extensive problem solving and helps students prepare for the FE exam. Prerequisite: Senior standing. (F)
- MEEN 404. Mechanical Engineering Topics Review** **Credit 3(3-0)**  
 This course reviews the mechanical engineering topics normally covered in the discipline specific section of the Fundamentals of Engineering Examination. The course is intended for senior students preparing for the FE Exam. Prerequisites: MEEN 401 and consent of instructor. (F;S)
- MEEN 421. Computer-Aided Design of Machine Elements** **Credit 3(3-0)**  
 This course covers the principles and current practices of machine element design, including solid modeling and finite element analysis. Prerequisite: MEEN 321. (F;S)
- MEEN 424. Vibrations and Controls** **Credit 3(3-0)**  
 This course introduces the modeling, analysis and simulation of free and forced vibrations of damped and undamped, single and multi-degree of freedom systems and the basic properties of feedback control, and the fundamentals of control system design using root locus and frequency response methods. Prerequisites: MEEN 324 and ECEN 340. (F;S)
- MEEN 425. Mechanical Systems Laboratory** **Credit 1(0-2)**  
 This is the third course in the sequence of three mechanical engineering laboratories. The course deals with experiments in manufacturing processes, system dynamics, vibrations and control. Prerequisite: MEEN 324. (F;S)
- MEEN 431. Composite Materials** **Credit 3(2-2)**  
 This course introduces manufacturing of fiber reinforced polymer composites and mechanical characterization with an introduction to material anisotropy and design. Topics include anisotropic constitutive equations, use of software to predict elastic constants, manufacturing methods, process control parameters, and physical and mechanical characterization. Concepts learned are applied to design of simple composite beams. Prerequisites: MEEN 233 and MEEN 261.
- MEEN 432. Fundamentals of Nanoscience and Engineering** **Credit 3(3-0)**  
 This course will offer a perspective in areas related to the structure, stability and functional characteristics of nanoscale materials using theoretical models, with an emphasis on the interrelationship between materials properties and processing. Prerequisite: MEEN 361. (F;S)
- MEEN 451. Aero Vehicle Structures** **Credit 3(3-0)**  
 This course covers deflection of structures, indeterminate structures, fatigue analysis, and minimum weight design. Finite element methods and software are utilized. Prerequisite: MEEN 321. (F;S)
- MEEN 452. Turbomachinery** **Credit 3(3-0)**  
 This course covers the application of the cascade method to turbo-machines; impulse and reaction turbines; compressible fluid dynamics; gas turbine principles, pumps, compressors and blowers; and the design of turbine elements. Project work is assigned. Prerequisite: MEEN 343. (F;S)
- MEEN 453. Flight Vehicle Performance** **Credit 3(3-0)**  
 This course provides an introduction to the performance analysis of aircraft. Aircraft performance in gliding, climbing, level, and turning are analyzed as well as calculation of vehicle take off and landing distance, range and endurance. Prerequisites: MATH 231 and MEEN 233. (F;S)
- MEEN 461. Design of Thermal Systems** **Credit 3(3-0)**  
 This is a course in the selection of components for fluid and energy processing systems to meet system performance requirements. Computer-aided thermal design, simulation and optimization techniques, and investment economics are discussed. Design projects are assigned to demonstrate application of these topics. Prerequisites: MEEN 343 and ISEN 260. (F;S)
- MEEN 463. Heating, Ventilation, and Air Conditioning** **Credit 3(3-0)**  
 This course deals with the principles of heating and air conditioning and their applications to design of environmental control systems; determination of building heating and cooling loads; principal equipment, layout and control are discussed for various types of systems. Prerequisite: MEEN 343. (F;S)

- MEEN 464. Internal Combustion Engines** **Credit 3(3-0)**  
 This course deals with the fundamental principles of spark-ignition and compression ignition engines, combustion phenomena, the effect of fuel-air mixture, design of components of an internal combustion engine, and testing and performance curves. Design projects are assigned. Prerequisite: MEEN 343. **(F;S)**
- MEEN 465. Energy Conversion Systems Design** **Credit 3(3-0)**  
 This course covers the design of steam power systems, internal combustion power systems, refrigeration and heat pump systems and an overview of direct energy conversion devices. Power system design projects are assigned. Prerequisite: MEEN 343. **(F;S)**
- MEEN 466. Fundamentals of Nuclear Energy** **Credit 3(3-0)**  
 This course introduces nuclear physics as applied to nuclear power. Pressurized water reactors, boiling water reactors, and others that are currently in operation and those planned for the future are discussed. The course addresses the safety and environmental concerns of nuclear energy with discussion of nuclear accidents and nuclear waste. Prerequisite: MEEN 241. **(F;S)**
- MEEN 480. Mechanical Engineering Senior Project I** **Credit 3(2-2)**  
 This is the first part of a two-course sequence which together prepares students for engineering practice. This is a major team design experience. The projects are based on the knowledge and skills acquired in earlier course work and incorporates multiple design constraints. Team design projects are continued during the following semester in MEEN 481 or MEEN 482. Oral presentations and written reports are required. Prerequisites: MEEN 341 (or MEEN 318) and MEEN 321. **(F)**
- MEEN 481. Mechanical Engineering Senior Project II** **Credit 3(0-6)**  
 This is the second part of the two-course sequence senior project. Work continues on the design project begun in MEEN 573 culminating in a final product which incorporates multiple design constraints. Oral presentations and written reports required. Prerequisite: MEEN 480. **(S)**
- MEEN 482. Aerospace Senior Project** **Credit 3(2-2)**  
 This is the second part of the two-sequence senior capstone design experience. Work continues on the design project begun in MEEN 480 culminating in a final aircraft or aerospace vehicle which incorporates multiple design constraints. Oral presentations and written reports are required. Prerequisite: MEEN 480. **(S)**
- MEEN 490. Independent Study** **Credit 3(3-0)**  
 This course involves student participation in research conducted by faculty. Topics may be analytical and/or experimental and encourage independent study. The submission of a written report is required. Students will receive "P" for "Satisfactory" or "F" for "Unsatisfactory" grades. Prerequisites: Senior standing and consent of instructor. **(F;S)**
- MEEN 492. Mechanical Engineering Seminar** **Credit 1(1-0)**  
 This weekly seminar course utilizes invited speakers to address such topics as resume preparation, interviewing, ethics and professional registration, as well as technical topics presented by graduate students and faculty researchers. Prerequisite: Senior standing in mechanical engineering. **(F)**
- MEEN 496. Special Undergraduate Project** **Variable Credit (1-3)**  
 This is a senior level project of interest to students. A faculty member will serve as a project advisor. Projects may include design, analysis, testing, and/or experimental work. Prerequisite: Permission of department and faculty member as an advisor. **(F;S;SS)**
- MEEN 585. Special Topics** **Credit 3(0-6)**  
 This course is designed to allow the introduction of potential new courses on a trial basis or special content courses on a once only basis. The topic of the course and title are determined prior to registration. Prerequisite: Senior standing. **(F;S)**

#### DIRECTORY OF FACULTY

- Stephen Armah**..... **Adjunct Assistant Professor**  
 B.S., Kwame Nkrumah University of Science & Technology, Kumasi, Ghana; M.S., Imperial College of Science, Technology & Medicine, London; Ph.D., North Carolina A&T State University
- Daniel Acree**..... **Lecturer**  
 B.S., M.S., North Carolina A&T State University
- Paul Akangah**..... **Lecturer**  
 B.S., Kwame Nkrumah University of Science & Technology, Kumasi, Ghana; M.S., Royal Institute of Technology, Stockholm, Sweden; Ph.D., North Carolina A&T State University
- Suresh Chandra**..... **Emeritus Professor**  
 B.S., Allahabad University; B.Sc., Banaras Hindu University; M.S, University of Louisville; Ph.D., Colorado State University
- Adrian Cuc**..... **Adjunct Assistant Professor**  
 B.S., "Politehnica" University of Timisoara, Romania; M.S., University of South Carolina; Ph.D., University of South Carolina.
- DeRome O. Dunn**..... **Associate Professor**  
 B.S., M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University
- Frederick Ferguson**..... **Professor and Chairperson**  
 M.S., Kharkov State University; Ph.D., University of Maryland
- John Kizito**..... **Professor and Director of Undergraduate Programs**  
 B.S., Makarere University; M.S., Ph.D., Case Western Reserve University
- Dhananjay Kumar**..... **Professor and Director of Graduate Programs**  
 B.S., Bhagalpur University; M.S., Magadh University, Ph.D., Indian Institute of Technology

**Samuel P. Owusu-Ofori** ..... **Boeing Professor**  
 B.S., University of Science and Technology-Kumasi, Ghana; M.S., Bradley University; Ph.D., University of Wisconsin-Madison;  
 Professional Engineer

**Devdas M. Pai** ..... **Professor and Director for Education and Outreach, NSF Engineering Research Center**  
 B.Tech., Indian Institute of Technology Madras; M.S., Ph.D., Arizona State University; Professional Engineer

**Jagannathan Sankar** ..... **University Distinguished Professor and Director of NSF Engineering Research Center**  
 B.E., University of Madras; M.E., Concordia University, Ph.D., Lehigh University

**Kunigal N. Shivakumar** ..... **Research Professor**  
 B.E., Bangalore University; M.E., Ph.D., Indian Institute of Science

**Mannur Sundaresan** ..... **Professor**  
 B.E , M.E., Bangalore University, Bangalore, India, Ph.D., Virginia Polytechnic Institute & State University

**Shih-Liang Wang** ..... **Professor**  
 B.S., National Tsing Hua University; M.S., Ph.D., The Ohio State University; Professional Engineer

**Cindy Waters** ..... **Associate Professor**  
 B.S., M.S., Virginia Polytechnic Institute & State University, Ph.D., North Carolina A&T State University

**Sun Yi** ..... **Associate Professor**  
 B.S., Seoul National University; M.S., Ph.D., University of Michigan-Ann Arbor

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## COLLEGE OF HEALTH AND HUMAN SCIENCES

<http://www.ncat.edu/chhs/index.html>

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**Lenora Campbell, Interim Dean**

The College of Health and Human Sciences (CHHS) at North Carolina A&T State University offers undergraduate and graduate programs in the academic disciplines of human performance and leisure studies, nursing, psychology, social work and sociology. Many of our programs are professionally accredited and our graduates are well prepared for licensure and certification examinations.

The College capitalizes on the synergistic relationships between exercise science, recreation and sports management, psychology, sociology, social work, and nursing.

### DEGREES OFFERED

Nursing – Bachelor of Science  
Psychology – Bachelor of Arts  
Social Work – Bachelor of Social Work  
Sociology – Bachelor of Arts  
Sport Science and Fitness Management – Bachelor of Science

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### Department of Human Performance and Leisure Studies

<http://www.ncat.edu/chhs/departments/hpls/index.html>

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### OBJECTIVES

1. Students will be able to apply principles of exercise science to identify, assess, and analyze human movement.
2. Students will demonstrate the ability to critically evaluate, interpret, and integrate information from the scientific literature in the discipline.
3. Students will demonstrate the knowledge needed to conduct and interpret assessments of health and fitness, as well as to determine safe and effective exercise programs to achieve desired outcomes and goals.
4. Students will demonstrate the ability to apply discipline-related knowledge and skill to real-world problems through internships.

### DEGREES OFFERED

Sport Science and Fitness Management – Bachelor of Science

### DEPARTMENTAL REQUIREMENTS

There are three options in the Sport Science and Fitness Management (SSFM) degree program: Business Administration (BA), Pre-Physical Therapy (Pre-PT) and Leisure Studies (LSS). Students are required to select one of the three options.

Students in the Business Administration or Leisure Studies option must maintain a minimum cumulative 2.3 grade point average (GPA), while students in the Pre-Physical Therapy option must maintain a minimum cumulative 2.8 GPA. In addition, students must receive a minimum grade of a “C” in all major core courses.

### CAREER OPPORTUNITIES

Career opportunities for all Sport Science and Fitness Management majors include, but are not limited to, personal training, strength and conditioning coaching, fitness instruction, wellness coaching, fitness specialists in cardiac rehabilitation facilities, and sales representatives in pharmaceuticals and medical and fitness supplies. Students in the Business Administration option take additional courses in management and marketing and have employment opportunities as health and fitness club managers, corporate wellness managers, and fitness, personal training, and wellness directors. Students in the Leisure Studies option take additional courses in recreation, and have employment opportunities in Parks and Recreation, youth leadership, YMCAs, and convention and business bureaus. Students in the Pre-PT option take additional courses in preparation for future graduate study in physical therapy. These courses include chemistry, physics, statistics, psychology, and medical terminology. (**Courses in this option may not meet all the required prerequisites for a particular physical therapy program**).

**Department of Human Performance and Leisure Studies  
Bachelor of Science in Sport Science and Fitness Management (Pre-Physical Therapy)  
Major Code: SSFM**

### Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	

ENGL 100	3	ENGL 101	3
FRST 101	1	Humanities/Fine Arts <sup>a</sup>	3
SSFM 130	3	Global Awareness <sup>a</sup>	3
BIOL 100 (SR)	4	A-A Culture & History <sup>a</sup>	3
CHEM 106/116 (Sr)	4	MATH 111 (MLA)	4
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
SSFM 226	3	MATH 224	3
SSFM 201	3	SSFM 225	3
PSYC 101	3	SSFM 272	3
BIOL 350	4	BIOL351	4
CHEM 107/117	4	PHYS 225/235	4
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>17</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
HPLS Elective <sup>d</sup>	3	SSFM 303	3
SSFM 300	3	SSFM 333	3
SSFM 340	3	HPED 370	3
HPED 345	3	HPED 375	3
PHYS 226/236	4	Pre-PT Elective <sup>c</sup>	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
HPED 342	3	Free Elective <sup>b</sup>	3
SSFM 469	3	Free Elective <sup>b</sup>	3
SSFM 471	3	SSFM 498	6
SSFM 472	3	<b>Semester Total</b>	<b>12</b>
<b>Semester Total</b>	<b>12</b>		

**Total Credit Hours: 120**

<sup>a</sup>12 hours –Students must choose from the list of university-approved Humanities/Fine Arts, Global Awareness, African-American Culture/History, and Social/Behavioral Sciences courses. The HPLS department recommends its students to use SSFM 226 as their Social/Behavioral Sciences course.

<sup>b</sup>6 hours – Free Electives: Students may take any courses for which they meet the prerequisites.

<sup>c</sup>3 hours – These hours are used as pre-requisites for graduate school in allied health. Students may choose from the list of approved Pre-PT courses.

<sup>d</sup>3 hours – Students may choose from any SSFM, HPED, or LSS course that is not already part of their curriculum.

Students who do not meet the SAT requirements for MATH 111 will need to take MATH 103 and MATH 104 instead as prerequisites for MATH 224 and PHYS 225.

Students who do not meet the SAT requirements for CHEM 106/116 will need to take CHEM 103 first.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in all major courses.*

*Students must acquire a minimum grade point average of 2.8 in a 4.0 scale by the end of the freshman year in order to continue in the Pre-PT option.*

Department of Human Performance and Leisure Studies  
 Bachelor of Science in Sport Science and Fitness Management (Leisure Studies)  
 Major Code: SSFM

Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
FRST 101	1	A-A Culture and History <sup>a</sup>	3
Human/Fine Arts <sup>a</sup>	3	BIOL 100	4
Global Awareness <sup>*a</sup>	3	MATH 102	3
MATH 101	3	LSS 160	3
SSFM 130	3	<b>Semester Total</b>	<b>16</b>
<b>Semester Total</b>	<b>16</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
SSFM 201	3	Free Elective <sup>b</sup>	3
SSFM 261	4	Social/Behavioral Sciences <sup>a</sup>	3
HPED 250	3	SSFM 225	3
LSS 260	3	SSFM 272	3
Scientific Reasoning Elective <sup>c</sup>	3	LSS 246	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
SSFM 300	3	SSFM 303	3
SSFM 340	3	SSFM 333	3
HPED 345	3	HPED 370	3
HPED 342	3	HPED 375	3
LSS 364	3	LSS 363	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
HPLS Elective	3	Free Elective <sup>b</sup>	3
SSFM 469	3	LSS 365	3
SSFM 471	3	SSFM 498	6
SSFM 472	3	<b>Semester Total</b>	<b>12</b>
Free Elective <sup>b</sup>	3		
<b>Semester Total</b>	<b>15</b>		

**Total Credit Hours: 120**

<sup>a</sup>12 hours –Students must choose from the list of university approved Humanities/Fine Arts, Global Awareness, African-American Culture/History, and Social/Behavioral Sciences courses. The HPLS department recommends its students to use SSFM 226 as their Social/Behavioral course.

<sup>b</sup>9 hours – Free Electives: Students may take any courses for which they meet the pre-requisites.

<sup>c</sup>7 hours – Students must take 2 courses under the Scientific Reasoning category of General Education. LSS option students are required to take BIOL 100 (4 credit hours); the remaining 3 credit hours must be chosen from the list of approved Scientific Reasoning courses. 3 hours

3 hours - HPLS Elective – Students may choose from any SSFM, HPED, or LSS course that is not already part of their curriculum.

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C or better in all major courses.*

Department of Human Performance and Leisure Studies  
 Bachelor of Science in Sport Science and Fitness Management (Business Administration)  
 Major Code: SSFM

Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100 (WC)	3	ENGL 101 (WC)	3
FRST 101	1	A-A Culture and History <sup>a</sup>	3
Human/Fine Arts <sup>a</sup>	3	BIOL 100	4
Global Awareness <sup>*a</sup>	3	MATH 102	3
MATH 101	3	MGMT 110	3
SSFM 130	3	<b>Semester Total</b>	<b>16</b>
<b>Semester Total</b>	<b>16</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
SSFM 201	3	Social/Behavioral Sciences*	3
SSFM 261	4	SSFM 202	3
SSFM 220	3	SSFM 225	3
Free Elective <sup>b</sup>	3	SSFM 272	3
Scientific Reasoning Elective <sup>c</sup>	3	MGMT / MKTG Elective	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
SSFM 340	3	SSFM 303	3
HPED 345	3	SSFM 333	3
MGMT / MKTG Elective	3	HPED 370	3
MGMT 201	3	HPED 375	3
SSFM 300	3	HPED 342	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
SSFM 469	3	Free Elective <sup>b</sup>	3
SSFM 471	3	Free Elective <sup>b</sup>	3
SSFM 472	3	SSFM 498	6
MKTG 230	3	<b>Semester Total</b>	<b>12</b>
HPLS Elective	3		
<b>Semester Total</b>	<b>15</b>		

**Total Credit Hours: 120**

<sup>a</sup>12 hours - Students must choose from the list of university approved Humanities/Fine Arts, Global Awareness, African-American Culture/History, and Social/Behavioral Sciences courses. The HPLS recommends its students to use SSFM 226 as their Social/Behavioral Science course.

<sup>b</sup>9 hours - Free Electives: Students may take any courses for which they meet the pre-requisites.

<sup>c</sup>7 hours - Students must take 2 courses under the Scientific Reasoning category of General Education. Business Administration option students are required to take BIOL 100 (4 credit hours); the remaining 3 credit hours must be chosen from the list of approved Scientific Reasoning courses.

3 hours - HPLS Elective - Students may choose from any SSFM, HPED, or LSS course that is not already part of their curriculum.

**COURSE DESCRIPTIONS FOR ALL SPORT SCIENCE AND FITNESS MANAGEMENT MAJORS**

*Students must earn a C or better in all major courses.*

**SSFM 130. Introduction to Kinesiology**

**Credit 3(3-0)**

This course explores the discipline of kinesiology, including current issues, trends, and various career opportunities. Basic American College of Sports Medicine principles are also introduced. Prerequisite: SSFM majors only. (F;S;SS)

**SSFM 201. Principles of Strength and Conditioning**

**Credit 3(2-2)**

This course provides students with scientific principles and practical skills to develop safe and effective cardiovascular and resistance training programs for apparently healthy populations. The knowledge, skills, and abilities learned are based upon American College of Sports Medicine and National Strength and Conditioning Association principles. SSFM majors only. (F)

**SSFM 225. Fitness Leadership**

**Credit 3(3-0)**

This course is a study of theory professional practice and design of group and individual exercise leadership, and modification of exercise techniques. A field experience is required. Prerequisite: SSFM majors only. (F;S;SS)

**SSF 226. Personal Approach to Health**

This course is designed to introduce research-based knowledge about personal health and how individual wellness impacts society as a whole. It emphasizes the acquisition of health knowledge and skills that include the biological and social aspects of healthful living as well as the dispositions needed to engage in a healthy lifestyle. (F;S;SS)

**SSF 272. Fitness and Aging****Credit 3(3-0)**

This course will examine the relationship between physical activity and the aging process; it will also focus on the impact of physical activity on the physiological, psychological and social well-being of aging adults. Prerequisite: SSF majors only. (S)

**SSF 300. Fitness Facilities and Management****Credit 3(3-0)**

This course is a study of the planning, design, use and maintenance of the facilities and equipment related to physical fitness and wellness. A field experience is required. Prerequisite: SSF majors only. (F)

**SSF 303. Nutrition for Sport and Fitness****Credit 3(3-0)**

This course is designed to study the impact of nutrition on health, fitness and sports performance. Emphasis will be on basic nutrition, diet analysis, weight control, special diets, eating disorders, and the use of ergogenic aids in sport and fitness. Prerequisite: SSF 261 or BIOL 350; SSF majors only. (S)

**SSF 333. Introduction to Sports Medicine****Credit 3(3-0)**

This course focuses on the basic principles in the prevention, care, and rehabilitation of human performance-related injuries. The topics include common medical problems and drugs in sport. Prerequisite: SSF 261 or BIOL 350; SSF majors only. (S)

**SSF 340. Introduction to Sport Management****Credit 3(3-0)**

This course addresses topics and practical skill development related to planning, administrative knowledge and skills needed to make a positive impact on the success of any sport organization, including organizations that focus on sport activities, sport products or sport services. Prerequisites: Junior standing and SSF majors only. (F;S)

**HPED 342. First Aid and Safety****Credit 3(2-2)**

This course is designed to study emergency first aid leading to American Red Cross certification in Standard First Aid and Cardiopulmonary Resuscitation. It also identifies practices and behaviors that promote safety in home, school and community. (F;S;SS)

**HPED 345. Applied Anatomy****Credit 3(2-2)**

This course is a scientific study of the mechanics and analysis of human movement, incorporating principles from the fields of physical education, anatomy, physiology and physics. Prerequisites: SSF 261 or BIOL 350; SSF majors only. (F)

**HPED 370. Exercise Physiology****Credit 3(3-0)**

This course provides theoretical and practical experience in studying physiological concepts as they apply to acute and chronic effects of exercise on humans. Prerequisites: SSF 261 or BIOL 350; SSF majors only. (S)

**HPED 375. Motor Learning and Control****Credit 3(3-0)**

This course is a study of the theoretical and application-based constructs related to human motor behavior in terms of motor learning, control, skill acquisition and performance. The behavioral, cognitive and psycho-physiological approaches are examined. Prerequisites: SSF majors only. (S)

**SSF 469. Measurement and Evaluation for Kinesiology Research****Credit 3(3-0)**

This course is an introduction to the methods of research, measurement, and applications of assessment in the health/fitness and sport fields. Emphasis is placed on test selection, development and administration, calculation and interpretation of basic statistics, and practical application of measurement/assessment principles. Prerequisite: Junior or Senior standing; SSF majors only. (F)

**SSF 471. Fitness Assessment and Exercise Prescription****Credit 3(3-0)**

This course focuses on the development of advanced skills in exercise testing, data interpretation, and prescription for health-related fitness. Prerequisites: HPED 370 and SSF majors only. (F)

**SSF 472. Exercise Programming in Special Populations****Credit 3(3-0)**

This course focuses on the concepts and procedures necessary to assess, develop, and prescribe exercise for populations across the lifespan with various health conditions including, but not limited to, cardiovascular disease, stroke, hypertension, obesity, and diabetes. Compliance, risk of injury and other specific programming issues will also be addressed. Case studies will aid in the application of the information. A field experience is required. Prerequisites: HPED 370 and SSF majors only. (F)

**SSF 490. Independent Study****Credit 3(3-0)**

This course is an independent study in the area of Human Performance and Leisure Studies. Content is determined by the student and the course instructor. Prerequisite: SSF majors only; Consent of the academic advisor, course instructor, and department chair. (F;S;SS)

**SSF 498. Internship****Credit 6(0-6)**

The internship is designed to be the culminating experience in the SSF program and provides professional experience to support academic preparation in the SSF program. Prerequisite: SSF Majors only with all major courses completed. (F;S;SS)

**COURSE DESCRIPTIONS FOR SPORT SCIENCE AND FITNESS MANAGEMENT  
(Business Administration Option)**

**SSF 202. Advanced Principles of Strength and Conditioning****Credit 3(1-3)**

This course is an advanced study of the scientific principles and practical skills necessary to develop safe and effective exercise programs with an emphasis on athletic performance. The concepts of periodization, plyometrics, and aerobic endurance training programs are introduced. Prerequisites: SSF 201; SSF majors only. (S)



**SSFEM 220. Psychosocial Interactions of Human Movement** **Credit 3(3-0)**  
This course is a study of current psychological and sociological theories and research as they affect human movement. It focuses on the psychology of the learner, participation, group processes, cultural diversity, aggression, motivation, self-perception and psychosocial growth and development. SSFM majors only. (F)

**SSFEM 261. Anatomy and Physiology for Kinesiology** **Credit 4(2-4)**  
The course explores the biological structure and function of the human body in a system-based approach, with emphasis on the interrelationships between form and function at the gross and microscopic levels of organization. Primary emphasis is placed on the muscular, skeletal, cardiovascular, respiratory, and nervous systems, with added coverage of the metabolic, endocrine, integumentary and immune systems related to exercise. This course is designed to emphasize selected concepts necessary to study sport, exercise and physical activity in a variety of settings. Prerequisites: BIOL 100; SSFM majors only. (F;S;SS)

#### **COURSE DESCRIPTIONS FOR SPORT SCIENCE AND FITNESS MANAGEMENT (Leisure Studies Option)**

**HPED 250. Information Technology for HPLS**  
This course is designed to provide an overview of information technology as applied to Human Performance and Leisure Studies. A strong emphasis is placed on the delivery of discipline related content through use of information technology for instruction and assessment. In addition, students will become familiar with current discipline specific software. Issues presented by technology in health and human performance will also be explored. National Education Technology Standards for Teachers are addressed. Prerequisite: SSFM majors only. (F;S;SS)

**LSS 160. Introduction to Recreation** **Credit 3(3-0)**  
This course is designed to study the foundations of recreation including the basic concepts underlying the organization of leisure and recreation activity. (F;S)

**LSS 246. Camp Administration** **Credit 3(3-0)**  
This course examines the organization and administration of camp activities. Students will also program camping activities that will apply to all ages and both sexes. (S)

**LSS 260. Community Recreation** **Credit 3(3-0)**  
This course is a study of city, state, and national organizations. Practice in the general principles and techniques in the organization and promotion of leisure activities for home, school, and community will be included. Field experience will include observations, service as aides and assistants. (F)

**LSS 363. Principles and Practices of Outdoor Recreation** **Credit 3(2-2)**  
This course examines the philosophy, organization administration and laboratory experiences in outdoor recreation. (S)

**LSS 364. Group Leadership** **Credit 3(3-0)**  
This course examines the techniques of group dynamics and methods of developing group leadership capabilities. (F)

**LSS 365. Program Planning Recreation** **Credit 3(3-0)**  
This course includes analysis of recreation programs. Emphasis is placed on program objectives, personnel and facilities. (S)

**SSFEM 261. Anatomy and Physiology for Kinesiology** **Credit 4(2-4)**  
The course explores the biological structure and function of the human body in a system-based approach, with emphasis on the interrelationships between form and function at the gross and microscopic levels of organization. Primary emphasis is placed on the muscular, skeletal, cardiovascular, respiratory, and nervous systems, with added coverage of the metabolic, endocrine, integumentary and immune systems related to exercise. This course is designed to emphasize selected concepts necessary to study sport, exercise and physical activity in a variety of settings. Prerequisites: BIOL 100 and SSFM majors only. (F;S;SS)

#### **COURSE DESCRIPTIONS FOR ELECTIVE COURSES IN SPORT SCIENCE AND FITNESS MANAGEMENT**

**HPED 104. Weight Training** **Credit 1(0-2)**  
This course introduces the student to weight training with emphasis on principles, techniques and development of individual programs.\*\*

**HPED 105. Beginning Swimming** **Credit 1(0-2)**  
This course teaches students the beginning skills in swimming necessary to meet American Red Cross Level Three standards.\*\*

**HPED 106. Swimming for Nonswimmers** **Credit 1(0-2)**  
This course includes orientation to the water along with the development of survival skills. Instruction in the basic strokes, safety and rescue skills is a part of the curriculum. The course is designed for non-swimmers and those who are not comfortable in deep water. (F;S;SS)

**HPED 107. Racquetball** **Credit 1(0-2)**  
This course is designed to offer the student an opportunity to develop performance skills, an understanding of rules and strategies, and an appreciation for racquetball which can be enjoyed as a lifetime activity.\*\*

**HPED 108. Beginning Springboard Diving** **Credit 1(0-2)**  
This course introduces the student to the basic skills, knowledge and mechanics of springboard diving.\*\*

**HPED 109. Fundamentals of Team Sports** **Credit 1(0-2)**  
This course seeks to develop an understanding of the values and the logic behind exercise and sports activity and regular habits of exercise, to determine the physical fitness needs of the student with the nature, basic rules, techniques and skills of a wide variety of popular American sports, and guide students into activities which will be of the most interest and benefit now and in the future.\*\*

<b>HPED 110. Aerobic Training</b>	<b>Credit 1(0-2)</b>
This course emphasizes the improvement of cardiovascular fitness through various forms of aerobic activity.**	
<b>HPED 111. Fundamentals of Gymnastics</b>	<b>Credit 1(0-2)</b>
In this course, students will develop an understanding of the basic skills and knowledge in the Olympic-gymnastic events through a performance oriented experience. Students will perform on the vault, balance beam, parallel bars, horizontal bar, side horse, rings and floor exercise. The course provides a performance oriented gymnastic experience.**	
<b>HPED 112. Fundamentals of Dance</b>	<b>Credit 1(0-2)</b>
In this course, students will develop an understanding of the following concepts: kinesthetic awareness of how body movement is controlled, and the elimination of muscular tension.**	
<b>HPED 113. Beginning Tennis</b>	<b>Credit 1(0-2)</b>
This course is a study of the basic skills and knowledge of tennis.**	
<b>HPED 114. Beginning Golf</b>	<b>Credit 1(0-2)</b>
This course is a study of the basic skills and knowledge of golf.**	
<b>HPED 115. Beginning Bowling</b>	<b>Credit 1(0-2)</b>
This course is a study of the basic skills and knowledge of bowling.**	
<b>HPED 116. Adapted Physical Activity</b>	<b>Credit 1(0-2)</b>
This course includes special activities for those students whose physical examination shows that they are unable to participate in the regular physical education program.**	
<b>HPED 117. Beginning Badminton</b>	<b>Credit 1(0-2)</b>
This course is a study of the basic skills and knowledge of badminton.**	
<b>HPED 118. Water Aerobics</b>	<b>Credit 1(0-2)</b>
This course is a physical fitness course designed to develop cardiovascular endurance, muscular strength, endurance and flexibility via exercises in the swimming pool. Swimming skills are not required.**	
<b>HPED 119. Fitness Walking</b>	<b>Credit 1(0-2)</b>
This course is designed to instruct students in the benefits of walking as part of an overall fitness program. Instruction about equipment, walking techniques, nutrition and the prevention and care of injuries is included. (F;S;SS)	
<b>HPED 120. Beginning Sailing</b>	<b>Credit 1(0-2)</b>
This course is designed to teach students the basic skills of dinghy sailing as outlined by United States Sailing and the American Red Cross.**	
<b>HPED 121. Beginning Tae Kwon Do</b>	<b>Credit 1(0-2)</b>
This course is designed to provide students through active participation fundamental skills; cultural etiquette, values and terminology as well as historical and scientific information pertaining to Tae Kwon Do.** (F;S;SS)	
<b>HPED 122. Beginning Self Defense</b>	<b>Credit 1(0-2)</b>
This course introduces the student to basic self-defense principles and values. Active class participation is a requirement in order to proficiently demonstrate application of these concepts at the end of the course.** (F;S;SS)	
<b>HPED 123. Volleyball</b>	<b>Credit 1(0-2)</b>
This course is designed to introduce and instruct students in basic volleyball techniques, rules and strategies. ** (F;S;SS)	
<b>HPED 124. Dance Aerobics</b>	<b>Credit 1(0-2)</b>
This course is designed to provide the student with beginning level knowledge and skill in dance/rhythmic aerobic fitness.** (F;S;SS)	
<b>HPED 125. Yoga/Pilates</b>	<b>Credit 1(0-2)</b>
This course is designed to study the basic techniques associated with various types of Yoga and Pilates. The class uses a holistic approach to target mental and physical practices that lead to the maintenance of a healthy lifestyle.** (F;S;SS)	
<b>HPED 126. Intermediate Basketball</b>	<b>Credit 1(0-2)</b>
This course will integrate the fundamentals of basketball skills with the history and rules associated with the sport. Students will learn advanced basketball techniques and implement these in drills and game play. Prerequisite: Permission from the Instructor required.** (F;S;SS)	
<b>HPED 200. Personal Health</b>	<b>Credit 2(2-0)</b>
This course is designed to study personal health needs and problems. It emphasizes the acquisition of health knowledge and skills needed to critically analyze and evaluate health practices. (F;S;SS)	
<b>HPED 203. Weight Management</b>	<b>Credit 2(2-0)</b>
This course is a study of the principles and applications of proper weight management. It includes assessment, physiological and psychological aspects of weight control, and activities related to weight management. (S)	
<b>HPED 205. Intermediate Swimming</b>	<b>Credit 1(0-2)</b>
This course teaches the student intermediate/advanced swimming skills necessary to meet American Red Cross Level Five standards. Prerequisite: HPED 105 or consent of instructor.** (F;S;SS)	
<b>HPED 207. Intermediate Racquetball</b>	<b>Credit 1(0-2)</b>
This course teaches the student intermediate level racquetball skills, techniques and strategies. Prerequisite: HPED 107 or consent of instructor.**	
<b>HPED 213. Intermediate Tennis</b>	<b>Credit 1(0-2)</b>
This course teaches intermediate level tennis skills, techniques and strategies. Prerequisite: HPED 113 or consent of instructor.**	

- HPED 214. Intermediate Golf** **Credit 1(0-2)**  
 This course teaches intermediate level golf skills, techniques and strategies. Prerequisite: HPED 114 or consent of instructor.\*\*
- HPED 215. Intermediate Bowling** **Credit 1(0-2)**  
 This course teaches intermediate level bowling skills, techniques and strategies. Prerequisite: HPED 115 or consent of instructor.\*\*
- HPED 219. Human Sexuality** **Credit 3(3-0)**  
 This course introduces students to the biology of human sexuality, the anatomy and physiology involved in the human sexual response, and the emotional and cultural perspectives of human sexuality. (F;S)
- HPED 222. Health and Wellness in the 21<sup>st</sup> Century** **Credit 3(3-0)**  
 This course explores the impact of globalization and its associated issues on the health and wellness of humanity. Such phenomena are examined from the perspectives of culture, religion, politics, history, economics and technology. These issues are also analyzed and addressed within the context of developing and developed countries and synthesized from a global perspective. (F;S;SS)
- HPED 229. Movement and Dance** **Credit 1(0-2)**  
 This course is designed to study basic locomotor and axial movements in dance. It includes group problem solving utilizing the elements of time, space and force to create dance works.\*\* (DEMAND)
- HPED 231. Developmental Movement and Dance** **Credit 2(1-3)**  
 This course is designed to study basic locomotor and axial movements. It includes elements of time, space and force to create dance works. Students will also study folk, square, social and aerobic dance. (Majors only) (F;S)
- HPED 237. Group Games and Outdoor Leisure** **Credit 1(0-2)**  
 This course is designed to study the basic skills and knowledge of group games and outdoor leisure pursuits. It includes group games suitable for the gym, playground and camps, and outdoor leisure pursuits such as camping, backpacking, frisbee, orienteering and canoeing.\*\*
- HPED 246. Tennis and Golf** **Credit 1(0-2)**  
 This course is designed to study the basic skills and knowledge of tennis and golf. It includes the history, terminology, skill techniques, strategies and knowledge of rules.\*\*
- HPED 251. Soccer and Volleyball** **Credit 1(0-2)**  
 This course is designed to study the basic skills and knowledge of soccer and knowledge of soccer and volleyball. It includes the history, terminology, skill techniques, strategies and knowledge of rules and officiating.\*\*
- HPED 263. Rhythms** **Credit 1(0-2)**  
 This course examines suitable types of rhythmical activities for students including fundamental movements, folk, tap, social dance and singing games.\*\*
- HPED 398. Field Experience** **Credit 3(0-3)**  
 This course provides an introductory practical experience in applying theoretical knowledge and skills through assisting professionals in community, commercial, corporate, and clinical settings. Prerequisites: Junior standing; SSFM majors only. (F;S;SS)
- HPED 458. Lifeguard Training** **Credit 2(1-2)**  
 This course provides students with aquatic skills and knowledge to meet American Red Cross Lifeguard Training. It includes American Red Cross certification in Standard First Aid.\*\*
- HPED 459. Water Safety Instructor** **Credit 2(1-2)**  
 This course provides students with skills and knowledge to meet American Red Cross standards for Water Safety Instructor. It includes American Red Cross certification in Health Services Education.\*\*
- HPED 492. Diversity Seminar** **Credit 3(3-0)**  
 This course is designed to introduce diversity and cultural competency skills relevant to the professions of leisure and recreation, sports science and fitness management, youth, and human services. It will specifically explore diversity and culturally sensitive recreation practice in various leisure settings, such as community recreation, schools, nonprofit recreation organizations, youth and human service organizations, parks, private/commercial recreation facilities, outdoor recreation, therapeutic recreation and tourism agencies.\*\*
- SSFM 226. Personal Approach to Health**  
 This course is designed to introduce research-based knowledge about personal health and how individual wellness impacts society as a whole. It emphasizes the acquisition of health knowledge and skills that include the biological and social aspects of healthful living as well as the dispositions needed to engage in a healthy lifestyle. (F;S;SS)  
 \*\*Availability based on demand

#### DIRECTORY OF FACULTY

<b>Phoebe B. Ajibade</b> .....	<b>Associate Professor</b>
B.S., Radford University; M.S., Old Dominion University; Ed.D., The George Washington University	
<b>Paul K. Ankomah</b> .....	<b>Professor</b>
B.A., University of Ghana, Legon; M.S., Wilfrid Laurier University; Ph.D., Texas A&M University	
<b>Marc Cook</b> .....	<b>Assistant Professor</b>
B.S., M.S., Ph.D., University of Illinois-Champaign	

<b>Teresa Dail</b> .....	<b>Associate Professor</b>
B.S., Wake Forest University; M.A.T., University of North Carolina at Chapel Hill; Ph.D., University of North Carolina at Greensboro	
<b>Gloria Elliott</b> .....	<b>Assistant Professor</b>
B.S., Fayetteville State University; M.A., The University of Connecticut; Ph.D., The Ohio State University	
<b>Dwedor W. Ford</b> .....	<b>Assistant Professor</b>
B.S., Tennessee State University; M.S., Ph.D., Middle Tennessee State University	
<b>Tiffany Fuller</b> .....	<b>Associate Professor</b>
B.S., M.S., North Carolina A&T State University; Ph.D., University of North Carolina at Greensboro	
<b>Julie Hampton</b> .....	<b>Lecturer</b>
B.S., Belhaven University; M.S., Lenoir-Rhyne	
<b>Shawn Hendrix</b> .....	<b>Lecturer</b>
B.S., High Point University; M.S. North Carolina A&T State University	
<b>Robert T. Larson</b> .....	<b>Associate Professor</b>
B.S., M.S., Brigham Young University; Ph.D., University of New Mexico	
<b>Carlos Lassiter</b> .....	<b>Lecturer</b>
B.S., M.S., North Carolina A&T State University	
<b>Minyong Lee</b> .....	<b>Assistant Professor</b>
B.S., Chosun University; M.A., Ph.D., University of Connecticut	
<b>Diana Melton</b> .....	<b>Associate Professor</b>
B.S., Springfield College; M.S., Ed.D., University of North Carolina at Greensboro	
<b>Trina L. Pratt</b> .....	<b>Lecturer</b>
B.S., North Carolina A&T State University; M.S., Temple University	
<b>Jerono P. Rotich</b> .....	<b>Professor</b>
B.S., Kenyatta University; M.S., State University of New York; Ph.D., University of North Carolina at Greensboro	
<b>Thomas H. Waddell</b> .....	<b>Lecturer</b>
B.S., M.S., North Carolina A&T State University	
<b>Cedric Walthaw</b> .....	<b>Lecturer</b>
B.S., University of Southern Mississippi; M.S., Middle Tennessee State University	
<b>Richard Watkins</b> .....	<b>Instructor</b>
B.S., High Point College; M.S., North Carolina A&T State University	
<b>Daniel Webb</b> .....	<b>Associate Professor</b>
B.S., Coppin State University; M.S., University of Wisconsin; Ph.D., The Ohio State University	

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**School of Nursing**

<http://www.ncat.edu/chhs/departments/nurs/index.html>

**Terry Ward, Director, School of Nursing**  
**Associate Dean, College of Health and Human Sciences**

The School of Nursing offers a program leading to the Bachelor of Science Degree in Nursing (BSN), and there are three entry options to pursue this degree: traditional (generic pre-licensure), accelerated second degree (ABSN pre-licensure option) and a completion option for registered nurses (BSNC option). The traditional program has been in existence since 1953 when the School of Nursing was established. The accelerated option enrolled its first cohort of second degree students in January 2010. The option for registered nurses began in the mid-1990s and a revised curriculum was implemented with a new cohort of registered nurses in 2014.

**DEGREE OFFERED**

Nursing – Bachelor of Science

**PHILOSOPHY**

The School of Nursing faculty, as members of the University community, share and extend its mission and core values. The School of Nursing supports the University’s vision of being “the institution of choice for high-achieving students who are inspired by outstanding teaching and learning, civic engagement, transformative research, and creative scholarship to solve societal challenges” (Preeminence 2020). Furthermore, as a School within the College of Health and Human Sciences (CHHS) we are devoted to distinguished education, scholarship, and community engagement achieved through exemplary teaching, devoted mentoring, interdisciplinary and innovative research, and dedicated service that promote health and wellness with a special focus on those who are underserved. We strive to achieve a diverse learning environment that values human dignity, integrity, and social justice, which are fundamental to the discipline of nursing. We also believe that accountability, responsibility, and professionalism are required attributes of nursing professionals.

We consider professional nursing an art and a science. It is a changing, interactive, evidence-based, patient-centered practice discipline. The focus of the practice of the professional nurse includes the diagnosis and treatment of human responses to actual or

potential health problems/life processes (ANA, Social Policy Statement, 2003, p.5). Nurses use the nursing process as a systematic approach to plan and implement safe, quality, patient-centered nursing care and to make clinical judgments in a variety of settings. We are committed to addressing health disparities by supporting and implementing research, training, education, and intervention programs that will improve the health of underserved and vulnerable populations.

We believe that health is a dynamic state of wholeness (mind-body-spirit) influenced by one's cultural beliefs and personal circumstances. We believe that patients are active participants in their health care and nurses are collaborators in their decisions regarding health promotion and illness prevention. We believe the nurse practices within a health care system that is diverse and that is constantly changing in response to advances in technology and health-promoting discoveries.

The School of Nursing addresses the health and nursing care needs of patients across the lifespan and in various health care environments. The nursing curriculum provides a foundation for nursing practice built on a body of knowledge derived from the humanities, arts, biological, physical and social sciences, and nursing. The program prepares individuals for professional nursing practice with the skills and knowledge necessary to expand their current practice and pursue graduate education and lifelong learning.

### **MISSION**

The mission of the School of Nursing is to provide an environment of academic excellence in which to educate and prepare students to become professional nurses committed to lifelong learning, scholarly inquiry, civility and service which will enhance the health and wellness of diverse communities. We contribute to the body of nursing knowledge through scholarly activities and the dissemination of findings. We provide service to local, regional, state, national, and global communities by facilitating community engagement.

### **CORE VALUES**

Faculty affirms the University and College values. The values of the institution are reinforced in classroom and clinical instruction, through the activities of the student nursing organizations, and in interactions between students and their academic faculty coaches. In addition, the faculty of the School of Nursing embrace the core values of accountability, responsibility, and professionalism. The core values of the University, College and the School of Nursing are expressed in the philosophy and mission statements and are reflected in program goals.

### **ORGANIZING FRAMEWORK**

The Organizing Framework for the School of Nursing is:

- Based on a foundation of general education knowledge
- Dedicated to the acquisition and application of knowledge related to the science, art, and practice of nursing
- Built on a progression from simple to complex concepts
- Focused on client health needs across the lifespan
- Grounded in evidence-based practice in a variety of health care environments

### **PROGRAM GOALS**

The School of Nursing offers undergraduate programs for traditional and second degree pre-licensure students, and a baccalaureate completion program for registered nurses to include students enrolled in our RIBN (Regionally Increasing Baccalaureate Nurses) initiative. Competencies of the various programs are derived from the School of Nursing philosophy, mission and organizing framework.

The program goals of the School of Nursing are to:

1. Educate students to become professional nurses prepared to enter the workforce and provide culturally appropriate safe, evidence-based care.
2. Conduct research and scholarly activities that contribute to and advance nursing practice and health promotion.
3. Contribute to the health of our local community, state, regional, national and global societies through our community engagement activities.
4. Engage and participate in collaborative and interdisciplinary efforts to fulfill the mission of the University.

### **STUDENT OUTCOMES**

At the end of the program the graduate will:

1. Use the nursing process to provide patient centered care which is culturally appropriate within the context of families, communities, and global societies.
2. Choose professional behaviors that encompass ethical reasoning, accountability, responsibility, civility, and integrity in the practice of nursing.
3. Collaborate with members of the interprofessional health care team.
4. Plan population specific nursing care that includes concepts of health promotion, disease and injury prevention across the lifespan.
5. Use technology to retrieve evidence to inform the delivery of safe and effective nursing interventions.
6. Demonstrate leadership ability by enlisting the aid and support of others in the accomplishment of essential nursing actions.
7. Demonstrate the use of critical thinking and clinical judgment to provide evidenced-based patient-centered care.
8. Demonstrate effective oral and written communication.

9. Apply knowledge of patient safety and quality in professional nursing practice.

### **ROLE SPECIFIC GRADUATE COMPETENCIES**

Embedded in these nine student learning outcomes are the following role-specific graduate competencies which are developed over time throughout the curriculum:

- Nursing process
- Patient-centered care
- Culturally appropriate care
- Ethical reasoning
- Collaboration
- Teamwork
- Health promotion and injury prevention
- Technology use
- Safe and effective nursing interventions
- Leadership
- Critical thinking
- Evidence-based care
- Communication
- Patient safety and quality.

The structure, content and processes of the curriculum for the traditional, ABSN and BSNC entry options all incorporate professional standards, guidelines, and competencies, including *The Essentials of Baccalaureate Education for Professional Nursing Practice* (AACN, 2008); *The Quality and Safety Education for Nurses* (QSEN) Quality and Safety Competencies (2011), the ANA Standards of Professional Practice (2010), the American Nurses Association Nursing Scope and Standards of Practice, and standards set by the North Carolina Board of Nursing.

### **ACCREDITATION AND MEMBERSHIPS**

The program offered by the School of Nursing is approved by the North Carolina Board of Nursing, 4516 Lake Boone Trail, Raleigh, NC 27607, (919) 782-3211, [www.ncbon.com](http://www.ncbon.com); [email@ncbon.com](mailto:email@ncbon.com). The School of Nursing is accredited by the Accreditation Commission for Education in Nursing, Inc., (ACEN) 3343 Peachtree Road, NE, Suite 850, Atlanta, Georgia 30326, Telephone (404) 975-5000, <http://www.acenursing.org/>.

The School of Nursing is an agency member of the National League for Nursing (NLN), the American Association of Colleges of Nursing (AACN), Southern Regional Education Board Council on Collegiate Education for Nursing (SREB) and the Southern Nursing Research Society (SNRS). The School of Nursing has an affiliate chapter of Sigma Theta Tau International Nursing Honor Society.

### **GENERAL PROGRAM REQUIREMENTS**

The School of Nursing believes that the professional development of a nursing student is essential. A total of 124-125 credit hours are required for graduation with a Bachelor of Science in Nursing degree. A minimum of 36 credit hours must be earned at North Carolina Agricultural and Technical State University. The BSN program has a credit to contact hour ratio of 1:1 for theory classes, 1:2 ratio for laboratory classes and a 1:3 ratio for clinical practice experiences. Students are required to take nationally normed tests and comprehensive exams throughout the curriculum and to achieve satisfactory scores on such tests. Graduates of the nursing program are eligible to apply to take the National Council of State Boards of Nursing Licensure Examination for Registered Nurses (NCLEX-RN).

Students are required to attend Founder's Day, Honors Convocation, White Coat Ceremony and Senior Pinning Ceremony, other College of Health and Human Sciences and School of Nursing activities and events designated by the director as related to the professional nature of nursing. Students are encouraged to participate in nationally affiliated student organizations and local and global service learning.

### **DEPARTMENTAL REQUIREMENTS**

The School of Nursing has more stringent criteria for admission than University policy.

#### **I. Admission Criteria for Pre-Nursing Majors (Lower Division)**

- Freshman admitted to the University must meet the following criteria to be eligible for admission into the pre-nursing major.
  - Combined SAT of 930 (math and verbal)
  - Cumulative high school GPA of 3.0 or higher
  - Redesigned SAT:1010
- Students who transfer from other colleges and universities and are without a SAT score may be admitted to the University as a pre-nursing major if they have a cumulative GPA of 3.0 or higher from all academic transcripts. All transcripts will be evaluated and a cumulative GPA averaged across all programs. Grades of C or higher in nursing prerequisite courses are preferred. Students must complete BIOL 100, CHEM 104 and 114, CHEM 105 and 115 and BIOL 350 and 351

(Human Anatomy and Physiology I and II) with a minimum grade of C or higher on the first attempt. Chemistry and Human Anatomy and Physiology I and II cannot be more than 5 years old for transfer purposes and currency of content.

- Freshman and transfer students who are not formally admitted to the University as pre-nursing majors must meet the following criteria to be eligible to change their majors to pre-nursing:
  - Completion of the first three semesters of the nursing curriculum with a cumulative grade point average of 2.8 or higher on a 4 point scale. Grades transferred from all other institutions will be considered in the computation of the grade point average for transfer students.
  - Attainment of a grade of C or higher in all courses.
  - Students must complete BIOL 100, CHEM 104 and 114, CHEM 105 and 115 and BIOL 350 and 351 (Human Anatomy and Physiology I and II) with a minimum grade of C or higher on the first attempt.

## II. Admission to the Nursing Major

Admission to the University or the pre-nursing major does not guarantee acceptance to the nursing major in the pre-licensure entry options. Admission into the nursing major is competitive. The transcripts of previous coursework at all institutions are evaluated and a cumulative GPA of all academic work is calculated. **Competitive applicants to the pre-licensure entry options will have a grade of “C” or higher on all prerequisite courses on the first attempt.**

- A. Completion of physical and biological science courses with a grade of “C” or higher **on the first attempt:**  
BIOL 100 (4), CHEM 104 (3), CHEM 114 (1) LAB, CHEM 105 (3), CHEM 115 (1), BIOL 350 (4), BIOL 351 (4)
- B. Completion of the following additional prerequisites with a grade of “C” or higher.

MATH 103/111 (3/4)	Statistics (3)	ENGL 101 (3)
ENGL 100 (3)	FCS 260 (3)	MATH Logic/Analytical Reasoning (3)
PSYC 101 (3)	FCS 157 (3)	BIOL 221(4)
Global Awareness (3)	Afr. Amer. Culture & Hist.(3)	CHEM 105 (3)
CHEM 115 (1)	Hum./Fine Arts (3)	
- C. Completion of the following prerequisite nursing course’s with a grade of “C” or better higher.  
NURS 100

Students must meet all admission requirements for the entry option and the University and complete prerequisites prior to being admitted to the nursing major. Students enrolled in the nursing major must meet agency requirements for criminal background reviews and drug screenings as well as other requirements. Students must be physically and mentally capable to perform the tasks taught within the nursing discipline with minimal assistance.

## CAREER OPPORTUNITIES

The Bachelor of Science in Nursing degree, when accompanied by nursing licensure, prepares the graduate for beginning practice in a variety of health care settings and to pursue graduate education. Some possible employment settings include institutions such as hospitals, public health agencies, clinics, military services, travel nursing, home health, and extended care facilities.

## POLICY CHANGE

Policies and procedures are subject to change and students will be notified of the changes no later than 30 days prior to their implementation. Changes will be communicated in orientation sessions/student meetings, e-mail and other electronic media, the School of Nursing Student Handbook, and University Bulletin and Policy Handbook. Students are expected to review annually the policies in the School of Nursing Student Handbook and check their university e-mail frequently.

## TRADITIONAL BSN ENTRY OPTION

Pre-nursing and transfer students are admitted to the upper division in the traditional entry option. Students’ progress through the curriculum as cohort groups. The first semester in the upper division is the summer which follows the sophomore year.

## ACCELERATED ENTRY OPTION FOR SECOND (2<sup>ND</sup>) DEGREE STUDENTS

Students with a bachelor’s degree in another discipline who wish to pursue nursing are eligible to apply for the accelerated entry option. The Accelerated Option is offered in course blocks and moves rapidly; students spend from 28-32 contact hours per week in classroom and clinical activities. The program is conducted over a 12-month period with 3 one-week breaks. Students must be committed to intense study and have support systems in place that allow for few distractions. Sixty-four credits are required beyond the first bachelor’s degree.

## BSN ENTRY COMPLETION (RN-BSN) OPTION GENERAL INFORMATION

The goal of the BSN Completion Option is to provide the registered nurse with an associate’s degree in nursing an opportunity to obtain a Bachelor of Science degree in Nursing. The program is designed to graduate nurses who will function in a variety of clinical settings, provide leadership with managerial skills, apply research evidence, and be prepared for graduate nursing education. The program can be completed in 12 months of full-time study or 24 months part-time. Students must be licensed and eligible to practice in the state of North Carolina prior to enrolling in the major. Thirty-one (31) credits are required in the nursing major core. Students are awarded additional credits for proficiency, completion of previously earned general education credits, and additional required prerequisites/electives (which are in most cases completed in the acquisition of the previous degree). A total of 124 semester hours of credit are required for graduation.

**Department of School of Nursing  
Bachelor of Science in Nursing  
Major Code: NURS**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
MATH 103 or MATH 111	3-4	MATH, Logical and A.R.**	3
ENGL 100	3	ENGL 101	3
BIOL 100	4	CHEM 105	3
CHEM 104	3	CHEM 115	1
CHEM 114	1	FCS 260	3
NURS 100	1		<b>13</b>
<b>Semester Total</b>	<b>15-16</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
Statistics Course (ECON 305, MATH 224, SOCI 203)	3	African American Culture & History	3
Global Awareness*	3	BIOL 221	4
PSYC 101	3	FCS 157	3
BIOL 350	4	BIOL 351	4
Humanities/Fine Arts	3	<b>Semester Total</b>	<b>14</b>
<b>Semester Total</b>	<b>16</b>		
<b>Summer Session I</b>		<b>Summer Session II</b>	
NURS 226	3	NURS 320	3
NURS 326	4	<b>Semester Total</b>	<b>3</b>
<b>Semester Total</b>	<b>7</b>		
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
NURS 355	7	NURS 455	6
NURS 361	3	NURS 418	4
NURS 368	4	NURS 420	4
<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>14</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
NURS 412	4	NURS 457	4
NURS 461	4	NURS 458	3
NURS 464	4	NURS 365	3
NURS 467	3	NURS 415	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>13</b>

**Total Credit Hours: 124-125**

\*Students are allowed to choose class from approved General Education courses. Of the 12 total hours in social/behavioral sciences and humanities/fine arts, at least 3 hours in African-American Studies courses and 3 hours in Global Awareness courses are required.

\*\*Students are allowed to choose from approved General Education courses.

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C or better in the following courses:*

NURS 100	BIOL 221
NURS 226	BIOL 350 + BIOL 351
NURS 320	CHEM 104



NURS 326	CHEM 105
NURS 355	CHEM 114
NURS 365	CHEM 115
NURS 368	ENGL 100
NURS 412	ENGL 101
NURS 415	MATH 103
NURS 418	PSYC 101
NURS 420	FCS 260
NURS 455	FCS 157
NURS 457	Statistics
NURS 458	MATH Logic / Analytical Reasoning
NURS 461	African American Culture & History
NURS 464	Global Awareness
NURS 467	Humanities/Fine Arts
BIOL 100	

#### Accelerated BSN Curriculum Guide

Course	CR
<b>Spring Semester</b>	
NURS 320	3
NURS 325	5
NURS 335	3
NURS 356	7
NURS 358	3
NURS 366	3
<b>Semester Total</b>	<b>24</b>
<b>Summer (1<sup>st</sup> and 2<sup>nd</sup> Sessions)</b>	
NURS 361	3
NURS 413	4
NURS 419	4
NURS 421	4
NURS 464	4
NURS 467	3
<b>Semester Total</b>	<b>22</b>
<b>Fall Semester</b>	
NURS 365	3
NURS 424	8
NURS 458	3
NURS 462	4
NURS 466	0
<b>Semester Total</b>	<b>18</b>
<b>Prerequisite Courses</b>	
*CHEM 104	3
*CHEM 114	1
*BIOL 350	4
*BIOL 351	4

BIOL 221	4
FCS 157	3
FCS 260	3
NURS 415	3
PSYC 101	3
SOCI 203	3
<b>Total</b>	<b>31</b>

**Total Nursing Credit Hours: 64**

\*Cannot be older than five years at time of application.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

NURS 320	NURS 419
NURS 325	NURS 421
NURS 335	NURS 424
NURS 356	NURS 458
NURS 358	NURS 462
NURS 366	NURS 464
NURS 361	NURS 466
NURS 365	NURS 467
NURS 413	

### BSN Completion Curriculum Guide Full-Time

Eighty-five (85) credits will be granted - 40 transfer credits as evidenced on transcripts(s) and 45 from associate degree in nursing and licensure.

Course	CR	Course	CR
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
NURS 363	3	NURS 460	4
NURS 364	3	NURS 415	3
NURS 360	3	NURS 361	3
NURS 362	1	<b>Semester Total</b>	<b>10</b>
<b>Semester Total</b>	<b>10</b>		
<b>Senior Year: First Semester (Summer)</b>			
NURS 365	3		
NURS 464	4		
NURS 465	1		
NURS 467	3		
<b>Semester Total</b>	<b>11</b>		

**Total Nursing Credit Hours: 31**

**Total Program Credit Hours: 124**

## MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

NURS 360	NURS 415
NURS 361	NURS 460
NURS 362	NURS 464
NURS 363	NURS 465
NURS 364	NURS 467
NURS 365	

### COURSE DESCRIPTIONS IN NURSING

The courses listed below are required, elective and/or general education courses taught by faculty in the School of Nursing and offered in the three entry options. Refer to the appropriate curriculum guide for the list of required courses.

#### **NURS 100. Student Success I**

**Credit 1(1-0)**

This course is designed to facilitate transition to higher education early in an academic program of study. Students will explore a range of personal and professional strategies to achieve academic success and to cope effectively with the requirements of higher education. Prerequisite: Pre-Nursing Majors Only.

#### **NURS 204. Biostatistics**

**Credit 3(3-0)**

This course introduces basic statistical principles and includes the following statistical concepts: descriptive statistics, probability, inferential statistics, correlation and linear regression. Emphasis is placed on the use and relevance of statistics to health sciences and a substantial number of human health examples are included to demonstrate the application of statistics to health and disease. Students also will be introduced and expected to use a statistical software program, i.e. SPSS.

#### **NURS 205. Pharmacology in Nursing**

**Credit 3(3-0)**

This course examines the nurse's role in medication administration and usage. The course will also increase the student's knowledge of categories of medications and their effects upon various populations. It will enable the student to determine and evaluate the educational and patient care goals regarding medication administration. The student will learn to use information technology to stay current with new drugs and collaborate with interdisciplinary teams to ensure quality patient-centered care. Co-requisite: NURS 226.

#### **NURS 226. Introduction to Professional Nursing**

**Credit 4(4-0)**

This course introduces students to the fundamental concepts of professional, evidenced-based nursing practice. Emphasis is placed on concepts relevant to nursing care in a rapidly changing health care environment. The essential qualities of nursing as a profession are explored. Prerequisites: BIOL 369, BIOL 370, FCS 260, PSYC 320.

#### **NURS 258. Introduction to Forensic Health Studies**

**Credit 3(3-0)**

This course will provide a foundational overview for students understanding of forensic health science as it applies and interfaces with the legal and health care system. The course will also assist students from various disciplines in analyzing the foundation for ethical decision making with respect to the law and the forensics in multiple areas of practice.

#### **NURS 267. Mentoring**

**Credit 3(3-0)**

The purpose of this course is to foster connection, collaboration and networking with the students in the Regionally Increasing Baccalaureate Nursing (RIBN) cohort as well as support retention and completion of the entry option. This course uses mentoring to facilitate utilization of institutional resources to support dual enrollment in the community college and university nursing programs. This course is repeatable until program completion up to three semester credit hours.

#### **NURS 303. Health Promotion**

**Credit 3(3-0)**

This course focuses on health promotion and disease prevention strategies. Emphasis will be placed on improving the health of the community by empowering individuals, families, and groups to making positive lifestyle choices. This course will focus on integrating skills such as critical thinking, teaching and learning, interdisciplinary collaboration, communication, and cultural competency into experiences in a variety of settings.

#### **NURS 305. Nutrition Healthy Lifestyle**

**Credit 3(3-0)**

This course introduces fundamentals of human nutrition for the promotion of optimal health and wellness across the life span.

#### **NURS 306. Health Care in an Aging Society**

**Credit 3(3-0)**

This course is intended to introduce the student to the principles of health care in an aging society. Students will be exposed to the concepts that are applicable to caring for the elderly as well as being introduced to various interdisciplinary agencies that work with the elderly to ensure a holistic approach to their care. Prerequisite: Senior Standing in the University.

#### **NURS 315. Women's Health across the Lifespan**

**Credit 3(3-0)**

This course examines health and health care from a historical perspective. Implications of female gender, ethnicity,

socioeconomic status, and spirituality are examined. The course explores healthcare delivery systems and the impact of environment on health. Prerequisites: ENGL 101.

**NURS 320. Health Assessment**

**Credit 3(1-4)**

The course prepares the student to perform physical health assessments using a patient-centered holistic approach. Students will have opportunities to practice physical assessment techniques and make clinical judgments in a laboratory and/or clinical setting. Prerequisites: Enrolled in ABSN Entry Option or BIOL 369, BIOL 370, NURS 226 and Co-requisite: NURS 326.

**NURS 325. Foundations of Professional Nursing**

**Credit 5(3-4)**

This course introduces students to the fundamental concepts of professional evidence-based nursing. Basic human needs, the nursing process and fundamental nursing skills that are essential to provide patient-centered care are presented and used to guide professional evidence-based nursing practice. There is a laboratory component where skills are practiced and competency is demonstrated. Prerequisite: Enrolled in ABSN Entry Option.

**NURS 326. Foundations of Professional Nursing**

**Credit 4(2-4)**

This course expands fundamental concepts of professional, evidence-based nursing to include psychomotor skills related to basic human needs. The scientific and physiological basis for nursing practice and clients with special needs are presented. There is a laboratory component where skills are practiced and competency is demonstrated. Prerequisites: Nursing Majors Only. Corequisite: NURS 320.

**NURS 335. Pharmacology in Nursing**

**Credit 3(3-0)**

This course examines the nurse's role in medication administration and usage. The course will also increase the student's knowledge of categories of medications and their effects upon various populations. It will enable the student to determine and evaluate the educational and patient care goals regarding medication administration. The student will learn to use information technology to stay current with new drugs and collaborate within interprofessional teams to ensure quality patient-centered care. Prerequisite: Enrolled in ABSN Entry Option or Nursing Upper Division.

**NURS 355. Adult Health I**

**Credit 7(3-2-9)**

This course focuses on the refinement of cognitive and psychomotor nursing skills. Physiological and psychosocial needs of adults with acute and/or chronic illnesses are explored in the context of professional nursing. The theory and clinical components focus on development of critical thinking skills and clinical judgment. Using evidence-based nursing practice as their foundation, students provide quality patient-centered care as part of an interdisciplinary team. Prerequisites: NURS 320, NURS 326.

**NURS 356. Adult Health**

**Credit 7(4-2-6)**

This course focuses on the continued development of cognitive and psychomotor nursing skills. Psychosocial, physiological, and spiritual needs of adults with acute and chronic illness are explored in the context of professional nursing. The theory and clinical components focus on critical thinking and clinical judgment. Students learn to work within interprofessional teams and employ evidence-based practice to provide quality patient-centered care. Prerequisite: NURS 325.

**NURS 358. Pathophysiology**

**Credit 3(3-0)**

The course focuses on the development of nursing knowledge in pathophysiology as a foundation for evidence-based, patient-centered care. Students learn to differentiate normal from abnormal physiological functioning and identify the etiology of pathophysiological alterations in illness across the lifespan. Prerequisite: Nursing Majors Only.

**NURS 360. Concepts in Professional Nursing**

**Credit 3(3-0)**

An introduction to professional nursing as a discipline is explored. An overview of the development of nursing knowledge is presented. Theories and concepts influencing professional nursing and health care are emphasized. Course assignments develop self-awareness, critical thinking skills, written communication, and professional values. Prerequisite: Enrolled in BSN Completion Option.

**NURS 361. Nursing Research for Evidence-Based Practice**

**Credit 3(3-0)**

An overview of the research process and evidence-based practice are presented. Their contribution to the development of nursing knowledge and practice are emphasized. The historical evolution of nursing research and its impact on current issues are examined. Current research studies are critically appraised for quality and application to evidence-based nursing practice. Ethical considerations and rights of human participants are explored. Prerequisite: Nursing Majors Only.

**NURS 362. Student Success I**

**Credit 1(1-0)**

The course is designed to support students' transition to higher education. Students will explore strategies to achieve personal, academic and professional success. Prerequisite: Enrolled in BSN Completion Option.

**NURS 363. Advanced Health Assessment**

**Credit 3(1-4)**

This course is designed to assist the student to build on prior education and experience to refine history-taking as well as physical and psychosocial assessment skills. It focuses on assessment of diverse populations throughout the lifespan. It includes patient-centered approaches with faculty as facilitators. Students use advanced health assessment techniques and skills to collect and analyze health data using a holistic approach that incorporates cultural, socioeconomic, nutritional, developmental, spiritual, physiological, and psychological assessments. Prerequisite: Enrolled in BSN Completion Option.

**NURS 364. Applied Ethics in Professional Nursing Practice**

**Credit 3(3-0)**

This course is designed to examine ethical and moral dilemmas encountered by the professional nurse. Personal value systems related to nursing ethics will also be examined. The course focuses on ethical concepts, theories, and values applied in ethical decision-making. Students have the opportunity to apply ethical principles to selected global health issues, issues related to social and economic disparities, and other complex health issues affecting nursing practice. Prerequisite: Nursing Majors Only.

- NURS 365. Collaborative Interprofessional Practice** **Credit 3(3-0)**  
 This course describes specific values, roles expectations and responsibilities of nurses and health care professionals engaged in interprofessional collaborative practice. Effective communication and collaborative skills and team-based care will be discussed and demonstrated. Students will reflect on their personal and professional values and develop ways to practice in teams that improve patient care outcomes. Prerequisite: Nursing Majors Only.
- NURS 366. Contemporary Issues in Nursing** **Credit 3(3-0)**  
 This course examines current issues and trends influencing nursing and healthcare, including societal and cultural behaviors. The role of the nurse is examined through the presentation of topics important to professional nursing. Prerequisite: Nursing Majors Only.
- NURS 367. Student Success II** **Credit 1(1-0)**  
 This course is designed to support students' transition into the nursing major. The course emphasizes the development of critical thinking and decision making skills. The course will also focus on strategies to enhance academic success. Prerequisite: Nursing Majors Only.
- NURS 368. Pathophysiology and Pharmacokinetics** **Credits 4(3-0-3)**  
 This course focuses on the study and development of nursing knowledge in the areas of pathophysiology and pharmacology as foundations for evidence-based, patient-centered care. Differentiation of normal and abnormal physiological functioning; identification of the etiology of the pathophysiological alterations in illness across the lifespan, and exploration of concomitant pharmacological agents are explored. Using evidence, the basis for evaluating the effectiveness of pharmacological agents is presented. Knowledge from pathophysiology and pharmacokinetics will be integrated to develop clinical decision-making skills that result in positive outcomes across the lifespan and healthcare delivery settings.
- NURS 412. Psychiatric Mental Health Nursing** **Credit 4(2-0-6)**  
 This course provides an introduction to patient-centered nursing care for individuals and families experiencing acute and chronic mental health needs across the life span. The clinical component allows the students the opportunity to construct and implement a therapeutic plan of care based on patient needs. Prerequisite: NURS 355.
- NURS 413. Psychiatric Mental Health Nursing** **Credit 4(3-0-3)**  
 This course provides an introduction to patient-centered nursing care for individuals and families experiencing acute and chronic mental health needs across the life span. In the clinical portion of the course, the students will learn to work within interprofessional teams and employ evidence-based practice, technology and informatics to provide quality patient-centered care and implement a therapeutic plan of care based on patient needs. Prerequisite: NURS 356.
- NURS 415. Health Care in a Global Society** **Credit 3(3-0)**  
 The purpose of this course is to provide students with the opportunity to learn about the impact of health and illness on all populations in the United States and selected countries worldwide. Students will be able to compare the major public health concerns in the United States to those in other countries. Prerequisite: Enrolled in one of the nursing entry options or by permission of the instructor.
- NURS 418. Childbearing Family and Women's Health across the Lifespan** **Credit 4(2-0-6)**  
 This course focuses on the concepts and theories essential in providing nursing care to childbearing families, newborns, and women. Incorporated into the course are methods of adaptation to physiological and psychological stressors inherent in this group of patients. In the clinical portion of the course the students will learn to work with interdisciplinary teams, employ evidence-based practice, technology, and informatics to provide quality patient-centered care. Prerequisite: NURS 355.
- NURS 419. Nursing Care of the Childbearing Family and Women's Health** **Credit 4(3-0-3)**  
 This course focuses on the concepts and theories essential in providing nursing care to childbearing families, newborns and women. Incorporated into the course are methods of adaptation to physiological and psychological stressors inherent in this group of patients. In the clinical portion of the course, the students will learn to work within interprofessional teams and employ evidence-based practice, technology, and informatics to provide quality patient-centered care. Prerequisite: NURS 356.
- NURS 420. Childrearing Family and Child and Adolescent Health** **Credit 4(2-0-6)**  
 This course focuses on the development of professional knowledge and specialized skills in family centered care. Emphasis is placed on the stages of physiological and psychosocial development and health care needs from infancy to adolescence. The clinical practicum portion of the course assists the student in developing critical skills related to the nursing care of infants, children, adolescents and their families. Prerequisite: NURS 355.
- NURS 421. Nursing Care of the Childrearing Family and Child and Adolescent Health** **Credit 4(3-0-3)**  
 This course focuses on the development of professional knowledge and specialized skills in family centered care. Emphasis is placed on the stages of physiological, cognitive, and psychosocial development and health care needs from infancy to adolescence. In the clinical portion of the course, the students will learn to work within interprofessional teams and employ evidence-based practice, technology, and informatics to provide quality family-centered care. Prerequisite: NURS 413.
- NURS 424. Advanced Adult Health** **Credit 8(4-0-12)**  
 This course focuses on the integration of knowledge and continued development of cognitive and psychomotor skills. The theory and clinical components enhance critical thinking and clinical judgment through the use of evidence-based practice. Learners provide patient-centered nursing care within interprofessional teams to adults experiencing complex, acute and chronic illnesses in a variety of health care settings. Prerequisite: NURS 356.
- NURS 455. Adult Health II** **Credit 6(3-0-9)**  
 This course builds on the content found in Adult Health I and further refines the cognitive and psychomotor skills in the

management and care of adults with increasingly more complex acute and chronic illnesses. The course emphasizes holistic care of an aging population and the genetic influences on health and illness. As in Adult Health I, the theory and clinical components focus on critical thinking and clinical judgment. Students learn to work in interdisciplinary teams and employ evidence-based practice to provide quality patient-centered care. Prerequisites: NURS 355, NURS 358.

**NURS 456. Student Success III**

**Credit 1(1-0)**

This course is designed to prepare students for a smooth transition into their professional role. Students will explore personal and professional issues that will impact their future practice. Students will be expected to demonstrate higher order critical thinking and decision making skills. The focus will be on professional skill building and portfolio development. Prerequisite: Nursing majors only.

**NURS 457. Adult Health III**

**Credit 4(2-0-6)**

This course focuses on both the theoretical content and its application in a holistic manner to manage patients with complex and high acuity illnesses. The clinical component of this course is designed to provide a practicum with high acuity care experiences. Psychosocial, lifespan, and behavioral issues encountered by patients with high acuity disorders and/or trauma will be discussed. Prerequisite: NURS 455, NURS 412.

**NURS 458. Bridge to Professional Nursing Practice**

**Credit 3(0-0-9)**

This nursing capstone course provides a focused patient care experience. The course is designed to assist the student to transition to entry level practice. Emphasis is on working within interprofessional teams using leadership skills and evidence-based knowledge. Learning experiences take place in a variety of healthcare settings and faculty-led seminars. Prerequisites: NURS 455 or NURS 424 depending on entry option.

**NURS 460. Community Health Nursing**

**Credit 4(3-0-3)**

This course focuses on the care of clients experiencing health problems as individuals, families, groups and communities. Emphasis is on the utilization of the nursing process in promoting, maintaining and restoring health. The epidemiological approach is introduced as a methodology for the study of populations and high risk groups in various settings. Prerequisite: Enrolled in BSN Completion Option.

**NURS 461. Community Health Nursing**

**Credit 4(2-0-6)**

This course focuses on the care of clients experiencing health problems as individuals, families, groups and communities. Emphasis is on the utilization of the nursing process in promoting, maintaining and restoring health. The epidemiological approach is introduced as a methodology for the study of populations and high risk groups in various settings. Prerequisite: NURS 455.

**NURS 462. Community Health Nursing**

**Credit 4(3-0-3)**

The course focuses on the care of clients experiencing health problems as individuals, families, groups and communities. Emphasis is on the utilization of the nursing process in promoting, maintaining and restoring health. The epidemiological approach is introduced as a methodology for the study of populations and high risk groups in various settings. Prerequisite: NURS 421.

**NURS 464. Leadership and Management**

**Credit 4(3-0-3)**

This course focuses on the identification and development of leadership and management principles within a rapidly changing healthcare environment. Selected concepts, such as quality improvement, change, patient safety, finance and health policy and politics are explored. The course is designed to facilitate the students' self-assessment of their leadership and management skills. It includes opportunities for scholarly inquiry and professional communication. A precepted practicum with a nurse leader facilitates the transition to professional nurse. Corequisite: NURS 467.

**NURS 465. Synthesis of Professional Nursing Practice**

**Credit 1(0-0-3)**

This course is designed to provide students with opportunities to integrate and apply newly acquired knowledge and skills in a variety of settings and roles. The experience allows students to work with a nurse mentor and various experts and engage in collaborative interprofessional practice. Students will observe and demonstrate respectful interactions and knowledge sharing between members of the health care team. Using current knowledge of health disparity populations may be part of this experience. Prerequisite: Enrolled in BSN Completion Option.

**NURS 466. Transition to Professional Nursing Practice**

**Credit 0(0-0)**

The course is designed to prepare second career students for a smooth transition into their professional nursing role. Students will explore personal and professional issues that will impact future practice. Students will be expected to demonstrate higher order critical thinking and decision making skills. The focus will be on professional skill building and portfolio development. Prerequisite: Enrolled in the ABSN Entry Option.

**NURS 467. Nursing Informatics: Application of Patient Care Technology**

**Credit 3(2-2)**

Course work focuses on development of knowledge and skills required to use information management and patient care technologies to deliver safe and effective care. Practical experience with a variety of patient care technologies relevant to evidence-based practice is included. Corequisite: NURS 464.

**NURS 490. Registered Nurse First Assistant I**

**Credit 3.0(2.5-0.5-0)**

This is the first of a two course series that prepares registered nurses (RNs) for the RN First Assistant role according to the guidelines published in the Association of periOperative Registered Nurses (AORN) Core Curriculum. The course provides the perioperative nurse and advanced practice RNs (APRNs) with the foundational knowledge and skills to function at an expanded practice level. Content includes vascular, orthopedic, pulmonary, gastrointestinal, and other surgical procedures; responses to various physiologic complications; team building, communication and conflict resolution; and practice in tissue handling,

retracting, exposing, clamping, ligating, suturing, and providing hemostasis. Prerequisites: Student must meet all Association of periOperative Registered Nurses (AORN) Registered Nurse First Assistant (RNFA) program entry criteria and have permission of instructor.

**NURS 491. Registered Nurse First Assistant II**

**Credit 1.0-3.0(0-0-3 to 0-0-9)**

This is the second of a two course series that prepares registered nurses for the RN First Assistant role according to the guidelines published in the Association of periOperative Registered Nurses (AORN) Core Curriculum. The course builds on the foundational knowledge and skills acquired in NURS 490 to prepare perioperative and advanced practice RNs to function at an expanded practice level. The course takes place in a variety of health care settings through a precepted clinical experience. Pre- or Corequisites: NURS 490 and with permission of instructor.

**NURS 516. Independent Study**

**Credit 1-3([1-3])-0**

This course is designed to provide a unique experience that offers the nursing student an opportunity to creatively demonstrate learning objectives within the framework of a holistic, patient centered curriculum. Faculty facilitate learning through collaboration with students. Prerequisite: Prior Permission Required.

**DIRECTORY OF FACULTY**

<b>*Charlotte Atkins</b> .....	<b>Adjunct Clinical Instructor</b>
B.S.N., M.S.N., University of North Carolina at Greensboro	
<b>Connie Bishop</b> .....	<b>Clinical Assistant Professor</b>
B.S.N., Duke University; M.N., University of South Carolina; M.B.A., University of New Haven; D.N.P., Duke University	
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B.S.N., North Carolina A&T State University; M.S.N., University of North Carolina at Greensboro; Ed.D., University of Phoenix	
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B.S.N., University of North Carolina at Chapel Hill; M.S.N., University of Pennsylvania; M.B.A., Ph.D., University of Pennsylvania	
<b>Evelyn Hoover</b> .....	<b>Assistant Professor</b>
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B.S.N., University of Virginia, M.S.N., University of Phoenix	
<b>Lavicia Murray</b> .....	<b>Clinical Instructor</b>
B.S.N., University of North Carolina at Greensboro; M.S.N., University of Phoenix	
<b>Ruthie Rogers</b> .....	<b>Clinical Instructor</b>
B.S.N., Winston-Salem State University, M.S.N., University of North Carolina at Greensboro, D.N.P, Walden University	
<b>Cynthia Shores</b> .....	<b>Clinical Instructor</b>
B.S.N., University of North Carolina at Charlotte, M.S.N., Ph.D., University of North Carolina at Greensboro	
<b>Smriti Shrestha</b> .....	<b>Lecturer</b>
B.S., M.A., Tribhuvan University, M.S. Kansas State University	
<b>Mary Uzochukwu</b> .....	<b>Lecturer</b>
A.S.S., Southeast Community College; B.S., M.S., North Carolina A&T State University; Ph.D., Walden University	
<b>Terry Ward</b> .....	<b>Associate Professor, Director, School of Nursing, and Associate Dean for the College of Health and Human Sciences</b>
B.S.N., M.S.N., University of Mobile, Ph.D., University of North Carolina at Greensboro	

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**Department of Psychology**

<http://www.ncat.edu/chhs/departments/psyc/index.html>

**George S. Robinson, Jr., Chairperson**

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**OBJECTIVES**

The objectives of the Psychology Program are as follows:

1. to provide the highest quality of instruction that will result in employment at the baccalaureate level, or entrance to graduate school.
2. to help students develop analytical, critical thinking and problem solving skills in all areas of psychology.
3. to enhance written and oral presentation skills.
4. to develop research and quantitative analysis skills.

5. to enhance interpersonal skills that will enable students to recognize, understand and appreciate the diversity in human behavior.
6. to enhance the awareness for the needs of human services in the community.

### DEGREE OFFERED

Psychology – Bachelor of Arts

### DEPARTMENTAL REQUIREMENTS

Psychology major – The major in psychology must complete 120 semester hours of University courses. Initial acceptance to the psychology department requires a minimum high school GPA of 2.8. Students that wish to change their major to psychology must have an overall GPA of 2.8. A minimum grade of “C” must be achieved in ALL psychology courses. Thus, psychology courses with a “C-” grade or less, must be repeated in order to count for graduation.

### CAREER OPPORTUNITIES

To function as a professional psychologist, it is necessary to complete graduate training in the discipline. However, the baccalaureate degree can lead to career and job opportunities in child care, human and social services, military services, law enforcement and criminal justice, and mental health services, to name a few.

## Department of Psychology Bachelor of Arts in Psychology Major Code: PSYC

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
PSYC 120 ( <i>formerly PSYC 240</i> )	3	PSYC 150	3
PSYC 110 ( <i>formerly PSYC 321</i> )	3	SOCI 100	3
BIOL 100	4	SPCH 250	3
ENGL 100	3	ENGL 101	3
Free Elective 1 or MATH 101*	3	MATH 102	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
PSYC 230 ( <i>formerly PSYC 560</i> )	3	PSYC 221, 225, 227 or 243	3
CHEM 104 / 114	4	PSYC 250/252	6
Foreign Language 1**	3	Foreign Language 2**	3
HIST 103 or 106 or 107 ( <i>formerly HIST 201 or 202 or 203</i> )	3	HIST 130 or 207	3
MATH 224	3	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>16</b>		
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
PSYC 241, 245, 337 or 347	3	PSYC 331 or 333	3
PSYC 350 / 352	6	PSYC 361, 363, 365 or 367	3
Humanities / Fine Arts	3	PSYC Elective (General #1)	3
Free Elective 2	3	Free Elective 3	3
<b>Semester Total</b>	<b>15</b>	Free Elective 4	3
		<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
PSYC 492 ( <i>formerly PSYC 542</i> )	3	PSYC Elective (General #3)	3
PSYC Elective (General #2)	3	Free Elective 8	3
Free Elective 5	3	Free Elective 9	3
Free Elective 6	3	Free Elective 10	3
Free Elective 7	3	Free Elective 11	1
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>13</b>



**Total Credit Hours: 120**

\*If you are placed in MATH 101, MATH 102 will be your first math class that will count as a math, and MATH 101 will be used as a free elective.

\*\*Students must take two courses from the same language.

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a grade of "C" or better in all PSYC courses.  
Students must maintain an overall GPA of 2.5 in order to graduate.*

**COURSE DESCRIPTIONS IN PSYCHOLOGY****PSYC 101. General Psychology (formerly PSYC 320) Credit 3(3-0)**

This course provides an introduction to psychology for non-psychology majors. Topics given major consideration include maturation and development, motivation, emotion, and personality; mental health, intelligence, and aptitude; perception and attention; learning, forgetting, language, and thinking; social influence, attitudes, beliefs, and vocational adjustments. Prerequisite: Non Psychology majors. (F;S;SS)

**PSYC 110. General Psychology for Majors (formerly PSYC 321) Credit 3(3-0)**

This course is an introduction to psychology as a behavioral science required of the psychology major with enrollment restricted to them. Major areas of consideration include maturation and development, nervous system and internal environment; physiological basis of behavior; motivation, emotion, and personality; and psychological testing. Prerequisite: Psychology major. (F;S;SS)

**PSYC 120. Freshman Seminar (formerly PSYC 240) Credit 3(3-0)**

This course is designed to give students an overview of the various fields of psychology, possible career opportunities for psychology graduates, and skills that are essential to the success of students majoring in psychology. Topics will include how to read, critique and summarize research papers, an introduction to APA style, basic career skills such as creating a resume, writing a personal statement, how to prepare for an interview, presentation skills and academic etiquette. This course will also provide students with an overview of the graduate school application process and will emphasize the importance of gaining research experience through independent study. Prerequisite: Psychology majors only. (F;S;SS)

**PSYC 150. Information Processing Techniques in Behavioral Research (formerly PSYC 242) Credit 3(2-2)**

This course is an exploration of the ability of computers to assist in behavioral research. Included are literature review (bibliographic search), stimulus presentation and response recording (programming and data management), data analysis (spreadsheets and statistical packages), data presentation (graphics), and report writing (word processing). Prerequisite: Psychology majors only. (F;S;SS)

**PSYC 175. Psychology of Success (formerly PSYC 328) Credit 3(3-0)**

This course is an examination of the fundamental psychological principles of success. Some topics will include understanding success, self-awareness, setting and achieving goals, handling stress and anger, self-esteem, positive thinking, self-discipline, self-motivation, time management, effective communication, and healthy relationships. Prerequisites: PSYC 101 or 110. (F;S;SS)

**PSYC 221. Developmental Psychology (formerly PSYC 324) Credit 3(3-0)**

This course is an introductory survey of developmental psychology from birth through adulthood and death. It also considers developmental theories and research that investigates biological, psychological, and social factors within a cultural framework. Prerequisite: PSYC 101 or 110. (F;S;SS)

**PSYC 225. Social Psychology (formerly PSYC 420) Credit 3(3-0)**

This is an introduction to the study of the behavior of the individual in relation to factors in his social environment. Socialization, enculturation, attitude formation and modification, social influence on perceptual and conceptual processes, and social interaction will also be studied. Prerequisite: PSYC 101 or 110. (F;S;SS)

**PSYC 227. Theories of Personality (formerly PSYC 439) Credit 3(3-0)**

Contemporary theoretical formulations of the structure and development of personality and their empirical bases will be covered. Prerequisite: PSYC 101 or 110. (F;S;SS)

**PSYC 230. Black Psychology (formerly PSYC 560) Credit 3(3-0)**

This course examines the psychology of the African American / Black experience. The course begins with examination of the Black psychology paradigm, its history, and its applications. The course will examine several topics relevant to Black psychology such as racism, racial identity, family, community, spirituality, and African American mental health. The course will also focus on how knowledge of Black / African American psychological experiences can be used to promote African American psychological health and wellness. Prerequisite: PSYC 101 or 110. (F;S;SS)

**PSYC 241. Principles of Learning (formerly PSYC 470) Credit 3(3-0)**

This course is a survey of different learning approaches. The focus will be on conditioning, discrimination learning, observational learning, motor learning, and verbal learning. Discussion will include interactions of learning and innate physiological mechanisms related to behavior. Prerequisite: PSYC 101 or 110. (F;S;SS)

- PSYC 243. Human Motivation (formerly PSYC 460)** **Credit 3(3-0)**  
 This course presents a survey of major concepts, research findings, and perspectives in the study of the selection, initiation, and persistence of human motivation across the spectrum of psychology. Prerequisite: PSYC 101 or 110. (F;S;SS)
- PSYC 245. Memory and Cognition (formerly PSYC 461)** **Credit 3(3-0)**  
 This course is an introduction to human information processing. Coverage will include memory systems, attention, concept formation, decision making, imagery, language processing, mental representation, pattern recognition, problem solving, artificial intelligence, human factors, and applied problems (e.g., eyewitness testimony). Prerequisite: PSYC 101 or 110. (F;S;SS)
- PSYC 250. Psychological Statistics (formerly PSYC 322)** **Credit 3(3-0)**  
 This course introduces techniques of analysis and interpretation of research data. Topics will include descriptive statistics (frequency distributions, centrality, variability, and correlational measures), introduction to statistical inference (normal curve, sampling theory, test of statistical hypotheses, t-test, analysis of variance, chi-square, and others). Prerequisites: PSYC 101 or 110, taken concurrently with PSYC 251 or 252. (F;S;SS)
- PSYC 251. Psychological Statistics Lab (formerly PSYC 323)** **Credit 1(0-2)**  
 This laboratory provides first-hand experiences in the practical use of statistical methods. Computer software (i.e. SPSS) will be used to analyze, interpret, and graph data. Prerequisites: PSYC 101 or 110; taken concurrently with PSYC 250. (F;S;SS)
- PSYC 252. Applications of Psychological Statistics** **Credit 3(3-0)**  
 This course will focus on the practical application of the statistical concepts covered in PSYC 250. During lectures, activities, and assignments, students will work with real data sets to describe, analyze, and interpret results. Particular focus will be placed on the use of computer software to carry out statistical analyses. Prerequisites: PSYC 101 or 110, PSYC 150, taken concurrently with PSYC 250. (F;S;SS)
- PSYC 271. History and Systems of Psychology (formerly PSYC 545)** **Credit 3(3-0)**  
 This course is an analysis of the philosophical and empirical antecedents of modern psychology and the contemporary systems from which they emerged. Coverage will include a review of the historical roots of selected systems and theories in psychology. Prerequisite: PSYC 101 or 110. (F;S;SS)
- PSYC 273. Industrial Psychology (formerly PSYC 445)** **Credit 3(3-0)**  
 This course studies issues related to differences in personnel selection, training, and placement in organizations and industries. Topics will include organizational theory and development; personnel evaluation and assessment; skills development and measurement; theory of motivation and leadership, and issues related to human factors, working conditions and safety. Prerequisite: PSYC 101 or 110. (F;S;SS)
- PSYC 275. Psychological Perspectives in Hip Hop (formerly PSYC 510)** **Credit 3(3-0)**  
 This course will examine how principles and perspectives in psychology manifest themselves in hip-hop culture. A primary focus of this course is to examine different psychological concepts and identify the psychological underpinnings of hip-hop from 1979 until the present. The course will begin with an extended look at research conducted in the areas of popular media, journalism and mass communication, and hip-hop studies. Next, students will explore & identify evidence of psychological theory in mainstream hip-hop culture. Finally, students will study the documented effects of music on mental processes such as cognition, motivation, and emotion; extrapolating findings from the literature on sensation and perception to offer hypotheses on the overall effects of music from this genre at both the individual and societal level. Prerequisite: PSYC 101 or 110. (F;S;SS)
- PSYC 278. Media Psychology** **Credit 3(3-0)**  
 This course will provide an overview of the primary areas of media psychology and will explore how individuals interact with and are affected by mass media (magazines, television, video games, internet, etc.). Students will apply various theories of media influence and evaluate research strategies used to measure media effects. The course will investigate the messages that different media genres communicate about health, relationships, and stereotypes, and the ways children, adolescents, and adults interpret these messages. Students will also evaluate current controversies about media use and well-being, and develop policy recommendations based on the existing literature. Prerequisite: PSYC 101 or PSYC 110. (F;S;SS)
- PSYC 331. Psychological Disorders (formerly PSYC 434; Abnormal Psychology)** **Credit 3(3-0)**  
 This course provides students with foundational knowledge of child, adolescent, and adult emotional and behavioral disorders and conditions. Students will be exposed to the etiology, research methods, diagnostic criteria, developmental course, correlates, treatment, and prevention of psychological disorders. Prerequisite: PSYC 101 or 110. (F;S;SS)
- PSYC 333. Clinical Psychology (formerly PSYC 525)** **Credit 3(3-0)**  
 This course is an advanced survey of the field of clinical psychology, covering issues such as mental health delivery systems, clinical assessment and diagnoses, and ethics. The course also presents an overview of different approaches to psychotherapy, and assessment methods used in evaluation of therapy, research, and decision making in clinical settings. Prerequisites: PSYC 101 or 110. (F;S;SS)
- PSYC 335. Psychopharmacology (formerly PSYC 462)** **Credit 3(3-0)**  
 This course explores the psychological, pharmacological, and physiological aspects of drugs and human behavior. Coverage includes approaches to understanding drug use and abuse in clinical and non-clinical settings. Special emphasis is placed on narcotics, hallucinogens, alcohol, nicotine, caffeine and psychotherapeutic drugs. Consideration will be given to drug effects on learning, memory, and sleep; as well as drug screening procedures. Prerequisite: PSYC 101 or 110. (F;S;SS)
- PSYC 337. Behavior Modification (formerly PSYC 548)** **Credit 3(3-0)**  
 This course is a survey of relevant research and techniques making use of either learning theory or behavioral principles in the

treatment of deviant behavior. Special emphasis is placed on the use of operant conditioning procedures in the prevention and treatment of abnormal behavior. Prerequisite: PSYC 101 or 110. (F;S;S)

**PSYC 339. Psychological Testing (formerly PSYC 544)**

**Credit 3(3-0)**

This course emphasizes the principles of measurement of psychological attributes; an examination of factors essential for a reliable and valid measuring instrument with an emphasis on the important role they play in producing their effects. There will be discussions and pre-clinical experiences with more valid tests available in the areas of personality, aptitude, attitude, interests and intelligence testing. Prerequisite: PSYC 101 or 110. (F;S;SS)

**PSYC 347. Animal Behavior and Cognition (formerly PSYC 550)**

**Credit 3(3-0)**

This course is a study of various animal behaviors (communication, aggression, feeding, sexual behavior, maternal behavior, territoriality, socialization, responses to stressors) as well as cognitive processes underlying behavior (such as learning, memory, and problem solving). Interactions of heredity and environment are considered, with emphasis on domestic animals and their often "unnatural" environments. Prerequisite: PSYC 101 or 110. (F;S;SS)

**PSYC 350. Methods of Psychological Research (formerly PSYC 440)**

**Credit 3(3-0)**

This course provides a survey of various research methods with an emphasis on experimental design, instrumentation, and the collection, analysis, interpretation, and reporting of research data. Prerequisites: PSYC 101 or 110, 250, 251 or 252, taken concurrently with PSYC 351 or 352. (F;S;SS)

**PSYC 351. Methods of Psychological Research Lab (formerly PSYC 441)**

**Credit 1(0-2)**

This laboratory provides practice in human and animal research using various experimental designs in the collection, analysis, and interpretation of research data, and in methods of reporting experiments. Prerequisites: PSYC 101 or 110, taken concurrently with PSYC 350. (F;S;SS)

**PSYC 335. Psychopharmacology (formerly PSYC 462)**

**Credit 3(3-0)**

This course explores the psychological, pharmacological, and physiological aspects of drugs and human behavior. Coverage includes approaches to understanding drug use and abuse in clinical and non-clinical settings. Special emphasis is placed on narcotics, hallucinogens, alcohol, nicotine, caffeine and psychotherapeutic drugs. Consideration will be given to drug effects on learning, memory, and sleep; as well as drug screening procedures. Prerequisite: PSYC 101 or 110. (F;S;SS)

**PSYC 352. Applications of Psychological Research Methods**

**Credit 3(3-0)**

This course will focus on the practical application of the methodological concepts covered in PSYC 350. During lectures, activities, and assignments, students will design and implement psychological research studies. Course work will also include the collection, analysis, and interpretation of data, and writing of research reports in APA style. Prerequisites: PSYC 101 or 110, PSYC 150, PSYC 250, PSYC 252, taken concurrently with PSYC 350. (F;S;SS)

**PSYC 361. Biological Psychology (formerly PSYC 540)**

**Credit 3(3-0)**

This course is a study of the biological basis of normal and abnormal behavior, including sensory systems, brain and behavior relationships, and underlying neurochemical processes. Prerequisite: PSYC 101 or 110. (F;S;SS)

**PSYC 363. Sensation and Perception (formerly PSYC 463)**

**Credit 3(3-0)**

This course is a study of sensory systems in man and other animals. There will be discussions on cognitive organization related to measurable physical energy changes mediated through sensory channels. Coverage will include vision, audition, psychophysics, and practical applications (e.g., work environments, human-machine interaction). Prerequisite: PSYC 101 or 110. (F;S;SS)

**PSYC 365. Neuropsychology (formerly PSYC 565)**

**Credit 3(3-0)**

This course examines the effects of brain diseases, injury, and other conditions on mental and cognitive processes such as memory, language, motor functions, executive functions, emotions, and perception. Attention will be given to methods of neuropsychological assessment and treatment. Prerequisite: PSYC 101 or 110. (F;S;SS)

**PSYC 367. Cognitive Neuroscience (formerly PSYC 553)**

**Credit 3(3-0)**

This course will examine the psychobiological, computational, and neuroscientific bases for cognition and higher mental functions. Topics will include vision, object recognition, attention, memory, spatial functions, language, and decision making. Major themes will include mind/brain relationships, localization of functions, and plasticity of the brain. In addition, material will include neuroimaging studies of people with focal brain damage, as well as neurologically normal people. Cognitive neuroscience approaches to disorders such as autism, schizophrenia, and Alzheimer's disease will also be explored. Prerequisites: PSYC 101 or 110. (F;S;SS)

**PSYC 371. Cross-Cultural Psychology (formerly PSYC 504)**

**Credit 3(3-0)**

This course is designed to introduce students to the impact of European-based psychological principles on various ethnic groups in America. Differences in culture, background, perceptions, and history in America will collectively serve as a foundation to assess the applicability of psychology as we know it. Additionally, the scientific assumptions of various psychological concepts will be challenged in terms of the cultures to which they appear to apply, and compared with ethnic-based alternatives. Prerequisite: PSYC 101 or 110. (F;S;SS)

**PSYC 372. Community Psychology**

**Credit 3(3-0)**

This course is an introduction to the principles, values, and critical areas of study within the field of community psychology. An interdisciplinary perspective is used to discuss the historical development and philosophical premise of community psychology. The roles of social systems and geographic factors frame the behavior of individuals and their capacity for empowerment, well-being, and social change. Topical areas include community development, dimensions of diversity, social prevention and intervention, and social / racial justice. Prerequisites: Sophomore or higher standing; PSYC 250 or MATH 224 or ECON 305 or SOCI 203. (F;S;SS)

- PSYC 373. Forensic Psychology (formerly PSYC 530)** **Credit 3(3-0)**  
 This course is a study of the psychological theories and research that address legal issues, and the role psychologists play in the criminal justice system. This course gives an overview of services provided by psychologists, such as expert witnessing, criminal profiling, trial consulting, legal decision making on child custody, jury selection, and other issues. Coverage will include the assessment and therapeutic services provided to individuals in forensic settings with suspected deviant behaviors such as drug abuse, mental illness, suicide, and sexual deviance. Also covered are the ethical issues confronted by psychologists in the criminal justice system. Prerequisite: PSYC 101 or 110. (F;S;SS)
- PSYC 375. Applied Health Psychology (formerly PSYC 546)** **Credit 3(3-0)**  
 The utilization of psychology concerning the diagnosis, treatment, and prevention of physical disorder (e.g. hypertension) and disease from a behavioral and/or psychological perspective will be included. Prerequisite: PSYC 101 or 110. (F;S;SS)
- PSYC 377. Psychology of Women (formerly PSYC 551)** **Credit 3(3-0)**  
 This course will include historical context, issues in research, and theories of gender-typing. Students will examine how gender, personality, and experiences shape the development of masculinity and femininity. Further topics for discussion include the development of gender role behavior, socio-cultural stereotypes, and contemporary issues in the psychology of women. Prerequisites: PSYC 101 or 110. (F;S;SS)
- PSYC 379. Introduction to Helping and Healing Skills** **Credit 3(3-0)**  
 This course focuses on the dynamics of communication in a helping / healing relationship. The course will provide an introduction to the theoretical and practical application of the skills important to becoming an effective helper / healer. Class sessions will include lecture, discussion, and structured activities. Prerequisite: PSYC 101 or 110.
- PSYC 398. Internship Psychology I (formerly PSYC 505)** **Credit 3(2-2)**  
 This course is designed for placement of students in applied settings like hospitals, industry, mental health and rehabilitation centers, or schools. Students will gain experiences in the application of various psychological principles under professional supervision. Lecture topics will cover practical and theoretical issues related to the specific placement setting. Prerequisite: Psychology major with senior standing. (F;S;SS)
- PSYC 447. Special and Contemporary Topics in Behavioral Data Analytics** **Credit 3(3-0)**  
 This course provides knowledge and skills for the analysis and interpretation of large data sets in areas such as social media, healthcare, and consumer behavior. Some of the special topics will be based on what is not covered in the introductory level course in psychological statistics. Contemporary topics will be chosen to follow current trends or new developments in behavioral data analytics. Prerequisites: PSYC 250, and PSYC 251 or 252. (F;S;SS)
- PSYC 450. Advanced Statistics and Computer Applications (formerly PSYC 502)** **Credit 3(3-0)**  
 This course provides further study of descriptive and especially inferential statistics. It covers the basic principles underlying the logic of hypothesis testing. It also includes concepts and assumptions underlying parametric tests (e.g., ANOVA), non-linear correlation and regression (e.g., logistic regression), and nonparametric (e.g., Chi-Square, Mann-Whitney U, Kruskal-Wallis, Spearman Rank Order) statistical tests of significance, and the use of statistical software packages for data analysis. Prerequisites: PSYC 101 or 110, 250, 251 or 252. (F;S;SS)
- PSYC 453. Advanced Experimental Design and Scientific Writing** **Credit 3(3-0)**  
 This course provides additional training in experimental design and the craft of writing about scientific research. Students will gain expertise in conducting the experimental design process from start to finish, including designing an experimental study, carrying out an appropriate statistical analysis of the data, and properly interpreting and communicating the findings. Advanced experimental methods, including factorial ANOVA design, will be covered. Manuscript writing, submission and peer review will be additional components of the course. Prerequisites: PSYC 350, and PSYC 351 or 352. (F;S;SS)
- PSYC 485. Special Topics in Developmental Psychology (formerly PSYC 501)** **Credit 3(3-0)**  
 This course is a study of a specific developmental period (e.g., adolescence, or adulthood and old age). It surveys developmental theories and research on the biological, psychological, and social factors within a cultural framework. Prerequisite: PSYC 101 or 110. (F;S;SS)
- PSYC 492. Seminar in Psychology (formerly PSYC 542)** **Credit 3(3-0)**  
 A study of selected major systematic views and theoretical issues in psychology will be included as the capstone experience. Each student will participate in research using psychological journals and other materials, which will lead to an oral presentation and a written paper on a substantive view or issue in psychology. The graduate school application process, and preparation for the workforce will be included. Prerequisite: Psychology major, junior standing and above. (F;S;SS)
- PSYC 494. Independent Research (formerly PSYC 500)** **Credit 3(3-0)**  
 Independent research on a specific topic or area in behavioral science. Prerequisite: PSYC 101 or 110, PSYC 453, permission of the instructor. (F;S;SS)
- PSYC 498. Internship Psychology II (formerly PSYC 506)** **Credit 3(2-2)**  
 This is a continuation of Internship I. Students will do an in-depth study in the same or different applied settings, like hospitals, industry, mental health and rehabilitation centers, or schools. Moreover, students will gain experiences in the application of various psychological principles under professional supervision. Lecture topics will cover practical and theoretical issues related to the specific placement setting. Prerequisite: PSYC 398, psychology major. (F;S;SS)

## DIRECTORY OF FACULTY

<b>Cheree Barber-Gravelly</b> .....	<b>Part-Time Lecturer</b>
B.A., North Carolina A&T State University, M.A., Virginia State University	
<b>Audrey Campbell</b> .....	<b>Part-Time Lecturer</b>
B.A., University of San Francisco, M.A., Ph.D., Psychological Studies Institute	
<b>Maya Corneille</b> .....	<b>Associate Professor</b>
B.A., Duke University, Ph.D., Virginia Commonwealth University	
<b>Jennifer Dashiell-Shoffner</b> .....	<b>Part-Time Lecturer</b>
B.A., North Carolina A&T State University, M.S., Radford University	
<b>Phyllis Ford-Booker</b> .....	<b>Associate Professor</b>
B.S., M.S., Ph.D., Howard University	
<b>Marvin Hall</b> .....	<b>Adjunct Assistant Professor</b>
B.A., M.S., North Carolina A&T State University, Ed.D., Western Michigan University	
<b>Dawn Henderson</b> .....	<b>Associate Professor</b>
B.S., Saint Augustine University; M.Ed., M.S., Ph.D., North Carolina State University	
<b>Tyronne James</b> .....	<b>Part-Time Lecture</b>
B.A., M.S., North Carolina Central University	
<b>Alvin L. Keyes</b> .....	<b>Associate Professor</b>
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<b>Anna Lee</b> .....	<b>Associate Professor</b>
B.A., Southern University; Ph.D., Howard University	
<b>Antoniette Maldonado-Devincci</b> .....	<b>Assistant Professor</b>
B.A., M.A., Ph.D., University of South Florida; Post-doctoral Fellow, University of North Carolina at Chapel Hill	
<b>Adrienne Morgan</b> .....	<b>Assistant Professor</b>
B.A., Florida A&M University; M.S., Ph.D., University of Florida; Post-doctoral Fellows, Rush University Medical Center and Duke University	
<b>George S. Robinson, Jr.</b> .....	<b>Associate Professor and Chairperson</b>
B.A., North Carolina A&T State University; Ph.D., University of North Carolina at Chapel Hill; Post-doctoral Fellows, National Institutes of Health and University of North Carolina at Chapel Hill	
<b>Joseph Stephens</b> .....	<b>Associate Professor</b>
B.A., Indiana University, Ph.D., Carnegie Mellon University; Post-doctoral Fellow, The Ohio State University	
<b>Steven Withrow</b> .....	<b>Part-Time Lecture</b>
B.A., Wingate University; M.A., University of North Carolina at Greensboro	

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### Department of Social Work and Sociology

<http://www.ncat.edu/chhs/departments/swso/index.html>

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Arnold Barnes, Interim Chairperson

### GENERAL PROGRAM REQUIREMENTS

The admission of the students to the undergraduate degree program in the Department of Sociology and Social Work is based upon the general admission requirements of the University. All majors are required to take courses in Sociology, Statistics and Research.

### DEGREES OFFERED

Social Work – Bachelor of Social Work  
Sociology – Bachelor of Arts

### SOCIOLOGY OBJECTIVES

The objectives of the Sociology Program are as follows:

1. to provide students with analytic and systematic skills necessary to understand the problems inherent in societal relationships and to subsequently attempt to solve them,
2. to prepare students for graduate study in the discipline,
3. to provide a sociological background for departmental and university students who must meet major specific, general education or liberal arts requirements.

### SOCIOLOGY REQUIREMENTS

Sociology Major – Completion of a minimum of 120 semester hours of University courses. Included in the 120 semester hours are 49 hours of sociology. A minimum grade of “C” must be achieved in these courses; sociology majors are required to complete an 18 hour concentration. Sociology majors are required to successfully complete a one semester internship in their senior year.

Comprehensive Examination: All students prior to graduation from the department must pass the Comprehensive Exam, which

is given in the Senior Seminar class during the second semester of the senior year. Those who do not pass the exam will not be able to pass the Senior Seminar course with a “C” or better and hence will not be able to meet all the requirements for graduation from the University. The exam will be administered during the mid-semester and again, for those who need it, during regular exam time. NOTE: the Senior Seminar course can be repeated, if necessary, through Independent Study if recommended by the faculty). All sociology majors are required to join and participate in the Sociology/Social Work Society.

### **CAREER OPPORTUNITIES**

A degree in sociology is preparatory for graduate study in sociology and can serve as the basic preparation for study of law, social work and public administration, entry into government service positions, applied research and education.

- A BA in sociology is excellent preparation for future graduate work in sociology in order to become a professor, researcher, or applied sociologist.
- The undergraduate degree provides a strong liberal arts preparation for entry level positions throughout the business, social service, and government worlds. Employers look for people with the skills that an undergraduate education in sociology provides.
- Since its subject matter is intrinsically fascinating, sociology offers valuable preparation for careers in journalism, politics, public relations, business, or public administration – fields that involve investigative skills and working with diverse groups.
- Many students choose sociology because they see it as a broad liberal arts base for professions such as law, education, medicine, social work, and counseling. Sociology provides a rich fund of knowledge the directly pertains to each of these fields.

### **SOCIAL WORK MISSION AND OBJECTIVES**

Historically North Carolina A&T State University played a prominent role in the Civil Rights Movement. In the turbulence of 1960, four freshmen sat down at a segregated lunch counter in Greensboro, NC. Their actions inspired a national sit-in movement. Our history has influenced a program culture that emphasizes the Social Work profession’s commitment to ethical practice and social justice. Community Service opportunities are a part of required class volunteer hours.

The mission of North Carolina A&T State University’s BSW program is to prepare students through classroom interactions, field experiences, and extra curricula activities to engage in competent, ethical and evidence-based generalist practice with individuals, families, groups, organizations, and communities. The goals/objectives of the BSW program are to:

1. Prepare students for generalist social work practice.
2. Promote continued learning and critical thinking which builds on the broad knowledge base provided by the liberal arts perspective.
3. Advance students’ capacity to become change agents in championing human rights and social, economic and environmental justice.
4. Prepare students for graduate school and ongoing professional development.

North Carolina A&T State University’s BSW program is accredited by the Council on Social Work Education (CSWE); it’s most recent reaffirmation was granted by the Commission on Accreditation in June 2011. NCAT has a proud legacy as one of the oldest accredited BSW programs in the nation.

The mission of the BSW program is evidenced by an infused curriculum reflecting the National Association of Social Workers (NASW) Code of Ethics and the Council on Social Work Education (CSWE) 2015 Educational Policy and Accreditation Standards (EPAS). Our curriculum contains core values of service, social justice, the dignity and worth of the person, integrity, competence, human rights, and scientific inquiry. The curriculum of the Bachelor of Social Work (BSW) Program is structured to promote critical thinking, an appreciation of diversity, a commitment to high ethical standards, and an understanding of both the art and science of social work practice.

NCAT’s BSW program is grounded in the person and environment perspective. The competencies of the BSW program stem from the Council on Social Work Education (CSWE) Education Policies and Accreditation Standards (EPAS).

The Social Work competencies are:

- Competency 1 – Demonstrate Ethical and Professional Behavior
- Competency 2 – Engage Diversity and Difference in Practice
- Competency 3 – Advance Human Rights and Social, Economic, and Environmental Justice
- Competency 4 – Engage in Practice-Informed Research and Research-Informed Practice
- Competency 5 – Engage in Policy Practice
- Competency 6 – Engage with Individuals, Families, Groups, Organizations, and Communities
- Competency 7 – Assess Individuals, Families, Groups, Organizations, and Communities
- Competency 8 – Intervene with Individuals, Families, Groups, Organizations, and Communities
- Competency 9 – Evaluate Practice with Individuals, Families, Groups, Organizations, and Communities

### **SOCIAL WORK REQUIREMENTS**

Social Work Major – Completion of a minimum of 120 semester hours of University courses. Included in the 120 credit hours are 64 credit hours in social work and cognate courses. A minimum grade of “C” must be achieved in English, Speech and all major courses. Formal program admission is required before taking any upper division social work courses. Students must have and maintain a 2.6 GPA or better. Social Work majors are required to successfully complete an internship their senior year.

Professional liability insurance is required before entering the Field. Second degree seeking students must earn a grade of “C” or better in all social work, sociology, English, and speech courses required for the degree.

Students interested in participating in the Child Welfare E Collaborative should make their application during spring semester of their junior year, when they are applying for senior year field practicum placements.

Entering the program – Students desiring to change their major to Social Work (from another major) must have a 2.6 GPA or higher. Students must meet with the Bachelor of Social Work program director for an initial interview to assess the number of courses/semesters remaining for graduation. Students transferring from another university or community college should arrange a meeting with their advisor within the first week of school to assure that they are enrolled in the correct courses. All social work students will participate in a BSW application process prior to taking junior and senior level social work courses. This application process consists of attending an Information Session, completing a Personal Statement and meeting with their advisor. Students must have successfully completed specific social work courses, maintained an overall 2.6 GPA, and completed a minimum of 45 credit hours. *No academic credit is given for previous life experience.*

### CAREER OPPORTUNITIES

A degree in Social Work provides students with the competencies essential for immediate entry as a generalist into the professional field of social work. Career opportunities include but are not limited to departments of social services, mental health agencies, centers on aging, non-profit organizations, advocacy services, social justice organizations and various areas in the criminal justice system. The Social Work Program is accredited by the Council on Social Work Education.

## Department of Sociology and Social Work Bachelor of Social Work (BSW) Major Code: SOWK

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100 (WC)	3	MLAR Elective (MLAR)	3
MATH 101 (MLAR)	3	SOCI 100 (SBS)	3
BIOL 100 (SR)	4	ENGL 101 (WC)	3
SOWK 133 <sup>3</sup>	3	HIST 130, 207, 216 or 231 (GA)	3
FRST 101 (SS)	1	PSYC 101 (SBS)	3
<b>Semester Total Hours</b>	<b>14</b>	<b>Semester Total Hours</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
SOWK 134 <sup>3</sup>	3	ENGL 316, 331, 404, 412 or 434 <sup>1</sup>	3
Scientific Reasoning Elective (SR)	3	SOWK 230 <sup>3</sup>	3
POLI 110, ECON 200 or FOLA 101 <sup>2</sup>	3	HIST 103, 106 or 107 (AA)	3
SPCH 250 (HFA)	3	SOWK 285 <sup>3</sup>	3
SOCI/SOWK Elective	3	POLI 215 or POLI 311; or ECON 201; or FOLA102 <sup>2</sup>	3
<b>Semester Total Hours</b>	<b>15</b>	<b>Semester Total Hours</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
ENGL 316, 331, 404, 412, or 434 <sup>1</sup>	3	SOCI 310	3
SOCI 203, MATH 224 or ECON 305	3	SOWK 315 <sup>4</sup>	3
PSYC 21 or 331	3	PHIL 101, 104 or 266 (HFA)	3
SOWK 310 <sup>4</sup>	3	SOCI/SOWK Elective	3
SOWK/SOSW Elective	3	SOCI/SOWK Elective or Free Elective	3
<b>Semester Total Hours</b>	<b>15</b>	<b>Semester Total Hours</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
SOWK 487	5	SOWK 498	5
SOWK 424	3	SOWK 425	3
SOWK 489	1	SOWK 492	1
Sociology/Social Work Elective	3	SOWK 497	4
Free Elective	3	Free Elective	3

<b>Semester Total Hours</b>	<b>15</b>	<b>Semester Total Hours</b>	<b>16</b>
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**Total Credit Hours: 120**

<sup>1</sup>Choose two from the five options.

<sup>2</sup>Must take correlating course in the same discipline.

<sup>3</sup>Denotes Core Social Work courses.

<sup>4</sup>Must be admitted to Bachelor of Social Work program prior to taking these courses.

All Sociology and Social Work, English, and Speech courses must be passed with a grade of "C" or better.

**Department of Sociology and Social Work  
Bachelor of Science in Sociology  
Major Code: SOCI**

**Curriculum Guide**

<b>COURSE</b>	<b>CR</b>	<b>COURSE</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
SOCI 100 (SBS)	3	ENGL 101 (WC)	3
BIOL 100 (SR)	4	MATH 111 (MLAR)	4
HIST 130, 207, 216 or 231 (GA)	3	PHIL 104 (HFA)	3
ENGL 100 (WC)	3	SOCI 101	3
FRST 101 (SS)	1	HIST 103, 106, or 107 (AA)	3
<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
SOCI 203	3	SOCI 204	3
Scientific Reasoning Elective (SR) <sup>1</sup>	3	SOCI 213	3
SPCH 250 (HFA)	3	FOLA Elective <sup>3</sup>	3
SOCI 201	3	ECON 200 or GEO 200	3
Elective (MLAR) <sup>2</sup>	3	Sociology/Social Work Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
SOCI 310	3	SOCI 202	3
ENGL 331 or 404 <sup>4</sup>	3	SOCI 306 or SOWK 414	3
Concentration <sup>5</sup>	3	Free Elective	3
Concentration <sup>5</sup>	3	Concentration <sup>5</sup>	3
Sociology/Social Work Elective	3	Concentration <sup>5</sup>	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
SOCI 406 or SOWK 303	3	SOCI 411 or SOCI 412	3
SOCI 475	3	Concentration <sup>5</sup>	3
Concentration <sup>5</sup>	3	SOCI 470	4
Sociology /Social Work Elective or Free Elective	3	Sociology /Social Work Elective or Free Elective	3
SOCI 498	5	<b>Semester Total</b>	<b>13</b>
<b>Semester Total</b>	<b>17</b>		

**Total Credit Hours: 120**

<sup>1</sup>Must also take one of the following Scientific Reasoning (SR) courses: BIOL 101 or 102; CHEM 100, 104, 106, or 107, ENVS 201; EES 234; PHYS 101 or 104.

<sup>2</sup>Must also take one of the following MLAR courses: HIST 277 or PHIL 262.

<sup>3</sup>Three hours of Foreign Language (FOLA).



<sup>4</sup>Must select one of these English courses: ENGL 331 (Writing for Science & Technology) or ENGL 404 (Advanced Composition).

<sup>5</sup>Eighteen hours in suggested fields are: Economics, History, Psychology, Political Science, Marketing, Business Administration, Biology and Anthropology. The 18 hours must be passed with a grade of "C" or better, as well as each major course and all English and Speech courses.

### COURSE DESCRIPTIONS IN SOCIOLOGY

**SOCI 100. Principles of Sociology** **Credit 3(3-0)**  
Basic concepts and principles in sociology as they are used to examine patterned and recurrent forms of social behavior will be studied.

**SOCI 101. Basic Quantitative Writing and Computer Skills in Sociology** **Credit 3(3-0)**  
This course, to be taken concurrently with SOCI 100 – Principles of Sociology, is designed to provide students with basic computer skills needed to summarize and describe sociological data. The ability to perform elementary calculations, such as percentages, proportions, and ratios, along with utilization of graphing techniques is a prime objective. Other descriptive/summary statistical techniques emphasized include construction and interpretation of one- and two-variable tables. A third objective is to ensure that students can write a clear report in standard English on the methods and findings of elementary research.

**SOCI 201. Origins of Social Thought** **Credit 3(3-0)**  
This course includes a review of the major historical sources, nature and growth of social thought as well as an introduction to the emergence of Sociological Theory in Europe and America in the 19th and early 20th centuries. (F)

**SOCI 202. Social Theories** **Credit 3(3-0)**  
Social thought and theory in its development from Comte to the present will be studied. Prerequisite: SOCI 203, SOCI 204, and SOCI 201.

**SOCI 203. Social Statistics I** **Credit 3(3-0)**  
This course is an introduction to elementary statistical reasoning, descriptive statistics, frequency distribution, graphics, measures of central tendency and dispersion. Correlation and regression techniques are also taught.

**SOCI 204. Social Problems** **Credit 3(3-0)**  
Major social problems in American society and their relationship to social structures will be studied. Prerequisite: SOCI 100.

**SOCI 213. Social Statistics II** **Credit 3 (3-0)**  
Inferential statistics, probability, sampling distribution tests of significance as well as measures of association, analysis of variance, multivariate correlational analysis are taught. Prerequisite: SOCI 302.

**SOCI 224. Social Aspects of Human Sexuality** **Credit 3(3-0)**  
Social aspects of human sexuality and American sexual behavior and its influence on life styles will be studied. Emphasis will be on social roles.

**SOCI 306. Minority Group Relations** **Credit 3(3-0)**  
This course is an examination of racial and ethnic relations in society. The main focus is on intergroup relations within the United States, but a global comparative approach is also emphasized. It will present views from numerous perspectives within sociology, with special emphasis on the social psychological aspects of prejudice, discrimination, and differential power structures in society. In addition, the course utilizes a comparative-historical approach to intergroup relations.

**SOCI 310. Social Research Method I** **Credit 3 (3-0)**  
This is an introductory course in social research methods; basic theory, principles and practical applications of data collection, analysis and interpretation. Includes study of research designs, measurement techniques, and sampling techniques used in survey research methods. Prerequisite: SOCI 203 or concurrent.

**SOCI 373. Introduction to Population Studies** **Credit 3(3-0)**  
This course includes a review of demographic processes; growth, fertility, mortality and migration in human populations. Focus on causes and consequences of demographic change in relation to social change and economic development. (S)

**SOCI 410. Reading for Honors in Sociology** **Credit 3(3-0)**  
This course includes intensive and extensive library research on topics in Sociology. Prerequisite: "B" average. (DEMAND)

**SOCI 411. Sociology of Marriage and the Family** **Credit 3(3-0)**  
The family as a social institution and family types in cross-cultural perspectives will be studied.

**SOCI 412. Social Stratification** **Credit 3(3-0)**  
This is a study of social inequalities and differentiation as related to social structures and social systems. Prerequisite: SOCI 203. (DEMAND)

**SOCI 470. Senior Seminar** **Credit 4(4-0)**  
Research and discussions of professional and field issues related to sociology and social work will be studied. Prerequisite: Senior standing.

**SOCI 472. Selected Issues in Sociology** **Credit 3(3-0)**  
Topics of current interest to sociologists and the student body are explored.

**SOCI 475. Research Methods II** **Credit 3(3-0)**  
This course is continuation of SOCI 403. Prerequisites: Senior or graduate standing; minimum of 6 to 9 credits in statistics and research.

**SOCI 498. Sociology Internship****Credit 5(0-10)**

This course is an internship to provide opportunities for students to enhance their employability by supervised experiences in selected agencies. Prerequisites: Senior standing and SOCI 403.

**COURSE DESCRIPTIONS IN SOCIAL WORK****SOWK 133. Introduction to Social Work****Credit 3(3-0)**

This course is designed to introduce students to the human services professions with emphasis on social work as a profession. It explores the human service professions from historical, sociological, political, and economic viewpoints. Students spend a minimum of 20 hours in a social agency.

**SOWK 134. Social Work & Human Diversity****Credit 3(3-0)**

The purpose of this course is to prepare individuals to understand the impact of culture, ethnicity, race, disabilities, ageism, and sexual orientation on society, as well as on their own professional interactions. Prerequisites: SOWK 133, SOCI 100, or permission of the instructor.

**SOWK 230. Social Welfare Policies and Services****Credit 3(3-0)**

This course examines social welfare legislation and policy. Students spend a minimum of 20 hours in a social agency.

**SOWK 260. Major Problems of Family Functioning****Credit 3(3-0)**

This course examines the dynamics of families experiencing major dysfunctions related to poverty, violence, the effects of deviant family members, and the social programs and policies relating to these problem areas. This course will enhance the student's social work practice with families by increasing understanding of dysfunctional effects of these problems on the family system and its individual members and the relationship of policies and programs to the enhancement or deterioration of family life.

**SOWK 270. The Community****Credit 3(3-0)**

This course is a study of the social areas commonly defined as communities, and analyses of the social processes that occur within their boundaries. Community organization skills are taught as a vehicle to address social ills.

**SOWK 285. Interviewing & Recording Skills****Credit 3(3-0)**

This course is designed to provide students with an understanding of the effective dimensions present in the helping process and an opportunity to learn and practice the skills.

**SOWK 303. Juvenile Delinquency****Credit 3(3-0)**

This course is the study of sociological and psychological explanation relative to the causes and rehabilitation of juvenile delinquents, probation and treatment of juveniles within the criminal justice system.

**SOWK 310. Human Behavior in the Social Environment I****Credit 3(3-0)**

This sequential course is a study of how biological, psychological, social and cultural dimensions of human behavior impinge upon every stage of the life cycle from infancy through adolescence. Knowledge is provided for the assessment of the development and behavior of families, groups, organizations, and communities. Prerequisites: SOWK 133, 134, 230 and 235. Acceptance into BSW program.

**SOWK 315. Human Behavior in the Social Environment II****Credit 3(3-0)**

HBSE II builds upon content presented in SOWK 410 (HBSE I). Presents social systems theories, psychosocial theories, and developmental theories to examine why people behave as they do and to apply this knowledge to generalist social work practice across the later-half of the life span. This second course in the HBSE sequence explores the impact of socio-cultural, socio-historical, socio-political, and economic forces on individuals and social systems, and utilizes a diversity perspective to evaluate the effects of culture, social class, race, ethnicity, gender and sexual orientation. This course also introduces the students to macro issues within social work practice as adults interact with larger social systems. Prerequisites: SOWK 133, 134, 230, and 285. Acceptance into BSW program.

**SOWK 320. Feminization of Poverty****Credit 3(3-0)**

This three credit, upper division social work elective explores the status of women. It gives an historical look at women and the global perceptions of women, then focuses on women in the 20<sup>th</sup> & 21<sup>st</sup> centuries, in the U.S. The status of women is explored through the lenses of feminism with special emphasis on the impoverishment of women.

**SOWK 325. Honors Seminar in Social Service****Credit 3(3-0)**

Selected topics in social welfare are extensively studied and discussed. Prerequisites: Junior standing and "B" average. (DEMAND)

**SOWK 350. Introduction to International Social Work**

This course examines international social work, its definition, history, theoretical perspectives, skills, ethical guidelines and the variety of settings and populations served. The topics explored are covered via video conferencing.

**SOWK 360. Global Issues in Human Services**

This course examines global issues and the strategies used to assess and intervene in social issues from a social work framework. The topics explored are covered via video conferencing.

**SOWK 372. Child Welfare I****Credit 3(3-0)**

This course is designed to offer students an opportunity to develop cognitive skills as they relate to the history and development of child welfare. Students will review needs of children and evaluate the extent to which parents/society are able to meet their needs.

**SOWK 390. Independent Study****Credit 3(3-0)**

This course includes independent research in a delineated area of social welfare. Prerequisites: Only Sociology/Social Work Majors and consent of the instructor.

- SOWK 398. Practicum in the Community** **Credit 5(0-16)**  
 This course includes the selection of a community problem, study and analysis of the problem followed by corrective activities, when possible. Prerequisite: Consent of the instructor. **(DEMAND)**
- SOWK 409. Disability and Employment** **Credit 3(3-0)**  
 This course will focus on selected mental, physical, and social disabilities, and their implications for coping and employment. **(DEMAND)**
- SOWK 421. Reading for Honors in Social Welfare** **Credit 3(3-0)**  
 Extensive library research in selected areas of social welfare is required. Prerequisites: Sophomore standing and "B" average. **(DEMAND)**
- SOWK 423. Introduction to Family Therapy** **Credit 3(3-0)**  
 This course is designed to introduce the student to the rapidly developing field of family therapy. A brief overview of family therapy will be presented, along with explanation of the similarities and the difference with other therapies. Several models of practices and technique will be presented. **(DEMAND)**
- SOWK 424. Social Work Practice I** **Credit 3(2-2)**  
 This course is designed to reinforce the knowledge and develop the skills essential for generalist social work practice. Various methods are offered for developing intervention skills with individuals, families and small groups in a variety of settings. SOWK 133, 134, 285, 310, 315 and 430. Taken concurrently with SOWK 487 and 489. Acceptance into BSW program.
- SOWK 425. Social Work Practice II** **Credit 3(2-2)**  
 This course is a continuation of skill development. Emphasis is placed on social work intervention in larger systems (organizations, groups and communities). Attention is given to further understanding the dynamic relationship between people and their environment, the conflicting issues in social work practice, and the impact of various settings on practice. Prerequisites: SOWK 424. Taken concurrently with SOWK 489 and 492. Acceptance into BSW program.
- SOWK 472. Child Welfare II** **Credit 3(3-0)**  
 This course is an examination of philosophies and institutional systems that impact on child welfare. This course will examine influences of such issues as racism, sexism, women's liberation, and child advocacy. Major institutions (educational, court/legal, health care, economic, political) will be examined to identify and evaluate effects. **(DEMAND)**
- SOWK 487. Field Education I** **Credit 5(0-16)**  
 In this practicum, student will apply course-based knowledge and skills by working in a social service setting. A total of 220 internship hours are required. Prerequisites: SOWK 133, 134, 230, 285, 310, and 315. Taken concurrently with SOWK 424 and 489. Acceptance into BSW program. Professional liability insurance required before entering the Field.
- SOWK 489. Field Education Seminar I** **Credit 1(1-0)**  
 The first of a two-semester sequence, provides the forum for students to discuss their implementation of basic social work skills and interventions in their field practicum settings. Students will examine their personal values, as well as conflicting values and ethical dilemmas regarding the populations with whom they practice. Students are expected to develop skills that are essential to the micro level of social work practice. Prerequisites: SOWK 133, 134, 230, 285, 310 and 315. Taken concurrently with SOWK 424.
- SOWK 492. Field Education Seminar II** **Credit 1(1-0)**  
 The second of a two-semester sequence, provides the forum for students to continue discussing their implementation of generalist social work skills and interventions. Students are encouraged to share a range of learning, experiences encountered in different work settings as they continue to examine and evaluate their professionalism. Students are expected to develop skills and proficiencies that are essential to the micro level of social work practice. Prerequisites: SOWK 489 and 424. Taken concurrently with SOWK 425.
- SOWK 497. Senior Seminar** **Credit 4(4-0)**  
 This course includes research and discussion of professional and field issues related to careers in sociology and social work. Prerequisite: Senior status.
- SOWK 498. Field Education II** **Credit 5(0-16)**  
 In this second sequential practicum, students will build on their generalist foundational knowledge and skills by working in a social service setting providing direct intervention to populations-at-risk, carrying professional level case loads. A total of 220 internship hours are required. SOWK 487, 489 424 Taken concurrently with SOWK 492 and 425.
- SOSW 400. Intimate Partner and Domestic Violence**  
 This course builds upon research in the cultural theoretical perspectives of domestic and intimate partner violence at the micro, exo-, meso-, and macrosystem levels. Student learning will be centered on the cognitive-affective-ecological conceptual framework. Students will explore the various forms of abusive behavior in families belonging to four major ethnic minority communities in the United States as well as international communities. Students will look at other areas of abuse and violence as they relate to religious practices, economic marginalization, and gender. Students are required to explore their own assumptions which have caused them to express prejudices and have supported oppression; address personal issues of abuse behavior and/or domestic and intimate partner violence.

#### INTRA-DEPARTMENTAL COURSES

- SOCI 200. Introduction to Anthropology** **Credit 3(3-0)**  
 This course includes an analysis and comparison of primitive cultures and further comparisons with modern cultures.

- SOCI 300. Topics in Cultural Anthropology** **Credit 3(3-0)**  
 Selected topics in language, culture, mythology, and religion designed to acquaint students with analyzing cultural patterning in this and other cultures will be studied.
- SOCI 301. Sociology of Religion** **Credit 3(3-0)**  
 This course is designed to primarily explore the practices, social structures, historical backgrounds, development, universal themes, and roles of religion in society. Course content include the exploration of views of religion from classical sociologists (Marx, Weber, and Durkheim) as well as contemporary sociologists of religion. Various types of religious groups such as ecclesias, denominations, and cults/sects are also discussed.
- SOCI 307. Introduction to Social Entrepreneurship** **Credit 3(3-0)**  
 This course is designed to introduce students to basic sociological concepts associated with social entrepreneurship. Special emphasis is placed on how non-profit organizations are created, maintained, and structured. **(F;S)**
- SOCI 351. Anthropological Experience** **Credit 3(3-0)**  
 This course provides an exploration of anthropological theories and research methods with an emphasis on qualitative research methods. **(DEMAND)**
- SOCI 416. Sociology of Mental Health** **Credit 3(3-0)**  
 This course is a sociocultural variation in the assessment of sociopathological and psychopathological aspects of mental disorder. A critical analysis of institutions of mental health care, consideration of the etiology of mental illness, typologies, and social policies relative to the phenomenon of mental health will also be included. Prerequisite: SOCI 100. **(DEMAND)**
- SOCI 420. Human Evolution in Ecological Perspective** **Credit 3(3-0)**  
 This course examines human cultural and biological evolution using an ecological perspective. **(DEMAND)**
- SOCI 421. Seminar in Cultural Factors in Communication** **Credit 3(3-0)**  
 This course is designed both to sensitize the student to the importance of cultural factors in nonverbal and verbal communication and to equip the student with ways to record and analyze this behavior.
- SOCI 450. Independent Study in Anthropology** **Credit 3(3-0)**  
 This course enables the student to do readings and research in anthropology in cooperation with the instructor. **(DEMAND)**
- SOCI 498. Sociology/Social Service Internship** **Credit 5(0-10)**  
 This course is an internship to provide opportunities for students to enhance their employability by supervised experiences in selected agencies.
- SOWK 280. Black Experience** **Credit 3(3-0)**  
 This is a topical seminar focusing on commonly shared experiences of American Blacks in selected social institutions. Prerequisite: Junior standing.
- SOWK 303. Juvenile Delinquency** **Credit 3(3-0)**  
 This course is the study of sociological and psychological explanation relative to the causes and rehabilitation of juvenile delinquents, probation and treatment of juveniles within the criminal justice system.
- SOWK 370. Introduction to Gerontology** **Credit 3(3-0)**  
 Aging and its implication in social institutions are studied.
- SOSW 415. Medical Sociology** **Credit 3(3-0)**  
 This course includes sociological analysis of medical services, the role of the sick professional organizations and quasi-professional groups; socializational structure of hospitals; sociodemographic and socioepidemiologic variables in relation to modern societies. Cultural and cross-cultural customs and traditions affecting attitudes toward health and the healing art will also be studied. **(DEMAND)**
- SOWK 496. Independent Study II** **Credit 3(3-0)**  
 Prerequisite: Six hours of statistics, and/or research. **(DEMAND)**  
*Note: Sociology 100, Sociology 101, Sociology 203, Sociology 204, Social Work 133, and SOSW 669 are the only courses scheduled to be taught each semester. Other courses are taught once per year and students must follow the curriculum sheets.*

#### DIRECTORY OF FACULTY

- Soonok An** ..... **Assistant Professor**  
 B.A., M.A., Chungbuk National University; M.S.W., Ph.D., University of Georgia
- Arnold Barnes** ..... **Associate Professor and Interim Chairperson**  
 B.A., M.S.W., University of Maryland; Ph.D., Washington University (St. Louis, MO)
- Phillip Carey** ..... **Professor**  
 B.S., M.S., Ph.D., Oklahoma State University
- Joanne Hessmiller** ..... **Associate Professor**  
 B.A., Marywood University; M.S.W., Bryn Mawr College; Ph.D., University of Maryland at Baltimore
- Joshua Kirven** ..... **Associate Professor**  
 B.S., Hampton University; M.S.W., University of South Carolina; Ph.D., Ohio State University
- Jilan Li** ..... **Assistant Professor of Social Work**  
 B.S., M.S., Southwest University People's Republic of China; M.S.W., Ph.D., University of North Carolina at Chapel Hill
- Wayne Moore** ..... **Professor**  
 B.S., East Carolina University; M.S.W., Ohio State University; Ph.D., University of South Carolina

**Maura Nsonwu** ..... **Associate Professor and Interim Director of BSW Program**  
 B.S., University of North Carolina; M.S.W., University of South Carolina; Ph.D., University of North Carolina at Greensboro

**Sharon Parker** ..... **Associate Professor**  
 B.A., Greensboro College; M.S.W., University of Pittsburgh; Ph.D., University of North Carolina at Chapel Hill

**Jeffrey Shears** ..... **Professor**  
 B.S.W., M.Ed., North Carolina Agricultural and Technical State University; Ph.D., University of Denver, Denver Colorado

**Tobin Walton** ..... **Assistant Professor**  
 B.S., University of Evansville; B.A., University of Southern Indiana; M.A., University of Louisville; Ph.D., University of Tennessee

**Elizabeth Watson** ..... **Assistant Professor and Co-Director of BSW Field**  
 B.S., Columbia Union College; M.S.W., Howard University; Ph.D., Andrews University

**Chiquitia Welch-Brewer** ..... **Assistant Professor**  
 B.A., Cleveland State University; M.S.S.A., Case Western Reserve; Ph.D., University of North Carolina at Chapel Hill

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## COLLEGE OF SCIENCE AND TECHNOLOGY

<http://www.ncat.edu/cost/index.html>

**Abdellah Ahmidouch, Interim Dean**

The College of Science and Technology combines departments formerly located in the School of Technology and the College of Arts and Sciences. The new college will increase the production of science, technology, engineering and mathematics (STEM) graduates thereby fulfilling the national and statewide demand for qualified STEM professionals. The primary focus of the College of Science and Technology is to prepare individuals who are uniquely proficient in the application of basic science and technology. Thus, faculty of the college are interested in what industry, business and education want and need. As a result, our goal is to educate the whole person. Students develop not only their technical skills but their personality, cooperativeness, innovativeness, concern for the organization, and communications skills. Graduates of the school are prepared to meet the new and emerging challenges of a modern high technological society.

### ACCREDITATION

The undergraduate programs are as follows: applied engineering technology, construction management, electronics technology, environmental health and safety, graphic communication systems, and motorsports technology. These programs are accredited by the Association of Technology, Management, and Applied Engineering (ATMAE). The undergraduate construction management program is accredited by the American Council of Construction Education (ACCE). The geomatics program is accredited by the Accreditation Board for Engineering and Technology (ABET). The Chemistry Program is certified by American Chemical Society (ACS).

### DEGREES OFFERED

Applied Engineering Technology – Bachelor of Science  
Atmospheric Sciences – Bachelor of Science  
Biology – Bachelor of Science  
Chemistry – Bachelor of Science  
Construction Management – Bachelor of Science  
Electronics Technology – Bachelor of Science  
Environmental Health and Safety – Bachelor of Science  
Geomatics – Bachelor of Science  
Graphic Communication Systems – Bachelor of Science  
Information Technology – Bachelor of Science  
Mathematics – Bachelor of Science  
Motorsports Technology – Bachelor of Science  
Physics – Bachelor of Science

### GENERAL PROGRAM REQUIREMENTS

Admission requirements for entering students in the College of Science and Technology are the same as those for the University. Transfer students must meet admission requirements set by the University. Requirements for graduation vary by department. Students are responsible for meeting all academic requirements for graduation established by both the University and their chosen department.

Community college and technical institute graduates as well as other transfer students may be admitted to undergraduate programs in applied engineering technology, construction management, electronics technology, environmental health and safety, geomatics, graphic communication systems, and motorsports technology, and advanced classification by submitting their credentials to the University Admissions Office. The school also has several 2+2 agreements with area community colleges. The maximum number of transfer credits allowed is 64 semester hours or approximately junior status.

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### Department of Applied Engineering Technology

<http://www.ncat.edu/cost/departments/aet/index.html>

**Vacant, Chairperson**

### OBJECTIVE

The Department of Applied Engineering Technology offers comprehensive instructions and laboratory trainings leading to the BS Degree in Applied Engineering Technology and BS Degree in Motorsports Technology. The degree programs are accredited by the Association of Technology, Management, and Applied Engineering (ATMAE). Our graduates were hired by various companies such as John Deere, Lockheed Martin, Cummins, Texas Instruments, Caterpillar, Rockwell Collins, Cargill, Cross Fluid Power, Johnson Controls, Inc., Ingersoll Rand, Altria, VOLVO, Good Year, Core Technology Molding, Xerox, 3M, British Aerospace Electronics (BAE) Systems, Pratt & Whitney, Bank of America, US Air Force, US Army, and many others.

### VISION

The Department of Applied Engineering Technology strives to become a premiere learner-centered community in industrial technology through global and interdisciplinary learning, innovation and engagement, producing human capital to meet the 21<sup>st</sup> Century US industrial needs.

## **MISSION**

The Department of Applied Engineering Technology seeks to provide opportunities for individuals from diverse backgrounds to achieve excellence at the graduate and undergraduate levels, prepares its students for successful professional and personal lives in the 21<sup>st</sup> century, equipping them with 21<sup>st</sup> century management-oriented skills that they need to adapt to the ever-changing world.

Our degree programs enable students to apply basic engineering principles, technical and management skills to secure application-oriented technical and management positions in today's industrial environment. Specifically, the programs are designed to prepare our students for various engineering support and management functions for research, production, and operations, and applications to specific engineering specialties. The program will enhance their proficiencies in the following areas:

- Planning, organizing and managing technology, workforce, and resources.
- Applying and controlling the use of various high-level technologies, e.g., information based business management systems, such as, enterprise resource planning systems, supply chain management systems, manufacturing execution systems, etc.
- Mastering the technical skills such as industrial materials and processing, computer aided drafting, design and manufacturing; computer-integrated manufacturing; machine vision, power technology; automation technologies such as robotics, PLC, and CNC machines.
- Controlling processes to improve quality, reliability, and productivity.
- Managing and developing a changing workplace to achieve organizational goals.
- Problem solving and creative thinking skills.
- Technology innovation and implementation.

## **TARGET AUDIENCE AND CAREER OPPORTUNITIES**

The program is designed to serve the diverse needs of people who are interested in pursuing careers in engineering technology enterprises, academic society, and government agencies.

- Individuals recently graduated from high schools and want to embark on a career in engineering technology positions.
- Individuals recently graduated from community colleges and want to advance their degree level to prepare for a career in engineering technology positions.
- Individuals currently employed in the technical and/or management positions that have professional growth aspirations.

## **DEGREES OFFERED**

Applied Engineering Technology – Bachelor of Science

Motorsports Technology – Bachelor of Science

## **GENERAL PROGRAM REQUIREMENTS**

The admission of students to the undergraduate degree programs in the Department of Applied Engineering Technology is based upon the general admission requirements of the University. All North Carolina A&T State University students are required to complete a minimum of 33 credit hours in General Education since Fall 2012.

## **DEPARTMENTAL REQUIREMENTS**

All students in the Department of Applied Engineering Technology must complete 120 credit hours, and maintain a minimum of 2.0 GPA in order to receive a BS degree. A minimum of 66 credit hours must be completed in applied engineering technology or motorsports technology specialization courses, which include 30 credit hours of departmental core courses. A minimum grade of “C” must be earned in all Applied Engineering Technology (AET), Motorsports Technology (MST) courses, Computer Systems Technology (CST), and ESH courses.

Graduates of technical institutes and community colleges who have earned the Associate Degree in technology areas may be admitted to the BS degree programs as juniors. Specific course requirements for these students will have to be made on an individual basis after their previously earned credits have been assessed. All transferable credits must have a grade “C” or higher. The typical student in this program will be required to take at least 64 additional credit hours for graduation. If a high school graduate has taken Advanced Placement (AP) courses during high school years, the student will need to submit a test score report directly from the Testing Service of the College Board in order to receive transfer credits. A high school transcript will not suffice. In addition, the course work must meet the curriculum requirements.

Any student transferring to the BS degree programs from other disciplines must have a minimum 2.5 grade point average. Specific course requirements for these students will have to be made on an individual basis after previously earned credits have been assessed.

## **ACCREDITATION**

Both Bachelor of Science Degrees in Applied Engineering Technology and Motorsports Technology are accredited by the Association of Technology, Management, and Applied Engineering (ATMAE).

## **CAREER OPPORTUNITIES**

Graduates of the BS Degree programs are very successful in securing employment in industrial, service areas and government organizations. Positions typically include enterprise managers, production supervisors, manufacturing engineers, production

engineers, automation engineer, manufacturing management, quality control, facilities planner, service management, motorsports marketing, NASCAR related areas, etc.

#### AET CORE COURSES (30 credit hours)

All undergraduate students in the Department of Applied Engineering Technology must take the following departmental core courses: AET 110, AET 121, AET 191, AET 232, AET 270, AET 281, AET 293, AET 395, AET 445, and AET 496.

#### AET TECHNICAL ELECTIVES

AET specialization courses may be chosen from the following four groups of manufacturing courses:

**(1) Industrial Materials and Material Processing Courses:**

AET 361, AET 381, AET 392, AET 461, AET 475, AET 476, AET 477, AET 492, AET 493.

**(2) Industrial Automation Courses:**

AET 373, AET 377, AET 440, AET 441, AET 450, AET 491.

**(3) Industrial Management Courses:**

AET 311, AET 332, AET 421, AET 432, AET 445, AET 481, AET 482, AET 483, AET 484, AET 494.

**(4) Alternative Energy Courses:**

AET 325, AET 326, AET 425, AET 426, AET 427.

**Department of Applied Engineering Technology  
Bachelor of Science in Motorsports Technology  
Major Code: MTSP**

#### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
AET 110	3	AET 121	3
AET 191	3	ENGL 101	3
ENGL 100	3	MATH 112	4
FRST 101	1	MST 251	3
MATH 111	4	HIST 106	3
<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
AET 232	3	AET 205	3
CHEM 106/116	4	AET 270	3
PHYS 225/235	4	AET 293	3
PSYC 101	3	CST 112 or CST 120	3
<b>Semester Total</b>	<b>14</b>	PHYS 226/236	4
		<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
ACCT 210	3	AET 492	3
AET 281	3	MGMT 110	3
AET 392	3	MST 255	3
MST 252	3	MST 275	3
PHIL 201	3	SPCH 250	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
AET 311	3	AET 445	3
AET 395	3	AET 496	3
AET 476	3	Free Elective	3
AET 493	3	MST 452	3
MST 455	3	MST 456	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 120**



## MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

- 1) All AET courses
- 2) All MST courses
- 3) EHS 101
- 4) CST 110 and CST 120

**Department of Applied Engineering Technology  
Bachelor of Science in Applied Engineering Technology  
Major Code: AET**

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
AET 110	3	AET 121	3
AET 191	3	ENGL 101	3
ENGL 100	3	HIST 106	3
FRST 101	1	MATH 112	4
MATH 111	4	ESH 201	3
<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
AET 202	3	AET 270	3
CHEM 106/116	4	AET 293	3
PHYS 225/235	4	CST 112	3
PSYC 101	3	PHYS 226/236	4
<b>Semester Total</b>	<b>14</b>	SPCH 250	3
		<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
ACCT 203	3	AET 273	3
AET 232	3	AET 276	3
AET 281	3	Free Elective	3
PHIL 201	3	MGMT 110	3
Technical Elective	3	Technical Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
AET 395	3	AET 445	3
AET 482	3	AET 483	3
AET 484	3	AET 496	3
Technical Elective <sup>1</sup>	3	Technical Elective <sup>1</sup>	3
Technical Elective <sup>1</sup>	3	Technical Elective <sup>1</sup>	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 120**

<sup>1</sup>Technical electives in the senior year must be at 300 or 400 level.

## MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

- 1) All AET courses
- 2) EHS 101
- 3) CST 110 and CST 120

## COURSE DESCRIPTIONS IN APPLIED ENGINEERING TECHNOLOGY

- AET 100. Orientation to Technology** **Credit 1(1-0)**  
An overview of the College of Science and Technology and its programs are explained along with what is expected of majors, their preparation, and the opportunities available upon graduation. Basic concepts such as dependability, dedication, technical knowledge, communications, cooperativeness, self-motivation, and dressing for success are discussed. (F;S)
- AET 102. Technology Globalization** **Credit 3(3-0)**  
This course introduces students to the concept and history of globalization. It examines the complexity of global issues from multiple societal perspectives – political, cultural, social, ideological, economic, technological, industrial, and many others. The main focus is on technology globalization: global enterprises, investment, markets, workforce, resources, manufacturing, and environment. (F;S)
- AET 110. Blueprint Reading and Interpretation** **Credit 3(3-0)**  
This course trains students with the basic skills needed to read and interpret industrial blueprints. Emphases are measurement unit systems and their conversions, industrial blueprint production and interpretation, information tracing through blueprint title block and notes, and converting blueprint objects to marketable products through manufacturing sequencing. Fundamental skills will also be introduced, such as lettering, sketching, dimensioning and representing common geometrical entities with points, lines, planes, and solids, orthogonal projection, sectional and auxiliary views, oblique and isometric representation. (F;S)
- AET 121. Computing Technology** **Credit 3(3-0)**  
This course is designed to provide basic computer knowledge and skills required in a typical manufacturing environment. Emphasis will be placed on the basics of computer structure and circuitry, software programming and applications in manufacturing process including ladder logic, materials requirement planning (MRP) and statistical process control (SPC). (F;S)
- AET 131. Ethics in Technology Professions** **Credit 3(3-0)**  
This course is an introduction to ethics in technology professions. It teaches students the concepts, theory and practice of ethics in the context of technology and engineering professions. This course also provides students with a basic understanding of their ethical obligations as technology and engineering professionals, as well as a framework for analyzing and managing more complex ethical dilemmas that arise in technological practice with individuals, groups, organizations, and communities. The course will cover in-depth those values central to moral life of any professional – integrity, respect for persons, justice, compassion, beneficence and non-maleficence, and responsibility. (F;S)
- AET 191. Introduction to Manufacturing Processes** **Credit 3(3-0)**  
This course provides an introduction to basic manufacturing processes to include forming, separation conditioning, and assembly processes. An overview of production management and metrology is introduced. (F;S)
- AET 200. Technology Seminar** **Credit 2(2-0)**  
This course introduces students to technology innovation and implementation; new technology development and deployment. Seminar topics will cover some of the technological areas, such as nano-technology, alternative energies, advanced manufacturing technology, electronic technology, information technology, etc. Prerequisite: Sophomore standing. (F)
- AET 201. Computer Aided Manufacturing** **Credit 3(3-0)**  
This course introduces the basic principles of graphic design and common tools utilized in product design and product manufacturing enterprises. Geometric dimensioning and tolerancing practices and procedures are emphasized. Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM) tools and techniques are presented. (F;S;SS)
- AET 202. Parametric Modeling** **Credit 3(3-0)**  
This course focuses on development of knowledge and skills associated with the parametric-based approach to modeling. Emphasis will be placed on the creation of part models and common downstream Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM) processes. Rapid prototyping and common production tooling and techniques are introduced. Prerequisite: AET 201. (F;S;SS)
- AET 205. Mechanical Design and Manufacturing Problems** **Credit 3(3-0)**  
This is a basic course in mechanical design, problems and manufacturing procedures. Course includes machine-tool-die design using CAD/CAM software to generate machine codes and parts drawing. Prerequisite: Sophomore standing. (F;S)
- AET 225. Sustainability and Energy Conservation Technologies** **Credit 3(3-0)**  
This course introduces various alternative energy resources, and sustainability and energy conservation issues. Topics include alternative energy resources, management processes needed to maximize renewable/non-renewable energy resources, economics of sustainability, and reduction of environmental impacts. Upon completion, students should be able to discuss evaluation of energy resources, efficiency, environmental impacts of energy, sustainability metrics, and energy sources. Prerequisite: Sophomore standing. (F;S)
- AET 231. Human Resources in Manufacturing** **Credit 3(3-0)**  
This course introduces students to the current human resource issues in manufacturing industries. These include human resource needs in the new manufacturing environment involving steps in providing appropriate human resources, recruitment process, training, performance appraisal, legislation issues, and workforce diversity. Prerequisite: Sophomore standing. (F;S)
- AET 232. Manufacturing Planning and Management** **Credit 3(3-0)**  
This course includes a practical approach to management to include organizing, planning, controlling and development of operations used in decision making and problem-solving in a manufacturing environment. Prerequisite: Sophomore standing or consent of the instructor (F;S)

- AET 233. Assets Maintenance** **Credit 3(3-0)**  
 This course introduces students to the concepts and practices in the area of maintenance. The topics include breakdown maintenance; preventive maintenance; infant mortality of components; repair capability; redundancy; reliability; and interdependency of operators, machines, and mechanics. (F;S)
- AET 251. Dimensional Metrology** **Credit 3(3-0)**  
 This course covers dimensional metrology terminology, measurement of surface texture, flatness, squareness, angles, roundness, and concentricity. Areas of study include contact and non-contact measuring methods and equipment performance. Prerequisites: AET 201, AET 202. (F;S;SS)
- AET 254. Automation Identification and Bar Coding** **Credit 3(3-0)**  
 Inventory control and bar coding through automation will be covered. (F;S;SS)
- AET 261. Introduction to Non-Destructive Evaluation (NDE) Technology** **Credit 3(3-0)**  
 This course provides an overview of the non-destructive evaluation technologies. The course introduces students to a wide spectrum of NDE technologies, such as the popular “big five” NDE technologies (liquid penetration, magnetic particle testing, x-ray radiography, ultrasonic testing, and eddy-current testing), some of the newly developed NDE technologies, and the application areas of different types of NDE technologies. Necessary theoretical background knowledge involving mechanical, electrical, magnetic, acoustical, and thermal principles behind various NDE technologies will also be reviewed. Prerequisite: AET 270. (F;S;SS)
- AET 270. Industrial Materials & Processes** **Credit 3(3-0)**  
 This course emphasizes the nature, origin and the conversion into manufactured goods of metals, plastics, woods, ceramics, composites and synthetic materials. (F;S)
- AET 271. Metallic Material Processes** **Credit 3(3-0)**  
 This course is a study of metallic material properties, fabricating equipment and methods utilized in the production of metallic products. (F;S)
- AET 273. Numerically Controlled Machines** **Credit 3(3-0)**  
 Basic manufacturing processes with computer-numerically controlled (CNC) machine-tools will be covered. Course includes programming and machine language. Prerequisite: Sophomore Standing. (F;S)
- AET 274. Polymer Process** **Credit 3(3-0)**  
 This course introduces the properties and application of polymers in manufactured products, and provides experience with injection molding, extrusion, blow molding, rotational casting thermoforming, and other basic plastics processes through laboratory exercises. Also topics in tooling design of injection molds, compression molds and dies will be discussed. Prerequisite: Sophomore standing. (F;S)
- AET 276. Introduction to PLC's** **Credit 3(3-0)**  
 This course introduces the basics of programmable logic controllers (PLC). It describes the components, functions, operation, methods of programming, timers and counters and some applications of PLCs. (F;S)
- AET 277. Electronics Manufacturing Technology I** **Credit 3(3-0)**  
 This course covers the basics in design and fabrication of electronic components. Topics include properties of materials and chemicals used in electronics manufacturing, passive and active devices, thin and thick film and IC technologies, crystal growth and water preparation and contamination control. Prerequisites: PHYS 252, MATH 111, ECT 299. (F;S)
- AET 281. Industrial Statistics and Probability** **Credit 3(3-0)**  
 This course covers the standard introductory topics, including descriptive statistics, probability, confidence intervals, hypothesis tests, linear regression and basic techniques and methods to collect and analyze the industrial data. (F;S)
- AET 285. Technology Innovation and Entrepreneurship** **Credit 3(3-0)**  
 This course provides real world, hands-on learning on the process of technological innovation. The students talk to customers, partners, competitors, and other key players in the industry in order to validate and examine the potential marketability of a new innovation or technology. Students learn how to convert new ideas, technology and innovation into new products and/or services. The students learn the process by which they can determine whether a new product or service has potential to be marketed. Prerequisites: Junior standing. (S)
- AET 293. Power Technology** **Credit 3(3-0)**  
 Basic concepts of energy and power technology, including mechanical, hydraulics, pneumatics and electrical methods of transmitting and controlling power sources will be covered. (F;S)
- AET 311. Lean Manufacturing** **Credit 3(3-0)**  
 This course introduces manufacturing students to the concept of lean manufacturing, and how lean manufacturing system can facilitate continuous improvement in quality and productivity. This includes the pull method of work flow, consistent quality, small lot size, uniform workstation loads, standardized components and work methods. Other concepts include close supplier ties, flexible work force, line flows, automation, preventive maintenance, and just-in-time (JIT) philosophy. Prerequisite: Junior standing. (F;S)
- AET 325. Solar Power Technology** **Credit 3(3-0)**  
 This course is an introduction to solar power technology. Topics include diffuse and intermittent sources of sunlight, the conversion of sunlight into electricity using the physics of the photoelectric effect in photovoltaic cells, the integration of solar power plants into the electrical grid and solar energy systems economics. Student will be able to select proper components for a

photovoltaic system based on regulatory codes and standards and individual component specifications, and identify the applications of solar energy. Prerequisite: AET 225. (F)

**AET 326. Bio-Fuel Technologies**

**Credit 3(3-0)**

This course provides an in-depth study of commercial biofuels production and various methods for manufacturing biofuels at a large scale. Topics include government policies and standards regarding bio-fuel products, production technologies, feedstock selection and pretreatment, quality control, energy balance, and biofuels business models. Upon completion students should possess a practical knowledge of commercial biofuels production and facility operation. Prerequisite: AET 225. (S)

**AET 332. Manufacturing-Production and Control**

**Credit 3(3-0)**

This course provides a comprehensive study of manufacturing operation and production control. It includes materials handling and just-in-time manufacturing (JIT), manufacturing requirement planning and continuous flow manufacturing. Prerequisite: Sophomore standing or consent of the instructor. (F;S)

**AET 361. Non-Destructive Evaluation (NDE) Technology I**

**Credit 3(3-0)**

This course presents the popular “big five” NDE technologies (liquid penetration, magnetic particle testing, x-ray radiography, ultrasonic testing, and eddy-current testing). For each of these technologies, a series of topics will be discussed; physical principles, testing procedures, application areas, equipment, instruments, data acquisitions, data analysis, flaw indication, advantages and limitations. Prerequisite: Junior standing. (F;S)

**AET 373. Advanced CNC-Machines**

**Credit 3(3-0)**

This course provides study in advanced numerically controlled (CNC) machine-tool technology with precision work performed on lathes, milling machines, laser cutters, and surface drilling workstations. Prerequisite: AET 273. (F;S)

**AET 374. Plastic Part Design Principles**

**Credit 3(2-2)**

The course teaches students how to recognize the part design features and material issues that either help or hinder the manufacturing process, and offer the part and mold designer guidance in designing products for manufacturability. An overview of plastic part design, material shrinkage and flow characteristics, mold design, and injection molding is included to help students develop an understanding of the complex relationship of these different factors and how factors combine to create problems in the molding process. This course will explain the causes of, and means to solve many unexpected problems including shrinkage variation, warpage, no fills, gas traps, weld line locations and effects, variations in part size, shape and weight, flash, core deflection, and steel fatigue. (F;S)

**AET 377. Electronics Manufacturing Technology II**

**Credit 3(3-0)**

This course is a continuation of AET 350 and covers topics such as devices and integrated circuit formation processes, ion implantation, photolithography, deposition, materialization, wafer testing and evaluation, through hole and surface mount components, and soldering techniques. Prerequisite: AET 277. (F;S)

**AET 381. Metallurgy**

**Credit 3(3-0)**

Metals, their properties, selection, and production are studied. Phase diagram, thermal treatment and strengthening mechanisms are discussed. Lab exercises will cover specimen preparations, metallography techniques, and microstructural analysis. (F;S)

**AET 392. Statics for Technology Major**

**Credit 3(3-0)**

This course is a study of static equilibrium conditions and mechanical behavior of materials under loading. Applications are made in the area of bars, columns, joint pressure vessels, shafts and beams. Testing materials for measuring mechanical properties will be experienced. Prerequisite: Junior standing. (F;S)

**AET 395. Statistical Process/Quality Control**

**Credit 3(3-0)**

This course emphasizes a practical approach to quality control in industries. Includes quality and process improvement through measurement analysis and diagnosis utilizing basic concepts of statistics. (F;S)

**AET 398. Cooperative Training in Industry I**

**Credit 3(3-0)**

Students must be in industry full time for one semester in their major field of work and complete any University co-op requirements. The student will be evaluated on reports from industry. The report will be in standard format. The hours earned will be credited towards required technical electives in the industrial technology curriculum. Three semester hours are the maximum to be earned under this arrangement in any one semester. Six semester hours are the maximum to be earned in the co-op arrangement in the Industrial Technology curriculum. Prerequisite: Junior standing. (F;S;SS)

**AET 421. Manufacturing Decision Making**

**Credit 3(3-0)**

This course introduces the basic concept of the decision-making process in manufacturing industry. Different methods of quantitative analysis techniques will be discussed, including their application and interpretation in manufacturing industry. Prerequisite: Junior standing. (F;S)

**AET 425. Wind and Wave Energy Technologies**

**Credit 3(3-0)**

This course will discuss concepts of wind and wave energy, its reliability, economics and environmental implications. Various aspects of turbine technologies and their development will be addressed. Students will be expected to carry out research and present reports on selected turbines, energy applications and operating principles. Prerequisite: AET 225. (F)

**AET 426. Fuel Cell System Technology**

**Credit 3(3-0)**

This course addresses the fundamental process and materials aspect of fuel cell technology, the reforming of hydrocarbon fuels to hydrogen, and the application of fuel cell for transportation. The course includes a review and discussion of various types of fuel cells, materials properties of electrodes and polymeric membranes, and electrochemical mechanisms. Reforming of various types of hydrocarbon fuel to hydrogen and the application of reforming technology to stationary and vehicle fuel cells will be discussed. Prerequisite: AET 225. (S)

- AET 427. Hybrid Energy System Technology** **Credit 3(3-0)**  
 This course discusses the underlying fundamentals of all the major energy storage methods and combining multiple power systems to build economic and sustainable resource to cover various load demands. Student will learn the principles involved in the storage of energy in mechanical, electrostatic and magnetic systems for various applications. The course also intends to strengthen student's knowledge of hybrid electric components in the hybrid electric vehicle powertrain system, including electric energy storage (batteries, flywheels, and ultra-capacitors) and electrical energy production-fuel cells. Prerequisite: AET 225. (F;S)
- AET 432. Industrial Productivity Measurement and Analysis** **Credit 3(3-0)**  
 This course introduces the methods of work measurement and analysis towards establishing work standards and productivity level in manufacturing environment. Prerequisite: Junior standing. (F;S)
- AET 440. Thermal and Vibration Analysis and Testing of Electronic Components** **Credit 3(3-0)**  
 This course covers topics in electronic components testing including failure mode, overheating, thermal stress and vibration analysis. Environmental stress screening including thermal and vibration cycling will also be studied. Prerequisite: Senior standing. (F;S)
- AET 441. Industrial Robotics** **Credit 3(3-0)**  
 This course introduces the main components of industrial robots. Topics include: classifications, geometry, safety, power sources, drive systems, work envelope and ISO Standards. Prerequisite: Senior standing and AET 491. (F;S)
- AET 445. Industrial Project Management** **Credit 3(3-0)**  
 This course provides the students with the theory and core methodology to manage projects or participate on project teams including techniques and methods to break down the chaos of an overwhelming workload into manageable elements- scope, time, cost, quality, human resources, communication, risk, procurement, and integration, and to effectively manage their time by identifying goals, creating daily plans and recognizing obstacles. Prerequisite: Senior standing. (F;S;SS)
- AET 450. Electronic Components Packaging** **Credit 3(3-0)**  
 This course addresses basic issues in electronics packaging of single chip to multi-chip modules. Topics such as packaging process, clean room, bonding and sealing, and final packaging will be discussed. Student projects will include design, construction, and testing of packages for basic electronic components. Prerequisite: AET 377. (F;S)
- AET 461. Non-Destructive Evaluation (NDE) Technology II** **Credit 3(3-0)**  
 This course introduces the newly developed NDE technologies, such as acoustic emission techniques, magnetic flux leakage techniques, radiographic and microwave techniques. For each of technique, a series of topics covering physical principles, testing procedures, data collection and analysis, and applications will be introduced. Prerequisite: AET 361. (F;S)
- AET 474. Automated Manufacturing** **Credit 3(3-0)**  
 This course provides a basic understanding of automation and its various applications in manufacturing. Implications of Computer Integrated Manufacturing (CIM) and robotic work cells towards improving productivity are emphasized. (F;S)
- AET 475. Ceramic Materials** **Credit 3(3-0)**  
 In this course students will be introduced to different ceramic materials and their thermal, mechanical and chemical properties. Applications in different industries including high tech semiconductors, military and space will be discussed. Prerequisite: Junior standing. (F;S;SS)
- AET 476. Composite Material Fabrication** **Credit 3(3-0)**  
 This course introduces the students to the concept of composite materials; the constituent materials of composites; the application areas of composite materials; and the advantages and disadvantages of composite materials. The core contents of this course are the fabrication technologies to make various composite materials, such as, manual lay-up, automated tape lamination, vacuum bagging, filament winding, pultrusion, matched-die molding, resin-transfer molding, spray-up methods, and many others. Other important issues, such as quality assurance, damage control, and repair, will also be discussed. (F;S)
- AET 477. Piezoelectric Materials** **Credit 3(3-0)**  
 This course introduces the basic concepts of piezoelectric materials, which have a capacity to complete a fundamental process of electro-mechanical interaction that represents a linear coupling in energy conversion. The applications of piezoelectric materials are presented, such as, ultrasonic generators, filters, sensors, and actuators. Prerequisite: Junior standing. (F;S;SS)
- AET 478. Molding Process Validation** **Credit 3(2-2)**  
 This course will cover aspects of molding operations ranging from tool specification, process development, process validation, long term process performance and the linkage. The focus will be on the key elements involved with Installation Qualification (IQ), Operational Qualification (OQ), and Performance Qualification (PQ) as applicable to molding operations. The course will also cover the use of analytical and statistical techniques to generate high confidence in the manufacturing process and the long term performance. Benchmarking activities, design of experiments, and measurement system analysis in both the classroom and lab environment will be explored. (F;S)
- AET 479. Design of Experiments (DOEs) for Injection Molding** **Credit 3(2-2)**  
 This course will give students practical experience in setting up, implementing, and interpreting Design of Experiments (DOEs) utilizing both the processing and the computer labs. Students will learn how to set up the initial process, select factors and factor levels, and determine sample size. Students will also learn how to determine design levels and design factors, and their combinations. (F;S)
- AET 481. Supply Chain Management Systems** **Credit 3(3-0)**  
 This course introduces to students the functionalities and execution of Supply Chain Management (SCM) systems. In addition, it

shows how information technology and Internet can be integrated into manufacturing management process. Prerequisite: Junior standing. (F;S)

**AET 482. Six Sigma Applied to Manufacturing**

**Credit 3(3-0)**

This course introduces manufacturing students to the concept of Six Sigma, the impact of Six Sigma on the quality of manufacturing industries, and the relationship between Six Sigma strategy and total quality management. Prerequisite: AET 395. (F;S;SS)

**AET 483. Enterprise Resource Planning Systems**

**Credit 3(3-0)**

This course introduces students to seamless integration of all the information flow through a company. Topics include financial and accounting information, human resource and customer information, product planning, parts purchasing, maintaining inventory, and tracking orders. Prerequisite: Junior standing. (F;S;SS)

**AET 484. Manufacturing Execution System**

**Credit 3(3-0)**

This course introduces students to the Manufacturing Execution System (MES) functionalities including machines start-up procedures, product-making process, parts measurements and inventory availability. Prerequisite: Junior standing. (F;S)

**AET 490. Independent Study**

**Credit 3(3-0)**

The student selects a technical problem in his major area for special research and study in consultation with a faculty member in his area of interest. He will spend a minimum of six hours per week in library research or laboratory experimentation. A technical report in standard format will be required for completion and must be approved by two department faculty members. Prerequisite: Junior standing. (F;S;SS)

**AET 491. Electro-Mechanical Control Systems**

**Credit 3(3-0)**

This course is a general study of electromechanical control systems. Emphasis will be placed on programming PLC'S, robots and interfacing sensors, transducers, etc., with other components for output signals. PC computers will be an integral part of this class. Prerequisite: AET 276, AET 293. (F;S;SS)

**AET 492. Mechanics of Materials for Technology Major**

**Credit 3(3-0)**

This course introduces the mechanical behavior of materials under loading. The concepts of stress and strain, and the relationship between external loads and materials deformation are presented. Applications are made in the area of bars, columns, joint pressure vessels, shafts and beams. Testing materials for measuring mechanical properties will be experienced. Prerequisite: AET 392. (F;S)

**AET 493. Fundamentals of Dynamics and Kinematics for Technology Major**

**Credit 3(3-0)**

This course introduces various principles of kinematics and kinetics of particles and rigid bodies. Emphasis is placed on understanding and analyzing various mechanisms and their motion types. Newton's laws in various coordinator systems, and analysis of the relationship among displacement, velocity, acceleration, and the external load conditions, and how these principles should be used in industrial machines and motorsports vehicles. Prerequisite: AET 392. (F;S)

**AET 494. Leadership for Total Quality Management**

**Credit 3(3-0)**

This course introduces with the basic concepts and approaches related to the subject of total quality management. These includes quality and global competitiveness, strategic management, and ethics, partnering and strategic alliances, quality culture, customer satisfaction and retention, employee empowerment, teamwork, communication and interpersonal relation, education and training. Prerequisite: AET 395. (F;S)

**AET 496. AET Capstone Class**

**Credit 3(3-0)**

This course is a comprehensive AET required course for all manufacturing students before their graduation. This course is project oriented. The project may be chosen from all concentration areas within the department with all aspects of the manufacturing principles and practices implemented into a selected project. A final report must be completed and approved. Prerequisite: Senior standing. (F;S;SS)

**AET 498. Cooperative Training in Industry II**

**Credit 3(3-0)**

The description of this course is the same as AET 398: Cooperative Training in Industry I, and is normally the second co-op experience of the student. Prerequisite: AET 398. (F;S;SS)

**COURSE DESCRIPTIONS IN MOTORSPORTS TECHNOLOGY**

**MST 251. Introduction to Motorsports**

**Credit 3(3-0)**

This course provides an introduction to the history, structure and organization of motorsport; overview of the various types of races, vehicles, venues and sanctioning bodies of motorsports. Students learn the racing rules, and regulations, and point systems governing various classes of racing, emphasizing the ethical and legal responsibility of motorsport industry. Students research various career paths in motorsport industry and functions of motorsport facilities. (F;S)

**MST 252. Engine Performance**

**Credit 3(3-0)**

This course is a study of the principles of the internal combustion engine. Students learn to identify different engine types and components, chemistry of combustion, fuel systems, and exhaust systems. Basic functions of engine design are examined with an emphasis on those aspects that enable improved engine performance, such as, spark timing, valve timing, A/F ratio, engine geometry, fuel type, manifold tuning, cooling and lubricating systems. Students practice engine assembly maintenance and trouble shooting. Prerequisite: PHYS 225/226. (F;S)

**MST 255. Automotive Powertrain Technology**

**Credit 3(3-0)**

This course will have in-depth discussions on a variety of manual and automatic power transmission and drive train components including drive shafts, universal joints, gears, axles, differentials, bearing, clutches and seals. Modern automatic transmissions that heavily rely on control technologies are presented, including step gear transmissions (ATs), continuous variable transmissions

(CVTs) and hybrid power train systems. Students will also practice proper service procedures for diagnosis, disassembly and assembly of manual transmissions, transfer cases and differentials. (F;S)

**MST 275. Motorsports Performance Technology** **Credit 3(3-0)**

This course teaches students the technologies required for improving motorsport performance, such as, racing vehicle structural integrity (crashworthiness, structural strength and stiffness, aerodynamic characteristics performance); driver and track safety equipment; tire technology, suspension system analysis, damper analysis, aerodynamics and dynamic testing, driver’s perspective, performance modeling and the race modeling. (F;S)

**MST 452. Motorsport Management** **Credit 3(3-0)**

This course prepares students to operate a successful motorsports team. Students learn how to manage motorsport businesses strategically; create and sustain competitive advantage; plan marketing and positioning of sponsorship, raise capital and handle budgeting and finance. Students investigate the integration of management principles through assessment and evaluation of a series of motorsport case studies. (F;S)

**MST 455. Motorsports Data Acquisition and Controls** **Credit 3(3-0)**

Students learn to develop understanding of the automotive electrical system, operation and components; principles of operation of fuses, relays, solenoids and actuators, fuel injectors, electric motors, ignition coils, batteries; engine electronics, function of components; minimizing the environmental impact of the internal combustion engine by using electronic control. Introduction to hybrid (full and mild), electric, fuel cell vehicles and their environmental benefits will also be presented. (F;S)

**MST 456. Vehicle Dynamics and Control** **Credit 3(3-0)**

Students will learn the fundamental dynamic considerations that influence the performance of ground vehicles. Load transfer during braking, acceleration, and cornering are analyzed. Students will investigate vehicle handling as it directly relates to chassis, suspension components, springs and shocks, tires and the overall race set up. Different types of suspension and dampers to compare their influence on transferring the vehicle loads to the road and limitation on the vehicle performance. (F;S)

**DIRECTORY OF FACULTY**

<b>Patricia Banks</b> .....	<b>Adjunct Faculty</b>
B.S., M.S., North Carolina A&T State University	
<b>Malcolm D. Bethea</b> .....	<b>Adjunct Instructor</b>
B.S., South Carolina State University; B.S., M.S., North Carolina A&T State University	
<b>Jacqueline Chestnut</b> .....	<b>Adjunct Faculty</b>
B.S., M.S., North Carolina A&T State University; Ph. D. Mississippi State University	
<b>Policarpo deMattos</b> .....	<b>Adjunct Faculty</b>
B.S.; Pace University; M.S., North Carolina A&T State University; Ph.D. North Carolina A&T State University	
<b>Geoff E. Foster</b> .....	<b>Adjunct Instructor</b>
B.S., M.S., North Carolina A&T State University; M.B.A., Wake Forest University	
<b>Clement Iheancho</b> .....	<b>Adjunct Faculty</b>
B.S., M.Ed., North Carolina A&T State University; Ph.D. Virginia Polytechnic Institute and State University	
<b>Emmanuel Kolo</b> .....	<b>Adjunct Faculty</b>
B.S., M.S., North Carolina A&T State University; Ph.D. Virginia Polytechnic Institute and State University	
<b>Mahour Mellat Parast</b> .....	<b>Assistant Professor</b>
B.S., Sharif University of Technology, M.S., University of Science and Technology; Ph.D., University of Nebraska-Lincoln	
<b>Earnest L. Walker</b> .....	<b>Professor Emeritus</b>
B.S., University of Arkansas, Pine Bluff; M.S., University of Arkansas, Fayetteville; Ph.D., Southern Illinois University	
<b>Gerald J. Watson</b> .....	<b>Adjunct Faculty</b>
B.S., M.S., Georgia Institute of Technology; Ph.D., North Carolina A&T State University	
<b>Donald Ray West</b> .....	<b>Adjunct Faculty</b>
B.S., M.S., North Carolina State University; M.B.A., Strayer University; Ph.D., North Carolina State University	

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**Department of Biology**

<http://www.ncat.edu/cost/departments/biol/index.html>

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**Mary A. Smith, Chairperson**  
**Roy J. Coomans, Associate Chairperson**

**OBJECTIVES**

The objectives of the Department of Biology are as follows:

1. to prepare students for careers in research, industry, and government.
2. to prepare students for graduate study in the biological sciences.
3. to prepare students for admission to professional schools (i.e. medical, dental, and veterinary school).
4. to provide courses in biology that fulfill the general education core requirements of the university.
5. to provide cognate courses for students majoring in or receiving certification in other fields including, but not limited to, agricultural and environmental science, nursing, and human performance and leisure studies.

6. to serve as a resource to the university and community through cooperative programs, workshops, seminars, course offerings, and public service.
7. to conduct research and scholarly activity in the areas of biology, biotechnology, computational biology, and biology education.
8. to provide students with experience in the applications of computers in biological research.

### **DEGREES OFFERED**

Biology – Bachelor of Science

Secondary Education (Biology) – Bachelor of Science

Students interested in pursuing the Bachelor of Science degree in the Department of Biology are advised that rigorous high school preparation is important to success. The Department strongly recommends that a prospective student's preparation include 5 units of high school science (including units in biology, chemistry and physics) and at least 1 unit of mathematics beyond Algebra II.

### **GENERAL ADMISSION REQUIREMENTS**

For Fall 2017, the admission of students to the undergraduate degree program in the Department of Biology are based upon the general admission requirements of the University. For students entering Spring 2018 and thereafter, to be admitted into the undergraduate degree programs of the Department of Biology incoming freshmen must meet all of the following requirements:

- **English:** Four course units emphasizing grammar, composition, and literature
- **Foreign Language:** Two course units in the same language
- **Mathematics:** Four course units including Algebra I, Algebra II, Geometry, and a higher level mathematics course for which Algebra II is a prerequisite
- **Science:** Three course units including at least one unit in a life or biological science, at least one unit in a physical science, and at least one laboratory course
- **Social Science:** Two course units including one in United States history
- A minimum SAT (math plus reading comprehension) combined score of 800 or an ACT composite score of 16
- A minimum high school grade point average of 2.5 (unweighted)

### **DEPARTMENTAL REQUIREMENTS**

Biology (Pre-Professional) – Students are required to complete a minimum of 120 hours for graduation. This includes a minimum of 47 semester hours of biology and 39 semester hours of supporting math and science courses. The remaining courses satisfy other requirements of the Department and University.

Biology, Secondary Education – Students following the teacher education sequence are required to complete a minimum of 120 semester hours. Included in these 120 hours are a minimum of 47 semester hours of biology and 32 semester hours of supporting courses. The remaining courses satisfy the University's and School of Education's general education requirements.

Transfer students from other colleges and universities and from other disciplines at A&T must have a cumulative GPA of 2.5 or higher in all college work. All biology majors must maintain a cumulative GPA of 2.3 or higher. Any student whose GPA falls below 2.3 will be placed on probation at the end of that semester. If a student placed on probation does not raise his/her cumulative GPA to the minimum of 2.3 within two semesters he/she will be advised to change to another major. All biology majors must have a cumulative GPA of 2.3 or higher to qualify for graduation. Biology majors must earn a grade of "C" or higher in all biology courses. Any student earning a grade less than "C" must repeat the biology course.

### **ENRICHMENT PROGRAMS**

Several enrichment programs and activities are available to students in the department, which are designed to increase the knowledge and competitiveness of biology majors. They include:

1. *Departmental Seminars* All students are encouraged to attend seminars presented by research scientists from industry, medical institutions, research laboratories and universities.
2. Undergraduate Research and Academic Training Programs: NIH sponsored Maximizing Access to Research Careers (MARC), and Research Initiatives for Scientific Enhancement (RISE) programs.
3. *Pre-Professional Biological Sciences Association*. The club includes a chartered Student National Dental Association, Student Medical Association Program, and a National Black Graduate Student Association Chapter. Activities include field trips, seminars, and community service, promotion of careers in health care and preparation for national entrance examinations to professional schools.
4. *Honor Societies*. Tau Phi Chapter of the Beta Beta Beta National Biological Honor Society.
5. *Retreats*. Hosts an annual Faculty Strategic Planning Retreat, an Annual Graduate Student Retreat, an Annual New Student Orientation Program and an Undergraduate Research Retreat.
6. *Faculty/Student Advisement*. All biology majors have an assigned faculty advisor who will provide pin numbers, advice on course scheduling, career counseling, university resources, and personal issues that may affect academic performance. Students should schedule appointments to see advisors at least two times a semester.



### ENRICHMENT FACILITIES

1. *Research Laboratories.* The Department of Biology houses several state-of-the art research laboratories to support faculty and student research in molecular biology, biotechnology, microbiology, bioinformatics, genomics, ecology, and other biological sciences.
2. *Molecular Biology Research Core Lab.* This facility is equipped with high through-put technology for cutting-edge research.
3. *Lecture Facilities.* The teaching facilities in Barnes Hall include a seminar room, several SMART classrooms and auditorium, including one classroom with video-conferencing capability for online communication.
4. *Graduate Student Resource Room.* This facility provides space for graduate students to study, network, or relax.
5. *Life Mapping and Advising Center (LMAC).* This facility includes private cubicles with computers and material for academic advising, in addition to spaces equipped for peer tutoring and for career planning and exploration. The center offers intrusive advising, life coaching, peer tutoring and peer mentoring (Big Brothers & Big Sisters). The center is open four days a week for advising by appointment or for walk-ins.

### RESEARCH & EXTRAMURAL FUNDING

As is the standard in quality programs nationally, the department receives training and research support from Federal, State and private funding agencies to support its educational and research missions. Research areas in the department include:

- Bioinformatics and Genomics
- Ecophysiology and Photosynthetic Electron Transport
- Genetic Susceptibility of Alzheimer's Disease in African Americans
- Stress Physiology
  - Tissue regeneration in connective tissue
- Taxonomy & Distribution of Freshwater Algae
- Complex Disease and Nutrition
- Demographics of Rare Plant Populations
- Microbiology
- Cancer Biology, Brain Tumorigenesis, Breast Cancer
- Computational Biology
- Scholarship of Teaching and Learning
- Genomics of *Haemophilus ducrey*
- Phosphorylation-dependent Signaling
- Fluorescent Biosensor Development & Live Cell Imaging
- Apoptosis and Cell Signaling
  - Civic Engagement through Service Learning and Discipline-Based Education Research
- Role of Meprins in Acute and Chronic Kidney Failure
- Role of Viral Factors in Breast Cancer Pathogenesis
  - Structural and functional analysis of microbial proteins involved in bacterial virulence

### CAREER OPPORTUNITIES

Due to the depth of required courses in biology and the breadth of support courses in the quantitative sciences, humanities, the arts and others, Biology majors qualify for employment in many fields. Highly motivated graduates in biology compete successfully for entry into graduate and professional schools. Research careers in government and industry as well as jobs in technical and pharmaceutical sales, biotechnology, environmental science, and teacher education are some of the career opportunities available to majors in biology.

### REQUIRED MAJOR COURSES FOR BIOLOGY

BIOL 101	BIOL 210	BIOL 325
BIOL 102	BIOL 221	BIOL 366
BIOL 105	BIOL 301	BIOL 410
BIOL 200	BIOL 305	BIOL 492
BIOL 205		

For advisement on the curricula and courses in the Biology major, please contact your academic advisor or the chairperson of the Department of Biology.

Department of Biology  
Bachelor of Science in Biology (General Biology)  
Major Code: BIOL

### Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	

BIOL 101	4	BIOL 102	4
BIOL 105	1	BIOL 205	1
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
ENGL 100	3	ENGL 101	3
MATH 110 <sup>1</sup>	4	MATH 131	4
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
BIOL 221	4	BIOL 200	3
BIOL 210	3	BIOL 366	3
CHEM 221	3	CHEM 222	3
CHEM 223	1	CHEM 224	2
MATH 224	3	Social & Behavioral Sci. Elective <sup>2</sup>	3
Humanities & Fine Arts Elective <sup>2</sup>	3	Global Awareness <sup>2</sup>	3
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>17</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
BIOL 301	4	BIOL 305	4
PHYS 225	3	BIOL 325	3
PHYS 235	1	CHEM 451	3
Ethics Elective <sup>4</sup>	3	PHYS 226	3
Knowledge of African-American Culture and History <sup>2</sup>	3	PHYS 236	1
<b>Semester Total</b>	<b>14</b>	HPED 1xx <sup>5</sup>	1
		<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
BIOL 410	3	BIOL 496	1
BIOL Elective <sup>6</sup>	3	BIOL Elective <sup>6</sup>	3
BIOL Elective <sup>6</sup>	3	Free Elective <sup>3</sup>	3
Free Elective <sup>3</sup>	3	Free Elective <sup>3</sup>	3
<b>Semester Total</b>	<b>12</b>	Free Elective <sup>3</sup>	3
		<b>Semester Total</b>	<b>13</b>

**Total Credit Hours: 120**

<sup>1</sup>Students not eligible to enroll in MATH 110 must complete prerequisite(s).

<sup>2</sup>See the list of courses which may be taken as Social & Behavioral Sciences, Knowledge of African American Culture and History, Humanities/Fine Arts, and Global Awareness electives.

<sup>3</sup>Any course taught by the university; free electives must total 12 or more credit hours.

<sup>4</sup>Student must take one of the following courses: BIOL 468, PHIL 316, PHIL 317, or PHIL 320.

<sup>5</sup>Any 100 level Physical Education "Activity Class".

<sup>6</sup>Biology electives must be number 300 or above.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a cumulative GPA of 2.0 or better in BIOL courses.*

Department of Biology  
Bachelor of Science in Biology (Pre-Medical)  
Major Code: BIOL

Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
BIOL 101	4	BIOL 102	4
BIOL 105	1	BIOL 205	1
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
ENGL 100	3	ENGL 101	3
MATH 110 <sup>1</sup>	4	MATH 131	4
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
BIOL 221	4	BIOL 200	3
BIOL 210	3	BIOL 366	3
CHEM 221	3	CHEM 222	3
CHEM 223	1	CHEM 224	2
PHYS 225	3	MATH 224	3
PHYS 235	1	PHYS 226	3
<b>Semester Total</b>	<b>15</b>	PHYS 236	1
		<b>Semester Total</b>	<b>18</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
BIOL 301	4	BIOL 305	4
BIOL 304	3	BIOL 325	3
CHEM 451	3	Global Awareness <sup>2</sup>	3
Social & Behavioral Sci. Elective <sup>2</sup>	3	Ethics Elective <sup>4</sup>	3
Free Elective <sup>3</sup>	3	<b>Semester Total</b>	<b>13</b>
<b>Semester Total</b>	<b>16</b>		
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
BIOL 410	3	BIOL 496	1
BIOL 350	4	BIOL 351	4
Knowledge of African-American Culture and History <sup>2</sup>	3	BIOL Elective <sup>5</sup>	3
Free Elective <sup>3</sup>	3	Humanities & Fine Arts Elective <sup>2</sup>	3
<b>Semester Total</b>	<b>13</b>	Free Elective <sup>3</sup>	2
		<b>Semester Total</b>	<b>13</b>

**Total Credit Hours: 120**

<sup>1</sup>Students not eligible to enroll in MATH 110 must complete prerequisite(s).

<sup>2</sup>See the list of courses which may be taken as Social & Behavioral Sciences, Knowledge of African American Culture and History, Humanities/Fine Arts, and Global Awareness electives.

<sup>3</sup>Any course taught by the university; free electives must total 12 or more credit hours.

<sup>4</sup>Student must take one of the following courses: BIOL 468, PHIL 316, PHIL 317, or PHIL 320.

<sup>5</sup>Any 100 level Physical Education "Activity Class".

<sup>6</sup>Biology electives must be number 300 or above.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a cumulative GPA of 2.0 or better in BIOL courses.*

Department of Biology  
Bachelor of Science in Secondary Education (Biology)

Major Code: BIOL  
Concentration Code: PBSE

Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
BIOL 101	4	BIOL 102	4
BIOL 105	1	BIOL 205	1
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
CUIN 102	2	CUIN 101	1
ENGL 100	3	CUIN 110	2
<b>Semester Total</b>	<b>14</b>	ENGL 101	3
		<b>Semester Total</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
BIOL 221	4	BIOL 200	3
BIOL 210	3	BIOL 366 (formerly BIOL 466)	3
CHEM 221	3	CHEM 222	3
CHEM 223	1	CHEM 224	2
CUIN 210	2	MATH 224	3
MATH 110 <sup>1</sup>	4	CUIN 255 (formerly CUIN 310)	2
<b>Semester Total</b>	<b>17</b>	HPED 1xx <sup>3</sup>	1
		<b>Semester Total</b>	<b>17</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
BIOL 301 (formerly BIOL 401)	4	BIOL 305 (formerly BIOL 405)	4
CUIN 410	2	BIOL 325 (formerly BIOL 425)	3
PHYS 225	3	CUIN 420 (formerly CUIN 520)	2
PHYS 235	1	PHYS 226	3
SPED 250 (formerly SPED 350)	3	PHYS 236	1
Social & Behavioral Sci. Elective <sup>2</sup>	3	Knowledge of African-American Culture and History <sup>2</sup>	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>16</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
BIOL 410	3	CUIN 498 (formerly CUIN 560)	9
BIOL 492	1	Free Elective	3
CUIN 435 (formerly CUIN 535)	3	<b>Semester Total</b>	<b>12</b>
Global Awareness <sup>2</sup>	3		
Humanities & Fine Arts Elective <sup>2</sup>	3		
<b>Semester Total</b>	<b>13</b>		

**Total Credit Hours: 120**

<sup>1</sup>Students not eligible to enroll in MATH 110 must complete prerequisite(s).

<sup>2</sup>See the list of courses which may be taken as Social & Behavioral Sciences, Knowledge of African American Culture and History, Humanities/Fine Arts, and Global Awareness electives.

<sup>3</sup>Any 100 level Physical Education "Activity Class".

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a cumulative GPA of 2.0 or better in BIOL courses.*

**COURSE DESCRIPTIONS IN BIOLOGY**

**Undergraduate**

**BIOL 100. Biological Science**

**Credit 4(3-2)**

This is a general education course that stresses the objectives presented under the general education program of the University. This course stresses central concepts in biology including; basic chemical and physical phenomena, biochemistry, cell form and function, genetics, evolution, and multicellular organization. The laboratory will examine major biological concepts. Biological Science is not open to Biology majors. (F;S;SS)

- BIOL 101. Concepts of Biology** **Credit 4(3-2)**  
 This course is an introduction to science and the scientific method, basic biochemistry, cell structure and function, energy and metabolism, reproduction and genetics for those students planning to enroll in additional major courses in the biological sciences. The laboratory will emphasize central biological concepts. (F;S;SS)
- BIOL 102. Concepts of Biology** **Credit 4(3-2)**  
 This course is a continuation of BIOL 101. It will include an introduction to evolution, basic ecological principles, and a survey of the diversity of life. The laboratory will survey life's diversity. Prerequisites: BIOL 101. (F;S;SS)
- BIOL 105. Biology Orientation** **Credit 1(1-0)**  
 This course will introduce students to the university and the Department of Biology. Special emphasis will be placed on succeeding as a biology major, the challenges and expectations, effective study skills, university support services, and university policies and procedures. Students are expected to leave the course with an awareness of how to cope with and overcome the demands of college life and to take advantage of opportunities at the university. Restricted to biology majors. (F;S)
- BIOL 160. General Zoology** **Credit 4(3-2)**  
 This is an introductory study of structure, physiology and phylogeny of the major animal phyla. The laboratory emphasizes the comparative anatomy and taxonomy of the animals. Prerequisite: BIOL 101. (F;S;SS)
- BIOL 200. Introduction to Research** **Credit 3(3-0)**  
 This course will offer an introduction to the basic principles of biological research. It will emphasize reading biological research literature, writing and verbal communications in scientific formats, the scientific method, and research ethics. The laboratory will emphasize hypothesis development, experimental design, data analysis, basic laboratory techniques, and the application of mathematics in the laboratory. Students are expected to leave the course with the ability to read primary literature, properly design and perform hypothesis-driven experiments, and effectively communicate and interpret results. Prerequisite: BIOL 102.
- BIOL 205. Biology Orientation II** **Credit 1(1-0)**  
 This course is a continuation of BIOL 105. Emphasis will be placed on effective study skills, career planning, professional development, university support services, and university policies and procedures. Students are expected to leave the course with an awareness of career options in the biological sciences, requirements for pursuing advanced studies, and job-seeking skills. The course is restricted to biology majors. Prerequisites: BIOL 105 or FRST 100, Biology major. (F;S)
- BIOL 210. Writing in Biology** **Credit 3(3-0)**  
 This course will teach students the fundamentals of effective scientific writing. Instruction will focus primarily on the process of writing and be presented in two parts. Part I will teach students the rules of writing and how to write effectively, concisely, and clearly. Part II will emphasize scientific writing, including manuscript and grant preparation. Students will attend weekly lectures, during which they will complete writing assignments and editing exercises using prepared handouts and Criterion. Prerequisites: BIOL 102, Biology major. (F;S)
- BIOL 220. Basic Microbiology** **Credit 4(2-4)**  
 This is an introduction to the fundamentals of microbiology and the role of microorganisms in daily life. Special emphasis is placed on infectious diseases and immunology. The laboratory introduces students to the principles of microscopy, specimen preparation for light microscopy, aseptic techniques, cultivation techniques, and the biochemical activities of microorganisms. This course is not open to majors in Biology and Chemistry. Prerequisites: BIOL 100 or 101; CHEM 104 or its equivalent. (F;S;SS)
- BIOL 221. General Microbiology** **Credit 4(2-4)**  
 This is an introduction to the basic principles of microbiology. Microbial ultrastructure, growth, metabolism, molecular genetics, diversity, infectious diseases, and immunology will be discussed. The laboratory introduces students to the principles of microscopy, specimen preparation for light microscopy, aseptic techniques, cultivation techniques, and the biochemical activities of microorganisms. Prerequisites: BIOL 100 or 101, CHEM 104 or 106. (F;S;SS)
- BIOL 240. General Botany** **Credit 4(2-4)**  
 Plants as living organisms constitute an integral part of man's environment. Emphasis is placed on the relationship between plant structure and function, the diversity of organisms traditionally classified as plants, and plant physiology. The laboratory will emphasize plant structure and function. Prerequisite: BIOL 101. (F;S)
- BIOL 260. Comparative Evolution of the Vertebrates** **Credit 4(2-4)**  
 This course is a comparative study of chordate organ systems with rather detailed emphasis on the evolution and organogenesis of primitive chordates, dogfish shark and the cat. The laboratory emphasizes the comparative anatomy of representative chordates. Prerequisite: BIOL 101. (F;S)
- BIOL 276. Phage Laboratory I** **Credit 2(0-6)**  
 Research-based course in which students isolate and purify bacteriophages from environmental samples, visualize the phages with electron microscopy, and isolate phage DNA for genomic sequencing. Prerequisite: BIOL 102 or permission of instructor. (F;S)
- BIOL 277. Phage Laboratory II** **Credit 2(0-6)**  
 Research-based course in which students annotate sequenced genomes from bacteriophages isolated in BIOL 276. Genome sequence files are finished, oriented, evaluated and analyzed. Finalized files are reviewed for submission to GenBank. Post-annotation experimentation and research may also be carried out. Prerequisites: BIOL 102 or permission of instructor. (F;S)
- BIOL 301. Molecular Biology (formerly BIOL 401)** **Credit 4(2-4)**  
 This course examines the molecular events in cell function using molecular genetics, cell biology, and fundamental biochemistry;

using both prokaryotic and eukaryotic systems. The laboratory will emphasize fundamental techniques used in molecular biology.

Prerequisites: BIOL 221, CHEM 107 and 117. (F;S;SS)

**BIOL 304. Pre Med Prep Seminar (formerly BIOL 404)**

**Credit 3(3-0)**

This course exposes students to health professionals and their respective health care professions through seminars, field trips, internships, test preparations, medical ethics, and clinical research. Prerequisites: Biology major, junior level. (F;S;SS)

**BIOL 305. Cell Biology (formerly BIOL 405)**

**Credit 3(3-0)**

This course examines, in detail, the biology of the eukaryotic cell. The course will focus on the functions of the plasma membrane, organelles, and macromolecules within the cell. The course will also cover cellular growth, division, and cell death. The laboratory will include exercises to visualize the cell and to measure the physical and chemical properties of cellular macromolecules. Prerequisites: BIOL 221, CHEM 107 and 117. (F;S;SS)

**BIOL 325. Evolutionary Biology (formerly BIOL 425)**

**Credit 3(3-0)**

This course introduces students to the core concepts of organic evolution. It examines the basic evidence supporting organic evolution and emphasizes phylogenetic analysis, microevolutionary mechanisms of genetic change, and speciation. It also demonstrates the role of evolutionary biology in addressing the variety of phenomena observed in the organic world. Prerequisites: BIOL 102, BIOL 366. (F;S;SS)

**BIOL 350. Human Anatomy and Physiology I (formally BIOL 450)**

**Credit 4(3-2)**

This course, which provides a comprehensive study of the anatomy and physiology of the human body with an emphasis on health and medical issues, is designed for biology majors and/or students preparing for careers in the health professions. It will include an overview of organ systems, basic chemical organization, cell structure and function, and tissues; followed by the study of the skeletal, muscular, and nervous systems. The laboratory includes studies of histology, physiology experiments, model studies, computer simulations, and multimedia presentations. Open to biology majors or permission of the instructor. Prerequisites: BIOL 100 or 101, CHEM 103 or 104 or 106.

**BIOL 351. Human Anatomy and Physiology II (formally BIOL 451)**

**Credit 4(3-2)**

This course is a continuation of BIOL 450 and expands a comprehensive study of the anatomy and physiology of the human body with an emphasis on health and medical issues. Lecture topics include special senses, the endocrine system, cardiovascular and respiratory physiology, immunity, digestion, nutrition and metabolism, the urinary system, and the male and female reproductive systems. Laboratory work includes physiology experiments, model studies, computer simulations, and multimedia presentations. Prerequisites: BIOL 350.

**BIOL 361. Human Anatomy and Physiology**

**Credit 4(2-4)**

This course is a study of the general structure and function of the human body. It is not open to Biology majors. The laboratory emphasizes human anatomy and major physiological processes. Prerequisites: BIOL 100, CHEM 104 or its equivalent. (F;SS)

**BIOL 366. Principles of Genetics (formerly BIOL 466)**

**Credit 3(2-2)**

This course is a study of the traditional, classical areas of genetics as well as an introduction to gene action at the molecular level, including DNA and RNA structure, function and interactions in cellular systems. The laboratory features exercises with *Drosophila*. Prerequisites: BIOL 221, CHEM 107 and 117. (F;S;SS)

**BIOL 369. Human Anatomy**

**Credit 3(2-2)**

This course is a general introduction to human anatomy. The laboratory emphasizes the fundamental structure of the human body. This course is not open to Biology majors. Prerequisites: BIOL 100, CHEM 104 or its equivalent. (F;S;SS)

**BIOL 370. Human Physiology**

**Credit 3(2-2)**

This is an introductory course with emphasis placed on basic principles and mechanisms of physiological functioning of body cells, tissues and systems. The laboratory emphasizes major physiological concepts. This course is not open to Biology majors. Prerequisite: BIOL 361 or 369. (F;S;SS)

**BIOL 400. Field Biology**

**Credit 3(2-2)**

This course emphasizes how ecological knowledge is acquired and communicated. Fundamental techniques of sampling, numerical analysis, and the measurement of environmental factors will be studied using local aquatic and terrestrial communities. The laboratory emphasizes the study of local biomes. Prerequisite: BIOL 410. (DEMAND)

**BIOL 410. Ecology (formerly BIOL 310)**

**Credit 3(3-0)**

This course surveys the major principles underlying the interactions between living organisms and their environment. Both plant and animal examples will be used to illustrate the basic ecological processes. Emphasis is placed on the characterization of different physical environments; ecosystem processes such as ecological energetics and nutrient cycling; and current organismal concepts of adaptation, niche, population dynamics, life-history phenomena, organismal interactions and community organization. Major environmental issues concerning humans and their cultures will also be presented. Prerequisites: BIOL 102, CHEM 107 and 117. (F;S;SS)

**BIOL 430. Plant Taxonomy**

**Credit 4(2-4)**

The fundamentals of taxonomy, botanical nomenclature and modern systematics are covered. An introduction to selected families and genera of vascular plants is included. The laboratory provides exposure to the common elements of the local flora and instruction in herbarium techniques. Prerequisite: BIOL 240. (DEMAND)

**BIOL 432. Plant Physiology**

**Credit 4(2-4)**

This course is designed to develop a clear understanding of the basic physiological processes related to the structure, growth, and function of seed plants. The laboratory will emphasize major concepts in plant physiology. Prerequisites: BIOL 240 and CHEM 107. (DEMAND)

- BIOL 459. Cell and Molecular Mechanisms of Cancer** **Credit 4(4-0)**  
 This course is an introduction to the cellular and molecular aspects of cancer biology in humans. This course will integrate basic scientific findings with clinical situations, emphasizing the importance of basic research in understanding and combating cancer. Laboratory exercises will provide an introduction to classical and innovative cell signaling techniques. In addition to wet-lab exercises, novel case studies will be incorporated in order to strengthen critical thinking skills. Prerequisites: BIOL 301 or BIOL 366 or BIOL 305 is required. (F;S;SS)
- BIOL 462. Introductory Cell Physiology** **Credit 4(2-4)**  
 This course is a treatment at the molecular level of the fundamental processes of living cells. The biochemistry of cellular constituents, bioenergetics, intermediary metabolism, and the regulatory mechanisms of the cell will be discussed. The laboratory will include exercises on the measurement of hydrogen ion activity, physical and chemical properties of macromolecules and membranes, chromatography, enzymes and enzyme kinetics, cell fractionation studies, and the use of spectrophotometry in the identification and characterization of cellular macromolecules. Prerequisites: BIOL 301 and CHEM 222. (S)
- BIOL 465. Histology** **Credit 4(2-4)**  
 This course is a study of the microscopic anatomy of cells, tissues, and organs with special emphasis on normal histological structure and function. The laboratory emphasizes the major tissues. Prerequisite: BIOL 160. (DEMAND)
- BIOL 468. Biology, Technology, and Ethics I** **Credit 1(0-2)**  
 This is an interactive course that engages students in the analysis of contemporary issues at the interface of science and ethics. It also covers policies and guidelines that are essential for the responsible conduct of biological and biomedical research. Course sessions include discussion periods, case studies, lectures and presentations by guest speakers with expertise in the field. Prerequisites: Junior or senior standing. (F;S)
- BIOL 469. Biology, Technology, and Ethics II (Formerly BIOL 569)** **Credit 1(0-2)**  
 This seminar course is concerned with ethical issues in biology. It is required for all pre-professional Biology majors. Prerequisite: BIOL 468. (S)
- BIOL 490. Independent Study (formerly BIOL 498)** **Credit 1(0-2)**  
 Independent study under the direction of a faculty member. The submission of a written report is required. This course should be taken as a precursor to Undergraduate Research (BIOL 499) by students who plan to conduct their research on campus. Permission of instructor required. (F;S;SS)
- BIOL 492. Senior Seminar** **Credit 1(1-0)**  
 Oral and written presentations of primary scientific literature and recent advances in the field of biology. Prerequisites: Biology majors, senior classification. (F;S)
- BIOL 496. Senior Project (formerly BIOL 501)** **Credit 3(2-2)**  
 This course will require that students develop an independent hypothesis-based project in the area of biology. Each student will be required to submit a written paper followed by a public analysis. Scientific writing and oral presentations will be major elements of the course. Prerequisites: Biology major, senior classification. (F;S;SS)
- BIOL 499. Undergraduate Research** **Credit 3(0-6)**  
 Biological research under the direction of a faculty member. The research may be carried out in the department or as part of an internship in an off-campus academic or industrial setting. A written paper, an abstract, and an oral presentation open to the public are required. Limited to Biology majors with a 3.0 GPA overall and in the major. The student should register for the course the semester the research will be completed or in the fall for research done the previous summer. Permission of instructor required.
- Advanced Undergraduate and Graduate**
- BIOL 620. Food Microbiology (Formerly BIOL 420)** **Credit 4(2-4)**  
 This is a survey of selected topics in food microbiology. The course will cover the metabolic pathways, organisms and processes involved with food production from fermented dairy products, vegetables, fruits and meats. Food spoilage, preservation, infection, and intoxication will also be discussed. The laboratory will introduce students to the microorganisms involved with food production and spoilage. Prerequisite: BIOL 220 or 221. (F)
- BIOL 621. Soil Microbiology (Formerly BIOL 421)** **Credit 4(2-4)**  
 This is a study of the major groups of soil organisms including their classification and relation to soil environments. The abundance, significance, and functions of soil microorganisms as well as their role in chemical cycles in soil will be discussed. The laboratory will emphasize methods for studying soil microbes. Prerequisite: BIOL 220 or 221. (S)
- BIOL 630. Molecular Genetics** **Credit 3(3-0)**  
 This course will examine DNA and RNA structure, function, and processing in prokaryotic and eukaryotic systems. Various aspects of recombinant DNA technology will be examined. Prerequisites: BIOL 301 and 366. (DEMAND)
- BIOL 631. Endocrine Physiology** **Credit 3(3-0)**  
 This course will provide a basic introduction to endocrine function and include recent advances in the field of endocrinology. Emphasis will be placed on general aspects of endocrine physiology, the organization of the endocrine system, mechanisms of hormone action, and control of endocrine secretion. Prerequisites: BIOL 301 and 462. (DEMAND)
- BIOL 640. Introduction to Bioinformatics and Genomics Research** **Credit 3(1-4)**  
 The purpose of this course is to provide integrative experiences in computer and bench research in bioinformatics and genomic science. Students will acquire hands-on experiences with web-based software and the tools research scientists are using to study the genomes of plants, microbes, humans and other organisms. They will input experimental data into one or more of these databases to perform genetic analyses for making predictions about gene identity, structure, function, similarities and phylogenetic

relationships. They will also use the databases to develop biochips, probes and primers for various laboratory applications. The integrative bench work will involve testing results from database queries in the laboratory. This course will merge education and research and where possible, engage students in investigative activities that involve collaborations with scientists on and off the campus. Prerequisites: BIOL 301 and 366. (F;S)

**BIOL 642. Special Problems in Biology** **Credit 3(2-2)**

This course offers advanced students exposure to a selected topic in biology not covered in other courses. Prerequisites: BIOL 462 or 466 or permission of instructor and advisor. (F;S;SS)

**BIOL 665. Evolution** **Credit 3(3-0)**

This course will emphasize the genetics of populations and sources of genetic variation; causes of genetic change in populations including natural selection; speciation; and the evolutionary history of life on earth. Prerequisites: BIOL 410 and 366. (DEMAND)

**BIOL 667. Animal Physiology** **Credit 3(3-0)**

This course will provide students with an understanding of the current state of animal physiology at the level of the whole organism and its component organs and organ systems. Emphasis will be placed on function as it relates to survival of organisms in natural environments and on the regulation of homeostatic mechanisms. Topics would include metabolism, temperature regulation, reproductive mechanisms, circulation, gaseous exchange, nutrient processing, osmoregulation and ionic balance. Prerequisites: BIOL 160 and 462. (DEMAND)

**BIOL 668. Animal Behavior** **Credit 3(3-0)**

This course is a study of the qualitative and quantitative difference between behavioral characteristics at different evolutionary level. Adaptiveness of differences in behavior and the development of behavior will be emphasized. Prerequisites: BIOL 410 and 366. (DEMAND)

**BIOL 671. Principles and Practices of Immunology** **Credit 3(3-0)**

A study of mammalian immune response; particularly in humans. Special emphasis will be placed on the physiology, genetics, and regulation of immune responses. Interrelationships between nonspecific and specific immune reactions, humoral and cell-mediated immunity, effector cells, and diseases are also stressed; along with research and diagnostic methodologies. Prerequisites: BIOL 221, BIOL 466 , CHEM 221, CHEM 222.

#### DIRECTORY OF FACULTY

**Kelsie M. Bernot**..... **Assistant Professor**  
B.S., Duquesne University; Ph.D., Johns Hopkins University; Postdoctorals, National Cancer Institute and The Ohio State University

**Andrea Byers** ..... **Adjunct Professor**  
B.S., University of North Carolina Chapel Hill; M.S., Ph.D., North Carolina A&T State University

**Goldie Smith Byrd** ..... **Nathan F. Sims Endowed Professor and Dean of the College of Arts and Sciences**  
B.S., North Carolina A&T State University; Ph.D. and Postdoctoral, Meharry Medical College

**Roy Coomans**..... **Associate Professor and Associate Chairperson**  
B.S., Eckerd College; Ph.D., University of North Carolina at Chapel Hill

**Gregory D. Goins**..... **Professor of Environmental Biology**  
B.S., University of North Carolina at Chapel Hill; M.S., Ph.D., North Carolina State University; Postdoctoral, University of Minnesota

**Andrew G. Goliszek** ..... **Associate Professor**  
B.S., University of West Florida; M.S., Ph.D., Utah State University; Postdoctoral, Wake Forest University

**Jian Han** ..... **Associate Professor**  
B.S., M.S., Nankai University; M.S. University of Hawaii at Manoa; Ph.D., The Pennsylvania State University

**Scott Harrison**..... **Assistant Professor**  
B.S., Ph.D., Postdoctoral Michigan State University

**Liesl Jeffers-Francis**..... **Assistant Professor**  
B.S., M.S., Barry University; Ph.D., University of North Carolina at Chapel Hill

**Vinaya A. Kelkar**..... **Adjunct Professor**  
B.S., Gujarat University-India; M.S., Old Dominion University; Ph.D., University of North Carolina at Greensboro

**Perry V. Mack** ..... **Adjunct Professor**  
B.S., South Carolina State College; M.S., North Carolina Central University; Ed.D., Rutgers University, Extramural Associate, N.I.H.-Bethesda

**Patrick Martin** ..... **Associate Professor**  
B.S., Virginia Union University; Ph.D. and Postdoctoral, University of Virginia

**Perpetua Muganda**..... **Professor**  
B.S., Lock Haven State College; M.S., Howard University; Ph.D., Indiana University School of Medicine; Postdoctoral, Lineberger Cancer Research Center, University of North Carolina at Chapel Hill

**Robert H. Newman**..... **Assistant Professor**  
B.A., McDaniel College; Ph.D., Johns Hopkins University; Postdoctoral, Johns Hopkins University School of Medicine

**Elimelda Ongeri** ..... **Associate Professor**  
B.S., Egerton University; M.S. University of Nairobi; M.S., Ph.D. Purdue University; Postdoctoral, Pennsylvania State University



<b>Cailisha Petty</b> .....	<b>Lecturer</b>
B.S., M.S., North Carolina A&T State University; Ph.D., University of North Carolina at Greensboro	
<b>Shaquinta Platt</b> .....	<b>Adjunct Lecturer</b>
B.S., M.S., North Carolina A&T State University	
<b>Checo J. Rorie</b> .....	<b>Associate Professor</b>
B.S., Clark Atlanta University; Ph.D., University of North Carolina at Chapel Hill; Postdoctorals, New York University and Lineberger Comprehensive Cancer Center, University of North Carolina at Chapel Hill	
<b>Adreinne Smith</b> .....	<b>Adjunct Professor</b>
B.S., North Carolina State University; M.S., Fayetteville State University; Ph.D., North Carolina State University	
<b>Mary A. Smith</b> .....	<b>Professor and Chairperson</b>
B.S., M.S. Morgan State University; Ph.D. Cornell University; Postdoctorals, Cornell University and Michigan State University	
<b>Simone M. Smith</b> .....	<b>Assistant Professor</b>
B.S., University of South Florida Honors College and University of South Florida College of Arts & Sciences; Ph.D., University of South Florida College of Medicine	
<b>Pameeka Smith-Pearson</b> .....	<b>Adjunct Professor</b>
B.S., University of Georgia; Ph.D., Wake Forest University	
<b>Misty Thomas</b> .....	<b>Teaching Assistant Professor</b>
B.S., College Universitaire de St. Boniface; PhD., University of Manitoba, Post-doctoral, National Institutes of Environmental Health Sciences	
<b>Angela M. White</b> .....	<b>Lecturer</b>
B.S., University of North Carolina at Chapel Hill; M.S., North Carolina A&T State University	
<b>C. Dinitra White</b> .....	<b>Associate Professor</b>
B.S., Johnson C. Smith University; Ph.D., Wayne State University, Postdoctoral, University of North Carolina at Chapel Hill	

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**Department of Built Environment**

<http://www.ncat.edu/cost/departments/blte/index.html>

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**Robert B. Pyle, Chairperson**

**OBJECTIVES**

The Department of Built Environment (formerly the Department of Construction Management and Safety) prepares men and women in the scientific, managerial, and supervisory areas required in the programs of Construction Management, Environmental Health and Safety and Geomatics.

The program in Construction Management (CM) emphasizes all areas of construction from the viewpoint of the contractor/constructor. This includes all aspects of construction from planning and operations to materials and structures.

The program in Environmental Health and Safety (EHS) is concerned with the anticipation, recognition, evaluation and control of occupational safety and health hazards associated with mechanical systems, material handling, electrical systems, chemical processes, and illustrates controls through engineering revision, safeguarding and personal protective equipment.

The program in Geomatics is attuned to the unique abilities needed by students that will prepare them to work productively in the area of Geomatics contributing to the welfare, quality of life, protection, and advancement of the community.

**DEGREES OFFERED**

- Construction Management – Bachelor of Science
- Environmental Health and Safety – Bachelor of Science
- Geomatics – Bachelor of Science

**MINORS OFFERED**

- Construction Management
- Geomatics

**GENERAL PROGRAM REQUIREMENTS**

The admission of students to the undergraduate degree program in the Department of Built Environment is based upon the general admission requirements of the University.

**DEPARTMENTAL REQUIREMENTS**

Students who desire to matriculate in the Department of Built Environment must have a strong background in math, science and communication. Computer skills are also recommended. All majors in the department are expected to maintain a minimum grade point average (GPA) of 2.0. A minimum grade of “C” must be earned in all major courses.

Any student transferring to the Department of Built Environment from other disciplines within the University must have a minimum of 2.5.

Students majoring in Construction Management, Environmental Health and Safety and Geomatics must complete a minimum of 120 credit hours to meet program degree requirements.

### ACCREDITATION

The degree programs in Construction Management and Environmental Health and Safety are accredited by the Association of Technology, Management and Applied Engineering (ATMAE). The Construction Management degree program is also accredited by the American Council for Construction Education (ACCE).

### CAREER OPPORTUNITIES

Graduates of our Construction Management, Environmental Health and Safety and Geomatics programs are very successful in gaining employment in industry, government, and business as supervisors, managers, engineers, technical salespersons and researchers.

## Department of Built Environment Bachelor of Science in Construction Management Major Code: CNSM

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
CM 100	3	CM 190	3
CM 150	3	CM 160	3
MATH 111	4	MATH 112	4
FRST 101	1	Social / Behavioral Science Elective*	3
<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
CM 256	3	MGMT 201	3
PHYS 225/235	4	CM 200	1
CM 214	2	CM 216	3
CM 224	1	CHEM 100/110	4
CM 215	3	Global Studies	3
African American Studies	3	<b>Semester Total</b>	<b>14</b>
<b>Semester Total</b>	<b>16</b>		
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
CM 210	3	CM 301	1
CM 233	3	CM 412	3
CM 394	3	CM 318	3
ACCT 203	3	CM 331	3
SPCH 250	3	ECON 200	3
<b>Semester Total</b>	<b>15</b>	CM 320	3
		<b>Semester Total</b>	<b>16</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
CM 448	3	CM 438	3
MGMT 343	3	CM 401	3
CM 496	3	CM 450	3
CM 400	2	MGMT 321	3
MGMT 303	3	CM 460	3
<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 120**

\*General Education Requirements from Approved List: 3 hours of Humanities and Fine Arts (HFA), 3 hours of Social and Behavioral Sciences, 3 hours of Knowledge of African American History and 3 hours of Global Awareness. These will be selected from four difference pools.

\*\*Electives to be approved at program level.

**Department of Built Environment  
Bachelor of Science in Geomatics  
Major Code: GEOM**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
MATH 131	4	PHYS 225	3
CM 100	3	PHYS 235	1
GCS 121	3	MATH 132	4
Social / Behavioral Science Elective*	3	African American Culture	3
FRST 101	1	<b>Semester Total</b>	<b>14</b>
<b>Semester Total</b>	<b>17</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
Humanities / Fine Arts Elective*	3	GEOM 271	3
PHYS 226	3	GEOM 205	3
PHYS 236	1	GEOM 215	1
CM 214	2	ECT 101	3
CM 224	1	Global Awareness*	3
BIOE 216	3	Technical Elective**	3
<b>Semester Total</b>	<b>13</b>	<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
GEOM 340	3	GEOM 341	3
GEOM 366	2	GEOM 360	3
GEOM 307	3	GEOM 367	2
GEOM 317	1	GEOM 350	3
MATH 450	3	GEOM 320	3
Science Elective**	3	Free Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>17</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
GEOM 496	1	GEOM 499	4
GEOM 470	3	GEOM 400	1
GEOM 460	3	Technical Elective**	3
GEOM 471	1	Business Law / Construction	
GEOM 420	3	Mgmt. Elective**	3
Technical Elective**	3	Free Elective	3
<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>14</b>

**Total Credit Hours: 120**

\*General Education Requirements from Approved List: 3 hours of Humanities and Fine Arts (HFA), 3 hours of Social and Behavioral Sciences (SBS), 3 hours of African American Cultures and 3 hours of Global Awareness. These will be selected from four different pools.

\*\*Electives to be approved at program level.

**Department of Built Environment  
Bachelor of Science in Environmental Health and Safety  
Major Code: EHS**

**Curriculum Guide**

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
ENGL 100	3	ENGL 101	3
MATH 111	4	EHS 101	3
CHEM 106/116	4	MATH 112	4
FRST 101	1	CHEM 107/117	4
Global Awareness (GA) or Knowledge of African American Culture and History (AA) Elective*	3	GA or AA Elective*	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>17</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
Social/Behavioral Science Elective*	3	MGMT 201	3
PHYS 225/235	4	PHYS 226/236	4
EHS 220	3	EHS 212	3
BIOL 361	4	EHS 214	3
EHS 210	3	SPCH 250	3
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
Technical Elective**	3	MGMT 303	3
HPED 200 <sup>1</sup>	2	MATH 224	3
EHS 311	3	EHS 394	3
EHS 313	4	EHS 316	4
PSYC 445	3	CM 320	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>16</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
EHS 433	3	EHS 415	3
EHS 435	3	EHS 432	3
EHS 497	3	EHS 472	3
Technical Elective**	3	Technical Elective**	3
<b>Semester Total</b>	<b>12</b>	<b>Semester Total</b>	<b>12</b>

**Total Credit Hours: 120**

\*General Education Requirements from Approved List: 3 hours of Humanities and Fine Arts (HFA), 3 hours of Social and Behavioral Sciences, 3 hours of Knowledge of African American History and 3 hours of Global Awareness. These will be selected from four difference pools.

\*\*Electives to be approved at program level.

<sup>1</sup>HPED 200 is no longer offered; therefore, students should substitute another 2 credit hour SSFM course in its place.

**COURSE DESCRIPTIONS IN CONSTRUCTION MANAGEMENT**

**CM 100. Introduction to Construction Management** **Credit 3(2-2)**

This course will give students an introduction to historical perspectives of the construction industry. Emphasis is placed on computer applications, career opportunities, types of processes, specifications and related technology. (F;S;S)

**CM 150. Construction Documents** **Credit 3(2-3)**

This course deals with the analysis and interpretation of construction contract documents. Topics of discussion will include evaluation of different types of written contracts, architectural working drawings, shop drawings, general conditions, specifications, supplementary general conditions, bid proposal, addenda, and agreements. Special emphasis will be placed on case studies involving a variety of contracts. Also, computer applications in construction documents will be examined. Prerequisite: CM 100. (F;S;S)

**CM 160. Construction Drawings & Specifications** **Credit 3(2-2)**

This course focuses on the fundamentals of construction drawings and specifications. Emphasis will be placed on drawing interpretations, understanding contract specifications, scopes of work and the Construction Specification Institute (CSI) format. Prerequisite: CM 150. (F;S;S)

**CM 190. Construction Materials** **Credit 3(2-2)**

This course will provide a comprehensive overview of the structure, properties, and application of construction materials and their

integration into building systems. The laboratory exercises will focus on construction materials, soils and concrete testing. The structure of the course will follow the format of the Construction Specification Institute (CSI). Prerequisite: CM 100. (F;S;S)

**CM 200. Industrial Experience I** **Credit 1(0-3)**

Students must work in industry during one semester or summer (300 work-hours) in their major field and complete Departmental requirements. They will be evaluated on reports from on-site supervisors and the University coordinators. (F;S;S)

**CM 210. Principles of Structures** **Credit 3(2-2)**

This course will focus on analysis and evaluation of structural elements and systems and their integration into building design. Study of forces, force systems, building structural mechanics, statics, and strength of materials will be included. Prerequisites: PHYS 225/235 and CM 215. (F;S;S)

**CM 214. Surveying** **Credit 2(2-0)**

This course provides an introduction to surveying theories, principles, and practices. Topics include horizontal measurements, differential and profile leveling, the concept of errors in measurements and their corrections, directional and angular measurements, traverse computations and adjustments, area and volume computations, horizontal and vertical curves, topographic mapping and construction layout. Prerequisite: MATH 101 or above. (F;S;S)

**CM 215. Light Construction Methods and Codes** **Credit 3(2-2)**

The content of this course includes the principles of light frame construction, foundations, framing, exterior finish and related areas of layout, estimating, materials procurement and conventional and modular component systems. Special emphasis will be placed on applicable building codes, ordinances, and blueprint reading. Prerequisite: CM 190. (F;S;S)

**CM 216. Construction Methods and Equipment** **Credit 3(2-2)**

This course focuses on the construction methods and equipment currently used in building projects. Special emphasis will be placed on site layouts, foundations, structural systems, exterior and interior finishing. Prerequisite: CM 215. (F;S;S)

**CM 224. Surveying Lab** **Credit 1(0-3)**

This laboratory course will emphasize the material presented in CM 214 Surveying. Individual laboratory sessions will cover the areas of distance measurement including taping and pacing, differential and profile leveling and traverse and topographic surveying using a differential level, theodolite, and a total station. Emphasis will be on proper field procedures and documentation. Prerequisite (co-requisite): CM 214; MATH 101 or above. (F;S;S)

**CM 233. Construction Estimating I** **Credit 3(2-2)**

This course is designed to enable the student to gain competency in estimating the amount of materials, time, labor and equipment required to complete construction projects. A practical approach is emphasized in the estimating process to simplify preparation of formal estimates. Prerequisites: MATH 111 and CM 216. (F;S;S)

**CM 256. Introduction to Building Information Modeling (BIM)** **Credit 3(2-2)**

This course is a study of BIM technology as it is applied to various building types and their respective building systems. Emphasis is placed on research and integration of architectural, structural, MEP, specifications and cost estimating of building systems for decision modeling using BIM. Prerequisites: CM 210 or permission by instructor. (F;S;S)

**CM 301. Industrial Experience II** **Credit 1(1-0)**

Continuation of CM 200. Students must work in industry during one semester or summer (300 work-hours) in their major field and complete Departmental requirements. They will be evaluated on reports from on-site supervisors and the University coordinators. Prerequisite: CM 200. (F;S;S)

**CM 318. Construction Estimating II** **Credit 3(2-2)**

The focus of this course is on the general concepts of computer applications in construction estimating. Special emphasis will involve the utilization of selected commercial estimating software. A comprehensive estimating project is required for completion of the course. Prerequisite: CM 233. (F;S;S)

**CM 320. Construction Safety** **Credit 3(3-0)**

This is a study and evaluation of OSHA standards and regulations as they relate to the construction industry. Safety requirements on various construction operations will be analyzed and discussed. Also, students will learn the principles of safety management, accident prevention and safety program development methods. Prerequisite: Sophomore standing. (F;S;S)

**CM 331. Structural Systems** **Credit 3(2-2)**

This course focuses on advanced structural principles and practices in construction. Topics of discussion will include analysis and design of structural elements and building systems such as walls, floors, footings, foundations and roof truss systems; application of structural theories in the design of timber, steel and reinforced concrete members; and code requirements and specifications. Prerequisite: CM 210. (F;S;S)

**CM 333. Construction Inspections and Codes** **Credit 3(3-0)**

This course covers the basic principles and practices of professional construction inspection. Methods and techniques of visually inspecting construction work, analysis of contract documents, and applicable codes will be studied. Other topics of discussion will include code and contractual compliance, project monitoring and inspection report procedures. Prerequisite: CM 215. (F;S;S)

**CM 394. Construction Planning, Scheduling and Control** **Credit 3(2-2)**

This course will focus on actual planning, scheduling and controlling of construction projects. Students will define specific activities and work tasks, prepare work schedules, measure performance and evaluate options. Students will learn to develop presentations of accurate and timely information by appropriate computer software. Prerequisite: CM 216. (F;S;S)

**CM 400. Senior Seminar** **Credit 1(1-0)**

This course is for senior construction majors only. Special emphasis will be placed on preparing preliminary design documents for

a building project including cost estimate, scheduling, development drawings, site plan drawings and building processes and review. Students will be required to be on site shadowing or working with project manager. Prerequisites: Senior standing, CM 320, 348. (F;S;S)

**CM 401. Senior Capstone Project** **Credit 3(3-0)**

This course prepares students to become project managers by having students develop a final set of descriptive specific construction documents; including production drawings and specifications. The students will review and discuss contracts, ethics, construction administration and management as they relate to the project. Prerequisite: Senior Standing and CM 400. (F;S;S)

**CM 412. Environmental Control Systems** **Credit 3(2-2)**

This course covers the basic principles and advanced practices in the selection, installation, operation and maintenance of environmental control systems. Topics include mechanical and electrical equipment for buildings, piping systems, water supply and design; sanitary drainage systems and design, HVAC and cooling systems, electrical and lighting and renewal energy systems. Prerequisite: Junior standing. (F;S;S)

**CM 438. Construction Management** **Credit 3(2-2)**

This course covers the fundamental principles and practices of professional construction management. Relationships, duties and responsibilities of all parties involved are emphasized. Administration of complex construction projects including bidding, contracting, financing, organizing, coordinating and cost controlling functions and techniques will be covered. Appropriate contract administration software will be utilized. Prerequisites: CM 394, CM 496. (F;S;S)

**CM 448. Foundations Soil and Mechanics** **Credit 3(2-2)**

This course focuses on the engineering properties of soils and how they affect the design of foundations including shallow, pile and drilled shaft foundations as well as retaining structures. Other topics of discussion include slope stability analysis, soil pressure, bearing capacity and soil settlement. Prerequisites: PHYS 225/235 and CM 331. (F;S;S)

**CM 450. Construction Contracts and Law** **Credit 3(3-0)**

This course deals with contracts and the law in regard to construction company formation, methods of advertising, bidding process, contract formation and awards. Special emphasis is placed on law pertaining to the construction industry. Extensive case studies are reviewed. Prerequisite: CM 394 or equivalent. Senior Standing. (F;S;S)

**CM 460. Principals of Sustainable Development and Construction** **Credit 3(3-0)**

This course focuses on the principles and practices of sustainable development and construction. Topics to be covered include an overview of the historical development of sustainable movement as it relates to construction practices, an in depth analysis of green building systems, planning, assessment, and implementation. Prerequisites: CM 216, CM 412. (F;S;S)

**CM 490. Human Relations in Construction** **Credit 3(3-0)**

This course provides a study of work place issues, which will aid the students in getting along with people on the job, in the community, and the home. The units of work in class will include ethics, rights, obligations, employee/employer responsibilities, and state and federal regulations. (F;S;S)

**CM 496. Construction Financial Management and Organization** **Credit 3(2-3)**

This course focuses on the setting-up of a construction firm. Students are made to develop plans for setting-up their own firms by developing business plans and business strategies. They are then given a contract to construct a building project, commercial or residential. Construction estimating and scheduling for the comprehensive project are developed and financial reports of the business are prepared using appropriate software. Prerequisites: ACCT 203, MGMT 425, Senior Standing and CM Major. (F;S;S)

**CM 497. Industrial Experience I** **Credit 3 (0-7)**

Students must work in industry during one semester or summer (300 work hours) in their major field and complete departmental requirements. They will be evaluated on reports from on-site supervisors and the University coordinator. (F;S;SS)

**CM 498. Industrial Experience II** **Credit 3 (0-7)**

Students must work in industry during one semester or summer (300) work hours) in their major field and complete departmental requirements. They will be evaluated on reports from on-site supervisors and the University Coordinator. (F;S;SS)

**CM 570. Environmental Controls, AC and Heating Systems** **Credit 3(2-2)**

This course includes the study of principal equipment, design and load calculations for cooling and heating layouts and controls employed in various types of systems. This course is augmented by a practical design problem. Prerequisite: CM 216. (F;S;S)

**CM 571. Commercial Refrigeration, Heating and Ventilation** **Credit 3(2-2)**

This course is a study of steam systems, hot water systems, warm air systems and electrical systems used in heating buildings; load calculation for walk-in coolers, deep freezers and drinking water fountains; and special refrigerating devices and applications. Prerequisites: CM 570. (F;S;S)

**CM 590. Heavy Construction Methods** **Credit 3(3-0)**

This course focuses on the methods and equipment used in the heavy construction industry: highway, airport, AND dam construction. The methods will include haulage system design and analysis; fleet design and equipment scheduling; drilling and blasting; compaction and stabilization; dewatering systems and equipment. In addition, the economics of these methods and equipment will also be discussed. Prerequisites: CM 216, senior standing, CM major or permission of instructor. (F;S;S)

**CM 592. Project Management** **Credit 3(3-0)**

This is an introductory course in project management principles including the development of project management and organizational skills for technology, engineering and business applications. Other topics include materials management, computer applications and ethical issues relevant to project management. (F;S;S)

## COURSE DESCRIPTIONS IN GEOMATICS

- GEOM 101. Introduction to Geomatics I** **Credit 1(1-0)**  
This course will focus on the students' transition from high school to college and the skills necessary to be successful at the university level and in the Geomatics program. Course organization, study skills, time management, and topics relevant to Geomatics will be covered. (F;S;S)
- GEOM 102. Introduction to Geomatics II** **Credit 1(1-0)**  
This course will focus on the students' transition from high school to college and the skills necessary to be successful at the university level and in the Geomatics program. Course organization, study skills, time management, and topics relevant to Geomatics will be covered. (F;S;S)
- GEOM 202. Geomatics Sophomore Colloquium** **Credit 0(0-1)**  
This colloquium assists students in their preparation for the end-of-year exam required for sophomores in Geomatics. Topics include algebra and trigonometry, higher math, physics, written communication, plane survey calculations, graphical communication and mapping, field data acquisition and reduction, boundary law, and computer operations and programming. Prerequisites: Sophomore Standing. (F;S;S)
- GEOM 205. Surveying II** **Credit 3(3-0)**  
This course introduces route surveying and roadway planning and layout. Topics include simple, compound, reverse, spiral, and vertical curves, geometric design and layout of roadways, planning of cross-sections and grade lines, mass diagrams and super elevation calculations. Upon completion, students should be able to calculate and layout highway curves; prepare roadway plans, profiles and sections; and perform slope staking. Prerequisite: CM 214. Corequisite: GEOM 215. (F;S;S)
- GEOM 206. Surveying III** **Credit 4(2-5)**  
This course introduces boundary surveying, land partitioning, and calculations of areas. Topics include advanced traverses and adjustments, preparation of survey documents, and other related topics. Prerequisites: CAEE 204 or CM 214. (F;S;S)
- GEOM 208. Mathematical Applications in Geomatics** **Credit 3(3-0)**  
This course covers the mathematical aspects of surveying. Topics include trigonometric applications as related to geomatics, angle, bearing and azimuth computations, traverse adjustments, horizontal, vertical, and spiral curve design, and coordinate geometry. Also covered are taping adjustments, area and volume calculations, and leveling adjustments. Prerequisites: MATH 111 and Permission of Instructor. (F;S;S)
- GEOM 210. Cartography** **Credit 3(3-0)**  
This course examines the evolution of cartography by presenting both traditional and computer based cartographic techniques. Cartographic methods, design, and basic map reading and interpretation are examined. Professional quality maps that adhere to basic cartographic principles involving projections, graphic design and layout, data symbolization, and mapping theory are produced. Prerequisites: None. (F;S;S)
- GEOM 215. Surveying II Lab** **Credit 1(0-3)**  
This laboratory course will emphasize the material presented in GEOM 205 Surveying II. Individual laboratories will focus on the proper procedures and computational methods for all aspects of route design projects. Field work will cover the collection of topographic data and the processing of that data, roadway stake-out, and the collection of cross-sectional data. Prerequisites: CM 214; Corequisite: GEOM 205. (F;S;S)
- GEOM 271. Land Survey Systems** **Credit 3(3-0)**  
This course introduces the historical development, description, and basic legal land boundary elements related to the land survey systems in the United States. The United States Public Land Survey System material introduces sectionalized land subdivision, corner restoration, resurveys, evidence, and descriptions. Additional topics will include state plane coordinate systems, deed, plat, and other land boundary-related recording systems, and the historical concept of the cadastre. Prerequisites: CAEE 204 or CM 214. (F;S;S)
- GEOM 300. Internship** **Credit 1(0-3)**  
This course is designed to expose the typical student to the field of surveying in a real world environment. Students will be expected to work a minimum of 5 hours per week in some aspect of surveying which could include, but is not limited to, traditional field surveying, CAD office work, photogrammetry, or remote sensing. Prerequisites: CAEE 204, CM 214. (F;S;S)
- GEOM 302. Geomatics Junior Colloquium** **Credit 0(0-1)**  
This colloquium assists students in their preparation for the end-of-year exam required for juniors in Geomatics. Topics include algebra and trigonometry, higher math, physics, written communication, plane survey calculations, graphical communication and mapping. Other topics will include field data acquisition and reduction, boundary law, computer operations and programming, probability and statistics, measurement analysis, data adjustment, geodesy, geodetic survey calculations, photogrammetry and remote sensing, and geographic information system concepts. Prerequisites: Junior standing. (F;S;S)
- GEOM 307. Automated Surveying and Mapping** **Credit 3(3-0)**  
This course covers the procedures necessary for data collection and dissemination of field-to-finish projects. Topics covered include the use of hardware and software for surveying and mapping computations and drafting, data storage and output from automated devices used in surveying, and the use of total stations and electronic filed data collection systems. Prerequisite: GEOM 205; Corequisite: GEOM 317. (F;S;S)
- GEOM 310. Geographic Information Systems in Geomatics** **Credit 3(2-2)**  
This course introduces the capabilities, concepts, applications and issues of a Geographic Information System as it relates to areas within Geomatics. Topics include existing sources of data, metadata and representations in GIS, the relationship of CAD-

generated data and its incorporation into a GIS, land information system, generation and use of new data through GPS, static surveys, photogrammetry and remote sensing, spatial and attribute data, spatial data processing, and spatial analysis. Prerequisites: CIEN 280, CAEE 204 or CM 214. (F;S;S)

**GEOM 317. Automated Surveying and Mapping Lab** **Credit 1(0-3)**

This laboratory course will emphasize the material presented in GEOM 307 Automated Surveying and Mapping. Individual laboratories will utilize the latest survey technology for field-to-finish surveys. Technologies will include total stations, Real Time Kinematic Global Positioning Systems (RTK – GPS), data collectors, and current production and design software. Prerequisites: GEOM 205, GEOM 215; Corequisite: GEOM 307. (F;S;S)

**GEOM 320. Introduction to Photogrammetry** **Credit 3(3-0)**

This is an introductory course in metric and interpretive photogrammetry. Topics covered include the fundamental principles of photography and imaging, cameras and other imaging devices, coordinate systems and image measurements, vertical photographs, stereoscopic viewing and parallax, tilted photographs, and the role of planimetric mapping in GIS. Material on interpretive photogrammetry will include land use and cover mapping, color infrared photography, the use of multiple images, and satellite and radar mapping. Prerequisite: CAEE 204 or CM 214. (F;S;SS)

**GEOM 340. Adjustment Computations I** **Credit 3(3-0)**

This course recognizes the basic tenet that no measurement is ever exact and hence will have an error. The fundamentals of errors and the methods of analyzing them will be examined by evaluating graphical representations of data and numerical methods of data description. Random error theory will be covered by examining simple probability and the normal distribution function followed by statistical testing and confidence intervals. Error propagation in surveying measurements of indirectly measured quantities, traverse surveys, and differential leveling will be examined. Weights of observations will be covered for the various types of survey measurements. Prerequisite: GEOM 340, or Corequisite: MATH 450. (F;S;S)

**GEOM 341. Adjustment Computations II** **Credit 3(3-0)**

This second course in Adjustment Computations will examine the principles of least squares as it applies to error adjustment. Application of the least squares method to adjusting the basic types of surveys will then be presented. The adjustment of level nets, trilateration, triangulation, traverses and horizontal networks, and GPS networks will be covered. Error ellipses will be covered as well as the application of least squares in computing coordinate transformations. Prerequisite/Corequisite: GEOM 340, MATH 450. (F;S;S)

**GEOM 350. Subdivision Design** **Credit 3(3-0)**

General concepts governing land development will be examined including the analysis of soil, topography, geometry, environmental impact, aesthetic and economic principles in land planning. The permitting process at local, state and federal levels will be discussed, as well as the applicable federal, state, and municipal platting regulations. Ethical considerations for land planning will also be discussed. A plat and a subdivision design including appropriate infrastructure will be completed. Prerequisites: GEOM 307 pre- or corequisite: GEOM 367. (F;S;S)

**GEOM 360. Geodesy and Map Projections** **Credit 3(3-0)**

This course serves as an introduction to the concepts of astronomy, geodesy and map projections currently used in surveying practice. The earth's gravity field, ellipsoids, datums, geographic and projected coordinate systems, and coordinate transformations are discussed. Prerequisites: GEOM 340; PHYS 241/251. (F;S;S)

**GEOM 366. Hydraulics and Piping Systems** **Credit 2(1-2)**

This course covers the theory of fluid statics, the equations of continuity, momentum, and energy, and pipe friction and head loss. Applications and design of pressurized and open channel flow, network pipe flow, sanitary sewer system design and potable water systems will also be covered. Prerequisites: MATH 131. (F;S;S)

**GEOM 367. Hydrology** **Credit 2(1-2)**

This course covers the basic processes in a hydrologic system. Topics covered include precipitation, rainfall- runoff relationships, watersheds, hydrograph development methods, drainage conveyance and control, and storm water routing methods. Prerequisite: GEOM 366. (F;S;S)

**GEOM 400. Fundamentals of Land Surveying Review** **Credit 1(0-2)**

This course covers and reviews the geomatics topics included in the Fundamentals of Land Surveying (FLS) exam. The course emphasizes extensive problem solving to prepare the student for the exam. Prerequisite: Senior Standing in Geomatics. (F;S;S)

**GEOM 420. Analytical Photogrammetry** **Credit 3(3-0)**

This is an advanced course in photogrammetry that emphasizes the metric aspects of photogrammetry. Topics include analytical photogrammetry, mapping and data collection using stereoscopic plotting equipment, digital imaging and processing, elements of Softcopy photogrammetry, establishment of ground control and project planning, aerotriangulation, terrestrial and close range photogrammetry, and photogrammetric applications in GIS. Prerequisites: GEOM 320, GEOM 341. (F;S;S)

**GEOM 460. Satellite Positioning Systems** **Credit 3(3-0)**

This course covers precise point positioning as it applies to surveying using the Global Positioning System (GPS) and other satellite positioning systems. Types of GPS equipment, their uses and limitations will be discussed. Mission planning and network design for GPS surveys will be covered as well as baseline processing, network adjustment and data management. Real time kinematic (RTK) GPS will be applied to topographic, boundary, and construction surveys. Prerequisites: GEOM 360, GEOM 341. (F;S;S)

**GEOM 470. Boundary and Legal Principles** **Credit 3(3-0)**

This course explores the role of the boundary surveyor in retracement of land boundaries, the methods of boundary establishment,



and the classification and analysis of boundary evidence. Additional topics include the laws governing riparian boundaries, easements and right of ways, the preparation of deed descriptions and survey plats, the preservation of survey evidence, the surveyor as an expert witness, and ethics, liability, and professionalism in Geomatics. Prerequisites: GEOM 307. (F;S;S)

**GEOM 471. Professionalism and Ethics**

**Credit 1(1-0)**

This course will emphasize the basic concepts of professionalism and ethics as they apply to Geomatics. Students will learn methods of dealing with various situations both legally and ethically as the surveying and engineering profession requires. Through the use of open ended projects, the students will gain experience in working through actual problems. Prerequisite: Senior standing. (F;S;S)

**GEOM 474. Real Estate Law**

**Credit 3(3-0)**

This course will examine real estate law as it involves the surveyor. Topics include the economic, social, financial, and legal problems involved in acquiring, holding, and disposing of real estate. Property rights and liabilities, real estate instruments, estates, leases, and liens will be covered. Prerequisites: GEOM 470. (F;S;S)

**GEOM 496. Senior Project I**

**Credit 1(0-2)**

This is the first capstone design course in Geomatics. The objective is to begin the team solution of a practical and comprehensive Geomatics design project. Real world parameters including local, state and national law and codes, ordinances, and relevant surveying practices are emphasized. Professional quality team presentation of Geomatics projects using modern presentation tools/software is required. A final report and presentation are required. Prerequisite: Senior standing. (F;S;S)

**GEOM 499. Senior Project II**

**Credit 4(4-0)**

This is the second capstone design course in Geomatics and will emphasize a team solution of a practical and comprehensive Geomatics' project that incorporates data collection, analysis, and design. A comprehensive final report with professional quality drawings and a formal presentation to a panel of faculty and local professionals are required. (F;S;S)

**COURSE DESCRIPTIONS IN ENVIRONMENTAL HEALTH & SAFETY**

**EHS 101. Introduction to Occupational Safety and Health**

**Credit 3(3-0)**

This course is an introduction to the standards of the Environmental Health and Safety Administration, and the job roles of the safety professional and the industrial hygienist. Course material shall include an introduction to quantitative problem solving and units of measure. An emphasis will be placed on the description of workplace environments. (F;S;S)

**ESH 205. Sprinklers and Auto Alarms**

**Credit 3(3-0)**

This course introduces various types of automatic sprinklers, standpipes and fire alarm systems. Topics include wet or dry systems, testing and maintenance, water supply requirements, fire detection and alarm systems and other related topics. Upon completion, students should be able to demonstrate a working knowledge of various sprinkler and alarm systems and required inspection and maintenance. (F;S;S)

**ESH 210. Industrial Accident Prevention**

**Credit 3(3-0)**

This course is an introduction to the basic principles of accident prevention. An emphasis is placed on educational and training methods; the identification and elimination of physical, chemical, mechanical, electrical, and fall hazards; and consumer product safety. (F;S;S)

**ESH 212. Accident Investigation Analysis and Records**

**Credit 3(2-2)**

This course is an introduction to the basic principles of accident investigation including the importance, use, scope, and requirements of accident investigation. An emphasis is placed on casual analysis and the people, position, parts, and paper relevant to accident investigation. Topics of discussion also include record-keeping and reporting requirements of federal, state, and local agency standards. Prerequisite: OSH 201. (F;S;S)

**ESH 214. Principles of Fire Prevention**

**Credit 3(2-2)**

This course is an introduction to the principles of fire prevention and fire theory. An emphasis is placed on the Life Safety Code of the National Fire Protection Agency and pertinent standards from the Occupational Safety and Health Administration. Prerequisites: CHEM 107 or equivalent, and OSH 312. (F;S;S)

**ESH 220. Safety and Security Management**

**Credit 3(3-0)**

This course provides students with the technical know how to effectively communicate after the September 11, 2001 disaster and their need to manage, ensure and receive the necessary resources for organizational success. It examines new risk assessment models and proactive strategic planning concepts. It places emphasis on measurable metrics as applied to dealing with workplace violence, anti-terrorism and other security threats. Prerequisites: OSH 201 or consent of the instructor. (F;S;S)

**ESH 230. Transportation of Hazardous Materials**

**Credit 3(2-2)**

This course identifies agencies of the U.S. Department of Transportation, defines hazardous materials, and explains requirements for transportation of hazardous materials by the various transportation modes. An emphasis will be placed on the Department of Transportation's standards found in the Code of Federal Regulations, the International Air Transport Association's (IATA) Dangerous Goods Regulation, and other regulations guides. Prerequisite: MATH 111. (F;S;S)

**ESH 293. Safety Management**

**Credit 3(3-0)**

This course focuses on the industrial manager's role in preventing accidents, protecting workers' health and maintaining safety awareness in the workplace. (F;S;S)

**ESH 305. Fire Protection Law**

**Credit 3(3-0)**

This course covers Fire Protection Law. Topics include torts, legal terms, liability, review of case histories and other related topics. Upon completion the student should be able to discuss laws, codes and ordinances as they relate to the fire service. Prerequisite: OSH 205. (F;S;S)

- ESH 311. Hazardous Materials for the Safety Professional** **Credit 3(2-2)**  
 This course is an introduction to the principles of liquid and solid hazardous waste management. An emphasis is placed on pertinent federal regulatory legislation and environmental effects of released contaminants. Prerequisite: CHEM 107 or equivalent. (F;S;S)
- ESH 313. Industrial Hygiene I** **Credit 4(3-3)**  
 This course is an overview of the principles of industrial hygiene. An emphasis is placed on the quantitative evaluation of physical and chemical work-place hazards and pertinent standards of the Occupational Safety and Health Administration. Topics of discussion include industrial noise, particulate, solvents, hazard communication, heat stress, and biohazards. Reference is made to the anatomical systems affected by exposures. Laboratory work emphasizes hands-on experience with state-of-the-art industrial hygiene survey equipment. Prerequisites: PHYS 226 and 236 or equivalent CHEM 107 or equivalent BIOL 361 and MATH 111 or equivalent. (F;S;S)
- ESH 316. Industrial Hygiene II** **Credit 4(3-3)**  
 This course is a continuation of OSH 413. Topics of discussion include ionizing radiation, non-ionizing radiation, ergonomics, toxicology, industrial ventilation, general ventilation, and respiratory protection. An emphasis is placed on methods of control of work place hazards. Prerequisite: OSH 413. (F;S;S)
- ESH 317. Introduction to Job Search, Internship and Work Environment** **Credit 3(3-0)**  
 A course designed to develop practical job search and internship skills to increase the student's options and opportunities for locating immediate and appropriate job sites. Emphasis will be placed on developing the self-knowledge, grammar, and skills necessary to write a traditional resume, participate in a job interview, personal profile, and develop a plan of action for employment in the local job market. Prerequisites: OSH 210 or consent of the instructor. (F;S;S)
- OSH 342. Electrical Safety** **Credit 3(3-0)**  
 This course is an overview of the identification and control of the fire and electrocution hazards of electrical wiring and equipment. An emphasis is placed on the National Electric Code and electrical standards of the Occupational Safety and Health Administration found in the Code of Federal Regulations. Prerequisites: OSH 312 and PHYS 226. (F;S;SS)
- ESH 394. Environmental Health** **Credit 3(3-0)**  
 This course begins with the major concepts and principles of environmental health, emphasizing the chemical, biological and physical agents and factors that constitute a risk to humans. The principles and methods of risk assessment and risk management are identified and used throughout the course as a unifying theme. Prerequisite: OSH 201. (F;S;S)
- ESH 405. Portable and Fixed Extinguishing Systems** **Credit 3(3-0)**  
 This course provides a study of various types of fixed and portable extinguishing systems, their operation, installation and maintenance. Topics include applications, testing and maintenance of Halons, carbon dioxide, dry chemical and special extinguishing agents in fixed portable systems. Upon completion, students should be able to identify various types of fixed and portable systems, including their proper application and maintenance. Prerequisite: OSH 305. (F;S;S)
- ESH 408. Evaluation for Environmental Health and Safety** **Credit 3(1-4)**  
 This course is an introduction to technical writing for the Environmental Health and Safety profession. An emphasis is placed on documentation of calibration and analytical methods for industrial hygiene hazard evaluation. Prerequisite: OSH 210. (F;S;S)
- ESH 410. Workplace Violence Prevention and Reaction** **Credit 3(3-0)**  
 This course provides students with an understanding of the holistic and systems approach towards preventing and responding to workplace violence. Students learn how to design a multidisciplinary strategy involving senior management, union officials, human resource managers, labor law attorneys, employee assistance program professionals, security, safety, public relations and maintenance. Prerequisites: OSH 312 or consent of the instructor. (F;S;S)
- ESH 415. Standards and Regulations in Environmental Health and Safety** **Credit 3(3-0)**  
 This course is an overview of regulatory compliance in the field of Environmental Health and Safety. An emphasis is placed on the Occupational Safety and Health Administration standards for general industry and construction. Prerequisite: OSH 201. (F;S;S)
- ESH 426. Terrorism and Workplace Safety** **Credit 3(3-0)**  
 This course provides students with the tools and skills to understand theory behind terrorism. Historical background, definitions, tactics, ideologies and terrorism's impact on twenty-first century civilization around the world will be explored. Both current and historical events are analyzed within course context to provide experiential learning and development of critical thinking skills. Prerequisites: OSH 210 or consent of the instructor. (F;S;S)
- ESH 432. Design of Engineering Hazard Controls** **Credit 3(2-2)**  
 This course is an overview of the design and assessment of engineering controls for the abatement of health and safety hazards in the work-place. An emphasis is placed on cost benefit analysis, and technical and financial feasibility. Topics of discussion include industrial noise abatement, industrial ventilation, machine guarding, and walking and working surfaces. Prerequisites: OSH 416, MFG 191 and 491. Senior or Graduate Standing. (F;S;S)
- ESH 433. Human Factors** **Credit 3(2-2)**  
 This course is an overview of the discipline of human factors. Emphasis is placed on ergonomics and the hazards of physical work, including cumulative trauma disorders, lower back injuries, and over-work. Topics of discussion include system theory and reliability calculation, cost/benefit analysis, signal detection theory, human perception, and anthropometry. Prerequisite: PSYC 445 or equivalent. (F;S;S)

- ESH 435. Environmental Health and Safety Management** **Credit 3(3-0)**  
 This course is an overview of the application of management principles to the establishment and maintenance of Environmental Health and Safety programs. An emphasis is placed on written safety and health programs in compliance with standards from the Occupational Safety and Health Administration. Prerequisites OSH 312 and BUAD 422. (F;S;S)
- EHS 437. Machine and Welding Safety** **Credit 3(3-0)**  
 This course covers the general safety practices and precautions that all welders and safety professionals should follow during welding procedures. Topics such as health factors, ventilation, hot-work management, safe practices and personal protective equipment are covered. Further hazards related to welding such as: electrical shock, arc radiation, air contamination, fire and explosion and compressed gasses are studied. Prerequisites: OSH 312 and PHYS 226. Senior or graduate standing. (F;S;SS)
- ESH 438. Materials Handling for the Safety Professional** **Credit 3(2-3)**  
 This course is an introduction to the recognition, evaluation, and control of work place hazards associated with the handling of materials. An emphasis is placed on the materials handling and storage standards of the Occupational Safety and Health Administration. Prerequisites: OSH 210 and MATH 111 or equivalent. (F;S;S)
- ESH 455. Health Physics** **Credit 3(3-0)**  
 This course is an introduction to health physics. Emphasis is placed on the physics of radiation, adverse health effects of radiation, time/distance/shielding control of exposure, and regulations of the Nuclear Regulatory Commission found in the Code of Federal Regulations. Prerequisite: PHYS 226 or approval of instructor. (F;S;S)
- ESH 472. System Safety and Other Analytical Methods** **Credit 3(3-0)**  
 This course is an overview of system theory and process safety management. An emphasis is placed on regulatory compliance with the process safety management standard of the Occupational Safety and Health Administration. Topics of discussion include fault tree analysis, failure modes, and risk analysis and management. Prerequisites: MATH 224 or equivalent and OSH 411. Senior or Graduate Standing. (F;S;S)
- ESH 497. Industrial Experience I** **Credit 3(3-0)**  
 Students must work in industry during one semester or summer (300 hours) in their major field and complete all Departmental requirements. They will be evaluated on reports from on-site supervisors and the University coordinator. (F;S;S)
- ESH 498. Industrial Experience II** **Credit 3(3-0)**  
 Students must work in industry during one semester or summer (300 hours) in their major field and complete all Departmental requirements. They will be evaluated on reports from on-site supervisors and the University coordinator. (F;S;S)
- ESH 505. Fire Fighting Strategies** **Credit 3(3-0)**  
 This course provides preparation for command of initial incident operations involving emergencies within both the public and private sector. Topics include incident management, fire-ground tactics and strategies, incident safety and command/control of emergency operations. Upon completion, students should be able to describe the initial incident system as it relates to operations involving various emergencies in fire and non-fire situations. In addition, students study fire strategies as they relate to selected NFPA standards. Prerequisite OSH 405. (F;S;S)
- ESH 599. Independent Study in Environmental Health and Safety** **Credit 3(3-0)**  
 Students who have given evidence of their ability to do serious individual study on a professional level and to plan and carry out a project of their own choosing should consider this course. This course is subject to approval and supervision of a faculty member. (F;S;S)

#### DIRECTORY OF FACULTY

<b>Leila Hashemi-Beni</b> .....	<b>Assistant Professor</b>
B.S., University of Isfahan; M.S., University of Tehran; Ph.D., Laval University	
<b>Peggy A. Fersner</b> .....	<b>Geomatics Coordinator</b>
B.S., Virginia Tech; M Engr., Clemson University	
<b>Tony Graham</b> .....	<b>Associate Professor</b>
B.S., North Carolina A&T State University, M.S., Ph.D., Morgan State University	
<b>Iman J. Moore</b> .....	<b>Adjunct Instructor</b>
B.S., M.S., North Carolina A &T State University; Ed.D, Nova Southeastern University	
<b>Jerry W. Nave</b> .....	<b>Assistant Professor</b>
B.S., M.S., Ed.D., East Tennessee State University	
<b>Andrea Ofori-Boadu</b> .....	<b>Adjunct Instructor</b>
B.S., University of Science and Technology, Ghana, M.S., North Carolina A&T State University, Ph.D., Indiana State University	
<b>Robert B. Pyle</b> .....	<b>Professor and Department Chairperson</b>
B.A., M.A., Trenton State College; Ph.D., University of Pittsburgh	
<b>Musibau A. Shofoluwe</b> .....	<b>Professor</b>
B.S., North Carolina A&T State University; M.S., Pittsburgh State University; DIT University of Northern Iowa	
<b>Lewis S. Waller</b> .....	<b>Assistant Professor</b>
B.S., M.S., North Carolina A&T State University; Ph.D.; Capella University	
<b>Frank E. Yeboah</b> .....	<b>Assistant Professor</b>
M.E.; Technical University of Clausthal, Germany; D.Eng.-Sc., Columbia University	

### **OBJECTIVES**

The objectives of the Department of Chemistry are as follows:

1. to prepare chemistry majors for graduate study in chemistry or other chemistry-based sciences;
2. to prepare majors for admittance to medical, dental, and other professional schools;
3. to prepare majors for careers as professional chemists;
4. to prepare majors to teach chemistry at the secondary school level;
5. to provide majors in other departments with a functional understanding of chemistry commensurate with the needs of their chosen fields;
6. to provide all students served by the department with an insight into the nature of scientific investigations and the scientific enterprise in general;
7. to offer for graduate students learning experiences and research leading to a M.S. Degree in chemistry;
8. to offer learning experiences and research leading to a M.S. Degree in education with a concentration in chemistry;
9. to share the resources (human and physical) of the department with the local and academic community through cooperative programs, workshops, seminars, course offerings, etc.; and
10. to contribute to the extension of basic knowledge in chemistry and related sciences through applied and basic research, educational experimentation, publications, etc.

### **DEGREES OFFERED**

Chemistry – Bachelor of Science

Chemistry (Secondary Education) – Bachelor of Science

Chemistry (Accelerated Bachelor's/Master's-ABM) – Bachelor of Science/Master of Science

### **GENERAL ADMISSION REQUIREMENTS**

For Fall 2017, the admission of students to the undergraduate degree program in the Department of Chemistry are based upon the general admission requirements of the University. For students entering Fall 2016 and thereafter, to be admitted into the undergraduate degree programs of the Department of Chemistry incoming freshmen must meet all of the following requirements:

- **English:** Four course units emphasizing grammar, composition, and literature
- **Foreign Language:** Two course units in the same language
- **Mathematics:** Four course units including Algebra I, Algebra II, Geometry, and a higher level mathematics course for which Algebra II is a prerequisite
- **Science:** Three course units including at least one unit in a physical science, life or biological science, and at least one laboratory course
- A minimum SAT (math plus reading comprehension) combined score of 850 or an ACT composite score of 17
- A minimum high school grade point average of 2.8 (unweighted)
- Transfer students from other colleges and universities and from other disciplines at A&T must have a cumulative GPA of 2.5 or higher in all college work.

### **GENERAL PROGRAM REQUIREMENTS**

Chemistry Major – The professional major in chemistry must complete 120 semester hours of University courses. The student may select one of two options in order to complete the professional major. The options are the American Chemical Society (ACS) Certified Program or the Biochemistry and Biomedical Science Program. The ACS program requires the student to complete 57 semester hours in basic chemistry courses and nine to twelve hours in advanced chemistry courses of which three hours must be the capstone course CHEM 497. The Biochemistry and Biomedical Science Program requires the student to complete 52 semester hours in basic chemistry courses, nine to twelve hours in advanced chemistry courses and 8 semester hours of biology courses. A minimum grade of “C” must be achieved in all chemistry courses. The capstone course must be CHEM 497.

Chemistry Education – The education major must complete 120 semester hours of University courses to complete the Secondary Education with a Concentration in Chemistry degree. Students must pass PRAXIS I. A minimum grade of “C” must be achieved in all basic chemistry courses. The Secondary Education Program is accredited by the National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction.

Bachelor of Science/Master of Science in Chemistry – The curricula are identical in the first two years to the professional major's program leading to the Bachelor of Science degree. It is designed to enable talented undergraduate students to obtain the B.S. and M.S. degrees, in chemistry during a five year period of study and research. Any rising junior in chemistry with a grade point average of 3.25 in chemistry and 2.7 overall average is eligible. Required chemistry courses beyond the B.S. level are: CHEM 611, 701, 702, 722, 732, 743 or 749, 799, and 5 hours from among 600 and 700 level chemistry courses.

## ACCREDITATION

The professional curriculum (ACS Certified Program) is approved by the American Chemical Society. All Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction.

## CAREER OPPORTUNITIES

B.S. level graduates in chemistry qualify for employment in many fields. There are many career opportunities for chemists in education, government, and industry.

In industry, the chemistry graduate with a B.S. degree may be employed in manufacturing-plant management, research and development, product development, technical sales, marketing, etc. B.S. level chemists work in research at federal, state, municipal, and university laboratories.

The B.S. degree program prepares students to pursue graduate study in chemistry or other chemistry-based sciences (biochemistry, pharmacology, physiology, chemical physics, material science, etc.), medicine, dentistry, and other health professional areas.

### Department of Chemistry Bachelor of Science in Chemistry (Biochemistry and Biomedical Sciences) Major Code: CHEM

#### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
CHEM 106	3	CHEM 107	3
CHEM 108	1	CHEM 190 / CHEM 117	1
CHEM 116	1	MATH 131	4
ENGL 100	3	ENGL 101	3
African American <sup>1</sup>	3	Humanities / Fine Arts <sup>3</sup>	3
MATH 110	4	HPED <sup>2</sup>	1
HPED <sup>2</sup>	1	CHEM 109	1
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
CHEM 208	1	CHEM 209	1
CHEM 221	3	CHEM 222	3
CHEM 290 /CHEM 223	1	CHEM 291 / CHEM 224	2
MATH 132	4	MATH Elective <sup>6</sup>	3
Global Awareness <sup>4</sup>	3	PHYS 241	3
Social and Behavioral Sciences <sup>5</sup>	3	PHYS 251	1
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>13</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
CHEM 308	1	CHEM 309	1
CHEM 231	3	CHEM 411	3
CHEM 232	2	CHEM 451	3
PHYS 242	3	CHEM452	2
PHYS 252	1	CHEM 431	3
BIOL 101	4	CHEM 432	2
CHEM 390	2	CHEM 391	2
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>16</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
CHEM 408	1	CHEM 412	2
CHEM 490	2	Biology Elective	4
CHEM 441	3	CHEM 497 (capstone)	3
CHEM 443	1	CHEM 442	3
CHEM 453	3	CHEM 444	1
Free Elective	5	<b>Semester Total</b>	<b>13</b>
<b>Semester Total</b>	<b>15</b>		

**Total Credit Hours: 120**

<sup>1</sup>Select one of the following: ENGL 333, ENGL 334, HIST 106, HIST 107, HIST 103, LIBS 202, MUSI 220. . Courses may only satisfy ONE general education requirement Global Awareness, African American, Social and Behavioral Sciences, or Humanities and Fine Arts (eg. LIBS 202 can satisfy Humanities/Fine Arts or African American, but not both).

<sup>2</sup>SSFM 226 may be substituted for the two courses in Physical Education.

<sup>3</sup>Select one of the following: ENGL 200, ENGL 201, ENGL 230, ENGL 231, ENGL 333, ENGL 334, LIBS 202, MUSI 216, MUSI 220, PHIL 101, PHIL 103, PHIL 104 PHIL 201, PHIL 266, PHIL 267, SPCH 250.

<sup>4</sup>Select one of the following: HIST 130, HIST 206, HIST 207, HIST 216, HIST 231, MGMT 221, PHIL 103, PHIL 201.

<sup>5</sup>Select one of the following: BUED 279, ECON 200, ECON 201, FCS 135, FCS 181, FCS 260, HIST 103, HIST 104, HIST 105, HIST 106, HIST 107, HIST 130, HIST 207, HIST 216, HIST 231, JOMC 240, POLI 110, PSYC 101, SOCI 100, SOCI 200, SSFM 226.

<sup>6</sup>Select MATH 231 or 431.

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C or better in the following courses:*

CHEM 106	CHEM 390
CHEM 107	CHEM 391
CHEM 108	CHEM 408
CHEM 109	CHEM 411
CHEM 116	CHEM 412
CHEM 117 / CHEM 190	CHEM 431
CHEM 208	CHEM 432
CHEM 209	CHEM 441
CHEM 221	CHEM 442
CHEM 222	CHEM 443
CHEM 231	CHEM 444
CHEM 232	CHEM 451
CHEM 223 / CHEM 290	CHEM 452
CHEM 224 / CHEM 291	CHEM 453
CHEM 308	CHEM 490

Department of Chemistry  
Bachelor of Science in Chemistry (ACS Certified)  
Major Code: CHEM

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	

CHEM 106	3	CHEM 107	3
CHEM 108	1	CHEM 190 /CHEM 117	1
CHEM 116	1	MATH 131	4
ENGL 100	3	ENGL 101	3
African American <sup>1</sup>	3	Humanities / Fine Arts <sup>3</sup>	3
MATH 110	4	HPED <sup>2</sup>	1
HPED	1	CHEM 109	1
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
CHEM 208	1	CHEM 209	1
CHEM 221	3	CHEM 222	3
CHEM 290 / CHEM 223	1	CHEM291 /CHEM 224	2
MATH 132	4	MATH Elective <sup>6</sup>	3
Global Awareness <sup>4</sup>	3	PHYS 241	3
Social / Behavioral Sciences <sup>5</sup>	3	PHYS 251	1
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>13</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
CHEM 308	1	CHEM 309	1
CHEM 231	3	CHEM 451	3
CHEM 232	2	CHEM 452	2
PHYS 242	3	CHEM 431	3
PHYS 252	1	CHEM 432	2
BIOL 101	4	CHEM 391	2
CHEM 390	2	<b>Semester Total</b>	<b>13</b>
<b>Semester Total</b>	<b>16</b>		
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
CHEM 408	1	CHEM 412	2
CHEM 490	2	Electives	3
CHEM 441	3	CHEM 497 (capstone)	3
CHEM 443	1	CHEM 411	3
Advanced CHEM Elective <sup>7</sup>	3	CHEM 442	3
Free Elective	6	CHEM 444	1
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 120**

<sup>1</sup>Select one of the following: ENGL 333, ENGL 334, HIST 106, HIST 107, HIST 103 LIBS 202, MUSI 220. Courses may only satisfy ONE general education requirement Global Awareness, African American, Social and Behavioral Sciences, or Humanities and Fine Arts (eg. LIBS 202 can satisfy Humanities/Fine Arts or African American, but not both).

<sup>2</sup>SSFM 226 may be substituted for the two courses in Physical Education.

<sup>3</sup>Select one of the following: ENGL 200, ENGL 201, ENGL 230, ENGL 231, ENGL 333, ENGL 334, LIBS 202, MUSI 216, MUSI 220, PHIL 101, PHIL 103, PHIL 104, PHIL 201, PHIL 266, PHIL 267, SPCH 250.

<sup>4</sup>Select one of the following: HIST 130, HIST 206, HIST 207, HIST 216, HIST 231, MGMT 221, PHIL 103, PHIL 201.

<sup>5</sup>Select one of the following: BUED 279, ECON 200, ECON 201, FCS 135, FCS 181, FCS 260, HIST 103, HIST 104, HIST 105, HIST 106, HIST 107, HIST 130, HIST 207, HIST 216, HIST 231, JOMC 240, POLI 110, PSYC 101, SOCI 100, SOCI 200, SSFM 226.

<sup>6</sup>Select MATH 231 or 431.

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C or better in the following courses:*

CHEM 106	CHEM 390
CHEM 107	CHEM 391
CHEM 108	CHEM 408
CHEM 109	CHEM 411
CHEM 116	CHEM 412
CHEM 117 /CHEM 190	CHEM 431
CHEM 208	CHEM 432
CHEM 209	CHEM 441
CHEM 221	CHEM 442
CHEM 222	CHEM 443
CHEM 231	CHEM 444
CHEM 232	CHEM 451
CHEM 223 /CHEM 290	CHEM 452
CHEM 224 /CHEM 291	CHEM 490
CHEM 308	CHEM 497 (capstone)
CHEM 309	Advanced CHEM Elective

**Department of Chemistry**  
**Bachelor of Science in Secondary Chemistry (Chemistry)**  
**Major Code: CHEM**  
**Concentration Code: PCSE**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
CHEM 106	3	CHEM 107	3
CHEM 108	1	CHEM 117	1
CHEM 116	1	ENGL 101	3
ENGL 100	3	African American <sup>2</sup>	3
CUIN 102	2	CUIN 101	1
MATH 131 <sup>1</sup>	4	CUIN 110	2
<b>Semester Total</b>	<b>14</b>	BIOL 101	4
		<b>Semester Total</b>	<b>17</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
CHEM 221	3	CHEM 222	3
CHEM 223	1	CHEM 231	3
MATH 132	4	CHEM 232	2
PHYS 241	3	PHYS 242	3
PHYS 251	1	PHYS 252	1
CUIN 210	2	Global Awareness <sup>3</sup>	3
<b>Semester Total</b>	<b>14</b>	CUIN 255 ( <i>formerly</i> CUIN 310)	2
		<b>Semester Total</b>	<b>17</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
CHEM 441	3	CUIN 420	2
CHEM 443	1	CHEM 411 ( <i>formerly</i> CHEM 511)	3
BIOL Elective	4	CHEM 451	3



Foreign Language Elective <sup>4</sup>	3	CHEM 452	2
CUIN 410	2	Humanities / Fine Arts <sup>5</sup>	3
Free Elective	3	Foreign Language Elective <sup>4</sup>	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>16</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
CHEM 431	3	CUIN 498	9
CHEM 432	2	CUIN 470	3
CUIN 435	3	<b>Semester Total</b>	<b>12</b>
Social /Behavioral Science <sup>6</sup>	3		
Free Elective	3		
<b>Semester Total</b>	<b>17</b>		

**Total Credit Hours: 125**

<sup>1</sup>Student not eligible to be placed in MATH 131 must complete MATH 110 prior to enrolling in MATH 131.

<sup>2</sup>Select one of the following: ENGL 333, ENGL 334, HIST 106, HIST 107, HIST 103, LIBS 202, MUSI 220. Courses may only satisfy ONE general education requirement Global Awareness, African American, Social and Behavioral Sciences, or Humanities and Fine Arts (eg. LIBS 202 can satisfy Humanities/Fine Arts or African American, but not both).

<sup>3</sup>Select one of the following: HIST 130, HIST 206, HIST 207, HIST 216, HIST 231, MGMT 221, PHIL 103, PHIL 201.

<sup>4</sup>Two consecutive courses in the same foreign language.

<sup>5</sup>Select one of the following: ENGL 200, ENGL 201, ENGL 230, ENGL 231, ENGL 333, ENGL 334, LIBS 202, MUSI 216, MUSI 220, PHIL 101, PHIL 103, PHIL 104, PHIL201, PHIL 266, PHIL 267, SPCH 250.

<sup>6</sup>Select one of the following: BUED 279, ECON 200, ECON 201, FCS 135, FCS 181, FCS 260, HIST 103, HIST 104, HIST 105, HIST 106, HIST 107, HIST 130, HIST 207, HIST 216, HIST 231, JOMC 240, POLI 110, PSYC 101, SOCI 100, SOCI 200, SSFM 226.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

CHEM 106	CHEM 443
CHEM 107	CHEM 451
CHEM 108	CHEM 452
CHEM 116	CUIN 102
CHEM 117	CUIN 101
CHEM 221	CUIN 110
CHEM 222	CUIN 210
CHEM 223	CUIN 255
CHEM 231	CUIN 410
CHEM 232	CUIN 420
CHEM 411	CUIN 435
CHEM 431	CUIN 498
CHEM 432	CUIN 470
CHEM 441	

## COURSE DESCRIPTIONS IN CHEMISTRY

- CHEM 100. Physical Science\*** **Credit 3(3-0)**  
This is a one semester introductory course designed to make clear the nature of science as an enterprise and illustrate by numerous examples how science really proceeds. Learning experiences are constructed so that they closely approximate real life situations where one has to search for clues and insights from a variety of sources. This course is not open to students who have received credit for CHEM 101, 102, 104, 105, 106, or 107. (F;S;SS)
- CHEM 103. Foundation of Chemistry** **Credit 3(3-0)**  
This is a course introducing the fundamental concepts of inorganic chemistry. Topics include matter, structure of the atom, nomenclature, chemical equations, bonding and reactions. Mathematical topics include measurements, scientific notation, basic algebraic calculations and stoichiometry. This course aims to improve the student's problem solving skills. (F;S;SS)
- CHEM 104. General Chemistry IV\*** **Credit 3(3-0)**  
This course is an introduction to fundamental techniques and concepts in chemistry, including writing and interpretation of symbols, formulas, equations, atomic structure, composition and reactions of inorganic compounds. This course is not open to majors in chemistry, physics, biology, mathematics and engineering. Corequisite: CHEM 114. (F;S;SS)
- CHEM 106. General Chemistry VI\*** **Credit 3(3-0)**  
This is a course which emphasizes basic principles and important theoretical concepts of chemistry. Topics will include atomic structure, electronic configuration, the wave mechanical model of the atom, chemical bonding, states of matter, chemical equilibria, systems of acids and bases, and electrochemistry. Prerequisites: 2 units of high school algebra or equivalent, and 1 unit of high school chemistry or CHEM 099. Corequisite: CHEM 116. (F;S;SS)
- CHEM 107. General Chemistry VII\*** **Credit 3(3-0)**  
This course is a continuation of CHEM 106. It includes chemistry of important metals and nonmetals and a rigorous treatment of qualitative inorganic analysis. Prerequisite: CHEM 106 or equivalent. Corequisite: CHEM 117. (F;S;SS)
- CHEM 108. Chemistry Orientation** **Credit 1(1-0)**  
This course is a series of lectures and discussions on the nature and requirements of the chemical profession the application of chemistry to modern living, and other selected topics. (F)
- CHEM 109. Chemistry Freshman Colloquium** **Credit 1(1-0)**  
Topics of interest to freshman chemistry majors are presented and discussed. Topics include advising, retention, scholarship, curriculum, summer internships, career planning, and contemporary issues in chemistry. The course also provides a forum for students to interact with CHEM Faculty and the Department Chair. (F,S)
- CHEM 110. Physical Science Laboratory** **Credit 1(0-2)**  
This is a laboratory course designed to bring students into working contact with the essential aspects of scientific experiences. In this course the student develops concrete ideas about the operational meaning of the scientific method and problem solving. Corequisite: CHEM 100. This course is not open to students who have received credit for CHEM 114, 115, 116, or 117. (F;S;SS)
- CHEM 114. General Chemistry IV Laboratory** **Credit 1(0-3)**  
This course is a study of inorganic reaction and substances and their relation to the processes. Corequisite: CHEM 104. (F;S;SS)
- CHEM 116. General Chemistry VI Laboratory** **Credit 1(0-3)**  
This is a course which emphasizes quantitative studies of chemical reactions such as acid-base studies, redox reactions, and equilibrium reactions. Emphasis is also placed on the development of manipulative skills in the laboratory. Corequisite: CHEM 106. (F;S;SS)
- CHEM 117. General Chemistry VII Laboratory\*** **Credit 1(0-3)**  
This is a continuation of CHEM 116 with an introduction to qualitative analysis. Corequisite: CHEM 107. Prerequisite: CHEM 116. (F;S;SS)
- CHEM 190. Introduction to Chemical Research** **Credit 1(0-3)**  
This is an introduction to qualitative analysis with emphasis on the basic concepts of research. Students will be introduced to scientific ethics, good laboratory practices, primary literature and on-line search procedures. Corequisite: CHEM 107. Prerequisite 116. (F;S)
- CHEM 208. Chemistry Sophomore Colloquium I** **Credit 1(1-0)**  
Topics of interest to first semester sophomore chemistry majors are presented and discussed. Topics include advising, retention, scholarship, curriculum, summer internships, career planning, and contemporary issues in chemistry. The course also provides a forum for students to interact with CHEM Faculty and the Department Chairperson. (F;S)
- CHEM 209. Chemistry Sophomore Colloquium II** **Credit 1(1-0)**  
Topics of interest to second semester sophomore chemistry majors are presented and discussed. Topics include advising, retention, scholarship, curriculum, summer internships, career planning, and contemporary issues in chemistry. The course also provides a forum for students to interact with CHEM Faculty and the Department Chair. Prerequisite: Sophomore standing in CHEM. (F;S)
- CHEM 210. Cooperative Experience I** **Credit 2(2-0)**  
This course is a supervised learning experience in a specified private or governmental chemical facility. The student's performance will be evaluated by reports from the supervisor of the experience and the departmental staff. The student must present a seminar regarding the experience upon return to the University. (F;S;SS)
- CHEM 221. Organic Chemistry I\*** **Credit 3(3-0)**

This course is a study of the hydrocarbons (aliphatic and aromatic) and introduction to their derivatives. Prerequisite: CHEM 102, 105, or 107. (F;S;SS)

**CHEM 222. Organic Chemistry II\*** **Credit 3(3-0)**

This course is a continuation of the study of derivatives of hydrocarbons and more complex compounds. Prerequisite: CHEM 221. (F;S;SS)

**CHEM 223. Organic Chemistry I Laboratory\*** **Credit 1(0-3)**

This laboratory course emphasizes the study of physical and chemical properties of aliphatic and aromatic compounds. Modern instrumentation such as gas and column chromatography, infrared and ultraviolet analyses are used. Corequisite: CHEM 221. (F;S;SS)

**CHEM 224. Organic Chemistry II Laboratory\*** **Credit 2(0-6)**

This course is a continuation of Chemistry CHEM. However, more emphasis is placed on syntheses and qualitative analysis of organic compounds. Corequisite: CHEM 222. Prerequisite: 223. (F;S;SS)

**CHEM 231. Quantitative Analysis I** **Credit 3(3-0)**

Titrimetric and gravimetric analyses including theory and calculations associated with acid-base equilibria, oxidation reduction, nucleation, and precipitation-complexation processes will be covered in this course. Corequisite: MATH 131. Prerequisite: CHEM 102 or 107. (S)

**CHEM 232. Quantitative Analysis I Laboratory\*** **Credit 2(0-4)**

This laboratory course emphasizes the basic principles of chemical separations. Laboratory studies of gravimetric and titrimetric analyses are also encountered. Corequisite: CHEM 231. Prerequisite: CHEM 117. (S)

**CHEM 251. Elementary Biochemistry** **Credit 2(2-0)**

This course is a study of fundamental cellular constituents. Emphasis is placed on physiological applications and analyses. Prerequisite: CHEM 105 or 221. Corequisite: CHEM 252. This course is open to nonchemistry majors only. (F)

**CHEM 252. Elementary Biochemistry Laboratory\*** **Credit 1(0-3)**

Elementary biochemical reactions are studied with emphasis placed on applications to biology, home economics and nursing. Prerequisite: CHEM 115 or 223. Corequisite: CHEM 251. (F)

**CHEM 290. Methods in Chemical Research I** **Credit 1(0-3)**

This laboratory course provides instruction in experimental techniques of modern organic chemistry emphasizing chemical separations and reactions of alkanes, alkenes, and aromatic compounds. Stereochemical modeling and the identification of organic unknowns by spectroscopic and chemical methods are also introduced. Prerequisite: CHEM 190 or CHEM 117. (F;S)

**CHEM 291. Methods in Chemical Research II** **Credit 2(0-6)**

Students complete research modules that emphasize the use of various synthetic and analytical skills. An additional goal is the characterization of the physical and chemical properties of the target molecules as well as the intermediates. Students will develop proficiency in synthetic methods, chromatography, and spectroscopy by working with model compounds. Prerequisite: CHEM 290 or CHEM 223. (F;S)

**CHEM 301. Current Trends in Chemistry** **Credit 2(2-0)**

This course is a series of lectures and discussions on special problems in chemistry and of the chemical profession not covered in formal courses. (F;S)

**CHEM 308. Junior Colloquium I** **Credit 1(1-0)**

This course provides students with exposure to current issues in chemistry. (F;S)

**CHEM 309. Junior Colloquium II** **Credit 1(1-0)**

This course provides students with exposure to current issues in chemistry. (F;S)

**CHEM 310. Cooperative Experience II** **Credit 3(3-0)**

This course is a supervised learning experience in a specified private or governmental chemical facility. The student's performance will be evaluated by reports from the supervisor of the experience and the departmental staff. The student must present a seminar regarding the experience upon return to the University. (F;S;SS)

**CHEM 390. Methods in Chemical Research III** **Credit 2(2-0)**

This course will guide students through the stages of writing a research proposal. Topics include planning, research and documentation, prose style and editing, document design, ethics, abstracts, budget creation and oral presentation of the proposal. Prerequisite: CHEM 291. (F;S)

**CHEM 391. Research in Chemistry and Biochemistry I** **Credit 2(0-6)**

This course will provide directed research involving one-on-one interaction between faculty mentor and student researcher. In consultation with the faculty mentor, the student will devise a research plan and implement aspects of the plan during the semester. Prerequisite: CHEM 390. (F;S)

**CHEM 408. Senior Colloquium I** **Credit 1(1-0)**

This course provides students with exposure to current issues in chemistry. (F;S)

**CHEM 411. Inorganic Chemistry (formerly CHEM 511)** **Credit 3(3-0)**

This course is an introductory survey of structure and bonding in inorganic compounds; coordination compounds of the transition metals; donor-acceptor interactions; bonding theories. Prerequisite: CHEM 441. Corequisite: CHEM 442. (S)

**CHEM 412. Inorganic Synthesis (formerly CHEM 610)** **Credit 2(1-3)**

A discussion of theoretical principles and survey of classical synthetic techniques of inorganic compounds, applications of instrumental and optical methods of analysis in inorganic synthesis, metal-assisted reaction processes, ligand synthesis, synthesis of coordination compounds, and non-metallic compounds, inorganic frame-work structures of zeolites and silicates will take place in this course. Prerequisite: CHEM 441 and CHEM 411. (S)

**CHEM 421. Organic Chemistry III** **Credit 3(3-0)**

This course further develops many of the concepts introduced in Organic Chemistry I & II. Topics to be discussed may include: chemistry of enolates, enamines, dicarbonyl compounds, and amines, molecular orbital theory, conjugated pi systems, UV/vis spectroscopy, polymers, heterocycles, pericyclic reactions, carbohydrates, and lipids. Prerequisite: CHEM 222. (F)

**CHEM 431. Quantitative Analysis II** **Credit 3(3-0)**

This course is a study of the theory and the operational features of some of the more important instruments that are currently being used as analytical tools such as ultraviolet, visible-light, and infrared spectrophotometers, electro-analytical instruments, thermometric titrators, fluorimeters, etc. Prerequisite: CHEM 441. Corequisite: CHEM 442, 444. (F)

**CHEM 432. Instrumental Analysis Lab** **Credit 2(0-4)**

This laboratory course features the utilization of modern instruments such as ultraviolet, visible and infrared, and atomic absorption spectrophotometers, chromatographs (gas-liquid and liquid), electroanalyzer, and electrophoretic analyzer. Corequisite: CHEM 431. (F;S)

**CHEM 441. Physical Chemistry I** **Credit 3(3-0)**

This course is a study of the fundamental laws governing matter in the gaseous state, and the laws of thermodynamics and their applications to chemistry; it includes an introduction to statistical thermodynamics. Prerequisites: MATH 132, PHYS 241 and CHEM 231. (F;S)

**CHEM 442. Physical Chemistry II** **Credit 3(3-0)**

This course is a continuation of CHEM 441. Solid and liquid states, solutions, phase equilibria, chemical kinetics, and electrochemistry will be studied. Prerequisite: CHEM 441. (S)

**CHEM 443. Physical Chemistry I Laboratory\*** **Credit 1(0-3)**

Thermodynamic and kinetic studies are emphasized in this course. Corequisite: CHEM 441. (F;S)

**CHEM 444. Physical Chemistry II Laboratory\*** **Credit 1(0-3)**

This is a continuation of CHEM 443. Corequisite: CHEM 442. (F)

**CHEM 445. Physical Chemistry III (formerly CHEM 545)** **Credit 3(3-0)**

This course is a study of quantum chemistry and its application to studies of atomic and molecular structure. Prerequisite: CHEM 442. (S)

**CHEM 451. Biochemistry I** **Credit 3(3-0)**

A study of the structures, properties of biological molecules, amino acids, proteins and enzymes, carbohydrates, nucleic acids, lipids, and membranes. Also the bioenergetics of biological reactions, and enzyme catalysis, with particular emphasis on the underlying chemical principles, including thermodynamics and kinetics will be included. Prerequisite: CHEM 222 and BIOL 100 or BIOL 101. (F;S)

**CHEM 452. Biochemistry I Laboratory** **Credit 2(0-6)**

This is a laboratory course that introduces the basic principles, technologies, and instrumentation of current biochemical research. Students will acquire practical experiences, and application skills for the isolation and characterization of biomolecules. The course will encompass spectroscopic, chromatographic, electrophoretic, and recombinant DNA technologies. Error analysis and statistical analysis of experimental data will be included. Prerequisites: CHEM 224 or 252, and BIOL 100 or BIOL 101 or permission of the instructor. Corequisite: CHEM 451. (F;S)

**CHEM 453. Biochemistry II** **Credit 3(3-0)**

A continuation of the material covered in CHEM 451 with an emphasis on metabolic processes. Prerequisite: CHEM 451. (S)

**CHEM 490. Research in Chemistry and Biochemistry II** **Credit 2(0-6)**

This course is a continuation of CHEM 390. In consultation with the faculty mentor, the student will further implement aspects of the research plan devised in CHEM 390. Prerequisite: CHEM 391. (F;S)

**CHEM 491. Research in Chemistry and Biochemistry III** **Credit 2(0-6)**

This course is a continuation of CHEM 490. Student will continue his/her directed research. Student will be expected to make a presentation at a state, regional, or national meeting. Prerequisite: CHEM 490. (F;S)

**CHEM 492. Seminar (formerly CHEM 501)** **Credit 1(1-0)**

In this course the student will choose a research paper from the literature, critically analyze the paper and make an oral presentation with visual aids to the faculty and students. Prerequisite: Permission of the instructor. (F;S)

**CHEM 493. Independent Study (formerly CHEM 504)** **Credit 4(0-10)**

This course involves independent study or research in a particular area of chemistry. Students will submit a written report and make an oral presentation with visual aids. Prerequisites: Permission of the department and advanced standing. (F;S;SS)

**CHEM 494. Chemical Research (formerly CHEM 503)** **Credit 4(0-10)**

This course makes use of the laboratory and library facilities in studying minor problems of research. Students will submit a

written report and make an oral presentation with visual aids. Prerequisites: Advanced standing and permission of the Department. (F;S;SS)

**CHEM 497. Chemistry Thesis (formerly CHEM 499)** **Credit 3(0-6)**

In this course the student will write a thesis in consultation with the faculty mentor. The student will give an oral presentation with visual aids and defend the work that has been performed. Prerequisite: CHEM 491 or permission of the instructor. (F;S)

#### Advanced Undergraduate and Graduate

**CHEM 611. Advanced Inorganic Chemistry** **Credit 3(3-0)**

This is a course in the theoretical approach to the systematization of inorganic chemistry. Prerequisite: CHEM 442. (F)

**CHEM 621. Intermediate Organic Chemistry** **Credit 3(3-0)**

This course provides an in-depth examination of various organic mechanisms, reactions, structures, and kinetics. Prerequisites: CHEM 222 and CHEM 442. (F)

**CHEM 624. Qualitative Organic Chemistry** **Credit 5(3-6)**

This is a course in the systematic identification of organic compounds. Prerequisite: One year of Organic Chemistry. (S)

**CHEM 631. Electroanalytical Chemistry** **Credit 3(3-0)**

This course is a study of the theory and practice of polarography, chronopotentiometry, potential sweep chronoamperometry and electrodeposition. The theory of diffusion and electrode kinetics will also be discussed along with the factors which influence rate processes, the double layer, adsorption and catalytic reactions. Prerequisite: CHEM 431 or equivalent. (F)

**CHEM 641. Radiochemistry** **Credit 3(3-0)**

This course is a study of the fundamental concepts, processes, and applications of nuclear chemistry, including natural and artificial radioactivity, sources, and chemistry of the radioelements. Open to advanced majors and others with sufficient background in chemistry and physics. Prerequisite: CHEM 442 or PHYS 406. (S)

**CHEM 642. Radioisotope Techniques and Applications** **Credit 2(1-3)**

The techniques of measuring and handling radioisotopes and their use in chemistry, biology, and other fields will be studied. Open to majors and non-majors. Prerequisite: CHEM 107. (F)

**CHEM 643. Introduction to Quantum Mechanics** **Credit 3(3-0)**

Non-relativistic wave mechanics and its application to simple systems by means of the operator formulation will be studied. Prerequisites: CHEM 442 and PHYS 222. Corequisite: MATH 231. (S)

**CHEM 651. General Biochemistry** **Credit 3(3-0)**

This is a study of modern biochemistry. The course emphasizes chemical kinetics and energetics associated with biological reactions and includes a study of carbohydrates, lipids, proteins, vitamins, nucleic acids, hormones, photosynthesis, and respiration. Prerequisites: CHEM 431, 442 and 451. (S)

**CHEM 652. General Chemistry Laboratory** **Credit 2(0-6)**

This is a companion laboratory to CHEM 651. Experimentation will include isolation and characterization of biochemical substances and studies of physical properties. Students will be introduced to a variety of techniques including high performance liquid chromatography, electrophoresis, and centrifugation. Corequisite: CHEM 651. (S)

*\*Students are required to purchase supplemental materials for these general education courses.*

#### DIRECTORY OF FACULTY

**Zerihun Assefa**.....**Professor and Chairperson**

B.S., Addis Ababa University; Ph.D., University of Maine

**Mufeed Basti**..... **Professor**

B.S., Baath University; Ph.D., Northern Illinois University

**Ming Dong** ..... **Assistant Professor**

B.S., M.S., Hebei University of Technology; Ph.D., University of Delaware

**Jahangir Emrani** ..... **Assistant Professor**

B.S., Teacher's University, Ph.D., Indiana University

**Marion Franks**.....**Associate Professor**

B.S., Clark-Atlanta University; Ph.D., Virginia Polytechnic Institute and State University

**Etta C. Gravely** ..... **Associate Professor**

B.S., Howard University; M.S., North Carolina A&T State University; Ed.D., University of North Carolina at Greensboro

**Julius L. Harp**..... **Associate Professor**

B.S., York College; Ph.D., Howard University

**Peng He** ..... **Assistant Professor**

B.S., Shanghai Jiao Tong University; Ph.D., North Carolina State University

**Margaret Kanipes-Spinks**..... **Professor**

B.S., North Carolina A&T State University; Ph.D., Carnegie-Mellon University

**Debasish Kuila** ..... **Professor**

B.S., University of Calcutta; M.S., Indian Institute of Technology, Madras; M. Phil. The City University of New York; Ph.D. The City University of New York

**Claude N. Lamb** ..... **Associate Professor and Associate Chairperson**

B.S., Mount Union College; M.S., North Carolina Central University; Ph.D., Howard University

**Tanya Malloy** ..... **Assistant Professor**  
 B.S., North Carolina A&T State University; Ph.D., Wake Forest University  
**Ginger P. Redd** ..... **Assistant Professor**  
 B. S., Alcorn University; Ph.D., University of Mississippi  
**Divi Venteskateswarlu** ..... **Associate Professor**  
 B.S., Sri University; M.S., Kakatiya University; M.S., University of Hyderabad; Ph.D., North Eastern Hill University

**Department of Computer Systems Technology**  
<http://www.ncat.edu/cost/departments/cst/index.html>

**Clay Gloster, Jr., Chairperson**

**OBJECTIVES**

The Department of Computer Systems Technology (formerly the ECIT Department) prepares students to pursue technical, as well as technical management careers in all employment sectors. The program emphasizes acquisition of sound theoretical studies, as well as intensive “hands-on” experiences in the area of information technology. The department emphasizes development of “real world” competencies demanded by employers. Students receive thorough grounding in information technology; electronics; digital and microprocessor systems; computer networking; communication systems; power and renewable energy; and computer programming. Additional emphasis is placed on courses in business management that instill an appreciation for the economic and managerial aspects of the business enterprise.

**DEGREES OFFERED**

Electronics Technology – Bachelor of Science  
 Information Technology – Bachelor of Science

**GENERAL PROGRAM REQUIREMENTS**

The admission of students into the undergraduate degree program in the Department of Computer Systems Technology (CST) is based upon the general admission requirements of the University.

**DEPARTMENTAL REQUIREMENTS**

Students must complete 120 credit hours of coursework for Electronics Technology and 120 credit hours of coursework for Information Technology and a minimum grade of “C” in all denoted courses on the curriculum guide.

Graduates of appropriate associate degree programs may receive transfer credit for courses previously taken. Specific course requirements for these students will have to be determined on an individual basis after their previously earned credits have been assessed.

Any student changing their major to majors in the Department of Computer Systems Technology from other majors must have a minimum of 2.5 overall G.P.A.

**ACCREDITATION**

The Bachelor of Science degree in Electronics Technology is accredited by the Association of Technology, Management, and Applied Engineering (ATMAE).

**CAREER OPPORTUNITIES**

CST graduates are very successful in receiving employment in both the public and private sectors with positions in technology, engineering technology, engineering, and management. Typical job titles include: process engineer, application engineer, systems analyst, network administrator, project manager, information technologist, test engineer, industrial technologist, and engineering technologist. Major employers include: IBM, Fidelity Investment, Verizon, Bank of America, Dell, Wells-Fargo, John Deere, Cisco Systems, Accenture, State Employees Credit Union, and numerous public agencies.

**Department of Computer Systems Technology**  
**Bachelor of Science in Electronic Technology**  
**Major Code: ELTE**

**Curriculum Guide**

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
CST 120 (formerly ECT 120)	3	CST 112 (formerly ECT 211)	3
CST 130 (formerly ITT 420)	3	CST 122	1
ENGL 100	3	CST 140 (formerly ECT 201)	3

FRST 101	1	CST 150	1
MATH 110	4	ENGL 101	3
Global Awareness <sup>1</sup>	3	MATH 131	4
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
CST 212 (formerly ECT 212)	3	CST 213 (formerly ECT 213)	3
CST 222	1	CST 223	1
CST 240 (formerly ITT 240)	3	CST 250	3
MATH 132	4	CST 260	1
SPCH 250	3	MATH 224	3
African American Studies <sup>2</sup>	3	Social & Behavioral Science <sup>3</sup>	3
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>14</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
CST 312 (formerly ECT 312)	3	CST 300	3
CST 322	1	CST 313	3
CST 329 (formerly ITT 329)	3	CST 323	1
CST 339	1	MGMT 110 (formerly MGMT 220)	3
CST 355	3	PHYS 226	3
PHYS 225	3	PHYS 236	1
PHYS 235	1	<b>Semester Total</b>	<b>14</b>
<b>Semester Total</b>	<b>15</b>		
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
CST 496 (formerly ECT 103)	1	CST 499 (formerly ITT 598)	3
CST 498 (formerly ECT 598)	3	Technical Elective <sup>4</sup>	3
Technical Elective <sup>4</sup>	3	Technical Elective <sup>4</sup>	3
Free Elective <sup>5</sup>	3	Free Elective <sup>5</sup>	3
MGMT Elective <sup>6</sup>	3	MGMT Elective <sup>6</sup>	3
<b>Semester Total</b>	<b>13</b>	<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 120**

<sup>1</sup>General Education Elective – Global Awareness.

<sup>2</sup>General Education Elective – African American Studies.

<sup>3</sup>General Education Elective – Social & Behavioral Science.

<sup>4</sup>Technical Elective – Any CST course that is not required.

<sup>5</sup>Free Elective – Any course at or above the 100 level.

<sup>6</sup>MGMT Elective – Any MGMT course.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

CST 112	CST 300
CST 120	CST 312
CST 122	CST 313
CST 130	CST 322
CST 140	CST 323
CST 150	CST 329
CST 212	CST 339
CST 213	CST 355
CST 222	CST 496

CST 223	CST 498
CST 250	CST 499
CST 260	

**Department of Computer Systems Technology  
Bachelor of Science in Information Technology  
Major Code: INFO**

**Curriculum Guide**

<b>Course</b>	<b>CR</b>	<b>Course</b>	<b>CR</b>
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
CST 120 (formerly ECT 120)	3	CST 112 (formerly ECT 211)	3
CST 130 (formerly ITT 420)	3	CST 122	1
ENGL 100	3	CST 140 (formerly ECT 201)	3
FRST 101	1	CST 150	1
MATH 110	4	ENGL 101	3
Global Awareness <sup>1</sup>	3	MATH 131	4
<b>Semester Total</b>	<b>17</b>	<b>Semester Total</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
CST 231 (formerly ECT 231)	3	CST 225 (formerly ITT 325)	3
CST 240 (formerly ITT 240)	3	CST 235	1
MGMT 110 (formerly MGMT 220)	3	CST 285 (formerly ITT 185)	3
Social & Behavioral Sciences <sup>2</sup>	3	SPCH 250	3
Scientific Reasoning with Lab <sup>3</sup>	4	Scientific Reasoning <sup>3</sup>	3
<b>Semester Total</b>	<b>16</b>	African American Studies <sup>4</sup>	3
		<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
CST 325	3	CST 300 (formerly ITT 300)	3
CST 329 (formerly ITT 329)	3	CST 315 (formerly ITT 315)	3
CST 339	1	CST 317 (formerly ITT 317)	3
MATH 224	3	CST 430 (formerly ITT 430)	3
Technical Elective <sup>5</sup>	3	Technical Elective <sup>5</sup>	3
<b>Semester Total</b>	<b>13</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
CST 460 (formerly ECT 460)	3	CST 499 (formerly ITT 598)	3
CST 496	1	MGMT Elective <sup>6</sup>	3
CST 498 (formerly ECT 598)	3	Technical Elective <sup>5</sup>	3
MGMT Elective <sup>6</sup>	3	Technical Elective <sup>5</sup>	3
Free Elective <sup>7</sup>	3	Free Elective <sup>7</sup>	3
<b>Semester Total</b>	<b>13</b>	<b>Semester Total</b>	<b>15</b>

**Total Credit Hours: 120**

<sup>1</sup>General Education Elective – Global Awareness.

<sup>2</sup>General Education Elective – Social & Behavioral Sciences.

<sup>3</sup>General Education Elective – Scientific Reasoning Elective w/wo lab.

<sup>4</sup>General Education Elective – African American Studies.

<sup>5</sup>Technical Electives – Any CST course that is not required.

<sup>6</sup>MGMT Elective – Any MGMT course.

<sup>7</sup>Free Electives – Any course at or above the 100 level may be taken as a free elective.



## MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

CST 112	CST 300
CST 120	CST 315
CST 122	CST 317
CST 130	CST 325
CST 140	CST 329
CST 150	CST 339
CST 225	CST 430
CST 231	CST 460
CST 235	CST 496
CST 240	CST 498
CST 285	CST 499

### COURSE DESCRIPTIONS IN ELECTRONICS AND INFORMATION TECHNOLOGY

#### **CST 101. Microcomputer Applications**

**Credit 3(3-0)**

This course is designed to provide the student with basic computer skills as required in a typical business and technical environment. Emphasis is on business and technical software packages including spreadsheets, database management, word-processing, etc. as run on a Windows platform. **(F;SS)**

#### **CST 112. Electric Circuits I**

**Credit 3(3-0)**

This course is a study of the fundamentals of direct current electrical circuits. Topics include series, parallel, series-parallel networks, Ohm's Law, Kirchhoff's Laws, network theorems, and practical applications. Prerequisite: MATH 110 or CST 120. **(F;S;SS)**

#### **CST 120. Fundamentals of Technology**

**Credit 3(3-0)**

This course provides the quantitative background needed in the field of electronics, computer, and information technology. Topics include arithmetic review, algebra, basic trigonometry, complex algebra, statistics, and Boolean algebra and fundamental units, as they relate to electronics, information and computer technology. **(F;S;SS)**

#### **CST 122. Electric Circuits I Laboratory**

**Credit 1(1-3)**

In this laboratory, students will conduct experiments on direct current electrical circuits. Topics include: series and parallel networks, Ohm's Law, Kirchoff's Law, network theorems, and practical DC circuit applications. Corequisite: CST 112. **(F;S;SS)**

#### **CST 130. Introduction to Unix/Linux**

**Credit 3(3-0)**

The course will cover network management utilizing various Unix products, such as Linux and Solaris operating systems. Topics will include networking operating system (NOS) setup, network resource management, user and group management, and the security model. **(F;S;SS)**

#### **CST 140. Introduction to Computer Programming**

**Credit 3(3-0)**

This course gives an introduction to computer programming. Topics include structured program development and the use of a high level programming language to develop software applications. **(F;S;SS)**

#### **CST 150. Introduction to Computer Programming Laboratory**

**Credit 1(1-3)**

In this laboratory, students will apply the concepts and practices learned in the programming lecture by completing relevant programs with a practical or information technology focus. Corequisite: CST 140. **(F;S;SS)**

#### **CST 212. Electric Circuits II**

**Credit 3(3-0)**

This course is a continuation of Electric Circuits I. Topics include network analysis, power factor correction, complex impedance, polyphase systems, filters, resonance, and simple dynamos. Prerequisite: CST 112. **(F;SS)**

#### **CST 213. Digital Circuits**

**Credit 3(3-0)**

This course deals with digital logic fundamentals and field programmable gate arrays (FPGAs). Topics include: combinational circuits, sequential circuits and circuit modeling and simulation using a hardware description language. Software tools are used for circuit analysis and logic synthesis. Prerequisite: CST 112. **(S;SS)**

#### **CST 222. Electric Circuits II Laboratory**

**Credit 1(1-3)**

In this laboratory, students will conduct experiments on DC/AC electrical circuits. Topics include network analysis, power factor correction, complex impedance, polyphase systems, filters, resonance, and simple dynamos. Corequisite: CST 212. **(F;SS)**

#### **CST 223. Digital Circuits Laboratory**

**Credit 1(1-3)**

In this laboratory, students will conduct experiments on digital circuits and field programmable gate arrays (FPGAs). Topics

include: combinational circuits, sequential circuits, and circuit modeling and simulation using a hardware description language. Software tools are used for circuit analysis and logic synthesis. Corequisite: CST 213. (S;SS)

**CST 225. Computer Database Management I** **Credit 3(3-0)**

This course focuses on the study of relational database management systems. Topics include conceptual data model, logical data model, schema normalization and query languages. (S;SS)

**CST 231. Web Systems** **Credit 3(3-0)**

This course provides integration of graphic communication application, the principles and elements of graphic design, and streamlined workflow for students to design and develop Web sites using Web development software. This course explores the fundamentals of Web design principles and elements. Students will develop dynamic, interactive, and multimedia Web sites.

Prerequisites: Sophomore status. (F;SS)

**CST 235. Computer Database Management Laboratory** **Credit 1(1-3)**

In this laboratory, students focus exclusively on the design and system issues related to distribution database systems via conducting experiments and projects. Students learn the usage of different design strategies for distributed databases; they study query processing techniques and algorithms, as well as transaction management and concurrency control concepts used in such systems. Additionally, design and implementation issues related to multi-database systems are discussed. Finally, the course focuses on applying the techniques learned in the course to commercial database management systems. Corequisite: CST 225. (S;SS)

**CST 240. Applied Java Programming** **Credit 3(3-0)**

The course provides a comprehensive overview of basic programming concepts, the Java programming language using an object-oriented approach, and the software development life cycle. The course emphasizes problem solving and good practices for program construction, documentation, testing, and debugging. Prerequisite: CST 201. (F;S)

**CST 250. Communications Systems** **Credit 3(3-0)**

This course investigates the fundamental concepts of electronic communications systems. Topics include: Amplitude Modulation (AM), Frequency Modulation (FM), Phase Modulation (PM), digital modulation schemes, principles of power spectra and time domain analysis. Prerequisite: CST 112. (S;SS)

**CST 260. Communication Systems Laboratory** **Credit 1(1-3)**

This lab will accompany the CST 250 Communications course. This lab will emphasize practical applications of analog and digital modulation schemes, principles of power spectra and time domain analysis. Corequisite: CST 250. (S;SS)

**CST 285. Economic and Social Impacts of Information Technology** **Credit 3(3-0)**

This course is designed to access critically the institutional forces that shape and create the demand for Information Technology (IT). It also discusses how the consumption of new technologies impacts the economy and society. This course also helps students to think critically about the ethics of new technologies and their impact on society in a climate of ever-changing social and economic conditions. (S;SS)

**CST 300. Introduction to Project Management for Information Technology Professionals** **Credit 3(3-0)**

This course introduces the concept of project management to information technology majors. It will also teach students to create work breakdown structures, identify task dependencies and prerequisites, and identify a critical path to completion of a project. (S;SS)

**CST 305. Foundations of Storage Technology** **Credit 3(3-0)**

This course provides a comprehensive introduction to data storage technology fundamentals using case studies and laboratory experiments. Students will gain knowledge of the core logical and physical components that make up a storage system's infrastructure. (F;SS)

**CST 306. Big Data Analytics** **Credit 3(3-0)**

This course provides an introduction to big data and Data Analytics Lifecycle to address business challenges leveraging big data. The course covers basic and advanced data analytics tools and technology, including MapReduce and Hadoop. The course teaches several technologies used in manipulating storing and analyzing big data using both SQL and NoSQL storage solutions.

Prerequisites: CST 140. (F;SS)

**CST 312. Active Circuits I** **Credit 3(3-0)**

This course is an introduction to active electronic circuitry. Topics include power supplies, small and large amplifiers and linear integrated circuits. Prerequisites: CST 112. (F;SS)

**CST 313. Applied Hardware and Software Systems I** **Credit 3(3-0)**

In this course, students will use the concepts learned in circuits and programming to study the principles of designing and implementing electronic systems that are controlled by software. Students will use various microcontroller boards and programming languages to learn these principles. Prerequisites: CST 312 and CST 140. (S;SS)

**CST 314. Active Circuits II** **Credit 3(3-0)**

This course is continuation of Active Circuits I. Topics include: oscillators, phase locked loops, current differencing amplifiers, logarithmic amplifiers, trans conductance amplifiers, voltage regulators and specialized communications circuits. Prerequisites: CST 312. (F;SS)

**CST 315. Network Security for Information Technology Professionals** **Credit 3(3-0)**

This course focuses on basic concepts in network security. It aims to introduce students to the fundamental techniques used in implementing secure network communications, and to give them an understanding of common threats and attacks, as well as some practical experience in attacking and defending networked systems. (S;SS)

- CST 316. Information Security** **Credit 3(3-0)**  
 This course covers various aspects of data integrity, privacy and security from several perspectives including: legal issues, technical tools and methods, social and ethical concerns and applicable standards. Prerequisites: CST 315. (S;SS)
- CST 317. Human Computer Interaction** **Credit 3(3-0)**  
 The study of human-computer interaction enables system architects to design useful, efficient, and enjoyable computer interfaces. This course teaches the theory, design procedure, and programming practices behind effective human interaction with computers, and – a particular focus this quarter: smart phones and tablets. Prerequisite: Junior or senior status. (S;SS)
- CST 322. Active Circuits I Laboratory** **Credit 1(1-3)**  
 In this laboratory, students conduct experiments and complete projects focusing on active electronic circuitry. Topics include power supplies, small and large amplifiers and linear integrated circuits. Corequisite: CST 312. (F;SS)
- CST 323. Applied Hardware and Software Laboratory** **Credit 1(1-3)**  
 In this laboratory, students will apply the concepts and practices learned in the applied hardware and software lecture by building projects that have a practical purpose. Corequisite: CST 313. (S;SS)
- CST 325. Computer Database Management II** **Credit 3(3-0)**  
 This course is a continuation of CST 225. Topics include advanced query languages, query processing and optimization, transaction processing, concurrency control, backup and recovery, indexing and replication. Prerequisite: CST 225. (F;SS)
- CST 326. Database Security** **Credit 3(3-0)**  
 This course explores policies, methods and mechanisms for protecting enterprise data. Topics include data reliability, integrity, confidentiality, discretionary and mandatory access controls, and secure database architectures. Prerequisites: CST 325. (S;SS)
- CST 329. Computer Networking I** **Credit 3(3-0)**  
 This course introduces the student to Local Area Networks (LAN) and introduction to Wide Area Networks (WAN). The course also will provide the basic understanding of network concepts and router programming. (F;SS)
- CST 330. Computer Networking II** **Credit 3(3-0)**  
 This course covers the advanced study of Local Area Networks (LAN) and Wide Area Networks (WAN). The students will develop competences in designing and implementing enterprise-wide networks using routers and switches. (S;SS)
- CST 339. Computer Networking I Laboratory** **Credit 1(1-3)**  
 In this laboratory, students will conduct experiments with and simulations on Local Area Networks (LANs) and Wide Area Networks (WANs). This course also presents lab projects involving a basic understanding of network concepts and router programming. Corequisite: CST 329. (F;SS)
- CST 340. Introduction to Mainframe Operations** **Credit 3(3-0)**  
 This course is an introduction to mainframe operations including concepts and functions of the OS/MVS operating system. Topics include virtual storage, Job Control Language (JCL), data management, data set organization, compilers, and linkage editor. Additional, topics include the study of instream data sets, portioned data sets, temporary and cataloged sequential data sets, and cataloged procedures. Prerequisite: CST 140 or consent of instructor. (F;SS)
- CST 346. Intermediate Enterprise Sys Operations** **Credit 3(3-0)**  
 This course is a continuation of CST 340, and will focus on the application of concepts acquired in CST 340. Topics will include: COBOL, DB2, CICS, JCL, ISPF, RDz, Sysplex and z/VM. Prerequisites: CST 340 or Consent from Instructor. (S;SS)
- CST 347. Advanced Enterprise Sys Operations** **Credit 3(3-0)**  
 This course will be a semester long focused project on an enterprise systems topic. Student will work under the direct supervision of the instructor on a project selected by industry. Students may continue on a project begun on a recent internship or co-op, or have a topic selected by a Department Industry Partner. Prerequisite: CST 346 or consent of instructor. (F;S;SS)
- CST 355. Electrical Power and Machinery** **Credit 3(3-0)**  
 This course is a study of electrical machines and power systems. Topics include dc motors, single phase and 3 phase induction motors, synchronous generators, motor drives and power system transmission and distribution. Prerequisite: CST 212. (S;SS)
- CST 357. Network Servers** **Credit 3(3-0)**  
 This course is a survey of enterprise network technologies. Topics will include virtualization, security and hardware implementation. Prerequisite: CST 340. (S;SS)
- CST 383. Alternative Energy Systems** **Credit 3(3-0)**  
 This course will cover the production of electric energy from alternate energy sources including solar, wind, hydro, biomass, geothermal and ocean. It will provide the background knowledge of the characteristics of direct conversion, electromechanical conversion, and storage devices used in alternate energy systems. Power system issues associated with the integration of small scale energy sources into the electricity grid will be investigated. Prerequisite: CST 355. (F;SS)
- CST 384. Energy, Power and the Environment** **Credit 3(3-0)**  
 This course will cover the basic concepts of electric power generation, utilization and power networks. This course covers the development and current status of energy sources, technologies, consumption patterns, conservation and energy policies. The course will place emphasis on the environmental effects of various choices made at each step of the energy cycle. The course will also examine those choices from technological and socioeconomic points of view. How total energy consumption and the global economy, affects the environment will be studied. Prerequisite: CST 312. (S;SS)

- CST 390. Special Topics in CST** **Credit 3(3-0)**  
 This course is used to introduce new topics in the field of computer systems technology. The subject matter will be identified prior to the beginning of the course. Prerequisite: Junior status. (F;S;SS)
- CST 405. Cloud Infrastructure and Services** **Credit 3(3-0)**  
 This course teaches students cloud deployment and service models, cloud infrastructure, and the key considerations in migrating to cloud computing using hands-on labs. The course covers key technologies to include compute, storage, networking, desktop and application virtualization. In addition, course also includes topics on backup/recovery, business continuity, security and management. Students learn about the key consideration and steps involved to setup a complete cloud computing environment. Virtual Computing Lab (VCL) environment is used for lab exercises. (F;SS)
- CST 406. Backup Recovery Systems and Architectures** **Credit 3(3-0)**  
 The Backup Recovery Systems and Architecture (BRSA) course provides students with a solid foundation in Backup and Recovery infrastructure. The course focuses on the concepts and technologies used in Backup and Recovery environments. Students learn about backup and recovery theory, including backup methods, planning, and key terminology. The course includes topics on how storage technologies work and how their features such as replication and snapshot can be used for backup. This is followed by a look into data sources at the backup client and storage node backup targets. The course ends with backup and recovery planning and a high level look at the current industry trends. Prerequisites: CST 405. (S;SS)
- CST 413. Applied Hardware and Software Systems II** **Credit 3(3-0)**  
 In this course, students will place emphasis on moderate to complex digital and analog systems. Students will expound upon the concepts learned in circuits and programming to study the principles of designing and implementing electronic systems that are controlled by software. Students will use various microcontroller boards and programming languages to learn these principles. Prerequisites: CST 312 and CST 140. (F;SS)
- CST 414. ASIC/FPGA Design** **Credit 3(3-0)**  
 This course provides an introduction to Application Specific Integrated Circuits (ASIC) design. It introduces design tools that can be used to automate ASIC design. Similar tools will be used to develop designs for field programmable gate arrays, traditional gate arrays. Students will also be exposed to custom design tools and techniques. Prerequisite: CST 213. (S;SS)
- CST 425. Data Warehousing** **Credit 3(3-0)**  
 This course introduces the fundamental concepts in developing data warehousing systems. Topics include concepts, architectures, modeling, physical design, ETL processes, and OLAP. Prerequisites: CST 325. (S;SS)
- CST 426. Actionable Knowledge Mining** **Credit 3(3-0)**  
 This course introduces advanced information technologies for extracting non-trivial, actionable and novel knowledge from data for organizational decision-making. Topics cover mining classification rules, association rules, clustering and anomaly. Prerequisite: CST 325. (F;SS)
- CST 430. Linux Systems Administration** **Credit 3(3-0)**  
 This course presents the fundamental knowledge and skills needed to install, manage, and maintain a Linux Operating System. Students will learn to install the system, add users, configure devices, and maintain system security. Prerequisite: CST 130. (F;SS)
- CST 432. Computer Systems Architecture** **Credit 3(3-0)**  
 This course introduces the organization and design philosophy of computer systems with respect to resource management, throughput, and operating system interaction. Topics include instruction sets, registers, data types, memory management and hierarchy, virtual memory, cache, storage management, vector and multi-processing, CPU design, arithmetic algorithms, I/O communication techniques, RISC architectures, and pipelining. Prerequisite: CST 213. (F;SS)
- CST 433. Introduction to High Performance Computing** **Credit 3(3-0)**  
 This course provides an overview of the basic system, network, security, and programming aspects of High Performance Computing. Students will be introduced to the advantages and disadvantages of various machine architectures, programming models, and problem types. Students will learn basic high performance computing cluster configuration and use. (S;SS)
- CST 434. High Performance Computer Architecture and System Administration** **Credit 3(3-0)**  
 Topics covered in this course include: classification and management of high performance computing clusters. The course also includes an in-dept study of high performance system board components, memory management, supporting input and output devices, troubleshooting, and disaster recovery techniques. (S;SS)
- CST 435. Power Electronics and Applications** **Credit 3(3-0)**  
 This course addresses the principles and applications of Power Electronics. Topics include: power semiconductor switches, phase-controlled rectifiers, DC-to-DC converters, DC-to-DC inverters, motor drives, and power quality. (F;SS)
- CST 435. Introduction Parallel Pro** **Credit 3(3-0)**  
 Topics covers parallel computing fundamentals including models of parallel computing, architecture taxonomy, memory architecture, performance, design, and scalability considerations, parallel programming paradigms, techniques and issues in parallel program creation, and parallel programming examples. Prerequisites: CST 433. (F;SS)
- CST 448. Advanced Networking Security Applications** **Credit 3(3-0)**  
 This course explores security items, definitions, concepts, and issues that face industries today. This course also will examine how the concept of security, and being secure, integrates into the overall enterprise mission. The importance of user involvement, security training, ethics, trust and informed management will be explored. Prerequisites: CST 315. (F;SS)

- CST 450. Wireless Communications Sys I** **Credit 3(3-0)**  
 This course covers fundamental theory and design of high capacity wireless communication systems. Topics include trunking, propagation effects, frequency reuse, modulation methods, coding and equalization. Emerging cellular and next generation personal communication systems will also be analyzed. Prerequisite: CST 250. (S;SS)
- CST 460. System Integration and Architecture** **Credit 3(3-0)**  
 Examines the issues related to system integration. Topics include: data integration, business process integration, integration architecture, middleware, system security, and system management. Prerequisites: Senior status. (F;S;SS)
- CST 465. Wireless Geo-Location Systems** **Credit 3(3-0)**  
 This course describes the concepts and mechanics of Global Positioning Systems (GPS) and Inertial Navigation Systems (INS). Practical applications of GPS, INS and GPS/INS are discussed. Simple algebraic mathematical calculations are used to convey concepts and properties of these systems. (F;SS)
- CST 475. Video Communication Systems** **Credit 3(3-0)**  
 This course will study the techniques used to transmit and receive analog and digital video information. This course will also discuss current state of the art video technology such as High Definition Television (HDTV). (S;SS)
- CST 481. Power System Analysis and Control** **Credit 3(3-0)**  
 This course covers the development of methods for power system analysis and control. An analysis and implementation of systems for steady state, transient, and dynamic conditions will be studied. Digital solutions will be emphasized. Prerequisite: CST 355. (F;SS)
- CST 483. Solar Energy** **Credit 3(3-0)**  
 In this course students will learn the fundamentals of solar energy and how it can be used as a source of renewable energy. Principles of solar home design, solar hot water, pool and space heating and solar cooling for both new and existing structures are presented. Prerequisite: CST 383. (S;SS)
- CST 484. Wind and Water Energy** **Credit 3(3-0)**  
 In this course students will learn the fundamentals of wind and water energy and how it can be used as a source of renewable energy. Principles of and concepts of mechanics and power generation from wind and water are considered. Prerequisite: CST 356. (F;SS)
- CST 496. Senior Colloquium** **Credit 1(1-0)**  
 This course provides a forum for dialogue among students, industry, and academia. It will address the processes and skills needed for becoming a successful professional in the information technology field. Prerequisite: Senior status. (F)
- CST 497. Independent Study** **Credit 3(3-0)**  
 The student selects a technical problem in electronics or computer technology for special research and study in consultation with a faculty member in area of interest. The student will spend a minimum of six hours per week in library research or laboratory experimentation. A technical report in standard format is required for completion and approved by faculty. Prerequisite: Junior or senior status. (F;S;SS)
- CST 498. Senior Project: A Capstone Experience** **Credit 3(3-0)**  
 Students are required to complete projects that demonstrate a comprehensive understanding of basic concepts taught throughout the curriculum. Each project will be accompanied by a formal report on the project. Students will also make regular presentations of project status. Proficiency in effective technical writing, technical presentation and project management skills are emphasized. (F;S;SS)
- CST 499. Senior Project II: A Capstone Experience** **Credit 3(3-0)**  
 Students are required to complete projects that demonstrate a comprehensive understanding of basic concepts taught throughout the curriculum. Each project will be accompanied by a formal report on the project. Students will also make regular presentations of project status. Proficiency in effective technical writing, technical presentation and project management skills are emphasized. (F;S;SS)

#### DIRECTORY OF FACULTY

- Derek Brandon** ..... **Adjunct Instructor**  
 B.S., North Carolina A&T State University, M.S., American Intercontinental University
- Chafic Bousaba** ..... **Adjunct Assistant Professor**  
 B.S., Notre Dame University, M.S., Ph.D., North Carolina A&T State University
- DeWayne Brown** ..... **Professor**  
 B.S., University of South Carolina; M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University
- Gina Bullock** ..... **Adjunct Instructor**  
 B.S., Shaw University; M.S., Ph.D., North Carolina A&T State University
- Clay Gloster, Jr.** ..... **Professor and Interim Chairperson**  
 B.S., M.S., North Carolina A&T State University; Ph.D., North Carolina State University
- Sean Johnson** ..... **Adjunct Instructor**  
 B.S., M.S., North Carolina A&T State University
- Cameron Seay** ..... **Assistant Professor**  
 B.A., City University of New York; M.B.A., M.S., Ph.D., Georgia State University

**Evelyn Sowells** ..... **Assistant Professor**  
 B.S., M.S., Ph.D., North Carolina A&T State University  
**Li-Shiang Tsay** ..... **Associate Professor**  
 B.A., M.S., Ph.D., University of North Carolina at Charlotte  
**Maurice Tyler** ..... **Adjunct Instructor**  
 B.S., M.S., North Carolina A&T State University  
**Qing-An Zeng** ..... **Associate Professor**  
 B.S., Chengdu University of Information Technology; M.S., Ph.D., Shizuoka University

**Department of Graphic Design Technology**  
<http://www.ncat.edu/cost/departments/gdt/index.html>

**Vincent Childress, Interim Chairperson**

### OBJECTIVES

The major objective of the Department of Graphic Design Technology is to provide quality competency-based instruction so that men and women will be prepared to enter the fields of graphic design and technology. In addition, the Department assists majors in developing those critical competencies in the sciences, communications, mathematics, and technical specialties essential to securing positions in related industrial, business and government careers.

### DEGREES OFFERED

Graphic Communication Systems – Bachelor of Science

### GENERAL PROGRAM REQUIREMENTS

Student admission to undergraduate degree programs in the Department of Graphic Design Technology is based on general admission requirements of the University.

Community college and technical institute graduates and other transfer students may be admitted to undergraduate Graphic Design Technology programs with advanced classification by submitting credentials to the University Admissions Office for individual assessment. The maximum transfer credit from Associate Degree technical programs is 60 semester hours or approximately junior status. Students transferring to the Department of Graphic Design Technology from other disciplines must have a minimum of 2.5 grade point average.

### DEPARTMENTAL REQUIREMENTS

Students are required to complete 120 semester hours of University course work. A minimum grade of “C” must be earned in all major (GCS) courses. Students must maintain a grade point average of 2.0 or better for all course work.

*NOTE: Transfer students and persons applying college credits earned through competency examinations may apply a maximum of 24 semester hours of credit toward meeting technical course requirements in degree programs.*

### ACCREDITATION

The Graphic Communication Systems program is accredited by the Association of Technology, Management, and Applied Engineering (ATMAE).

### CAREER OPPORTUNITIES

Graduates of the Graphic Communication Systems program option have a variety of career options in management, production, design, or sales. A range of opportunities is available in photography, graphic design, design drafting, advertising, in-plant printing, publishing, web design, game design, animation, and geographic information systems.

**Department of Graphic Design Technology**  
**Bachelor of Science in Graphic Communication Systems**  
**Major Code: GCS**

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
MATH 111	4	MATH 112	4
ENGL 100	3	TECH 103 (formerly TECH 201)	3
GCS 121	3	ENGL 101	3
TECH 101	3	Free Elective	3
FRST 101	1	GCS 124 (formerly GCS 221)	3
Physical Education Elective	1	<b>Semester Total</b>	<b>16</b>
<b>Semester Total</b>	<b>15</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	

GCS 224	3	Free Elective	3
GCS 281 (formerly GCS 181)	3	HIST 106 (formerly HIST 202)	3
PHYS 225 & 235	4	GCS 211	3
SPCH 250	3	GCS 212	3
GCS 230 (formerly GCS 330)	3	PHIL 201	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
CHEM 104 and 114	4	GCS 310 (formerly GCS 185/340)	3
GCS 381	3	GCS 398 (formerly GCS 498)	3
GCS 382	3	GCS Track Course	3
GCS 342	3	GCS Track Course	3
GCS 329	3	JOMC 240 Elective	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
GCS Track Course	3	GCS 461	3
GCS Track Course	3	GCS 442	3
GCS 426	3	GCS 423	3
MKTG 230 (formerly MKTG 430)	3	GCS 441	3
Free Elective	3	<b>Semester Total</b>	<b>12</b>
<b>Semester Total</b>	<b>15</b>		

Total Credit Hours: 120

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

GCS 121	GCS 381
GCS 124 (formerly GCS 221)	GCS 382
GCS 211	GCS 386
GCS 212	GCS 398 (formerly GCS 498)
GCS 224	GCS 421
GCS 230 (formerly GCS 330)	GCS 422
GCS 281 (formerly GCS 181)	GCS 423
GCS 310 (formerly GCS 185/340)	GCS 424 (formerly GCS 327/430)
GCS 320	GCS 426
GCS 324	GCS 441
GCS 329	GCS 442
GCS 342	GCS 446
GCS 343	GCS 461
GCS 346	GCS 480
GCS 380	GCS 481

### TRACK COURSE ELECTIVES

Media Design Track

<u>Junior Year, Second Semester</u> GCS 386 and GCS 380	<u>Senior Year, First Semester</u> GCS 481 and GCS 480
<b>Graphic Design Track</b>	
<u>Junior Year, Second Semester</u> GCS 346 and GCS 343	<u>Senior Year, First Semester</u> GCS 446 and GCS 421
<b>Design Drafting Track</b>	
<u>Junior Year, Second Semester</u> GCS 320 and GCS 324	<u>Senior Year, First Semester</u> GCS 422 and GCS 424 (formerly 327/430)

#### COURSE DESCRIPTIONS IN GRAPHIC DESIGN TECHNOLOGY

**GCS 100. Graphic and Technology Education Freshmen Orientation** **Credit 1(1-0)**

This course covers orientation to college academic life with consideration for program demands, learning techniques and resources.

**GCS 121. Computer Aided Design I** **Credit 3(2-2)**

This course focuses on basic orthographic projection, sketching, dimensioning and drafting conventions, as related to the construction and manufacturing industries. It introduces drafting technology tools, practices and procedures. The student will develop skills in technical sketching and page layout. Computer aided design software applications will be introduced. (F;S;SS)

**GCS 124. Two Dimensional Design Drafting (formerly GCS 221)** **Credit 3(2-2)**

This course presents an opportunity for students to enhance technical ideas and concepts in a computer aided design environment. Emphasis is placed on the manipulation of software applications to interpret and produce working drawings. Skills and knowledge will be developed to graphically communicate resolutions to existing STEM problems in fabricated and built environments. Prerequisite: GCS 121. (F;S;SS)

**GCS 130. Graphic Communications Technology** **Credit 3(2-2)**

Basic principles of graphic design, pre-press preparation, reproduction methods, and bindery operation are taught in a laboratory setting. Historical, socioeconomic, organizational and career opportunities in graphic communications and allied industries are investigated in reference to graphic communications, business and industries. Hands-on laboratory work will introduce students to the equipment and processes employed in the print production. Prerequisite: GCS 110. (F;S;S)

**GCS 133. Introduction to Drafting Technology** **Credit 3(2-2)**

Basic orthographic projection is emphasized. This course is an introduction to drafting technology tools and procedures. Other topics include lettering, geometric construction, pictorials, auxiliaries, sections, and dimensioning. (F;S;SS)

**GCS 142. Printing Workflows and Processes** **Credit 3(2-2)**

This course introduces the student to the various software solutions and production techniques involved in the printing and publishing industry. Proper workflow and quality control instruments and techniques will be covered. Students will gain experience in obtaining digital images suitable for print, image manipulation, art development, and page layout. Preflight and quality techniques involved in image output will be stressed. Prerequisite: GCS 281. (S;SS)

**GCS 211. Evolution and Social Implications of Technology Education** **Credit 3(3-0)**

This course is the study of technology systems. An investigation of past and present impact on the individual and society will take place. Potential of future change influenced by technological change and application is addressed through technological assessment and forecasting. (F;S;SS)

**GCS 212. Technical Communication** **Credit 3(3-0)**

This course is designed to develop the student's proficiency in researching, organizing, writing, and presenting documents in various areas of technology. Prerequisites: ENGL 101 and Sophomore Standing. (F;S;SS)

**GCS 223. Intermediate Architectural Design** **Credit 3(2-2)**

This course deals with the planning of industrial, commercial and public buildings. Topics include construction and design



principals, materials specifications and codes; complete plans (plot, landscaping, framing, electrical and mechanical equipment), details (reinforced concrete, timber and steel), advanced perspective rendering, analytical study of historical and contemporary architecture, materials and methods, and engineering. Prerequisite: GCS 222. (S;SS)

**GCS 224. Solid Modeling**

**Credit 3(2-2)**

This course addresses manipulation and analysis of data associated with the fabrication and functionality of product subassemblies, assemblies, and other objects related to STEM processes. Students will integrate solid modeling principles to graphically communicate information about these objects. Emphasis will be placed on the application and interpretation of dimensioning and tolerancing information. Prerequisite: GCS 124. (F;S;SS)

**GCS 225. Solid Modeling II**

**Credit 3(2-2)**

This course provides opportunities to integrate assembly modeling principles to graphically communicate information about mechanical products. Students will analyze and evaluate the assembly and functionality of mechanical products using solid modeling applications. Attention will be given to advanced topics relevant to the application and interpretation of dimensioning and tolerancing will be pertinent to manufactured products. Prerequisite: GCS 224. (S;SS)

**GCS 230. Photography for Graphic Communication formerly (GCS 330)**

**Credit 3(2-2)**

This course is designed to acquaint the beginner with the fundamental knowledge of digital photography. Historical evolution and modern uses of photography will be studied. Nomenclature, theory, and application in photo composition, imaging, and presentation methods will be explored. Each student is required to provide a camera. Prerequisite: TECH 103. (F;S;SS)

**GCS 242. Flexography I**

**Credit 3(2-2)**

This course is designed to develop proficiency in flexographic printing and design. Students will be introduced to flexographic layout, film preparation, plate exposing and mounting, presswork and converting. Flexographic package design will be explored and students will receive hands-on experience in designing die lines, and preparing graphics to meet customer requirements. Prerequisite: GCS 281. (F;S;SS)

**GCS 243. Screen Printing Technology**

**Credit 3(2-2)**

This course provides broad and thorough knowledge and skills to transfer images through a stencil onto a substrate. Techniques of image design, screen preparation, screen exposing, and screenprinting will be studied. Students will gain hands-on laboratory experience in screen printing paper and textile substrates. Prerequisite: GCS 281. (F;S;SS)

**GCS 281. Graphic Communication Design Foundations (formerly GCS 181)**

**Credit 3(2-2)**

This course introduces the elements and principles of design through a concentrated study of its theory and application and by assignments in two- and three-dimensional projects. Through the language of design, students will build and apply design skills, knowledge, and methods in a variety of media. Students begin their portfolios. Prerequisite: TECH 103. (F;S;SS)

**GCS 285. Digital Image Editing**

**Credit 3(2-2)**

This course covers the use of digital graphic techniques to create and manipulate photographic and other raster graphic images. Digital imaging techniques through the use of photo manipulation software for web and print are explored. Prerequisite: GCS 281 or Consent of Instructor. (S;SS)

**GCS 286. Technical Illustration**

**Credit 3(2-2)**

The principles of graphic design, including design process, color, type and art components are discussed. Techniques for representing visual ideas, editing paths, and exporting illustration artwork for print production and web design are explored. Prerequisite: GCS 281 or Consent of Instructor. (S;SS)

**GCS 310. Color Management formerly GCS 185**

**Credit 3(2-2)**

This course is a study of managing color for graphic design. It emphasizes theory of color, color models, color generations, color corrections, color matching, color separations, and color proofing. Prerequisite: GCS 281. (S;SS)

**GCS 320. Architectural Design Drafting**

**Credit 3(2-2)**

This course addresses basic design principles and construction processes relevant to architectural structures. Site development, operational and structural systems, material specifications, building codes and construction processes and procedures will be addressed. The course will introduce learners to sustainable design concepts and building information modeling (BIM) technology. Prerequisite: GCS 124. (S)

**GCS 321. Digital Architecture**

**Credit 3(2-2)**

This course provides advanced techniques in the development of architectural presentation using photography, multimedia and digital video. This course is for students interested in creative methods and techniques for architectural presentation. Prerequisite: GCS 223. (F;SS)

**GCS 322. Architectural Animation and Rendering**

**Credit 3(2-2)**

In this course students participate in developing animations, interior and exterior renderings of buildings and the built environments. Emphasis is placed on 3D animation creativity and rendering technology. Prerequisites: GCS 321. (F;SS)

**GCS 323. Structural and Schematic Design**

**Credit 3(2-2)**

Given the structural and schematic design of a building, students will prepare both the structural plan and the shop details necessary for the fabrication of the structural members. Students will also study pipe fittings, symbols, specifications and their applications to a piping process system. Emphasis will be placed on the graphic representation of electrical, mechanical, structural and piping devices found in manufacturing and building construction. Prerequisite: Junior standing or consent of instructor. (F;S)

**GCS 324. Technical and Mechanical Graphic Applications**

**Credit 3(2-2)**

This course will require the student to demonstrate skills in the use of CADD software commonly found in the mechanical and manufacturing environments. Further, the students will write and incorporate the use of spreadsheets and basic programming to

communicate effectively with members of a multi-disciplinary team. Emphasis will be placed on solving technical and STEM problems with a graphical component. Prerequisite: GCS 224. (S)

**GCS 325. Intermediate Machine Design** **Credit 3(2-2)**

This course covers intermediate drafting and design techniques associated with machine components and assembly. Topics include tool design and material selection, work-holding principles, design of jigs, fixtures and press working tools, inspection and gauging, joining processes, modular tooling, and economics of design. Prerequisites: GCS 324. (S;SS)

**GCS 329. Typography Communication and Design** **Credit 3(2-2)**

This course introduces the letter forms in graphic communication, focusing on the exploration of formal and conceptual relationships, and investigates the design of organizational type structures, resending complex information in a clear and engaging manner serving utility and aesthetics. Prerequisites: GCS 281. (F;SS)

**GCS 340. Color Management** **Credit 3(3-0)**

This course is a study of managing color for graphic design. It emphasizes theory of color, color models, color generations, color corrections, color matching, color separations, and color proofing. Prerequisite: GCS 181. (S)

**GCS 342. Image Editing and Illustration for Graphic Design** **Credit 3(2-2)**

This course builds technical skills with new media tools for image editing, layout, and digital illustration in the context of problem solving in communication design. Design projects will also be assigned to further develop knowledge of problem solving. Prerequisite: GCS 281. (F;SS)

**GCS 343. Graphic Communication Design II** **Credit 3(2-2)**

This course encourages further development and application of design, image and typographic principles, and related digital tools integrated into communication design projects of moderate and increasing complexity. Emphasis is also on development of problem solving and building strong concepts that communicate persuasively and effectively. Management of graphic design processes is introduced. Prerequisites: GCS 329, 342. (S)

**GCS 344. Flexography II** **Credit 3(2-2)**

Flexographic print production techniques for process color printing will be covered. Color theory and management techniques will be integrated into the production process. Ink and substrate selection and quality control techniques will also be covered. Students will learn the basics of corrugated and paperboard print production through projects requiring both structural and graphic design. Prerequisite: GCS 242. (S;SS)

**GCS 345. Printing Sales and Customer Service** **Credit 3(2-2)**

This course focuses on selling techniques and the proper steps involved in the selling process. Students will develop their own techniques through the assigned projects. Effective customer communication and relations are stressed. Prerequisite: GCS 241. (S;SS)

**GCS 346. Package and Structure Design** **Credit 3(2-2)**

This course provides the student with the opportunity to implement techniques relevant to the creation of die lines, plot prototypes, create graphic images suitable for substrates, and prepare the image for print. The principles and elements of design are applied. Quality control techniques, color management and press requirements are emphasized. Prerequisite: GCS 342. (S)

**GCS 380. Game Technology and Design I** **Credit 3(2-2)**

This course will cover the history and ethics of the video game industry, popular game culture, game design, storytelling, graphic design, and game production. In addition, the students will gain hands-on experience in game technology and design. Students will apply the principles and elements of design. Prerequisite: GCS 281. (S)

**GCS 381. Web Design I** **Credit 3(2-2)**

This course provides integration of graphic communication applications, the principles and elements of graphic design, and streamlined workflow for students to design and develop Web sites using Web development software. This course explores the fundamentals of Web design principles and elements. Students will develop dynamic, interactive, and multimedia Web sites. Prerequisite: GCS 281. (F;SS)

**GCS 382. Multimedia and Videography** **Credit 3(2-2)**

This course provides an overview of the development and distribution of interactive multimedia for application in web and game design, electronic publication, and design drafting. Students will get hands-on experience in video graphics. Emphasis will be placed on using these tools for learning and communication. The multimedia industry and career opportunities will be examined. Prerequisite: GCS 281. (F;SS)

**GCS 386. Web Design II** **Credit 3(2-2)**

This course focuses on building Web sites for businesses. It incorporates the strategies and techniques of Web design into electronic-commerce applications. Students will be exposed to ecommerce Web design elements and client side programming language. Students will develop dynamic, interactive, and multimedia e-commerce Web sites. Students will apply the principles and elements of design. Prerequisites: GCS 381. (S)

**GCS 387. Multimedia and Videography II** **Credit 3(2-2)**

Students learn to use an advanced multimedia-authoring package to create interactive multimedia projects that incorporate text, graphics, sound, video and keyframe-based animation. Students are provided opportunities to develop multimedia applications for manipulation in computer and/or web-based environments. Prerequisite: GCS 382 or Consent of Instructor. (S;SS)

**GCS 398. Internship (formerly GCS 498)** **Credit 3(0-3)**

This course is dedicated to providing opportunities for students to develop and apply skills and knowledge appropriate to be successful in a cooperative environment. The student must complete a minimum of 150 contact hours with a corporation relevant

to the major and career aspirations. A portfolio journaling the application of skills and knowledge is required. Prerequisite: Junior Standing. (F;S;SS)

**GCS 400. Senior Seminar for Graphic Communication and Technology Education** **Credit 1(1-0)**

This course provides a forum for faculty and graduating seniors to address and discuss issues relevant to career placement opportunities and graduate school admission for Graphic Communication and Technology Education undergraduate students. Prerequisite: Graduating Seniors and Consent of Department. (F)

**GCS 421. Graphic Communication Design & Management I** **Credit 3(2-2)**

This course encourages further development and application of design, image and typographic principles, advanced design drafting, and related digital tools integrated into graphic design projects of moderate and increasing complexity. Emphasis is also on development of problem solving and building strong concepts that communicate persuasively and effectively. Management of graphic design processes is introduced. Prerequisite: GCS 343. (F)

**GCS 422. Three Dimensional Technical Visualization** **Credit 3(2-2)**

This course emphasizes the use of two-dimensional and three dimensional CADD software to solve STEM graphic problems by applying principles of science and mathematics. Students will perform technical calculations and solve STEM problems as technologists. Further, students will be challenged to identify, formulate and develop creative solutions to these technical problems in a variety of broad technical fields. In addition to CADD software, the students will also employ the use of scientific calculators, computers and other related software. Prerequisite: GCS 324. (F)

**GCS 423. Graphic Communication Design & Management II** **Credit 3(3-0)**

This course encourages further development and application of design, image and typographic principles, advanced design drafting, and related digital tools integrated into graphic design projects of advanced complexity. Emphasis is also on development of problem solving and building strong concepts that communicate persuasively and effectively. Management of graphic design processes is more deeply covered. Prerequisite: GCS 421 or GCS 481 or GCS 422. (S)

**GCS 424. Introduction to Geographic Information Systems (formerly GCS 327)** **Credit 3(2-2)**

This course introduces fundamental concepts of geographic information systems. Learners will integrate the latest in GIS technology to create maps, find information, and manipulate geographic data to communicate resolutions to a variety of geographic problems. (F)

**GCS 425. Intermediate Geographic Information Systems (formerly GCS 328)** **Credit 3(2-2)**

This course provides opportunities to apply GIS applications within a workflow context. Emphasis will be placed on working with data stored in a geodatabase and performing geoprocessing and analysis. Learners will prepare, organize, and edit data for analysis and manipulation using geoprocessing models. Prerequisite: GCS 424. (S)

**GCS 426. Graphic Animation** **Credit 3(2-2)**

This course focuses on the creation and manipulation of computer generated objects. Topics include creation of 3D models, assignment of materials, camera and lights, rendering, and animation. The elements and principles of design will be applied. Prerequisite: GCS 281 or Consent of Instructor. (F;SS)

**GCS 427. Interdisciplinary Decision Making using GIS Technology** **Credit 3(2-2)**

This course is a study of GIS technology as it is applied to multiple disciplines in everyday decision that affect the general population. Emphasis is placed on research and data collection for decision modeling using GIS in business, sociology, criminal justice, ethnicity, landscape architecture, disaster management, urban planning, health and economics. Prerequisite: GCS 425. (S)

**GCS 428. Computer Aided Design and Drafting Productivity** **Credit 3(3-0)**

This course is a study of certain skill sets needed to be proficient in the AutoCAD applications. These skill sets will emphasize interface customization, printing controls, task-oriented AutoLISP programming and similar other topics. The course is intended to supplement and enhance the existing skills of AutoCAD users. Prerequisite: Senior Standing. (F)

**GCS 429. Computer Aided Design and Drafting Management** **Credit 3(3-0)**

This course will explore computer aided design and drafting (CADD) management topics such as management skills needed for staffing a CADD department, development of communication skills, effective staff management, efficient files storage and retrieval, office procedures and CADD standards. The students will investigate solutions to the problems in implementation, enforcement and growth of CADD applications. Prerequisite: GCS 428 or consent of instructor. (F)

**GCS 430. Geographic Information Systems** **Credit 3(3-0)**

This course covers fundamental concepts of geographic information systems. Learners will integrate the latest in GIS technology to create maps, find information, and manipulate geographic data to communicate resolutions to a variety of interdisciplinary geographic problems. Prerequisite: GCS 324. (F)

**GCS 441. Workflow, Estimating, and Customer Service in Graphic Communication** **Credit 3(3-0)**

Cost estimating variables within publication design, electronic media design, and drafting design will be explored. Appropriate mathematical formulas will be introduced for pricing out production projects to improve cost controls, production techniques, and ensure company profitability. Proper workflow and quality control instruments and techniques will be covered. Students will gain experience in obtaining digital images suitable for print, image manipulation, art development, and page layout. Prerequisites: Senior Standing. (S)

**GCS 442. Graphic Communication Technology Entrepreneurship & Management** **Credit 3(3-0)**

This course will acquaint the student with project based entrepreneurship and management skills related to various areas of a graphic communications company. Concepts will be learned through practical applications. Prerequisite: Senior Standing. (S)

- GCS 446. Retail Ready Package and Display Design** **Credit 3(2-2)**  
 This course provides the student with the opportunity to implement techniques relevant to the creation of die lines, plot prototypes, create graphic images suitable for substrates, and prepare the image for print for the purpose of creating point-of-purchase displays, an advanced packaging design competency. The principles and elements of design are applied. Quality control techniques, color management and press requirements are emphasized. Prerequisite: GCS 346. (F)
- GCS 461. Senior Capstone for Graphic Communication Systems** **Credit 3(3-0)**  
 This course is dedicated to the demonstration and the assessment of the mastery of skills, knowledge and attitudes through portfolio completion and project work upon successful completion of a program of study relevant to communication and design. Prerequisite: Senior standing. (F;S)
- GCS 480. Web Design III** **Credit 3(3-0)**  
 This course integrates the strategies and techniques of multimedia into distance learning applications. Areas of emphasis include Web page development and management unique to distance learning delivery systems for the Internet. Students will be introduced to e-learning Web design elements and server side programming language. Students will develop dynamic, interactive, and multimedia e-learning Web sites. Prerequisite: GCS 386. (F)
- GCS 481. Game Technology and Design II** **Credit 3(2-2)**  
 This course is a continuation of Game Technology and Design I. The students will gain advanced hands-on experience in game technology and design. Principles and elements of design will be applied. Prerequisite: GCS 380. (F)
- GCS 490. Independent Study** **Credit 3(3-0)**  
 This course involves intensive inquiry in a field of technology under the supervision of a faculty advisor. Prerequisite: Approval of instructor. (F;S;SS)
- TECH 101. Introduction to Technology** **Credit 3(2-2)**  
 Use of the anthropological approach in studying the evolution of technology and its impact on tool development and technological processes. Students will develop problem-solving and manipulative skills through “hands-on” activities in a multiple activity laboratory. The activities will be developed/designed around the technological systems of communication, manufacturing, transportation, and construction. Students will also develop leadership skills through their involvement in the Technology Education Collegiate Association activities. (F;S)
- TECH 103. Computer Applications for Technological Studies (formerly TECH 201)** **Credit 3(2-2)**  
 This course provides an overview of computer concepts and applications in order to teach problem-solving techniques and interactive applications, and to encourage independent study. Practical problems from academic and real world environments will be integrated into the content. (S)

#### DIRECTORY OF FACULTY

- Vincent W. Childress** ..... **Professor and Interim Chairperson**  
 B.S., M.S., Ph.D., Virginia Polytechnic Institute and State University
- Robert Cobb, Jr.** ..... **Associate Professor**  
 B.S., Virginia Polytechnic Institute and State University; M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University
- Devang P. Mehta** ..... **Associate Professor**  
 B.S., University of Bombay; M.A., DIT, University of Northern Iowa

#### Department of Mathematics

<http://www.ncat.edu/cost/departments/math/index.html>

**Guoqing Tang, Chairperson**

#### OBJECTIVES

The objectives of the Mathematics Department are as follows:

1. to prepare students for employment in government or industry as well as graduate studies;
2. to avail students of the opportunity to undertake independent investigations in mathematics;
3. to prepare students to teach and present mathematics in a modern, meaningful, and stimulating manner at secondary school level;
5. to provide courses which ensure acquisition of basic mathematical skills and concepts for all students at the university;
6. to encourage wide ranging professional growth and research by faculty;
7. to encourage faculty involvement in university, college, and departmental governance, as well as in community activities;
7. to understand and effectively respond to student retention and graduation rates.

#### DEGREES OFFERED

- Mathematics – Bachelor of Science  
 Mathematics (Applied Mathematics) – Bachelor of Science  
 Mathematics (Statistics) – Bachelor of Science  
 Mathematics (Mathematics Secondary Education) – Bachelor of Science

#### GENERAL PROGRAM REQUIREMENTS

Admission, retention and graduation requirements for students enrolled in degree programs in the Department of Mathematics are based upon the general admission, retention and graduation requirements of the University. However, two units of algebra, one unit of plane geometry and one-half unit of trigonometry are required of all students who elect to pursue any curriculum offered in the department.

### **SPECIFIC PROGRAM REQUIREMENTS**

#### **Mathematics**

The B.S. Degree Program in Mathematics (Pure Mathematics) is designed for students who value the study of mathematics, not only for application, but also for its own sake, and are interested in finding new formulae and methods while utilizing insights from a tradition of thousands of years. The pure mathematics concentration is recommended for those interested in graduate study in pure mathematics, and those who seek a rigorous education that involves not only rote computational skills but also rigorous explanations of how mathematics works. The Mathematics major must complete a minimum of 120 semester hours of University courses. These include 60 hours in mathematics, 2 hours in computer programming and 16 hours in sciences. Also, a major must earn a “C” or better grade except for one passing grade below “C” if the student has GPA of at least 2.0 but less than 2.3, or two passing grades below “C” if the student has GPA of at least 2.3 in all required mathematics courses.

#### **Mathematics (Applied Mathematics)**

The B.S. Degree Program in Mathematics (Applied Mathematics) is designed to provide students with training in the applications of mathematics in engineering, sciences, medicine, health care, business and finance. Applied mathematics concentration is recommended for those interested in the mathematical study of general scientific concepts, principles, and phenomena that, because of their widespread occurrence and application, relate or unify various disciplines. The use of computational methods and implementation of algorithms on computers is central in the study of applied mathematics. The Applied Mathematics major must complete a minimum of 120 semester hours of University courses, including 46 hours in mathematics, 3 hours in statistics, 8 hours in physics, 2 hours in computer programming and 15 hours of applications area electives. Also, a major must earn a “C” or better grade except for one passing grade below “C” if the student has GPA of at least 2.0 but less than 2.3, or two passing grades below “C” if the student has GPA of at least 2.3 in all required mathematics, statistics, and application area elective courses.

#### **Mathematics (Statistics)**

The B.S. Degree Program in Mathematics (Statistics) is designed to provide students with statistical tools and conceptual foundations in quantitative reasoning to extract information intelligently from data. The statistics concentration is recommended for those interested in collecting, analyzing and interpreting data statistically, as well as effectively communicating and presenting the results relying on data. Statistics is becoming more important in modern society in providing succinct information for making decisions, and is used in a wide variety of fields including science, technology, business, health, and social sciences. The Statistics major must complete a minimum of 120 semester hours of University courses. These include 52 hours in mathematics, 15 hours in statistics, 8 hours in physics and 2 hours in computer programming. Also, a major must earn a “C” or better grade except for one passing grade below “C” if the student has GPA of at least 2.0 but less than 2.3, or two passing grades below “C” if the student has GPA of at least 2.3 in all required mathematics and statistics courses.

#### **Mathematics (Mathematics Secondary Education)**

The B.S. Degree Program in Mathematics (Mathematics Secondary Education) is designed to prepare students for careers as mathematics teachers from ninth through twelfth grade by providing both a strong foundation in mathematical content and pedagogical experience in the classroom. The secondary education in mathematics is recommended for those interested in content knowledge, problem solving, curriculum development, lesson and unit planning, the use of technology, and the evaluation of student knowledge. The program is designed so that students can easily double major in mathematics, giving its graduates added flexibility and expertise in mathematics. The Mathematics Secondary Education major must complete a minimum of 120 semester hours of University courses. These include 47 hours in mathematics, 8 hours in sciences and 28 hours in education. Also, majors must earn a “C” or better grade in each required mathematics course taken to fulfill the mathematics requirement. All Teacher Education admissions, retention and graduate standards apply.

### **CAREER OPPORTUNITIES**

Mathematical research and education are at the heart of some careers, while other careers utilize mathematics and its applications to build and enhance important work in the sciences, business, finance, manufacturing, communications, and engineering. Graduates with bachelor’s degrees in mathematics are hired by many types of firms, high tech, finance and communications among them, although the job description might not explicitly mention mathematics. Firms actively recruiting mathematicians include engineering and information technology companies, banking, science and financial consulting firms, as well as biomedical and imaging enterprises.

### **MINOR IN APPLIED MATHEMATICS**

The minor in applied mathematics consists of satisfaction of a prerequisite and successful completion with a grade of “C” or better in at least 19 credit hours of course work, specified as follows:

1. Prerequisite to the Applied Mathematics minor: Students must complete one of the calculus courses, MATH 112 or MATH 131, with a grade of “C” or better.
2. Required Course (4 credit hours): Students in the applied mathematics minor program are required to complete MATH 132 with a grade of “C” or better

3. Mathematics Electives (9-15 credit hours): Students in the applied mathematics minor program need to take three to five additional mathematics courses from the following list: MATH 223, MATH 231, MATH 224, MATH 240, MATH 311, MATH 431, MATH 432, MATH 440, MATH 450, MATH 480, MATH 507, MATH 511, MATH 608, MATH 612, MATH 623, MATH 650, MATH 651, MATH 690, MATH 692
4. Application Electives (up to 6 credit hours): Students in the applied mathematics minor program may take up to two courses at 200 level or above from an application area in biology, chemistry, physics, business and economics, computer science, or an engineering or technology discipline.

### MINOR IN MATHEMATICS EDUCATION

All minor applications must be approved by the Department of Mathematics.

The minor in Mathematics Education consists of satisfaction of prerequisites and successful completion with a grade of “C” or better in at least 26 credit hours of course work to help qualify the minor candidate in mathematics education for a secondary school teaching license. The prerequisite and 25-26 credit hours of course work are specified as follows:

1. Prerequisites to the Mathematics Education Minor:
  - a) Students must complete MATH 110 or MATH 111 and MATH 112 or MATH 131 and MATH 224, with a grade of “C” or better,
  - b) Students must be formally admitted to the Teacher Education Program. This process includes:
    - 1) A completed application approved by the Department of Mathematics,
    - 2) A minimum cumulative GPA of 2.80 (on a 4.00 scale),
    - 3) Passing scores on Praxis I, and
    - 4) An interview by the Teacher Education Panel.
2. Required courses (19 credit hours): Students in the mathematics education minor program are required to complete the following MATH and CUIN courses: MATH 132, MATH 205, MATH 206, CUIN, CUIN 520, CUIN 640, CUIN 660.
3. Mathematics electives (6-7 credit hours): Students in the mathematics education minor program need to take at least two additional mathematics courses from the following list: MATH 231, MATH 242, MATH 430, or MATH 450.

All minor applications must be approved by the Department of Mathematics.

## Department of Mathematics Bachelor of Science in Mathematics Major Code: MATH

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
MATH 131 (MLAR)	4	MATH 132 (MLAR)	4
MATH 105	1	ENGL 101 (WC)	3
ENGL 100 (WC)	3	Foreign Language <sup>1</sup> /Elective	3
Foreign Language <sup>1</sup> /Elective	3	GEEN 161 <sup>3</sup>	2
Global Awareness <sup>2</sup> (GA)	3	MATH 106	1
FRST 101 (SS)	1	African American History and Culture <sup>4</sup> (AA)	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
MATH 231	4	MATH 211	4
SPCH 250 (HFA)	3	PHYS 242 (SR)	3
MATH 240	3	PHYS 252 (SR)	1
PHYS 241 (SR)	3	Social/Behavioral Sciences <sup>5</sup> (SBS)	3
PHYS 251 (SR)	1	MATH 224	3
MATH 215	1	<b>Semester Total</b>	<b>14</b>
<b>Semester Total</b>	<b>15</b>		
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
MATH 341/351	3	MATH 351/341	3
MATH 320	3	MATH 340/365	3
MATH 377	3	MATH 378	3
Ethical Reasoning Elective <sup>6</sup>	3	Science Elective <sup>7</sup>	4
HPED	2	Elective	3

<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>16</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
MATH 411	3	MATH 412	3
MATH Elective <sup>8</sup>	3	MATH Elective <sup>8</sup>	3
Science Elective <sup>7</sup>	4	MATH 496	3
Electives	6	Electives	5
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>14</b>

**Total Credit Hours: 120**

<sup>1</sup>Two courses: FREN 101, FREN 102; or GERM 101, GERM 102; or SPAN 101, SPAN 102; or RUSS 101, RUSS 102; taken in sequence.

<sup>2</sup>One course from: HIST 130, 207, 216 or 231, or PHIL 103 or 201.

<sup>3</sup>For students starting in MATH 103, MATH 104, or MATH 110, the programming courses should be replaced with electives or HPED 200 in the first year. Then GEEN 161 and MATH 240 should be taken prior to MATH 340/365. See the Mathematics Student Handbook for a sample program guide.

<sup>4</sup>One course from: HIST 103, 106 or 107, or LIBS 202, or MUSI 220.

<sup>5</sup>One course from: BUED 279, ECON 200 or 201, HIST 104 or 105, POLI 100, PSYC 101, or SOCI 100 or 200.

<sup>6</sup>One course from: PHIL 104, 201, 263, 316, 317, or 320.

<sup>7</sup>8 hours from: CHEM 100, 110 and BIOL 100; or CHEM 106, 116 and CHEM 107, 117; CHEM 106, 116 and BIOL 101.

<sup>8</sup>9 hours from: MATH 123, 310, 323, 330, 485, 607, 608, 610, 611, 612, 620, 623, 624, 631, 632, 650, 651, 652, 665, 690, STAT 324, 328, 423, 424, 425, 426.

**MAJOR PROGRAM REQUIREMENTS**

*A student must earn a C or better grade except one passing grade below C if the student has GPA of at least 2.0 but less than 2.3, or two passing grades below C if the student has GPA of at least 2.3 in the following courses:*

MATH 105	MATH 341
MATH 106	MATH 340/365
MATH 131	MATH 351
MATH 132	MATH 377
MATH 211	MATH 378
MATH 215	MATH 411
MATH 224	MATH 412
MATH 231	MATH 496
MATH 240	MATH Electives (2)
MATH 320	

Department of Mathematics  
 Bachelor of Science in Mathematics (Mathematics Secondary Education)  
 Major Code: MATH  
 Concentration Code: MSCE

Curriculum Guide

Course	CR	Course	CR
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Freshman Year: First Semester		Freshman Year: Second Semester	
MATH 131 (MLAR)	4	MATH 132 (MLAR)	4
MATH 105	1	ENGL 101 (WC)	3
ENGL 100 (WC)	3	MATH 106	1
FRST 101 (SS)	1	MATH 123	3
Global Awareness <sup>1</sup> (GA)	3	African American History and Culture <sup>2</sup> (AA)	3
CUIN 101	1	CUIN 110	2
CUIN 102	2	<b>Semester Total</b>	<b>16</b>
<b>Semester Total</b>	<b>15</b>		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
MATH 231	4	MATH 211	4
MATH 205	1	MATH 242	3
MATH 240	3	MATH 206	1
CUIN 210	2	CUIN 255	2
PSYC 101 (SBS)	3	MATH 224	3
SPCH 250 (HFA)	3	Foreign Language <sup>3</sup> /Elective	3
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>16</b>
Junior Year: First Semester		Junior Year: Second Semester	
MATH 377	3	MATH 330/340	3
MATH 351	3	MATH 320	3
PHYS 225 (SR)	3	CUIN 420	2
PHYS 235 (SR)	1	Electives	6
Foreign Language <sup>3</sup> /Elective	3	<b>Semester Total</b>	<b>14</b>
CUIN 410	2		
<b>Semester Total</b>	<b>15</b>		
Senior Year: First Semester		Senior Year: Second Semester	
MATH 411	3	CUIN 498	9
Science Elective <sup>4</sup> (SR)	4	CUIN 470	3
CUIN 429	3	<b>Semester Total</b>	<b>12</b>
Electives	6		
<b>Semester Total</b>	<b>16</b>		

**Total Credit Hours: 120**

<sup>1</sup>One course from: HIST 130, 207, 216 or 231, or PHIL 103 or 201.

<sup>2</sup>One course from: HIST 103, 106 or 107, or LIBS 202, or MUSI 220.

<sup>3</sup>Two courses of FREN 101 & 102; or GERM 101 & 102; or SPAN 101 & 102; or RUSS 101 & 102 taken in sequence.

<sup>4</sup>One course from: PHYS 226/236, CHEM 100/110, or BIOL 100.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C or better in the following courses:*

MATH 105	MATH 231
MATH 106	MATH 240
MATH 123	MATH 242
MATH 131	MATH 320
MATH 132	MATH 330/340
MATH 205	MATH 351
MATH 206	MATH 377
MATH 211	MATH 411



Department of Mathematics  
 Bachelor of Science in Mathematics (Applied Mathematics)  
 Major Code: MATH  
 Concentration Code: AMTH

Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
MATH 131 (MLAR)	4	MATH 132 (MLAR)	4
MATH 105	1	ENGL 101 (WC)	3
ENGL 100 (WC)	3	Foreign Language <sup>1</sup> /Elective	3
Foreign Language <sup>1</sup> /Elective	3	GEEN 161 <sup>3</sup>	2
Global Awareness <sup>2</sup> (GA)	3	MATH 106	1
FRST 101 (SS)	1	African American History and Culture <sup>4</sup> (AA)	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>16</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
MATH 231	4	MATH 211	4
SPCH 250 (HFA)	3	PHYS 242 (SR)	3
MATH 240	3	PHYS 252 (SR)	1
PHYS 241 (SR)	3	Social/Behavioral Sciences <sup>5</sup> (SBS)	3
PHYS 251 (SR)	1	MATH 224	3
MATH 215	1	<b>Semester Total</b>	<b>14</b>
<b>Semester Total</b>	<b>15</b>		
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
MATH 320	3	MATH 341	3
MATH 351	3	MATH 340/365	3
MATH 377	3	Applications Area Electives <sup>6</sup>	3
Applications Area Electives <sup>6</sup>	3	STAT 328	3
Ethical Reasoning Elective <sup>7</sup>	3	Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
MATH 432	3	MATH 496	3
Applications Area Electives <sup>6</sup>	3	Applications Area Electives <sup>6</sup>	3
Applications Area Electives <sup>6</sup>	3	Electives	9
Electives	6	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>15</b>		

**Total Credit Hours: 120**

<sup>1</sup>Two courses of FREN 101, FREN 102; or GERM 101, GERM 102; or SPAN 101, SPAN 102; or RUSS 101, RUSS 102 taken in sequence.

<sup>2</sup>One course from: HIST 130, 207, 216 or 231, or PHIL 103 or 201.

<sup>3</sup>For students starting in MATH 103, MATH 104, or MATH 110, the programming courses should be replaced with electives in the first year. Then GEEN 161 and MATH 240 should be taken prior to MATH 340/365. See the Mathematics Student Handbook for a sample program guide.

<sup>4</sup>One course from: HIST 103, 106 or 107, or LIBS 202, or MUSI 220.

<sup>5</sup>One course from: BUED 279, ECON 200 or 201, HIST 104 or 105, POLI 100, PSYC 101, or SOCI 100 or 200.

<sup>6</sup>Must include a total of 15 credit hours taken in one of the applications areas, including but not limited to: Applied and Computational Mathematics, Statistics, Physical Sciences, Engineering and Applied Sciences, Life Sciences, or Business and Economics, and approved by the Applied Mathematics Undergraduate Program Committee. A list of suggested core courses for each of the applications areas is available from the Department of Mathematics.

<sup>7</sup>One course from: PHIL 104, 201, 263, 316, 317, or 320.

### MAJOR PROGRAM REQUIREMENTS

*A student must earn a C or better grade except one passing grade below C if the student has GPA of at least 2.0 but less than 2.3, or two passing grades below C if the student has GPA of at least 2.3 in the following courses:*

MATH 105	MATH 320
MATH 106	MATH 340/365
MATH 131	MATH 341
MATH 132	MATH 351
MATH 211	MATH 377
MATH 215	MATH 432
MATH 224	MATH 496
MATH 231	STAT 328
MATH 240	Applications Area Electives (5)

**Department of Mathematics**  
**Bachelor of Science in Mathematics (Statistics)**  
**Major Code: MATH**  
**Concentration Code: STAT**

#### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
MATH 131 (MLAR)	4	MATH 132 (MLAR)	4
MATH 105	1	ENGL 101 (WC)	3
ENGL 100 (WC)	3	Foreign Language <sup>1</sup> /Elective	3
Foreign Language <sup>1</sup> /Elective	3	MATH 123	3
Global Awareness <sup>2</sup> (GA)	3	MATH 106	1
FRST 101 (SS)	1	African American History and Culture <sup>3</sup> (AA)	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>17</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
MATH 231	4	MATH 211	4
MATH 240	3	PHYS 242 (SR)	3
SPCH 250 (HFA)	3	PHYS 252 (SR)	1
PHYS 241 (SR)	3	Social/Behavioral Sciences <sup>4</sup> (SBS)	3
PHYS 251 (SR)	1	MATH 224	3
MATH 215	1	<b>Semester Total</b>	<b>14</b>
<b>Semester Total</b>	<b>15</b>		

Junior Year: First Semester		Junior Year: Second Semester	
MATH 320	3	MATH 340/365	3
MATH 351	3	MATH 341	3
STAT 324	3	STAT 328	3
MATH 377	3	Ethical Reasoning Elective <sup>5</sup>	3
Elective	3	Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
Senior Year: First Semester		Senior Year: Second Semester	
MATH 432	3	MATH 496	3
STAT 423	3	STAT 424	3
STAT 425	3	Math Elective <sup>6</sup>	3
Electives	6	Electives	5
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>14</b>

**Total Credit Hours: 120**

<sup>1</sup>Two courses of FREN 101, FREN 102; or GERM 101, GERM 102; or SPAN 101, SPAN 102; or RUSS 101, RUSS 102 taken in sequence.

<sup>2</sup>One course from: HIST 130, 207, 216 or 231, or PHIL 103 or 201.

<sup>3</sup>One course from: HIST 103, 106 or 107, or LIBS 202, or MUSI 220.

<sup>4</sup>One course from: BUED 279, ECON 200 or 201, HIST 104 or 105, POLI 100, PSYC 101, or SOCI 100 or 200.

<sup>5</sup>One course from: PHIL 104, 201, 263, 316, 317, or 320.

<sup>6</sup>One course from: MATH 310, 323, 378, 411, 485 and STAT 426.

### MAJOR PROGRAM REQUIREMENTS

*A student must earn a C or better grade except one passing grade below C if the student has GPA of at least 2.0 but less than 2.3, or two passing grades below C if the student has GPA of at least 2.3 in the following courses:*

MATH 105	MATH 341
MATH 106	MATH 351
MATH 123	MATH 377
MATH 131	MATH 496
MATH 132	STAT 324
MATH 211	STAT 328
MATH 215	STAT 423
MATH 224	STAT 424
MATH 231	STAT 425
MATH 240	MATH/STAT Elective (1)
MATH 320	

### COURSE DESCRIPTIONS IN MATHEMATICS

#### **MATH 099. Intermediate Mathematics**

**Credit 3(3-0)**

This course covers elementary properties of real numbers and basic algebra through solving of quadratic equations by various means. It is required of students whose mathematics SAT scores are low and whose major curriculum includes either MATH 101 or 111. (F;S;SS)

#### **MATH 101. Fundamentals of Algebra and Trigonometry I**

**Credit 3(3-0)**

Numbers and their properties polynomials, rational expressions, rational exponents, radicals, equations and inequalities in one variable, relations and functions are studied. Prerequisite: An SAT Math score 480-510 or SAT Math II level score 430-460 or ACT Math score 18-20 or Math Department Algebra Test score between 15 and 19 or at least a "C" in MATH 099. (F;S;SS)

- MATH 102. Fundamentals of Algebra and Trigonometry II** **Credit 3(3-0)**  
 This course is a continuation of MATH 101. Quadratic functions, systems of linear equations, exponential and logarithmic functions, circular functions, trigonometric functions, analytical trigonometry and the binomial theorem will be studied. Prerequisite: MATH 101. (F;S;SS)
- MATH 103. College Algebra and Trigonometry for Engineers and Scientists I** **Credit 3(3-0)**  
 This course covers number systems, exponents, radicals, functions, linear and quadratic equations, complex numbers, inequalities, and graphs of polynomial and rational functions. Prerequisites: An SAT Math score between 480 and 510; or ACT Math score between 18-20; or SAT Subject Math Level II Test score between 430 and 460; or N.C. A&T Math Department-developed Algebra placement test score between 15 and 19, or at least a "C" in MATH 099. (F;S;SS)
- MATH 104. College Algebra and Trigonometry for Engineers and Scientists II** **Credit 3(3-0)**  
 A continuation of Math 103. The course covers exponential, logarithmic and trigonometric functions and their graphs, also the geometry of triangles with applications. Trigonometric identities are covered, and the binomial theorem. Prerequisite: "C" or better grade in MATH 103. (F;S;SS)
- MATH 105. Orientation for Freshmen and New Mathematics Majors** **Credit 1(1-0)**  
 This course will guide and encourage proper mathematics study habits, and develop an informed mathematics major who will be prepared to move through his or her curriculum. Course topics include: how to study mathematics; ethics-academic honesty, respect for property, civility; technology instruction; key information: special deadlines, required tests; and other related topics. (F)
- MATH 106. Introduction to Mathematical Reasoning and Problem Solving** **Credit 1(1-0)**  
 This course will introduce mathematics/mathematics education majors to review of reasoning and problem solving skills necessary for mastering key concepts common to multiple mathematics courses. Critical mathematical reading and writing skills, such as annotation of lecture notes, will also be included. Prerequisite: Mathematics or Mathematical Education Majors. (S)
- MATH 110. Pre-Calculus for Engineers and Scientists** **Credit 4(4-0)**  
 Algebraic properties of the number system, fundamental operations, exponents and radicals, functions and graphs, solutions of equations and systems of equations, trigonometric functions and identities, inequalities, logarithms, progressions, mathematical induction, binomial theorem, permutations and combinations will be studied. Prerequisites: An SAT Math score 520-570 or an SAT Math Level II score 470-530 or an ACT Math score 21-23 or a Math Department Algebra Test score at least 20 or a Math Department Precalculus Test score 13-16, or at least a "C" in MATH 102. (F;S;SS)
- MATH 111. College Algebra and Trigonometry** **Credit 4(4-0)**  
 This course is a review of basic algebra; first and second degree equations; polynomial and rational functions-systems of equations-inequalities, right triangle trigonometry; and trigonometric identities and equations. Prerequisites: An SAT Math score 520-570 or an SAT Math Level II score 470-530 or an ACT Math score 21-23 or a Math Department Algebra Test score at least 20, or MATH 102. (F;S;SS)
- MATH 112. Calculus for Business and Technology** **Credit 4(4-0)**  
 This course includes a brief treatment of basic concepts of differential and integral calculus with applications to business, economics, social and behavioral sciences; polynomial, rational, exponential and logarithmic functions. Prerequisite: MATH 104, 110, or 111. (F;S;SS)
- MATH 115. Mathematics of Business and Finance** **Credit 3(3-0)**  
 This course includes a brief review of computing with whole numbers, decimals, fractions, percent, problem solving and the metric system. Simple interest, discount, partial payments, payroll wages and commission accounts, discounts and mark-ups, retailing, taxes, distribution of ownership, transactions in corporate securities, insurance, compound interest, annuities amortization and sinking funds will also be studied. Prerequisite: MATH 101, 110, or 111. (DEMAND)
- MATH 123. Discrete Mathematics I** **Credit 3(3-0)**  
 This course is an introduction to applied discrete mathematics. Topics include set theory, introduction to logic, functions, recursion, relations, properties of integers, and elementary matrix algebra. Prerequisite: MATH 110 or equivalent. (F;S)
- MATH 131. Calculus I** **Credit 4(4-0)**  
 Limits and continuity of functions, the derivative, applications of the derivative, the definite integral and applications of the definite integral will be studied. Prerequisite: At least "C-" in one of the following courses: MATH 104, MATH 110 and MATH 111, or an SAT Math score at least 570 or an SAT Math Level II score at least 540 or an ACT Math score at least 24 or a Math Department Precalculus Test score at least 17. (F;S;SS)
- MATH 132. Calculus II** **Credit 4(4-0)**  
 Topics in analytic geometry, differentiation and integration of exponential, logarithmic, trigonometric, inverse trigonometric and hyperbolic functions, additional techniques and applications of integration, indeterminate forms, improper integrals, Taylor's Formula and infinite series will be studied. Prerequisite: MATH 131. (F;S;SS)
- MATH 205. Lab Course in Mathematics Education I** **Credit 1(0-2)**  
 This course examines the application and practice of methods, techniques, and materials on instruction in a real mathematics university classroom situation under supervision. Students will participate and engage in activities, which will aid in developing them as teachers. These activities include but are not limited to tutoring, serving as a supplemental instructor, assessing the work of students in lower level mathematics classes. Prerequisite: MATH 131. (F;S;SS)
- MATH 206. Lab Course in Mathematics Education II** **Credit 1(0-2)**

This course is a continuation of MATH 205 with more focus on student learning outcome assessment, portfolio development as well as peer critique. Prerequisite: MATH 205. (F;S;SS)

**MATH 211. Mathematical Logic and Proof Techniques (formerly MATH 311) Credit 4(3-2)**

Emphasis is placed on development or writing skills and the ability to understand and develop proofs and logical arguments. Topics include quantifiers, rules of logic, and methods of mathematical proof, with applications to sets, integers, real numbers, functions, relations, and combinatorics. In the weekly 2-hour active learning lab, exercises and proofs are given to groups of two to four. The students present solutions and the solutions are critiqued by the students and the instructor. Prerequisite: MATH 132. (S)

**MATH 215. Introduction to Mathematical Literature and Research Tools Credit 1(1-0)**

This course will introduce mathematics majors to tools necessary to conduct research in mathematics at the undergraduate level. Topics include LaTeX mathematics editing, conducting a literature search, research ethics, reading and annotating lecture notes, bibliography and correct citation style. The students will write a short paper incorporating these skills. Prerequisite: Mathematics Majors. (F)

**MATH 223. Discrete Mathematics II Credit 3(3-0)**

This course is a continuation of MATH 123. Topics include Boolean algebra and applications elementary graph theory, trees and applications, and mathematical techniques for algorithm analysis. Prerequisite: MATH 123 or 311. (F;S;SS)

**MATH 224. Introduction to Probability and Statistics Credit 3(3-0)**

This is a general course covering fundamentals of statistics, central tendencies, variabilities, graphic methods, frequency distributions, correlations, reliability of measures, theory and methods of sampling and descriptive and analytical measures of statistics. Prerequisite: MATH 111. (F;S;SS)

**MATH 231. Calculus III Credit 4(4-0)**

This course will cover plane curves and polar coordinates, vector and solid geometry, vector valued functions, partial differentiation, multiple integrals, applications of multiple integrals and vector analysis. Prerequisite: MATH 132. (F;S;SS)

**MATH 240. Introduction to Scientific Programming for Mathematics Majors Credit 3(3-0)**

This course teaches mathematics majors problem-solving in mathematics through algorithmic and computer program development. MATLAB and Mathematica will be used to apply mathematical algorithms and problem-solving techniques to selected numerical or symbolic computation problems from algebra, trigonometry, discrete mathematics and calculus. Prerequisite: MATH 131. (F;S;SS)

**MATH 242. College Geometry Credit 3(3-0)**

Postulational systems, Euclid's Parallel Postulate, a brief study of non-Euclidean geometries, Euclidean geometry as a special case of other geometries and defects of Euclid's system will be studied. Prerequisite: MATH 132. (DEMAND)

**MATH 310. Mathematics for Health Informatics (Formerly MATH 410) Credit 3(3-0)**

This course examines the mathematics of health informatics. It covers mathematical core competencies that are needed for advanced research in health informatics. Topics include cryptography, biostatistics and linear programming. In addition the course covers new developments in the application of mathematics to health informatics privacy and security. Prerequisite: MATH 132 and 224. (F;S)

**MATH 320. History of Mathematics (formerly MATH 420) Credit 3(3-0)**

This course is a survey of the development of mathematics by chronological periods with biographical references, illustrations of national and racial achievements and discussion of the evaluation of certain important topics of elementary mathematics. Prerequisite: MATH 231. (DEMAND)

**MATH 323. Theory of Equations (formerly MATH 423) Credit 3(3-0)**

Methods of solving cubics, quartics and other algebraic equations, methods of approximating roots-systems of equations, and elements of determinants and matrices will be studied. Prerequisite: MATH 132. (DEMAND)

**MATH 330. Use of Technology in Teaching Mathematics (formerly MATH 420) Credit 3(3-)**

This course covers the use of graphing calculators and mathematical software in doing and teaching of mathematics at the secondary and college levels. It includes an introduction to a calculator based programming language with in-depth treatment of algorithms and control structures. Application areas include algebra, geometry, trigonometry, precalculus, calculus, statistics, and elementary linear algebra. Prerequisites: MATH 224, 132. (S)

**MATH 340. Numerical Methods (formerly MATH 440) Credit 3(2-2)**

Numerical methods as related to programming techniques, interpolation, extrapolation, approximate solutions of algebraic and transcendental equations, simultaneous linear equations, initial-value, characteristic-value and boundary-value problems, partial differential equations of the hyperbolic parabolic and elliptic types will be studied. Corequisite: MATH 240. (DEMAND)

**MATH 341. Introduction to Differential Equations (formerly MATH 431) Credit 3(3-0)**

This course will cover first order differential equations, higher order linear differential equations, matrices and determinants, systems of linear algebraic equations, systems of linear differential equations, and Laplace transforms. Prerequisite: MATH 132. (F;S;SS)

**MATH 351. Linear Algebra and Matrix Theory (formerly MATH 450) Credit 3(3-0)**

This course is an introduction to linear algebra and matrix theory; the algebra of matrices and its application to the solutions of

systems of linear equations, determinants, real and complex vector spaces, bases, dimension, linear transformations, eigenvalues and eigenvectors. Prerequisite: MATH 132. (F;S;SS)

**MATH 360. Numerical Analysis (formerly MATH 460)** **Credit 3(3-0)**

This course is an introduction to principles and techniques of numerical mathematics. Topics in round-off error analysis, the approximation of functions, derivatives and integrals, and the numerical solutions of non-linear equations, ordinary differential equations and the systems of linear equations will be studied. Prerequisites: MATH 231, 240 and 450. (DEMAND)

**MATH 365. Introduction to Scientific Computing (formerly MATH 465)** **Credit 3(3-0)**

This course will cover scientific computing fundamentals, and expose the student to high-performance programming languages and scientific computing tools. Topics include errors, approximations, floating point operations, polynomial interpolation, cubic splines, numerical integration, numerical linear algebra, solution of nonlinear equations, the initial value problems. The MATLAB or MAPLE computing environment is used. Prerequisites: MATH 332 and 350. (S)

**MATH 370. Introduction to Mathematical Modeling (formerly MATH 480)** **Credit 3(3-0)**

This course explores the fundamentals of both discrete and continuous mathematical modeling of problems in various fields where mathematics is used. The course will be project oriented and will emphasize multi-disciplinary problem solving. Prerequisites: MATH 231, 332; Corequisites: MATH 432, 350. (F;S)

**MATH 377. Intermediate Analysis I (formerly MATH 507)** **Credit 3(3-0)**

This course includes a rigorous treatment of the fundamental principles of analysis, limits, continuity, sequences, series, differentiability and integrability and functions of several variables. Prerequisites: MATH 211 and 231, or consent of instructor. (F)

**MATH 378. Intermediate Analysis II (formerly MATH 508)** **Credit 3(3-0)**

This course is a continuation of MATH 377. Prerequisite: MATH 377. (S)

**MATH 397. Co-Operative Industrial Experience I** **Variable: 1-4**

This course is a supervised learning experience in a specified private or governmental facility. The student must be in industry full time for at least one summer or one semester and must perform supervised work that will enhance his/her educational background in an area related to mathematics and/or computer science. In addition to the supervisor's evaluation on the field, the student's performance will be evaluated by a departmental faculty committee, based upon reports, informal portfolios and forum and/or a seminar presented by the student upon his/her return to the University. (DEMAND)

**MATH 398. Co-Operative Industrial Experience II** **Variable: 1-4**

The description of this course is the same as MATH 397 and is normally the second Co-op experience of the student related to mathematics and/or computer science. The maximum number of credit hours that may be earned by a student in the two courses MATH 397 and MATH 398 is six. (DEMAND)

**MATH 411. Abstract Algebra I (formerly MATH 511)** **Credit 3(3-0)**

Elementary properties of integers, rings, integral domains, and fields, properties of groups, including abelian groups, permutations, homomorphisms, normal subgroups, and factor groups will be studied. Prerequisite: MATH 211, 231 or consent of instructor. (F)

**MATH 412. Abstract Algebra II (formerly MATH 512)** **Credit 3(3-0)**

This is a continuation of MATH 511, including topics in commutative ring theory, Galois field theory and module theory. Prerequisite: MATH 411. (S)

**MATH 432. Introduction to Applied Mathematics (formerly MATH 332)** **Credit 3(3-0)**

This course will cover Fourier series, partial differential equations, complex variables, Taylor and Laurent series and residue theory. Prerequisite: MATH 332. (F;S;SS)

**MATH 451. Vector Analysis (formerly MATH 550)** **Credit 3(3-0)**

Vector and tensor calculus, covariant and contravariant components; integral theorems; applications to geometry, mechanics and electromagnetic theory will be studied. Prerequisite: MATH 332. (DEMAND)

**MATH 485. Special Topics in Mathematics** **Credit 3(3-0)**

This course covers special topics selected from a field of mathematics such as analysis, algebra, differential geometry, topology, differential equations, dynamic systems, numerical analysis, operations research, optimizations, probability, statistics, or mathematics education. The course may be repeated for a maximum of nine credit hours. Prerequisite: Senior standing and consensus of the instructor. (DEMAND)

**MATH 490. Independent Study (formerly MATH 692)** **Credit 3(3-0)**

This course offers guided independent undergraduate study under faculty supervision in an approved mathematical topic. The course may be repeated for a maximum of six credit hours. (F;S;SS)

**MATH 492. Seminar in Mathematics (formerly MATH 505)** **Credit 1(1-0)**

Methods of preparing and presenting seminars, presentation of seminars in current developments in mathematics and/or topics of interest which are not included in formal courses will be studied. Required for mathematics majors. Prerequisite: MATH 407 or 411. (DEMAND)

**MATH 496. Capstone Experience in Mathematics** **Credit 3(2-2)**

The capstone experience in mathematics synthesizes the development of mathematical reasoning and analysis abilities as well as problem solving skills necessary for pursuing a career or graduate education in a mathematics-related discipline. Student will undertake an inquiry-based or exploration-based project involving an area of pure mathematics, applied mathematics or statistics, exhibiting senior level competency in analysis and computation. Requirements for completion include but are not limited to a

written project report prepared in LaTeX and an oral presentation, both of which demonstrate critical thinking ability and professionalism and ethics in research. Prerequisites: MATH 320, MATH 340 or STAT 328, and MATH 377. (F;S)

**STAT 214. Statistics for Social Sciences**

**Credit 3(3-0)**

This is an introductory course in statistics whose purpose is to promote understanding of statistical reasoning and using numerical information to make judgments and decisions. Students will learn to understand graphical and numerical presentations of data, and to judge the reliability of results from studies, surveys and experiments. The methods and concepts studied will be presented in the context of the real-world problems in the social, physical and biological sciences. Prerequisite: MATH 101 or MATH 103. (F;S;SS)

**STAT 324. Intermediate Statistics**

**Credit 3(3-0)**

This course is a continuation of Math 224 and covers two sample z and t-tests, paired t-tests, two sample proportion tests, Chi-square tests, simple linear regression, nonparametric statistics, one-way Analysis of Variance. Students will be introduced to computing and graphics using statistical software. Prerequisite: MATH 224. (F;S;SS)

**STAT 328. Introduction to Statistical Modeling**

**Credit 3(3-0)**

This course covers simple and multiple linear regression, the design of experiments and the Analysis of Variance, one and two factor. Methods of variable selection and diagnostic testing are discussed. Statistical software, such as R or SAS, is used. Prerequisite: MATH 224 or STAT 324. (F;S)

**STAT 423. Probability Theory with Applications**

**Credit 3(3-0)**

This course begins with an introduction to sample spaces and probability, including combinatorics. It covers continuous and discrete random variables, including multi-variate random variables and expectations; also marginal and conditional distributions are derived. The course introduces moment generating functions, and covers the central limit theorem and its applications. Prerequisite: MATH 224 and MATH 231. (F;S)

**STAT 424. Statistical Inference**

**Credit 3(3-0)**

This course covers the properties of estimators computed from sample data, and covers methods of estimation, such as maximum likelihood, the method of moments, and confidence intervals. The principles of hypothesis testing are considered including likelihood ratio and the power of a test. Prerequisite: STAT 423. (F;S)

**STAT 425. Introduction to Statistical Computing**

**Credit 3(3-0)**

This course covers the use of SAS for analyzing large data sets and performing statistical analyses on them. R will be taught from the point of view of functional and object oriented programming, also Monte Carlo methods including resampling, randomization and simulation. Prerequisite: STAT 328 or STAT 424. (F;S)

**STAT 426. Introduction to Stochastic Processes**

**Credit 3(3-0)**

This course begins with a review of probability and random variables. Markov processes, Poisson processes, waiting times, renewal phenomena, branching processes, queuing system, and service times are covered. Prerequisite: STAT 423. (F;S)

**Advanced Undergraduate and Graduate**

**MATH 600. Introduction to Modern Mathematics for Secondary School Teachers**

**Credit 3(3-0)**

Elementary theory of sets, elementary logic and propositional systems, nature and methods of mathematical proofs, structure of the real number system will be studied. Evaluation of instructional software and use of computer integrated instruction to teach pertinent concepts in secondary school mathematics will also be included. Prerequisite: Consent of the instructor. (DEMAND)

**MATH 601. Technology and Applications in Secondary School Mathematics**

**Credit 3(3-0)**

This course covers techniques of teaching algebra, advanced algebra, trigonometry, and other secondary mathematics using graphing calculators, software packages and other technology. Prerequisite: Consent of the instructor. (DEMAND)

**MATH 602. Modern Algebra**

**Credit 3(3-0)**

This course covers mappings, binary operations, groups, rings, integral domains, fields, and some applications to coding and cryptography. Prerequisite: MATH 311 or consent of the instructor. (DEMAND)

**MATH 603. Introduction to Real Analysis**

**Credit 3(3-0)**

The following topics will be covered in this course: elementary set theory, functions, axiomatic development of the real numbers, metric spaces, convergent sequences, completeness, compactness, connectedness, continuity, limits, sequences of functions, differentiation, the mean value theorem, Taylor's theorem, Riemann integration, infinite series, the fixed point theorem, partial differentiation, and the implicit function theorem. Prerequisite: MATH 311 or consent of the instructor. (DEMAND)

**MATH 604. Modern Geometry for Secondary School Teachers**

**Credit 3(3-0)**

Re-examination of Euclidean geometry, axiomatic systems and the Hilbert axioms, introduction to projective geometry and other non-Euclidean geometries will be included. Prerequisite: MATH 600 or consent of the Department of Mathematics. (DEMAND)

**MATH 606. Mathematics for Chemists**

**Credit 3(3-0)**

This course includes a review of those principles of mathematics which are involved in chemical computations and derivations from general chemistry through physical chemistry; topics covered include significant figures, methods of expressing large and small numbers, algebraic operations, trigonometric functions and an introduction to calculus. (DEMAND)

**MATH 607. Theory of Numbers**

**Credit 3(3-0)**

Divisibility properties of the integers, the Euclidean algorithm, congruences, diophantine equations, number-theoretic functions and continued fractions will be studied. Prerequisite: Twenty hours of college mathematics. (DEMAND)

- MATH 608. Methods of Applied Statistics** **Credit 3(3-0)**  
 This course introduces the SAS programming language, and uses it in the analysis of variance, both single and multifactor. It includes various methods of hypothesis testing and constructing confidence intervals. The course covers simple and multiple linear regression, including model building and variable selection techniques. Elements of time series and categorical data analysis are covered. Prerequisite: MATH 224. **(DEMAND)**
- MATH 610. Complex Variables I** **Credit 3(3-0)**  
 The following topics will be covered in this course: complex number system, limits of complex sequences, complex functions, continuity, limits of functions, derivatives, elementary functions, Cauchy-Riemann equations, antiderivatives harmonic functions, inverse functions, power series, analytic functions, analytic continuation, contour integrals, Cauchy's theorem and Cauchy's integral formula. Prerequisite: MATH 231. **(DEMAND)**
- MATH 611. Complex Variables II** **Credit 3(3-0)**  
 Mathematics 611 is a continuation of Mathematics 610. The following topics will be covered in this course: Liouville's theorem, the fundamental theorem of algebra, the winding number, generalized Cauchy theorems, singularities, residue calculus, Laurent series, boundary value problems, harmonic functions, conformal mappings, Poisson's formula, potential theory, physical applications and the Riemann mapping theorem. Prerequisite: MATH 610. **(DEMAND)**
- MATH 612. Advanced Linear Algebra (Formerly MATH 520)** **Credit 3(3-0)**  
 This course covers vector spaces, linear transformations and matrices determinants and systems of linear equations, eigenvalues and eigenvectors, diagonalization, inner products, bilinear quadratic forms, canonical forms, and application to engineering, and applied sciences. Prerequisite: MATH 450 or consent of the instructor. **(DEMAND)**
- MATH 620. Elements of Set Theory and Topology** **Credit 3(3-0)**  
 Operations on sets, indexed families of sets, products of sets, relations, functions, metric spaces, general topological spaces, continuity, compactness and connectedness will be included. Prerequisites: MATH 231 and consent of the instructor. **(DEMAND)**
- MATH 623. Probability Theory and Applications** **Credit 3(3-0)**  
 This course begins with an introduction to sample spaces and probability, including combinatorics. It covers continuous and discrete random variables, including multi-variate random variables and expectations; also marginal and conditional distributions are derived. The course introduces moment generating functions, and covers the central limit theorem and its applications. Prerequisite: MATH 231. **(DEMAND)**
- MATH 624. Theory and Methods of Statistics** **Credit 3(3-0)**  
 This course introduces methods of statistical estimation and inference including the following topics: sufficient statistics, confidence sets, hypothesis tests, and maximum likelihood methods. The theory of uniformly most powerful tests and the Neyman-Pearson Lemma are covered. Other topics include least squares estimation, the linear model, and Bayesian methods. Prerequisite: MATH 623. **(DEMAND)**
- MATH 625. Mathematics for Elementary Teachers, K-8, I** **Credit 3(3-0)**  
 This course is designed for in-service and prospective teachers who have as their goal "to teach the basic skills and competencies of mathematics sought in today's world." The course emphasizes that the teacher first, must have the knowledge and skills in order to accomplish this goal. It stresses fundamentals of arithmetic, sets and operations, number systems, fractions, decimals, percents, estimation, consumer arithmetic, problem solving and traditional and metric geometry and measurement. This course may not be used for degree credit. **(DEMAND)**
- MATH 626. Mathematics for Elementary Teachers, K-8, II** **Credit 3(3-0)**  
 This is a continuation of MATH 625; provides no credit towards a degree in mathematics; is not open to secondary school teachers of mathematics. Credit on elementary education degree. Prerequisite: MATH 625. **(DEMAND)**
- MATH 631. Linear and Non-Linear Programming** **Credit 3(3-0)**  
 This course includes optimization subject to linear constraints; transportation problems, SIMPLEX algorithm; network flows; application of linear programming to industrial problems and economic theories; introduction to non-linear programming. Prerequisites: MATH 450 and a high level programming language. **(DEMAND)**
- MATH 632. Games and Queue Theory** **Credit 3(3-0)**  
 This course is a general introduction to game theory; two-person-non-zerosum-non-cooperative games; two-person cooperative games; reasonable outcomes and values; the minimax theorem. Introduction to queuing theory; single server queuing processes; many serve queuing processes; applications to economics and business. Prerequisite: MATH 224, MATH 450, or consent of the instructor. **(DEMAND)**
- MATH 633. Stochastic Processes** **Credit 3(3-0)**  
 This course begins with a review of Probability and Random Variables. Markov Processes, Poisson Processes, Waiting Times, Renewal Phenomena, Branching Processes, Queuing System, Service Times are covered. Prerequisite: MATH 623 or consent of the instructor. **(DEMAND)**
- MATH 650. Ordinary Differential Equations** **Credit 3(3-0)**  
 This is an intermediate course in ordinary differential equations with emphasis on applications. Topics include linear systems and various phase plane techniques for non-linear ordinary differential equations. Prerequisite: MATH 431. **(DEMAND)**
- MATH 651. Partial Differential Equations** **Credit 3(3-0)**



This course includes introduction to complex variables and residue calculus, transform calculus, higher order partial differential equations governing various physical phenomena, nonhomogeneous boundary value problems, orthogonal expressions, Green's functions and variational principles. Prerequisites: MATH 431 and 432. **(DEMAND)**

**MATH 652. Methods of Applied Mathematics** **Credit 3(3-0)**

This course covers matrix theory, systems of linear equations, vector spaces, eigenvalue problem and its applications to systems of linear ODEs and mechanical vibrations, the simplest problems of calculus of variations, Euler equations, boundary conditions, extensions of Euler equations, Hamilton's Principles, constraints and Lagrange multipliers, introduction to integral equations, and solutions in iterative and other methods. Prerequisites: MATH 431 and 432. **(DEMAND)**

**MATH 665. Principles of Optimization** **Credit 3(3-0)**

Algebra, linear inequalities, duality, graph, transport network; linear programming; special algorithms; selected applications. An upper level course. Prerequisites: MATH 231 or equivalent and MATH 240 and 450. **(DEMAND)**

**MATH 675. Graph Theory** **Credit 3(3-0)**

Varieties of graphs, graph theory algorithms, and applications of graph theory to other disciplines will be studied. Prerequisite: MATH 450. **(DEMAND)**

**MATH 685. Special Topics in Applied Mathematics (formerly MATH 691)** **Credit 3(3-0)**

Topics are selected from differential equations, numerical methods, operations research, applied mechanics and from other fields of applied mathematics. Prerequisites: Senior or graduate standing and consent of the instructor. **(DEMAND)**

**MATH 690. Scientific Programming for Mathematical Scientists** **Credit 3(1-4)**

This course covers the implementation of the computer in the Mathematical sciences. MATLAB will be used to apply algorithms and solve problems in areas such as differential equations and Linear algebra. Probability and statistical problems will be studied through the "R" language. **(F;S)**

#### DIRECTORY OF FACULTY

<b>Bampia A. Bangura</b> .....	<b>Associate Professor</b>
B.S., Njala University College; M.S., North Carolina A&T State University; Ed.D., Louisiana State University	
<b>Shea D. Burns</b> .....	<b>Associate Professor</b>
B.S., North Carolina A&T State University; M.S., Ph.D., Howard University	
<b>Gilbert Casterlow, Jr.</b> .....	<b>Professor Emeritus</b>
B.S., M.S., North Carolina A&T State University; Ph.D., Pennsylvania State University	
<b>Samuel Casterlow</b> .....	<b>Lecturer</b>
B.S., M.S., North Carolina A&T State University	
<b>Mingxiang Chen</b> .....	<b>Professor</b>
B.S., M.S., Huazhong Normal University; Ph.D., Georgia Institute of Technology	
<b>Dominic P. Clemence</b> .....	<b>Professor</b>
B.S., North Carolina A&T State University; M.S., Ph.D., Virginia Polytechnic Institute and State University	
<b>Kathy M. Cousins-Cooper</b> .....	<b>Associate Professor</b>
B.S., Virginia Polytechnic Institute and State University; M.S., North Carolina A&T State University; Ph.D., University of South Florida	
<b>Ahmad A. Deeb</b> .....	<b>Teaching Assistant Professor</b>
B.S., Yarmouk University; M.S., Ohio University; Ph.D., Kent State University	
<b>Zachary Denton</b> .....	<b>Assistant Professor</b>
B.S., Middle Tennessee State University; M.S., Ph.D., University of Louisiana at Lafayette	
<b>Kossi D. Edoh</b> .....	<b>Associate Professor</b>
B.S., Cap Coast University; M.S., Ph.D., Simon Fraser University	
<b>Amal A. El Moghraby</b> .....	<b>Assistant Professor</b>
B.Sc., University of Khartoum; M.S., Ph.D., Brown University	
<b>Gregory Gibson</b> .....	<b>Associate Professor</b>
B.A., State University of New York/College at Geneseo; M.S., Ph.D., North Carolina State University	
<b>Seong-Tae Kim</b> .....	<b>Assistant Professor</b>
B.A., Hanyang University; M.A., Korea University; M.S., Ph.D., North Carolina State University	
<b>Alexandra Kurepa</b> .....	<b>Professor</b>
B.S., M.S., University of Zagreb; Ph.D., University of North Texas	
<b>Yaw Kyei</b> .....	<b>Associate Professor</b>
B.S., University of Ghana; M.S., Ph.D., North Carolina State University	
<b>Liping Liu</b> .....	<b>Associate Professor</b>
B.S., Huazhong University of Science and Technology; Ph.D., University of Alberta	
<b>Nicholas Luke</b> .....	<b>Associate Professor and Student Success Coordinator</b>
B.S., North Carolina A&T State University; M.S., Ph.D., North Carolina State University	
<b>Katrina Nelson</b> .....	<b>Teaching Assistant Professor</b>
B.S., M.S., North Carolina A&T State University; Ph.D., North Carolina State University	

<b>Janis M. Oldham</b> .....	<b>Associate Professor</b>
B.A., University of Chicago; M.S., Purdue University; Ph.D., University of California-Berkeley	
<b>Suzanne M. O'Regan</b> .....	<b>Assistant Professor</b>
B.S., Ph.D., University College Cork	
<b>Choongseok Park</b> .....	<b>Assistant Professor</b>
B.S., Yonsei University; Ph.D., Ohio State University	
<b>Yevgeniy A. Rastigejev</b> .....	<b>Associate Professor</b>
M.S., Moscow Institute of Physics and Technology; M.S., Ph.D., University of Notre Dame	
<b>Thomas C. Redd</b> .....	<b>Associate Professor and Associate Chairperson</b>
B.S., Fort Valley State University; M.S., University of Oklahoma; M.S., Ph.D., Brown University	
<b>John P. Roop</b> .....	<b>Associate Professor</b>
B.S., Roanoke College; M.S., Ph.D., Clemson University	
<b>Guoqing Tang</b> .....	<b>Professor and Chairperson</b>
B.S., Anhui University; M.S., Nanjing University of Science and Technology; Ph.D., Rutgers University	
<b>Barbara Tankersley</b> .....	<b>Associate Professor</b>
B.S., Paine College; M.S., North Carolina A&T State University; M.S., Ph.D., Howard University	
<b>Paramanathan Varatharajah</b> .....	<b>Associate Professor</b>
B.S., University of Jaffna; M.S., Ph.D., University of Arizona	
<b>John P. Ward</b> .....	<b>Assistant Professor</b>
B.S., University of Georgia; Ph.D., Texas A&M University	
<b>A. Giles Warrack</b> .....	<b>Associate Professor</b>
B.S., M.S., California State Polytechnic University; Ph.D., University of Iowa	
<b>Alisha Williams</b> .....	<b>Lecturer</b>
B.S., M.S., North Carolina A&T State University	
<b>Stacey C. Zimmerman</b> .....	<b>Lecturer</b>
B.S., M.S., North Carolina A&T State University	

**Department of Physics**

<http://www.ncat.edu/cost/departments/phys/index.html>

**Floyd James, Interim Chairperson**

**OBJECTIVES**

The Department of Physics provides a comprehensive and robust program of physics designed to educate, train, and prepare a diverse group of students for careers in physics, science, technology, engineering, and mathematics. Physics majors at both the undergraduate and graduate levels will learn how to analyze complex phenomena, think critically, solve problems, develop independent learning skills, and use good judgment and practical skills in various laboratory environments. These graduates will be prepared to meet our nation's scientific workforce needs in state and federal governments, the industrial workplace, research laboratories, higher education, and secondary schools.

The Department of Physics is a recognized leader in physics education, teaching, research, and scholarship. It plays a central and critical role in building an Interdisciplinary University through the use of novel technologies in education and research.

**DEGREES OFFERED**

- Physics – Bachelor of Science
- Physics (Engineering Physics) – Bachelor of Science
- Physics (Interdisciplinary Physics) – Bachelor of Science
- Physics (Secondary Education) – Bachelor of Science
- Atmospheric Sciences and Meteorology – Bachelor of Science

**GENERAL PROGRAM REQUIREMENTS**

In addition to the general admission requirements of the University, a student must have two units of algebra, one unit of plane geometry, and 1/2 unit of trigonometry.

**DEPARTMENTAL REQUIREMENTS COURSES**

**Common Courses for All Concentrations (75 hours)**

- A. Required Major Core Courses for Physics for All Concentrations (32 hours):
 

PHYS 241	PHYS 305	PHYS 415
PHYS 242	PHYS 306	PHYS 420
PHYS 251	PHYS 345	PHYS 430
PHYS 252	PHYS 400	PHYS 494
- B. Required Math Courses for Physics for All Concentrations (12 hours)
 

MATH 131	MATH 132	MATH 231
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- C. Required Elective Courses for Physics for All Concentrations (6 hours)

CHEM 106      CHEM 116      GEEN 160

D. Required General Education non-math and non-science courses – 12 Credit hours

*Physics Major* – As a major in physics all students in all concentrations must complete from 120 semester hours of University courses depending on the concentration. A minimum grade of “C-” must be achieved in all physics courses. Note that a 2.00 grade point average must be maintained in all major courses and an overall grade point average of 2.00 is required to graduate.

*Atmospheric Sciences and Meteorology Major* – Students must complete 126 semester hours of University courses. A minimum grade of “C-” must be achieved in all atmospheric sciences and meteorology and physics courses. Note that a “C” average must be maintained in all major courses and an overall “C” average to graduate.

Additional Course Requirements – Physics

Physics – PHYS 100, 101, 375, 401, 416, 422, 450, 485, 492 (2 semesters)

Math – MATH 224, 341, 350

Computation – GEEN 160

Free Electives – (12 hours) *It is suggested that at least 6 of these hours be FOLA courses*

Additional Course Requirements – Physics (Engineering Physics)

Physics – PHYS 100, 101, 375, 401, 416, 422, 475, Physics Electives (6 hours) numbered 300 or above

Math – MATH 331

Computation – GEEN 160

Engineering Electives (24 hours)

Free Electives (6 hours)

Additional Course Requirements – Physics (Interdisciplinary Physics)

Physics – Physics Elective (6 hours) numbered 300 or above

Math – Mathematics electives (3 hours) numbered 300 or above

Disciplinary Electives (24 credit hours) – to be determined by the student’s interest and approved by an advisor.

Free Electives – 9 credit hours – *It is suggested that at least 6 of these hours be FOLA courses*

Additional Course Requirements – Physics (Secondary Education)

Physics – PHYS 101, 102, 110, 111, 375, 492 (2)

Chemistry – CHEM 107, 117

Other Sciences – ASME 151, BIOL 101, BIOL 160

Science Elective – (3 hours) – This must be a science elective other than a Physics course

Curriculum and Instruction – CUIN 101, 110, 210, 310, 410, 520, 535, 660, 670

### MINOR IN PHYSICS

The Minor in Physics shall consist of at least 20 credit hours, as follows:

- Required courses: PHYS 241, PHYS 251, PHYS 242, PHYS 252 and PHYS 306
- Elective courses: An additional 9 credit hours from PHYS 101 and / or any physics courses numbered 300 or above.

Students must choose the elective physics courses with the approval of the department chair.

- Students completing the Minor in Physics must earn a grade of “C” or better in all courses for the minor.
- Students must complete a minimum of 24 academic credits before declaring a minor.
- All other requirements under the Minor Field of Undergraduate Study Policy apply.

### BACHELOR OF SCIENCE IN ATMOSPHERIC SCIENCES AND METEOROLOGY

Course requirements:

Atmospheric Science – ASME 151, 211, 231, 251, 252, 422, 433, 434, 492, 463, 496.

ASME Electives (6 hours)- Courses must be chosen from ASME 275, 285, 423, 440, 481, 491, or PHYS 412

Physics – PHYS 100, 241, 242, 251, 252, 290, 411, 415, 450

Physics Elective – (3 hours) – Course must be chosen from any Physics course numbered 300 or above

Math – MATH 131, 132, 224, 231, 341

Chemistry – CHEM 106, 107, 116, 117

Technical Electives – (6 credit hours) that must be in Mathematics, Science, or Engineering

Free Electives – (11 hours) – It is suggested that at least 6 of these hours be FOLA courses

### ENRICHMENT OPPORTUNITIES

The Department of Physics provides quality instruction, mentoring, and training in order to produce competitive graduates who are trained in the arts of critical thinking, analytical reasoning, independent learning, and problem solving. The department has strong and active collaborations with major research institutions such as Duke University, the University of North Carolina at Chapel Hill, Stanford University, the University of Connecticut, and Pennsylvania State University. Collaborations with national laboratories include the Joint Institute for Laboratory Astrophysics (JILA), Lawrence Berkeley National Laboratory (LBNL), Lawrence Livermore National Laboratory (LLNL), Los Alamos National Laboratory (LANL), Oak Ridge National Laboratory

(ORNL), and Thomas Jefferson National Accelerator Facility (JLab). More than half of our physics majors participate in summer research at these institutions.

### ENRICHMENT FACILITIES

Departmental teaching facilities include smart classrooms, computerized undergraduate laboratories, an astronomy observatory, a planetarium, a nuclear lab, a space science and solid-state physics lab, and a chemical physics lab. The Department plays a major role in many interdisciplinary campus research activities and program developments. In addition, the department provides numerous service courses to meet the science, technology, engineering, and mathematical needs.

### RESEARCH PROGRAMS

1. Experimental Low and Medium Energy Physics: Research carried out on campus, at the Thomas Jefferson National Accelerator Facility, and at the Triangle Universities Nuclear Laboratories. Research topics include: investigations of the spin structure of the nucleon, tests of fundamental symmetry-breaking predictions in the theory of the strong force through precision measurement of meson decay widths, and signature of materials by gamma exposure. The research work involves construction of detectors, data acquisition, test and calibrations, and data analysis. The research work is supported by the National Science Foundation.
2. Chemical Physics, Experimental and Theoretical: Spectroscopic techniques applied to the study of chemical reactions, non-reactive energy transfer processes, and cluster photochemistry, as well as theoretical calculations involving density matrix functional theories. Program supported by the National Science Foundation.
3. Atmospheric Science: The research and technology integrated themes include: sensor science and technology, data mining and analysis, and global observing systems. This research is supported by a grant from the National Oceanic and Atmospheric Administration.
4. Physics of Materials: Experimental and theoretical research into the physical properties of amorphous, ordered, and nanostructured solids. Investigated materials include metals, insulators, semiconductors and amorphous solids.
5. Physics Education: Space and Earth Science Education development supported through a NASA grant. Research on the ionospheric phenomenon along the geomagnetic equator. Also, research on web-based education and innovative teaching methods and on creating a responsive learning environment.
6. Seismic Data Processing: Research in seismic physical modeling, seismic data analysis, subsurface imaging, and non-destructive testing using ultrasonic waves. This research is supported by the National Science Foundation.
7. Computational Atomic Molecular and Optical Physics: Structural studies of organic molecular crystals. Visualization of DFT functional differences.

### CAREER OPPORTUNITIES

A knowledge and understanding of the principles of physics not only lead to a profound understanding of the physical world but also supply the scientist with the insight to develop new and innovative ideas. The technology and devices that influence our daily lives are based upon the discoveries of physics. Theoretical and experimental physicists are on the cutting edge of this exciting and vital progress. They are everywhere: they work in industry, in national laboratories, on college campuses, and on Wall Street. They are astronauts in the space shuttle. They are astronomers who hunt for new planets beyond our solar system and who are concerned with the origin and evolution of the universe. They are men and women who are interested in how things work and in how things might work. A physics education develops problem-solving skills and provides a firm knowledge of basic science and the ability to apply and adapt that knowledge within the workplace. Owing to their training, physicists excel at solving complex problems, which allows them to seek employment in a surprisingly wide range of academic, government, and industrial settings, well beyond the traditional boundaries of physics.

### Department of Physics Bachelor of Science in Physics Major Code: PHYS

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
PHYS 100	1	PHYS 241	3
PHYS 101	3	PHYS 251	1
MATH 131	4	MATH 132	4
GEEN 160	2	ENGL 101	3
ENGL 100	3	H/FA/S/BS ElectiveII <sup>1</sup>	3
H/FA/S/BS Elective <sup>1</sup>	3	FRST 101	1
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
PHYS 242	3	PHYS 305	3

PHYS 252	1	PHYS 306	3
MATH 224	3	PHYS 345	3
MATH 231	4	MATH 331	3
CHEM 106	3	Science Elective	3
CHEM 116	1	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>15</b>		
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
PHYS 400	3	PHYS 416	3
PHYS 415	3	PHYS 375	2
PHYS 420	3	PHYS 422	3
MATH 350	3	H/FA/S/BS Elective IV <sup>1</sup>	3
H/FA/S/BS Elective III <sup>1</sup>	3	Free Elective <sup>4</sup>	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>14</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
PHYS 430	3	PHYS 3xx <sup>2</sup> Elective	3
PHYS 450	3	PHYS 3xx <sup>2</sup> Elective	3
PHYS 475	2	Science Elective	3
PHYS 494 <sup>3</sup>	3	Free Elective <sup>4</sup>	3
PHYS 492	1	Free Elective <sup>4</sup>	3
Free Elective <sup>4</sup>	3	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>15</b>		

**Total Credit Hours: 120**

<sup>1</sup>Of the 12 total credit hours taken in the Humanities/Fine Arts and Social/Behavioral Sciences (H/FA/S/SB), 3 credit hours must be in Humanities/Fine Arts, 3 credit hours must be in Social/Behavioral Sciences, 3 credit hours must be completed in African-American culture and History and 3 credit hours must be completed in Global Awareness.

<sup>2</sup>Physics electives (6 hours) numbered 300 or above.

<sup>3</sup>PHYS 494 – capstone course

<sup>4</sup>Free electives (12 hours) – It is suggested that at least 6 of these hours be FOLA courses

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C- or better in PHYS courses.*

Department of Physics  
 Bachelor of Science in Physics (Secondary Education)  
 Major Code: PHYS  
 Concentration Code: PPSE

#### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 101	1	PHYS 100	1
PHYS 110	2	CUIN 101	1
PHYS 111	1	CUIN 110	2
MATH 131	4	MATH 132	4
GEEN 160	2	PHYS 241	3
ENGL 100	3	PHYS 251	1
CUIN 102	2	ENGL 101	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	

PHYS 242	3	PHYS 305	3
PHYS 252	1	PHYS 306	3
MATH 231	4	PHYS 345	3
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
CUIN 210	2	CUIN 225	2
Humanities/Fine Arts (HFA) <sup>1</sup>	3	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>17</b>		
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
PHYS 400	3	Global Awareness (GL) <sup>1</sup>	3
PHYS 101 or ASME 151	3	Social/Behavioral Sciences (SBS) <sup>1</sup>	3
PHYS 415	3	CUIN or PSYC Elective	3
PHYS 375	2	Free Elective <sup>5</sup>	3
Afr. Amer. Culture & History (AA) <sup>1</sup>	3	Science Elective <sup>4</sup>	3
CUIN 410	2	CUIN 420	2
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>17</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
PHYS 430	3	CUIN 498	9
PHYS 420	3	CUIN 470 <sup>2</sup>	3
Free Elective <sup>5</sup>	3	<b>Semester Total</b>	<b>12</b>
CUIN 435	3		
PHYS 492	1		
<b>Semester Total</b>	<b>13</b>		

**Total Credit Hours: 120**

<sup>1</sup>Courses may only satisfy ONE general education requirement GL, AA, SBS, or HFA (e.g. LIBS202 can satisfy HFA or AA, but not both).

<sup>2</sup>CUIN 470 – Education capstone course.

<sup>3</sup>PHYS 494 – Physics capstone course.

<sup>4</sup>This must be a science elective other than a Physics Course.

<sup>5</sup>Free electives (6 hours) – It is suggested that these hours be FOLA courses.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C- or better in PHYS, MATH and CUIN courses.*

**Department of Physics**  
**Bachelor of Science in Atmospheric Sciences and Meteorology**  
**Major Code: ATSM**

#### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
FRST 101	1	ENGL 101	3
ENGL 100	3	ASME 151	3
Afr. Amer. History & Culture (AA) <sup>1</sup>	3	MATH 132	4
MATH 131	4	PHYS 100	1
CHEM 106	3	Humanities / Fine Arts (HFA) <sup>1</sup>	3
CHEM 116	1	<b>Semester Total</b>	<b>14</b>
<b>Semester Total</b>	<b>15</b>		
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	

ASME 251	3	Global Awareness (GL) <sup>1</sup>	3
ASME 252	1	MATH 224	3
Social/Behavioral Sciences (SBS) <sup>1</sup>	3	ASME 231	3
MATH 231	4	PHYS 305	3
PHYS 241	3	PHYS 242	3
PHYS 251	1	PHYS 252	1
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>16</b>
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
PHYS 345	3	ASME 422	4
ASME 433	3	ASME 434	3
ASME Elective <sup>2-1</sup>	3	PHYS Elective <sup>3</sup>	3
PHYS 411	3	Technical Elective <sup>4</sup>	3
PHYS 400	3	Free Elective	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>16</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
ASME 492	1	ASME 496 <sup>5</sup>	6
ASME Elective <sup>2-2</sup>	3	ASME 492	1
PHYS 450	3	ASME Elective <sup>2-3</sup>	3
Technical Elective <sup>4</sup>	3	Free Elective	3
PHYS Elective <sup>3</sup>	3	<b>Semester Total</b>	<b>13</b>
Free Elective	3		
<b>Semester Total</b>	<b>16</b>		

**Total Credit Hours: 120**

<sup>1</sup>Courses may only satisfy ONE general education requirement GL, AA, SBS, or HFA (e.g. LIBS202 can satisfy HFA or AA, but not both).

<sup>2-1</sup>ASME Elective: Course must be chosen from ASME 211, 275, 285.

<sup>2-2</sup>ASME Elective: Course must be chosen from ASME 420, 423, 430, or 440.

<sup>2-3</sup>ASME Elective: Course must be chosen from ASME 463, 470, 480, 481, or 491.

<sup>3</sup>Physics Elective: Course must be chosen from PHYS 412, 415, 420, 430, 440, 447, or 475.

<sup>4</sup>Technical Electives: Courses must be in Mathematics, Science or Engineering.

<sup>6</sup>ASME 496 - capstone course.

Free electives (9 credit hours).

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C- or better in ASME, PHYS and MATH courses.*

Department of Physics  
 Bachelor of Science in Engineering Physics  
 Major Code: PHYS  
 Concentration Code: ENGP

### Curriculum Guide

Course	CR	Course	CR
<b>Freshman Year: First Semester</b>		<b>Freshman Year: Second Semester</b>	
PHYS 100	1	PHYS 241	3
PHYS 101	3	PHYS 251	1
MATH 131	4	MATH 132	4
GEEN 160	2	ENGL 101	3
ENGL 100	3	H/FA/S/BS Elective II <sup>1</sup>	3
H/FA/S/BS Elective <sup>1</sup>	3	FRST 101	1
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15</b>

Sophomore Year: First Semester		Sophomore Year: Second Semester	
PHYS 242	3	PHYS 305	3
PHYS 252	1	PHYS 306	3
MATH 224	3	PHYS 345	3
MATH 231	4	MATH 331	3
H/FA/S/BS Elective III <sup>1</sup>	3	H/FA/S/BS Elective IV <sup>1</sup>	3
<b>Semester Total</b>	<b>14</b>	<b>Semester Total</b>	<b>15</b>
Junior Year: First Semester		Junior Year: Second Semester	
PHYS 400	3	PHYS 416	3
PHYS 415	3	PHYS 375	2
PHYS 420	3	PHYS 3xx <sup>2</sup>	3
Engineering Elective <sup>4</sup>	3	Engineering Elective <sup>4</sup>	3
Free Elective <sup>5</sup>	3	Engineering Elective <sup>4</sup>	3
<b>Semester Total</b>	<b>15</b>	Free Elective <sup>5</sup>	1
		<b>Semester Total</b>	<b>15</b>
Senior Year: First Semester		Senior Year: Second Semester	
PHYS 494 <sup>3</sup>	3	PHYS 3xx <sup>2</sup> Elective	3
PHYS 430	3	Engineering Elective <sup>4</sup>	3
PHYS 475	2	Engineering Elective <sup>4</sup>	3
PHYS 492	1	Free Elective <sup>4</sup>	3
Engineering Elective <sup>4</sup>	3	Free Elective <sup>4</sup>	3
Engineering Elective <sup>4</sup>	3	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>15</b>		

**Total Credit Hours: 120**

<sup>1</sup>Of the 12 total credit hours taken in the Humanities/Fine Arts and Social/Behavioral Sciences (H/FA/S/SB), 3 credit hours must be in Humanities/Fine Arts, 3 credit hours must be in Social/Behavioral Sciences, 3 credit hours must be completed in African-American culture and History and 3 credit hours must be completed in Global Awareness.

<sup>2</sup>Physics electives (6 hours) numbered 300 or above.

<sup>3</sup>PHYS 494 – capstone course.

<sup>4</sup>Students under guidance of a faculty advisor can choose any discipline in Engineering (24 hours)

<sup>5</sup>Free electives (6 hours) – It is suggested that at least 6 of these hours be FOLA courses.

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C- or better in PHYS courses.*

Department of Physics  
 Bachelor of Science in Interdisciplinary Physics  
 Major Code: PHYS  
 Concentration Code: IDPH

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	



PHYS 100	1	PHYS 241	3
PHYS 101	3	PHYS 251	1
MATH 131	4	MATH 132	4
GEEN 160	2	ENGL 101	3
ENGL 100	3	H/FA/S/BS Elective II <sup>1</sup>	3
H/FA/S/BS Elective <sup>1</sup>	3	FRST 101	1
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>15</b>
<b>Sophomore Year: First Semester</b>		<b>Sophomore Year: Second Semester</b>	
PHYS 242	3	PHYS 305	3
PHYS 252	1	PHYS 306	3
MATH 231	4	PHYS 345	3
CHEM 106	3	MATH 3xx <sup>3</sup>	3
CHEM 116	1	H/FA/S/BS Elective IV <sup>1</sup>	3
H/FA/S/BS Elective III <sup>1</sup>	3	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>15</b>		
<b>Junior Year: First Semester</b>		<b>Junior Year: Second Semester</b>	
PHYS 400	3	PHYS 375	2
PHYS 415	3	PHYS 3xx <sup>4</sup>	3
PHYS 420	3	Disciplinary Elective <sup>2</sup>	3
PHYS 450	3	Disciplinary Elective <sup>2</sup>	3
Disciplinary Elective <sup>2</sup>	3	Free Elective <sup>6</sup>	3
<b>Semester Total</b>	<b>15</b>	<b>Semester Total</b>	<b>14</b>
<b>Senior Year: First Semester</b>		<b>Senior Year: Second Semester</b>	
PHYS 494 <sup>5</sup>	3	Disciplinary Elective <sup>2</sup>	3
PHYS 430	3	Disciplinary Elective <sup>2</sup>	3
PHYS 475	2	Disciplinary Elective <sup>2</sup>	3
PHYS 492	1	Free Elective <sup>6</sup>	3
Disciplinary Elective <sup>2</sup>	3	Free Elective <sup>6</sup>	3
Disciplinary Elective <sup>2</sup>	3	<b>Semester Total</b>	<b>15</b>
<b>Semester Total</b>	<b>15</b>		

**Total Credit Hours: 120**

<sup>1</sup>Of the 12 total credit hours taken in the Humanities/Fine Arts and Social/Behavioral Sciences (H/FA/S/SB), 3 credit hours must be in Humanities/Fine Arts, 3 credit hours must be in Social/Behavioral Sciences, 3 credit hours must be completed in African-American culture and History and 3 credit hours must be completed in Global Awareness.

<sup>2</sup>Disciplinary Electives (24 credit hours) to be determined by the student's interest and approved by an instructor.

<sup>3</sup>Mathematics elective (3 hours) numbered 300 or above.

<sup>4</sup>Physics electives (3 hours) numbered 300 or above.

<sup>5</sup>PHYS 494 – capstone course.

<sup>6</sup>Free electives (9 hours) – It is suggested that at least 6 of these hours be FOLA course.

### MAJOR PROGRAM REQUIREMENTS

*Students must earn a C- or better in PHYS courses.*

### COURSE DESCRIPTIONS IN PHYSICS

#### PHYS 100. Physics Orientation

**Credit 1(1-0)**

The course introduces students to the subject area of physics, the various branches of physics. The applications of physics in science, engineering technology as well as current advances in physics will be discussed. The role of physics in interdisciplinary programs and research is discussed. Other topics may include African Americans and women in physics, physics and society, physics and religion, physics and politics, history of physics and physics and the national economy. (F)

- PHYS 101. Introduction to Astronomy** **Credit 3(3-0)**  
 This course is a broad survey of astronomy that examines the night sky, the seasons, the phases of the moon, eclipses, gravity, light, telescopes, the solar system, stars and galaxies. (F;S;SS)
- PHYS 104. Introduction to Cosmology** **Credit 3(3-0)**  
 This course will examine the universe: its size, shape and expansion; its origin, age and future; black holes and the mysterious dark matter and dark energy. (F;S;SS)
- PHYS 105. Physics for Nonscientists** **Credit 3(3-0)**  
 This course is intended for non-science students. It is a qualitative introduction to topics at the forefront of modern physics, with an emphasis on conceptual understanding. Mathematics use is reduced to a minimum. The course stresses the major role physics plays in our everyday life and aims at helping students evaluate the importance of the new scientific developments and their technological and socio-economical implications. It covers a wide variety of topics such as the building blocks of matter, the evolution of our universe, superconductivity and superfluidity, MRI and medical imaging techniques, the physics of lasers, the physics of semiconductors and transistors, nanoscience and nanotechnology, modern and future energy sources and their effects on the environment. (F;S)
- PHYS 110. Survey of Physics** **Credit 2(2-0)**  
 This is a one-semester study of selected topics in physics from each of the following: Newtonian mechanics, heat, sound, electricity and magnetism, light, atomic, and nuclear physics, and relativity. Prerequisites: MATH 102, 110 or 111. Corequisite: PHYS 111. (F;S;SS)
- PHYS 111. Survey of Physics Lab** **Credit 1(0-2)**  
 This is a laboratory course to be taken concurrently with PHYS 110, Survey of Physics. Students will perform experiments designed to verify and/or clarify physics concepts. Corequisite: PHYS 110. (F;S;SS)
- PHYS 211. Technical Physics I** **Credit 3(4-0)**  
 This is a study of the basic principles of mechanics, thermodynamics, wave motion, sound, electricity, magnetism, optics, and modern physics. Emphasis is placed on applications of physics in modern technology. Prerequisite: MATH 111. Corequisites: MATH 112 and PHYS 216. (DEMAND)
- PHYS 212. Technical Physics II** **Credit 3(4-0)**  
 This is a continuation of PHYS 211. Prerequisite: PHYS 211. Corequisite: PHYS 217. (DEMAND)
- PHYS 214. Astronomy I** **Credit 3(3-0)**  
 This course studies the Solar System. The following topics will be explored: the motions of the Earth, the sun, the moon, and the planets; the nature of light; ground and space-based telescopes; comparative planetology; the Earth-moon system; terrestrial and gas planets and their moons; dwarf planets, asteroids, and comets; planetary system formation. Corequisite: PHYS 224. (F;S)
- PHYS 215. Astronomy II** **Credit 3(3-0)**  
 This course studies Stars, Galaxies, and Cosmology. The following topics will be explored: stellar observables; star birth, evolution, and death; novae and supernovae; white dwarfs, neutron stars, and black holes; normal galaxies, active galaxies, and quasars; dark matter and dark energy; cosmology; and the early universe Prerequisites: PHYS 214 and PHYS 224. (F;S)
- PHYS 216. Technical Physics I Laboratory** **Credit 1(0-2)**  
 This is a qualitative and quantitative study of certain physical systems; critical observations and codification of data are emphasized. Corequisite: PHYS 211. (DEMAND)
- PHYS 217. Technical Physics II Laboratory** **Credit 1(0-2)**  
 This is a continuation of PHYS 216. Corequisite: PHYS 212. (DEMAND)
- PHYS 224. Astronomy I Laboratory** **Credit 1(0-2)**  
 In this laboratory, students will learn how to use robotic telescopes. Students will learn how to analyze data from their observations of planets, moons, asteroids, binary and variable stars, supernovae, star-forming regions, star clusters, and galaxies. Corequisite: PHYS 214. (F;S)
- PHYS 225. College Physics I** **Credit 3(3-0)**  
 This is an algebra-based course. No calculus is used. The course is a study of fundamental principles of Newtonian mechanics, heat, and thermodynamics. Corequisite: PHYS 235, MATH 110 or 111. (F;S;SS)
- PHYS 226. College Physics II** **Credit 3(3-0)**  
 This is an algebra-based continuation of PHYS 225. No calculus is used. The course covers the fundamental principles of electricity, magnetism, wave motion, and optics. Corequisite: PHYS 236. Prerequisite: PHYS 225. (F;S;SS)
- PHYS 235. College Physics I Laboratory** **Credit 1(0-2)**  
 This is a course that will emphasize the importance of experimentation and observations in the development of a physical science. A selected group of experiments will be undertaken.
- PHYS 225. College Physics I** **Credit 3(3-0)**  
 This is an algebra-based course. No calculus is used. The course is a study of fundamental principles of Newtonian mechanics, heat, and thermodynamics. Corequisite: PHYS 235, Prerequisite MATH 110 or 111. (F;S;SS)
- PHYS 236. College Physics II Laboratory** **Credit 1(0-2)**  
 This is a continuation of PHYS 235. Corequisite: PHYS 226. (F;S;SS)

- PHYS 241. General Physics I** **Credit 3(4-0)**  
 This is a calculus-based physics course that covers the fundamental principles of Newtonian mechanics, heat, and thermodynamics. Corequisites: MATH 132, PHYS 251. (F;S;SS)
- PHYS 242. General Physics II** **Credit 3(4-0)**  
 This is a continuation of PHYS 241. It is a calculus-based study of physics, which covers the fundamental principles of electricity, magnetism, wave motion, and optics. Prerequisite: MATH 132. Corequisite: PHYS 252. (F;S;SS)
- PHYS 251. General Physics I Lab** **Credit 1(0-2)**  
 This is a laboratory course where a selected group of physics experiments will be performed. Emphasis is placed on the development of experimental technique, analysis of data, and physical interpretation of experimental results. Corequisite: PHYS 241. (F;S;SS)
- PHYS 252. General Physics II Lab** **Credit 1(0-2)**  
 This course is a continuation of PHYS 251. Corequisite: PHYS 242. (F;S;SS)
- PHYS 280. Introduction to Space Science** **Credit 3(3-0)**  
 This course explores major components of space science that include properties of outer space (the region beyond the Earth's atmosphere), and/or regions that require a space-based operation. Space science areas include both remote sensing studies of Earth and more distant objects including the near-Earth space environment. Prerequisite: PHYS 101. (F;S)
- PHYS 290. Introduction to Geophysics** **Credit 3(3-0)**  
 This course provides an introduction to the use of physical measurements to determine the structure and composition of the solid Earth. Topics include plate tectonics, the gravity and magnetic fields, elasticity and seismic properties of the Earth, seismic waves, earthquake seismology, isostasy, and elementary concepts in geodynamics. The course summarizes current knowledge of the interior of the Earth as determined by modern geophysical techniques. Prerequisite: PHYS 242. (F;S)
- PHYS 305. Mathematical Physics (formally PHYS 405)** **Credit 3(3-0)**  
 This is a course in the applications of mathematics to solutions of physical problems. It covers selected topics in vector analysis, differential equations, special functions, calculus of variations, eigenvalues and eigenfunctions, and matrices. Prerequisite: MATH 231. (F;S)
- PHYS 306. Introduction to Modern Physics (formerly PHYS 406)** **Credit 3(3-0)**  
 This course is a study of the basics of special relativity, quantum, atomic, molecular, statistical, solid state, nuclear, and particle physics. Prerequisites: PHYS 242 or 226 and MATH 132. (F;S;SS)
- PHYS 345. Introduction to Computations in Physics (formerly PHYS 445)** **Credit 3(3-0)**  
 This course will introduce and use computational techniques to analyze and solve physical problems. Techniques to be used include a visual programming language, graphing packages, computer algebra systems, and other applications. Prerequisites: PHYS 241, PHYS 242 and a course in programming. (F;S)
- PHYS 375. Intermediate Physics Laboratory (formerly PHYS 407)** **Credit 2(1-2)**  
 This is an intermediate level laboratory course that emphasizes performing selected experiments in electromagnetism, optics, atomic, nuclear and condensed matter physics. The purpose of this course is to introduce students to proper laboratory skills in data collection, analysis and reporting as well as to give students hands-on knowledge of experiments and ideas which revolutionized the field of physics. Pre- or Co-requisite: PHYS 306. (F;S)
- PHYS 400. Physical Mechanics I** **Credit 3(3-0)**  
 This is a course in Newtonian mechanics and includes particle dynamics, conservation laws, vibrational motion, central field motion, rigid body dynamics, Hamilton's principle and Lagrange's equations. Prerequisites: PHYS 242 and PHYS 305. (F)
- PHYS 401. Physical Mechanics II** **Credit 3(3-0)**  
 This is an intermediate course on classical mechanics. Topics include: Lagrangian and Hamiltonian formalism, and special relativistic descriptions of the dynamics of particles and rigid bodies. Applications in engineering will be considered. Prerequisite: PHYS 400. (S)
- PHYS 411. Atmospheric Physics I** **Credit 3(3-0)**  
 This course covers the applications of physical laws and principles including acoustics, electricity, wave propagation, optics and radiation to the atmosphere. Prerequisites: MATH 231, PHYS 242 or consent of instructor. (F;S)
- PHYS 412. Atmospheric Physics II** **Credit 3(3-0)**  
 This course is a continuation of Atmospheric Physics I and will include topics from basic principles of cloud and precipitation physics, including the study of condensation processes, freezing nucleation, ice crystal growth and weather modification. Prerequisites: PHYS 411. (F;S)
- PHYS 415. Electromagnetism I** **Credit 3(3-0)**  
 This course is an intermediate course in Maxwell's theory of electromagnetism. The course treats electrostatic fields in vacuum, Gauss's law, special techniques for calculating electric potentials, electrostatic fields in matter, electric polarization, linear dielectrics, magnetostatic fields and potentials in vacuum and matter, Lorentz transformation, Ampere's law, magnetization, paramagnetic, diamagnetic and ferromagnetic media, Faraday's laws and induction, Maxwell's equations, energy conservation and Poynting's theorem. Prerequisites: PHYS 242 and PHYS 305. (F)
- PHYS 416. Electromagnetism II** **Credit 3(3-0)**  
 This course is the continuation of PHYS 415. It is an intermediate course in Maxwell's theory of electromagnetism. Electromagnetic phenomena are presented. This includes electromagnetic wave propagation, reflection and refraction, absorption

and dispersion, dipole and point charge radiation. Relativistic electrodynamics is also presented. Applications to problems in engineering will be considered. Prerequisite: PHYS 415. (S)

**PHYS 420. Quantum Physics I** **Credit 3(3-0)**

This course presents a mathematical introduction required for understanding of quantum mechanics. The solutions of the Schrodinger equation for free particle and a particle in one-dimensional potentials (square, barrier, etc.), and the postulates of quantum mechanics are presented. The simple harmonic oscillator problem is solved. Other topics include angular momentum, spin, the two-particle problem and the hydrogen atom. Prerequisite: PHYS 306. (F;S)

**PHYS 422. Quantum Physics II** **Credit 3(3-0)**

This is a continuation of PHYS 420. This course deals with selected applications of quantum mechanics to problems in atomic, molecular, nuclear, solid state physics and materials science. Topics include: approximation methods, perturbation theory, and scattering theory. Prerequisite: PHYS 420. (F;S)

**PHYS 430. Thermodynamics and Statistical Mechanics** **Credit 3(3-0)**

This course reviews the principles of thermodynamics, which include macroscopic variables, thermodynamic equilibrium, the thermodynamic laws, and kinematic theory. The fundamentals of statistical mechanics are covered which include microcanonical and canonical ensembles, partition functions, Bose and Fermi statistics, and the Boltzmann equation. Prerequisite: PHYS 400. (F;S)

**PHYS 440. Applied Geophysics** **Credit 3(3-0)**

This course offers an overview of the field procedures employed to collect different types of geophysical data, and provides an introduction to the techniques employed to analyze and interpret geophysical data collected for applied and engineering purposes. It covers the major geophysical methods employed in resource exploration, environmental assessment, and geotechnical investigations and includes theory and technical background for seismic refraction and reflection methods, electrical resistivity and electromagnetic methods, ground penetrating radar method, gravity method, and magnetic method. Case studies, and field and computer exercises are also included. Students will be given hands-on exercises with geophysical survey equipment. Prerequisite: PHYS 290. (F;S)

**PHYS 441. Geophysical Data Analysis** **Credit 3(3-0)**

This course covers the fundamental principles and methods that are commonly used to analyze geophysical data. It includes the following topics: transforms, one-sided functions, spectral factorization, resolution, matrices and multi-channel time series, data modeling by least squares, waveform applications of least squares, layers revealed by scattered wave filtering, and mathematical physics in stratified media. Prerequisite: PHYS 440. (F;S)

**PHYS 442. Structural Geology** **Credit 3(3-0)**

This course studies the processes of deformation and the geometry of deformed rocks by examining rock deformation through the analysis of structures at both the microscopic and outcrop scales. It will cover the following topics: the description of geological structures; the kinematics and dynamics of folding and faulting; stress, strain, and rheology; introduction to dislocation theory; micro-structural analysis and principles of plate tectonics. Prerequisite: PHYS 290. (F;S)

**PHYS 447. Computational Techniques in Physics (formerly PHYS 530)** **Credit 3(2-3)**

This course is an application of numerical methods to solve problems in physics. It includes root finding, systems of equations, integration, differentiation, boundary-value problems, and Monte Carlo methods. Prerequisite: PHYS 305. (DEMAND)

**PHYS 450. Waves and Optics** **Credit 3(3-0)**

This course explores wave phenomena. It covers the propagation, reflection, and refraction of light and includes studies of lenses and optical instruments, interference, diffraction, polarization, line spectra, and thermal radiation. Prerequisite: PHYS 242. (F;S)

**PHYS 451. Introduction to Astrophysics** **Credit 3(3-0)**

This course is a study of radiation from stars and nebulae to determine the basic stellar characteristics, the composition and physical conditions of matter in and between the stars. It also investigates the structural properties of our Milky Way galaxy, as evidenced by the spatial distribution of dust, gas, stars, and magnetic fields. Prerequisite: PHYS 242. (DEMAND)

**PHYS 453. Introduction to High Energy Astrophysics (formerly PHYS 580)** **Credit 3(3-0)**

The course will introduce the fundamentals of the subject, with a focus on compact objects such as black holes and neutron stars, and will also survey recent exciting developments in this field. Topics include general relativity, accreting neutron stars and black holes, and gamma ray bursts. Prerequisite: PHYS 242. (DEMAND)

**PHYS 457. Electromagnetism III** **Credit 3(3-0)**

This course is an extended study of electromagnetism which covers simple radiating systems, multi-pole radiation, and radiation by moving charges, and relativistic kinematics. Prerequisite: PHYS 416. (DEMAND)

**PHYS 465. Physics of Atoms, Molecules and Nanosystems** **Credit 3(3-0)**

This is a study of one and many electron atoms, molecular structure, and molecular spectra, of diatomic and polyatomic molecules with introductory applications to nanoscience. The course also covers other topics that include limits of smallness, quantum nature of the nanoworld, and self-assembled nanostructures in nature and industry. Prerequisite: PHYS 306. (S)

**PHYS 467. Solid State Physics** **Credit 3(3-0)**

This is a study of the basics of the topics of binding, crystal structure, the reciprocal lattice, phonons, free and nearly free electron gas models, energy bands, metals, semiconductors, insulators, superconductors, and magnetic properties of materials. Prerequisite: PHYS 306. (F)

- PHYS 468. Nuclear Physics and Elementary Particles** **Credit 3(3-0)**  
 This is a study of the properties of the nucleus, radioactivity, nuclear reactions, fission and fusion, elementary particles, and particle accelerators. Prerequisite: PHYS 306. **(F)**
- PHYS 470. Experimental Physics (formerly PHYS 531)** **Credit 3(2-3)**  
 This course surveys experimental methods in physics. It involves experiment development, including techniques in instrumentation design and data acquisition. Also, it involves oral and written presentations of experimental results. Prerequisite: PHYS 242. **(DEMAND)**
- PHYS 475. Advanced Laboratory (formerly PHYS 520)** **Credit 2(1-3)**  
 This is a laboratory course designed to give students advanced laboratory training needed to perform research. Selected experiments from classical mechanics, electromagnetism, optics, atomic physics, nuclear physics and condensed matter physics would be performed. This course may be repeated to earn a maximum of four credits. Prerequisite: PHYS 375. **(F;S)**
- PHYS 480. Introduction to Solar Physics** **Credit 3(3-0)**  
 This course examines the Sun as a star, its radius, mass, and luminosity as well as measuring of these parameters. It also explores other characteristics of the Sun such as variability of rotation, magnetism, chemical structure, and planetary system. The course will also address the internal structure of the Sun and its atmosphere. Contemporary research on the Sun will also be discussed. Prerequisite: PHYS 306. **(F;S)**
- PHYS 485. Special Topics in Physics (formerly PHYS 500)** **Variable Credit (1-3)**  
 This is a junior-senior level course on selected topics in physics not covered in other courses. A descriptive title, syllabus and the amount of credit must have received departmental approval before scheduling. Students' records will carry both course number and descriptive title. The course may be repeated to earn a maximum of six credits. **(DEMAND)**
- PHYS 490. Space Radiation** **Credit 3(3-0)**  
 This is a course in space radiation environment, space exploration and radiation protection requirements. The course covers cosmic rays and radiation environment, biological effect induced by space radiation, effects of space radiation on the spacecraft on-board electronics and equipment, space radiation measurement, monitoring and dosimetry, radiation protection for space exploration and shield design. Prerequisite: PHYS 242, MATH 231 **(F;S)**
- PHYS 494. Undergraduate Research (formerly PHYS 550)** **Variable Credit 1-3**  
 This course involves student participation in research conducted by faculty. Topics may be analytical and/or experimental and encourage independent study. The amount of credit will be determined before the beginning of the course. Prerequisite: Consent of instructor. **(F;S;SS)**
- PHYS 492. Physics Seminar (formerly PHYS 510)** **Variable Credit (1-3)**  
 This is a study of current developments in physics. The topics and the amount of credit will be determined before the beginning of the course. Prerequisite: Senior standing. **(DEMAND)**

#### **Some Graduate Courses**

(Consult Graduate Programs Catalog)

PHYS 600. Classical Mechanics	Credit 3(3-0)
PHYS 601. Selected Topics in Geophysics	Credit 3(2-2)
PHYS 602. Introduction to Geophysical Research	Credit 3(1-4)
PHYS 605. Mathematical Methods	Credit 3(3-0)
PHYS 615. Electromagnetic Theory I	Credit 3(3-0)
PHYS 620. Quantum Mechanics I	Credit 3(3-0)
PHYS 630. Statistical Mechanics	Credit 3(3-0)

#### **COURSE DESCRIPTIONS IN ATMOSPHERIC SCIENCES AND METEOROLOGY**

- ASME 151. Earth System Science: Exploring the Connections** **Credit 3(3-0)**  
 This course investigates the interactions among the atmosphere, ocean, ice, solid-Earth and biological systems. It introduces students to scientific inquiry and the scientific method through a comprehensive study of the principles of the earth system using a case study approach and the influence of human activity on the earth system. **(F;S)**
- ASME 211. Computer Applications in Meteorology** **Credit 3(2-2)**  
 This course is an introductory lecture and lab to familiarize students with computational, meteorological, and graphic software packages including, but not limited to FORTRAN and UNIX/LINUX, and MATLAB **(F;S)**
- ASME 231. Atmospheric Thermodynamics** **Credit 3(3-0)**  
 This course covers the general aspects of thermodynamic physical processes occurring within the atmosphere. Topics included are atmospheric statics and stability, saturation point analysis, aerosols, nucleation, the structure and content of clouds, the development of physical characteristics of precipitation, and the dynamics of rain systems. Prerequisite: PHYS 241. **(F;S)**
- ASME 251. Fundamentals of Meteorology and Climatology** **Credit 3(3-0)**  
 This course covers the general character of the atmosphere and its weather and climate systems, phenomena, and distributions of variables (winds, temperature, pressure, moisture). Topics included are the formal framework of the science; the application of basic classical physics, chemistry, mathematics, and computational sciences to the atmosphere and climate systems. Prerequisites: CHEM 107 or consent of instructor. Corequisite: ASME 252. **(F;S)**

- ASME 252. Meteorological Analysis Laboratory** **Credit 1(0-2)**  
 This course provides laboratory exercises to supplement ASME 251. Lab experiences include weather observations, weather map analysis, use of the internet, forecasting practice and climate modeling. Prerequisites: CHEM 107 or consent of instructor. Corequisite: ASME 251. (F;S)
- ASME 275. Weather Systems** **Credit 3(3-0)**  
 This course is an introduction to the basic characteristics, of thermodynamics, and dynamics of atmospheric weather systems on Earth and other planets. The students are exposed to observations of weather systems while reviewing non-dimensional analysis, dynamics and thermodynamics. Weather systems on earth are compared to those of other planets, and analytical tools are used to gain insights into their basic physics (F;S)
- ASME 285. Broadcast Meteorology** **Credit 3(3-0)**  
 This course provides an introduction to the principles of broadcast meteorology. Students will develop the skills necessary to communicate scientific information with emphasis on weather forecasts. The campus radio station will be used by the students to present weather forecasts. Prerequisite: ASME 251. (F;S)
- ASME 420. Tropical Meteorology** **Credit 3(3-0)**  
 This course surveys the basic concepts, theories, and dynamics of tropical meteorology. Topics cover tropical circulations, tropical convection, tropical wave dynamics, tropical cyclones and tropical climate. Prerequisite: ASME 231, ASME 251. (F;S)
- ASME 422. Weather Analysis and Forecasting** **Credit 4 (3-3)**  
 This course covers the analysis and forecasting of synoptic weather systems with an emphasis on the basic tools of and its application for weather analysis, including the theories of synoptic weather; the application of thermodynamic and dynamic concepts and models to synoptic weather analysis and the use of numerical models for synoptic weather forecasting. Prerequisites: ASME 211, ASME 251, MATH 231 or consent of instructor. (F;S)
- ASME 423. Weather Analysis and Forecasting II** **Credit 4(3-3)**  
 This course covers the mesoscale analysis and forecasting of mesoscale weather systems with an emphasis on the structure, evolution, and dynamics of atmospheric phenomena. Phenomena to be studied will include hurricanes, mountain waves, land/sea breeze, mesoscale convective complexes (MCCs), severe thunderstorms, tornadoes, and squall lines. Students will use data for mesoscale weather analysis from a variety of observing platforms, mesoscale models (such as WRF), case studies, and multi-media instructional modules. Prerequisites: ASME 422 or consent of instructor. (F;S)
- ASME 430. Polar Meteorology** **Credit 3(3-0)**  
 This course will focus on the meteorology in the polar region. The course begins with an overview of the basic geographical characteristics and climate features of the polar region. Attention then turns to various polar weather phenomena and patterns. The final segment of the course lecture explores the numerical weather forecast of polar weather. Prerequisites: ASME 251. (F;S)
- ASME 433. Atmospheric Dynamics I** **Credit 3(3-0)**  
 This course is an introduction to fluid dynamics in the atmosphere. The basic laws of fluid mechanics are discussed as applied in the atmospheric context. Topics covered are geophysical wave motion, the notion of scale in fluid mechanics, and approximations for analyzing the structure of large-scale atmospheric flows. Prerequisites: ASME 211, MATH 341 or consent of instructor. (F;S)
- ASME 434. Atmospheric Dynamics II** **Credit 3(3-0)**  
 This course provides additional coverage of atmospheric fluid mechanics topics. Topics covered are quasi-geostrophic energetic fronts, mean circulation planetary and equatorial waves, an overview of the dynamics of the middle atmosphere, wave-mean flow interaction, spectral methods, and tropical meteorology. Prerequisite: ASME 433. (F;S)
- ASME 440. Atmospheric Chemistry** **Credit 3(3-0)**  
 This course covers an overview of chemical kinetics and equilibrium, sources and sinks of pollutants, photochemistry and smog formation, air quality and human health issues, air pollution trends, and acid rain. It provides a quantitative basis for understanding complex chemical interactions in the atmosphere. Prerequisite: CHEM 107 or consent of instructor. (F;S)
- ASME 463. Atmospheric Remote Sensing (formerly ASME 563)** **Credit 3(3-0)**  
 This course investigates interactions between electromagnetic radiation and matter using examples drawn from remote sensing techniques that are commonly used in atmospheric sciences. Prerequisites: PHYS 416, or consent of instructor. (F;S)
- ASME 470. Atmospheric Modeling** **Credit 3(3-0)**  
 This course covers advanced atmospheric fluid dynamics concepts such as Coriolis accelerations, scale analysis, and appropriate approximations of the complete governing equations. Prerequisites: ASME 433, PHYS 345 or ASME 211. (F;S)
- ASME 480. Synoptic Dynamics** **Credit 3(3-0)**  
 This course will advance the understanding of synoptic-scale mid-latitude systems through the method of weather analysis. Topics include: quasi-geostrophic theory, potential vorticity dynamics, fronts cyclones and jets. Prerequisites: ASME 422 or ASME 433. (F;S)
- ASME 481. Atmospheric Fluid Dynamics** **Credit 3(3-0)**  
 This course covers advanced atmospheric fluid dynamics concepts such as Coriolis accelerations, scale analysis, and appropriate approximations of the complete governing equations. Prerequisites: MATH 341 and PHYS 241 or consent of instructor. (F;S)
- ASME 491. Chemical and Optical Instrumentation for Atmospheric Measurement** **Credit 3(3-0)**  
 This course covers principles and performance of chemical and optical instrumentation techniques for ground and aircraft-based measurements. Prerequisites: PHYS 450 or consent of instructor. (F;S)

**ASME 492. Seminar in Atmospheric Science and Meteorology (formerly ASME 510)** **Credit 1(1-0)**

This is a study of current developments in atmospheric sciences and meteorology. The topics will be determined between a student, advisor, and instructor of the course. A student is required to take this course twice. Prerequisites: ASME 251, Senior or Junior standing. **(F;S)**

**ASME 496. Senior Project (formerly ASME 550)** **Credit 6(0-12)**

This course is an investigation of special topics on climate, atmospheric science, and meteorology arranged between a student and a faculty advisor. Prerequisites: Consent of instructor. **(F;S)**

#### **DIRECTORY OF FACULTY**

**Abdellah Ahmidouch** ..... **Professor and Interim Dean, College of Science and Technology**

B.S., Mohammed V. University; M.S., Joseph Fourier Grenoble I University; Ph.D., University of Geneva

**Solomon Billig** ..... **Professor**

B.S., M.S., Addis Ababa University; Ph.D., University of Iowa

**Samuel S. Danagoulian** ..... **Professor**

M.S., Ph.D., Yerevan Physics Institute

**Kenneth Flurchick** ..... **Assistant Professor**

Ph.D., Colorado State University

**Ashot Gasparian** ..... **Professor**

B.S., Ph.D., Yerevan Physics Institute

**Floyd J. James** ..... **Associate Professor and Interim Chairperson**

B.S., M.S., M.S., Ph.D., University of North Carolina at Chapel Hill

**Abebe B. Kebede** ..... **Associate Professor**

B.S., Addis Ababa University; M.A, Ph.D., Temple University

**Melvin Levy** ..... **Research Professor**

B.S., M.A., Queens College, Ph.D., Indiana University

**Yuh-Lang Lin** ..... **Professor**

B.S., Fujen Catholic University, M.S., South Dakota School of Mines and Tech., Ph.D., Yale University

**Ronald S. Pedroni** ..... **Associate Professor**

B.A., Jacksonville University; Ph.D., Duke University

**Thomas R. Sandin** ..... **Professor Emeritus**

B.S., Santa Clara University; M.S., Ph.D., Purdue University

**Brian Schuft** ..... **Lecturer**

M.S., University of North Carolina at Chapel Hill

**Chih-Kuan Tung** ..... **Assistant Professor**

B.S., National Taiwan University, Taipei; Ph.D., Princeton University

**Jing Zhang** ..... **Associate Professor**

B.S., M.S., Nanjing University, Nanjing; Ph.D., Peking University, Beijing

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## CENTER FOR ACADEMIC EXCELLENCE

<http://www.ncat.edu/divisions/academic-affairs/cae/>

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**Regina Williams Davis, Assistant Provost for Student Success and Academic Support**

### OBJECTIVES

The objectives of The Center for Academic Excellence are:

- To serve as the university's central academic advising unit that provides academic guidance and support services for tutoring, supplemental instruction, developmental mathematics courses and instructors for the College Success Course.
- To collaborate with academic and student affairs departments to provide a cohesive network of support services aimed to increase student academic achievement.
- To develop and implement strategies designed to increase retention rates of all freshmen and sophomores.

### GOALS

The goals of the Center for Academic Excellence are:

1. To increase the retention and graduation of students admitted to the university;
2. To provide intensive quality academic advising and academic support services that foster academic success;
3. To assist students in their transition to the university;
4. To prepare undeclared students for their prospective majors;
5. To provide students on academic probation a support network that will assist them in obtaining good academic standing;
6. To enhance students' mathematics skills.

### COURSES WITH DESCRIPTION

#### **FRST 100. University Survival**

**Credit 1**

This course is intended to introduce students to academic and personal skills essential for success in college and in life. The course focuses on fundamental principles of study skills such as reading and study strategies, note-taking practices, and test-taking as well as general academic skills such as goal setting, time-management, and critical thinking. This course is also designed to orient students to university life and provide information regarding university organizational structures, as well as policies and procedures, all with the aim of encouraging them to utilize these resources to attain their academic goals.

#### **FRST 101. College Success**

**Credit 1**

This course is intended to provide academic and personal skills and resources essential for success in college and in life. Students will gain knowledge and experiences to guide them through the major/career decision making process based on ability and aptitude. Students will gain necessary information to build financial aid and financial literacy awareness and receive tools for financial and debt management. Additionally, health and wellness topics will be addressed to promote and identify prevention strategies for healthy living and student success.

#### **MATH 099. Intermediate Mathematics**

**Credit 3**

This course provides elementary properties of real numbers and basic algebra through solving of quadratic equations by various means. Students are assigned to this course based on their math placement exam score.

### CREDIT

Credit is given for math courses taken in the Center for Academic Excellence, however, no quality points are received toward



the completion of a degree.

#### **DIRECTORY OF FACULTY**

**Ahmed Ahmed**, B.S., University of Khartoum; M.S., North Carolina A&T State University  
**Katrina Allen-Norris**, B.S., James Madison University; M.Ed., National-Louis University  
**Amy Anderson**, B.A., Mercer University; M.Ed., Georgia Southern University; Ed.S., University of Georgia  
**Anjan Basu**, B.A., M.A., North Carolina A&T State University  
**Torrey Burden**, B.S., University of North Carolina at Greensboro; M.S., North Carolina A&T State University; Ed.S., Kellogg Institute (ASU); Ed.S., Appalachian State University  
**Kimberly Burke**, B.S., State University of New York at Geneseo; M.A., Nazareth College of Rochester  
**Antja Caldwell**, B.A., M.S., North Carolina A&T State University  
**Lorraine W Cook**, B.S., University of North Carolina at Greensboro; M.S., North Carolina A&T State University  
**Daniel Ferguson**, B.S., South Carolina State University; M.Ed., Clemson University  
**Andrea Fernandez**, B.A., M.A., North Carolina A&T State University; Ph.D., University of North Carolina at Greensboro  
**Tanisha George**, B.S., North Carolina A&T State University  
**Maurice D. Gregory**, B.S., University of Tennessee at Chattanooga; M.S., North Carolina A&T State University  
**Ella Hairston**, B.A., Johnson C. Smith University; M.A., North Carolina A&T State University  
**Tonia Hamilton**, B.S., University of North Carolina at Greensboro; M.S., North Carolina A&T State University  
**W. Grant Hill**, B.S., North Carolina A&T State University; M.B.A., Winston Salem State University  
**Renisha Howard**, B.A., M.P.A., University of North Carolina at Chapel Hill  
**Wilson Jones**, B.S., Winston-Salem State University; M.S., North Carolina A&T State University; Ed.S., Kellogg Institute (ASU); Ed.S., Appalachian State University  
**Melinda Lee**, B.S., Elizabeth City State University; M.S., American InterContinental University; Ph.D., Capella University  
**Michael Murphy**, B.S., M.S., North Carolina A&T State University  
**Dawn Nail**, B.A., North Carolina A&T State University; M.A., Austin Peay State University; Ed.D., Capella University  
**Juanita Painter**, B.S., M.A., Norfolk State University  
**Leslie Rowls**, B.S., University of West Alabama; M.A., University of North Carolina at Greensboro  
**Constance Williams**, B.S., University of North Carolina at Greensboro; B.S., M.S., North Carolina A&T State University  
**Deborah Williamson**, B.A., M.Ed., North Carolina A&T State University  
**Regina Williams Davis**, B.S., Hampton University; M.H.R., University of Oklahoma; Ph.D., University of North Carolina at Greensboro

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**DEPARTMENT OF MILITARY SCIENCE AND LEADERSHIP (MISC)**

<http://www.ncat.edu/divisions/academic-affairs/rotc/army/index.html>

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**LTC Michael Teague, Professor**

**OBJECTIVE**

The objective of the Army Reserve Officers' Training Corps (ROTC) is to train, motivate and prepare selected students with potential to serve as Commissioned Officers in the Regular Army, Army Reserve or the Army National Guard. The program is designed to provide an understanding of the fundamental concepts and principles of military art and science and to develop leadership and managerial potential in the student. A strong sense of personal integrity, honor, and individual responsibility, and an appreciation of the requirements for national security are instilled in all students. Attainment of these objectives will prepare students for commissioning and will establish a sound basis for their future professional development and effective performance in the Army or civilian life.

Enrollment in the Department of Military Science courses is open to all students attending a college or university in the Greater Greensboro Consortium (**Bennett College, Elon University, Greensboro College, Guilford College, High Point University, North Carolina A&T State University, and University of North Carolina at Greensboro**). The Army ROTC program offers elective courses for undergraduate and graduate students leading to a commission in the United States Army. Students may compete for four-year, three-year, and two-year scholarships. The program also offers nursing scholarships on a competitive basis as a Partnership in Nursing Education (**PNE**) school. For more information, contact the Army ROTC Department in Campbell Hall, (336) 334-7588.

**DEGREES OFFERED**

Upon graduation, students may have achieved four accomplishments:

- Bachelors of Science or Arts in student's chosen major
- Graduate degree in student's discipline
- Commission as a 2<sup>nd</sup> Lieutenant in the United States Army, Army Reserves or the National Guard
- Minor in Military Leadership

**GENERAL PROGRAM REQUIREMENTS**

The ROTC program is divided into a basic course, which is normally taken during the freshman and sophomore years, and an advanced course, which is taken during the junior and senior years. The admission of students to the ROTC program is based upon the general admission requirements of the University as they pertain to a full-time student.

**DEPARTMENT REQUIREMENTS**

The programs of instruction for Army ROTC include a four-year program and a two-year program. The four-year program consists of the two-year basic course, the two-year advanced course, and the Leadership Development and Assessment Course (LDAC). The two-year program encompasses a Leaders Training Course, the two-year advanced course and LDAC.

*Basic Course:* The basic course consist of two distinct components, the classroom introduction to the Army Profession and Officership of the Military Science and Leadership (MISC) 1 year, and the experiential examination of leadership, decision-making, and group process of the MISC II year. By the end of the Basic Course, cadets should possess a basic understanding of the unique aspects of the officer corps, fundamentals of leadership and decision-making, the Army's institutional values, and principles of individual fitness and a healthy lifestyle.

NOTE: Students may join the ROTC program at any time during the MISC I or MISC II year. The minimum ROTC participation, leading to a commission, is the Advanced Course (MISC III and MISC IV years and the Leader Development and Assessment Course (LDAC). Credit for the basic course can be obtained by successfully completing Military Science & Leadership 101, 102, 201, 202. A leadership laboratory must be taken concurrently each semester with the class. Prior service in the Armed Forces, completion of Basic Combat Training, or completion of the Leader's Training Course can be used to obtain appropriate credit for the basic course.

*Advanced Course:* The advanced course is designed to produce officers for the active Army as well as the Reserve Components. Entry into the advanced course is on a best qualified basis. The student must possess qualifications for becoming an effective Army officer. Applicants must attain and maintain a minimum G.P.A. of 2.0, (scholarship applicants must have a 2.5 G.P.A. and after being awarded the scholarship, must maintain a 2.0 G.P.A.) in order to validate their academic eligibility for participation in the program. The applicants must have a minimum of two years of academic work remaining at the educational institution in a curriculum leading to either a baccalaureate or advanced degree in a recognized academic field of study. In addition, each student must successfully complete the Leadership Development and Assessment Course the summer following completion of their MISC III year. Applicants must also pass an Army medical examination and swim test. The following courses are required for completion of the advanced course: Military Science & Leadership 301, 302, 401, 402. The leadership laboratory must also be taken each semester.

*Two Year Program:* This program is designed for sophomore and junior students transferring to a 4-year institution who have not taken ROTC. In lieu of the basic course, students are required to attend Leaders Training Course at Fort Knox in the summer of their sophomore year. The advanced course, which leads to an officer commission, is the same for students in either the four-year program or the two-year program.

### **CAREER OPPORTUNITIES**

Successful completion of the ROTC program qualifies a student for a commission as a Second Lieutenant in one of the following branches of the Army: Adjutant General's Corps, Armor, Infantry, Military Police Corps, Military Intelligence, Ordnance Corps, Quartermaster Corps, Signal Corps, Medical Service Corps, Corps of Engineers, Finance Corps, Aviation, Field Artillery, Air Defense Artillery, Transportation Corps and Army Nurse Corps. Special requirements and/or additional training is required for commissioning in the Medical Corps, Army Medical Specialist Corps, Veterinarian Corps, Chaplain Corps, and the Judge Advocate General's Corps.

### **FINANCIAL AID**

A subsistence fee ranging between \$350.00 and \$500.00 per month is paid to advanced course and scholarship cadets during the entire normal academic year while participating in Army ROTC. Four, three and two year scholarships are available. Details on scholarships are published by the Department of the Army and by the Military Science Department. In addition to the subsistence fee, the scholarship pays tuition, laboratory fees, book cost and certain supplies within the limits of the scholarship award.

### **COURSES WITH DESCRIPTION IN MILITARY SCIENCE AND LEADERSHIP**

#### **MISC 101. Foundations of Officership**

**Credit 1**

This course introduces students to the personal challenges and competencies that are critical for effective leadership. Students learn how the personal development of life skills such as critical thinking, goal setting, time management, physical fitness, and stress management relate to leadership, officership, and the Army profession. (F)

#### **MISC 102. Basic Leadership**

**Credit 1**

This course overviews leadership fundamentals such as setting direction, problem-solving, listening, presenting briefs, providing feedback, and using effective writing skills. Students explore dimensions of leadership values, attributes, skills, and actions in the context of practical, hands-on, and interactive exercises. (S)

#### **MISC 105/107. Leadership Laboratory\***

**Credit 1**

This course is in conjunction with each of the aforementioned M.S. level classes in the basic course. It is a period which supplements and reinforces, through practical application, the fundamentals taught in each of the Military Science classes. This course is a progressive leading experience designed to produce effective and efficient Second Lieutenants for the United States Army. MISC 105 (F) MISC 107 (S)

#### **MISC 201. Innovative Team Leadership**

**Credit 2**

This course explores the dimensions of creative and innovative tactical leadership strategies and styles by examining team dynamics and two historical leadership theories that form the basis of the Army leadership framework (trait and behavior theories). Students practice aspects of personal motivation and team building in the context of planning, executing, and assessing team exercises and participating in leadership labs.(F)

#### **MISC 202. Foundations of Tactical Leadership**

**Credit 2**

This course examines the challenges of leading tactical teams in the complex contemporary operating environment (COE). The course highlights dimensions of terrain analysis, patrolling, and operation orders. Further study of the theoretical basis of the Army leadership framework explores the dynamics of adaptive leadership in the context of military operations. (S)

#### **MISC 205/207. Leadership Laboratory\***

**Credit 1**

This course is in conjunction with each of the aforementioned M.S. level classes in the basic course. It is a period which supplements and reinforces, through practical application, the fundamentals taught in each of the Military Science classes. This

course is a progressive leading experience designed to produce effective and efficient Second Lieutenants for the United States Army. MISC 205 (F); MISC 207 (S)

**MISC 301. Adaptive Tactical Leadership** **Credit 3**

This course challenges cadets to study, practice, and evaluate adaptive leadership skills as they are presented with challenging scenarios related to squad tactical operations. Cadets receive systematic and specific feedback on their leadership attributes and actions. Based on such feedback, as well as their own self-evaluations, cadets continue to develop their leadership and critical thinking abilities. (F)

**MISC 302. Leadership in Changing Environments** **Credit 3**

This course uses increasingly intense situational leadership challenges to build cadet awareness and skills in leading tactical operations up to platoon level. Cadets review aspects of combat, stability, and support operations. They also conduct military briefings and develop proficiency in garrison operation orders. (S)

**MISC 305/307. Leadership Laboratory\*** **Credit 1**

This course is in conjunction with each of the aforementioned M.S. level classes in the advanced course. It is a period which supplements and reinforces, through practical application, the fundamentals taught in each of the Military Science classes. Leadership Lab is a progressive leading experience designed to produce effective and efficient Second Lieutenants for the United States Army. MISC 305 (F); MISC 307 (S)

**MISC 401. Developing Adaptive Leaders** **Credit 3**

This course develops cadet proficiency in planning, executing, and assessing complex operations, functioning as a member of a staff, and providing performance feedback to subordinates. Cadets assess risk, make ethical decisions, and lead fellow ROTC cadets. Lessons on military justice and personnel processes prepare cadets to make the transition to Army officers. (F)

**MISC 402. Leadership in a Complex World** **Credit 3**

This course explores the dynamics of leading in the complex situations of current military operations in the contemporary operating environment (COE). Cadets examine differences in customs and courtesies, military law, principles of war, and rules of engagement in the face of international terrorism. They also explore aspects of interacting with non-government organizations, civilians on the battlefield, and host nation support. (S)

**MISC 405/407. Leadership Laboratory\*** **Credit 1**

This course is in conjunction with each of the aforementioned M.S. level classes in the advanced course. It is a period which supplements and reinforces, through practical application, the fundamentals taught in each of the Military Science classes. This course is a progressive leading experience designed to produce effective and efficient Second Lieutenants for the United States Army. MISC 405 (F); MISC 407 (S)

**MISC 206. Leaders Training Course (Internship Program)** **Credit 4**

This course serves as an alternate means of entry into the ROTC advanced course, in lieu of the basic course requirements. This course consists of 6 weeks of training at Fort Knox, KY conducted the summer prior to entering the MISCIII year. Training consists of Army History, Role and Mission, Map Reading/Land Navigation, Rifle Marksmanship, Basic Leadership Techniques, Physical Training/Marches, Individual and Unit Tactics, Communications, First Aid, Drill, Parades and Ceremonies, Military Courtesy, and Traditions. (Summer) (SS)

**MISC 306. Leadership Development and Assessment Course (Internship)** **Credit 4**

Normally taken the summer following the MISCIII year. The training is conducted at Ft Lewis Washington. This training provides cadets with practical experience in leadership, Military Training, small unit tactics, weapons qualifications, and communications. This internship is six weeks in duration. (Summer) (SS)

**MISC 308. Nurse Summer Training Program (NSTP) (Internship)** **Credit 4**

Normally taken the summer following junior year. The Nurse Summer Training Program is a voluntary, two-(2) week program for nurse cadets, which provides opportunities to develop and practice leadership skills in both field and clinical environments. The program's primary focus is to provide nurse cadets experiences utilizing military, leadership, clinical nursing, administrative, and interpersonal skills. Academic credit hours may be granted for NURS 513.

**MISC 406. Airborne Training+ (Internship)** **Credit 3**

This course consists of 3 weeks of intensive airborne training to include physical conditioning, landing techniques, parachute safety, simulated jumps, procedure in and around aircraft, and five (5) combat jumps from an Air Force aircraft flying at 1250 feet. (Summer) (SS)

**MISC 409. Cadet Troop Leader Training + (Internship)** **Credit 3**

This course consists of three weeks training with an active duty Army unit. Students who participate are assigned to a unit and spend three weeks with a Second Lieutenant, Platoon Leader. The course is designed to familiarize students with the duties and responsibilities of Second Lieutenants in the Army. Students are assigned duties as Platoon Leaders and receive an evaluation at the end of training. The training is available to students enrolled in Military Science 300 level courses and is offered as part of the summer training program.

\* Denotes subject that must be taken every semester.

+ Optional training on a selected basis.

**DIRECTORY OF FACULTY**

**Roy George, CPT, LG** ..... **Assistant Professor**

B.S., CUNY – John Jay College of Criminal Justice; M.S., American Military University	
<b>Walter Pridgen, MAJ, LG</b> .....	<b>Assistant Professor</b>
B.S., Old Dominion University	
<b>Elizabeth Nhambure, CPT, SC</b> .....	<b>Assistant Professor</b>
B.S., Florida A&M University; M.S., Webster University	
<b>Vincent Nicholson, CPT, QM</b> .....	<b>Assistant Professor</b>
B.S., North Carolina Agricultural & Technical State University	
<b>Micheal Teague, LTC, FA</b> .....	<b>Professor</b>
B.S., Appalachian State University; M.S., Kansas State University	

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**DEPARTMENT OF AEROSPACE STUDIES**

<http://www.ncat.edu/divisions/academic-affairs/rotc/airforce/index.html>

**Lt Col Paul M. Stanifer, Professor**

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**OBJECTIVES**

The objective of the Department of Aerospace Studies is to develop leaders who will serve as commissioned officers in the United States Air Force (USAF). To meet this objective, the department offers a four-year Air Force Reserve Officer Training Corps (AFROTC) Program where students enroll at the beginning of their freshman year and continue through award of a bachelor's degree and commissioning into the USAF. The four-year program can be modified for students up until the beginning of the fall semester of a student's sophomore year.

The AFROTC Program begins with the General Military Course (GMC). As freshmen, students normally attend a one-hour class and a two-hour Leadership Laboratory each week in addition to two one-hour physical training sessions. The freshman course is a survey course designed to introduce students to the USAF and provides an overview of the basic characteristics, missions, and organization of the Air Force. The sophomore course is designed to examine the general aspects of air and space power through a historical perspective; utilizing this perspective, the course covers a time period from the first balloons and dirigibles to the space-age global positioning systems of Operations Enduring Freedom and Iraqi Freedom. Students who compete favorably for the award of Professional Officer Corps (POC) status will attend a four-week summer Leadership Evaluation and Development (LEAD) Training Program at Maxwell Air Force Base, Alabama, to give them a firsthand look at the Air Force environment.

During the junior and senior years, students begin and complete the POC Program, which is designed to equip them with the tools and strategies they will use on active duty. The junior year begins a study of leadership, management fundamentals, professional knowledge, Air Force personnel and evaluation systems, leadership ethics, and communication skills required of a Second Lieutenant in the USAF. Seniors examine the national security process, regional studies, advanced leadership ethics, and Air Force doctrine. Special topics of interest in the senior curriculum focus on the military as a profession, officership, military justice, civilian control of the military, preparation for active duty, and current issues affecting military professionalism. Leadership Laboratory puts the knowledge obtained and skills developed in the classroom into practical application. Depending on classification (freshman through senior) and contractual obligation to the USAF, the qualified student will receive a monthly, non-taxable stipend of between \$300 and \$500.

When one successfully completes the AFROTC Program and receives a degree, he/she is then commissioned as a Second Lieutenant and serves a minimum of four years in the Air Force. Everyone enters the Air Force in a specific career field, usually correlating to their field of study, which is subject to the needs of the Air Force. There are many exciting career fields for active duty officers including Engineering, Medical, Legal, Nursing, Intelligence and Logistics, and Aviation (i.e., pilot and navigator).

For more information on the AFROTC Program, you may contact any instructor or the Recruiting Flight Commander in the Department of Aerospace Studies, Campbell Hall, telephone (336) 334-7707, or view the AFROTC/DET 605 website at [www.ncat.edu/~afrotc](http://www.ncat.edu/~afrotc).

**PROGRAM REQUIREMENTS**

The requirements for entry into the program are as follows:

- Must be a full-time student of N.C. A&T SU, a Greensboro Consortium Institution, Winston-Salem State University, Salem College, or Guilford Technical Community College (restrictions apply).
- Must be at least 14 years old to participate and at least 17 to receive a scholarship
- Must be physically qualified
- Must be a U.S. citizen
- Must pass the Air Force Officer Qualifying Test (before attending summer Field Training)
- Must complete summer Field Training
- Must have 3 academic years remaining (undergraduate, graduate (no more than 1 year), or combination)
- Must maintain a 2.5 GPA term/cumulative (If you are entering with prior college credit, your cumulative GPA must be a 2.5 or above)
- Must be able to complete all commissioning requirements in accordance with the following:
  - Rated (pilot, navigator, remotely piloted aircraft, air battle manager): commissioned before reaching the age of 29
  - Scholarship applicants: be less than 31 years old as of December 31 of the year you will commission
  - Tech, non-tech and non-rated: commissioned by age 30 (waiverable up to age 35)

### **UNIFORMS**

All cadets will receive two ROTC uniforms and Physical Training wear at no cost to the student after completing certain membership requirements (e.g., meeting Air Force height/weight standards, passing the Air Force Physical Fitness Test, turning in membership paperwork). The uniform must be dry cleaned prior to returning it. Each cadet is responsible for the maintenance and security of property they have been issued. All uniform items must be returned prior to the end of each academic year.

### **SCHOLARSHIPS**

Scholarships may be granted for periods of two, two and a half, three, three and a half, and four years. All scholarship students, depending on classification, receive a monthly tax-free stipend of between \$300 and \$500. The Air Force pays tuition, mandatory fees, and a book allowance. For North Carolina A&T State University students, the University will provide free room and board for a limited number of four-year High School scholarship (HSSP) recipients at their discretion. Details on scholarships may be obtained by contacting the Recruiting Flight Commander in the Department of Aerospace Studies.

### **MINOR IN MILITARY LEADERSHIP**

The minor in Military Leadership is offered to any student completing the courses of study listed below. The minor not only prepares cadets for active duty service but provides any student the opportunity to learn the leadership principles that are employed by the United States Army and Air Force.

The Military Leadership minor exists in three forms, one for those intending to commission into the Air Force, one for those intending to commission into the Army and one for those solely looking for academic credit:

- Commission Track (Air Force)
  - HIST 209 (3 hours)
  - AERO 321 (3 hours)
  - AERO 322 (3 hours)
  - AERO 331 (1 hour)
  - AERO 332 (1 hour)
  - AERO 421 (3 hours)
  - AERO 422 (3 hours)
  - AERO 431 (1 hour)
  - AERO 432 (1 hour)
- Commission Track (Army)
  - HIST 209 (3 hours)
  - MISC 301 (3 hours)
  - MISC 302 (3 hours)
  - MISC 305 (1 hour)
  - MISC 307 (1 hour)
  - MISC 401 (3 hours)
  - MISC 402 (3 hours)
  - MISC 405 (1 hour)
  - MISC 407 (1 hour)
- Non-commission Track
  - HIST 209 (3 hours)
  - Any of the following totaling 15 hours: AERO 221, AERO 222, AERO 321, AERO 322, AERO 421, AERO 422, MISC 201, MISC 202, MISC 301, MISC 302, MISC 401, MISC 402

Further, students completing the Military Leadership minor must earn a grade of “C” or better in all courses for the minor.

### **GENERAL MILITARY COURSE**

**AERO 121. Foundations of the USAF I**

**Credit 1(1-0)**

This course introduces the students to the USAF. It includes a study of the foundations of officership, mission and organization of the Air Force, US military customs, courtesies, rank structure and Air Force Core Values. (F)

**AERO 122. Foundations of the USAF II**

**Credit 1(1-0)**

This course is a continuation of AERO 121. Featured topics include Air Force organization and command structure, communication skills application and structure of the Department of Defense. (S)

**AERO 131. General Military Course Leadership Laboratory I**

**Credit 1(0-1)**

This course puts into practice the Air Force customs and courtesies, drill and ceremonies, and leadership techniques learned during the associated class. In addition, one hour of physical training, beginning at 6:00 a.m., two times per week, is mandatory. This course must be taken in conjunction with AERO 121. Pass/Fail evaluation only, no letter grade will be given. (F)

**AERO 132. General Military Course Leadership Laboratory II**

**Credit 1(0-1)**

This course is a continuation of AERO 131. This course puts into practice the Air Force customs and courtesies, drill and ceremonies, and leadership techniques learned during the associated class. Provides more detailed information about the Air Force and career opportunities available. In addition, one hour of physical training, beginning at 6:00 a.m., two times per week, is mandatory. Must be taken in conjunction with AERO 122. Pass/Fail evaluation only, no letter grade will be given. (S)

**AERO 221. Air Power History I**

**Credit 1(1-0)**

This course is designed to examine the general aspects of air and space power through a historical perspective. Historical examples are provided to extrapolate the development of Air Force capabilities and missions to demonstrate the evolution of what has become today's USAF air and space power. (F)

**AERO 222. Air Power History II**

**Credit 1(1-0)**

This course is a continuation of AERO 221 and further examines the aspects of air and space power through a historical perspective but incorporates most recent world events and how they pertain to the capabilities and missions of the USAF. (S)

**AERO 231. General Military Course Leadership Laboratory III**

**Credit 1(0-1)**

This course is an application of Air Force customs and courtesies; drill and ceremonies; and examines the Air Force environment, life, and work of an Air Force Officer. An important aspect of this course is preparation of students to attend summer Leadership Evaluation and Development (LEAD) training. In addition, one hour of physical training, beginning at 6:00 a.m., two times per week, is mandatory. Must be taken in conjunction with AERO 221. Pass/Fail evaluation only, no letter grade will be given. (F)

**AERO 232. General Military Course Leadership Laboratory IV**

**Credit 1(0-1)**

This course continues the application of Air Force customs and courtesies, and leadership training. An important aspect of this course is preparation of students to attend summer Leadership Evaluation and Development (LEAD) training. In addition, one hour of physical training, beginning at 6:00 a.m., two times per week, is mandatory. This course must be taken in conjunction with AERO 222. Pass/Fail evaluation only, no letter grade will be given. (S)

**AERO 251. General Military Course Leadership Laboratory V**

**Credit 1(0-1)**

This course is a further continuation of the application of Air Force customs and courtesies; drill and ceremonies; and examines the Air Force environment, life, and work of an Air Force Officer. An important aspect of this course is preparation of students to attend summer Leadership Evaluation and Development (LEAD) training. In addition, one hour of physical training, beginning at 6:00 a.m., two times per week, is mandatory. Course is designed for students who have completed the entire General Military Course curriculum but have not attended summer Leadership Evaluation and Development (LEAD) training. (F)

**AERO 252. General Military Course Leadership Laboratory VI**

**Credit 1(0-1)**

This course is a further continuation of the application of Air Force customs and courtesies; drill and ceremonies; and examines the Air Force environment, life, and work of an Air Force Officer. An important aspect of this course is preparation of students to attend summer Leadership Evaluation and Development (LEAD) training. In addition, one hour of physical training, beginning at 6:00 a.m., two times per week, is mandatory. Course is designed for students who have completed the entire General Military Course curriculum but have not attended summer Leadership Evaluation and Development (LEAD) training. Pass/Fail evaluation only, no letter grade will be given. (S)

**PROFESSIONAL OFFICER COURSE**

**AERO 321. Leadership Studies I**

**Credit 3(3-0)**

This course is a study of leadership, management fundamentals, and professional knowledge, leadership ethics, and communication skills required of a junior officer in the United States Air Force. Case studies are used to examine Air Force leadership and management situations as a means of demonstrating and exercising practical application of the concepts being studied. (F)

**AERO 322. Leadership Studies II**

**Credit 3(3-0)**

This course is a continuation of AERO 321. Studies of team building fundamentals, roles and responsibilities of the Air Force supervisor, officer professional development, and advanced topics on Military Ethics and communication skills applications are covered. Case studies are used to examine Air Force leadership and management situations as a means of demonstrating and exercising practical applications of the concepts being studied. (S)

**AERO 331. Professional Officer Course Leadership Laboratory I**

**Credit 1(0-1)**

This course provides advanced leadership experiences in training and command activities. This gives the advanced students the opportunity to apply leadership and management principles and techniques. In addition, one hour of physical training, beginning

at 6:00 a.m., two times per week, is mandatory. This course must be taken in conjunction with AERO 321. Pass/Fail evaluation only, no letter grade will be given. (F)

**AERO 332. Professional Officer Course Leadership Laboratory II** **Credit 1(0-1)**

This course is a continuation of AERO 331. It gives students an opportunity to develop personal leadership and management concepts through participation in advanced leadership experiences. In addition, one hour of physical training, beginning at 6:00 a.m., two times per week, is mandatory. This course must be taken in conjunction with AERO 322. Pass/Fail evaluation only, no letter grade will be given. (S)

**AERO 421. National Security Affairs I** **Credit 3(3-0)**

This course examines the national security process, regional studies, and Air Force doctrine. Within this structure, continued emphasis is given to refining communication skills. (F)

**AERO 422. National Security Affairs II** **Credit 3(3-0)**

This course focuses on officership, military justice, civilian control of the military, preparation for active duty and military professionalism. (S)

**AERO 431. Professional Officer Course Leadership Laboratory III** **Credit 1(0-1)**

This course is designed to develop each student's leadership potential and serve as an orientation to active duty. Students are involved in the planning, organizing, coordinating, directing, and controlling of military activities in the cadet corps. In addition, one hour of physical training, beginning at 6:00 a.m., two times per week, is mandatory. This course must be taken in conjunction with AERO 421. Pass/Fail evaluation only, no letter grade will be given. (F)

**AERO 432. Professional Officer Course Leadership Laboratory IV** **Credit 1(0-1)**

This course is a continuation of AERO 431. It provides the students with practical command and staff leadership experiences through their performance of various tasks within the framework of an organized cadet corps. In addition, one hour of physical training, beginning at 6:00 a.m., two times per week, is mandatory. This course must be taken in conjunction with AERO 422. Pass/Fail evaluation only, no letter grade will be given. (S)

**CURRICULUM GUIDE FOR AIR FORCE RESERVE OFFICER TRAINING CORPS CADETS**

**General Military Course**

**Freshman Year**

<i>Fall Semester</i>	<i>Credit</i>	<i>Spring Semester</i>	<i>Credit</i>
AERO 121	1	AERO 122	1
AERO 131	$\frac{1}{2}$	AERO 132	$\frac{1}{2}$
	2		2

**Sophomore Year**

<i>Fall Semester</i>	<i>Credit</i>	<i>Spring Semester</i>	<i>Credit</i>
AERO 221	1	AERO 222	1
AERO 231	$\frac{1}{2}$	AERO 232	$\frac{1}{2}$
	2		2

**Professional Officer Course**

**Junior Year**

<i>Fall Semester</i>	<i>Credit</i>	<i>Spring Semester</i>	<i>Credit</i>
AERO 321	3	AERO 322	3
AERO 331	$\frac{1}{4}$	AERO 332	$\frac{1}{4}$
	4		4

**Senior Year**

<i>Fall Semester</i>	<i>Credit</i>	<i>Spring Semester</i>	<i>Credit</i>
AERO 421	3	AERO 422	3
AERO 431	$\frac{1}{4}$	AERO 432	$\frac{1}{4}$
	4		4

**DIRECTORY OF FACULTY**

**Maj Melanie Slattery** ..... **Assistant Professor**  
 B.S., Rowan University; M.S., Air Force Institute of Technology  
**Lt Col Paul M. Stanifer**..... **Professor**  
 B.S., North Carolina State University; M.S., Trident University International



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**WASTE MANAGEMENT INSTITUTE**

<http://www.ncat.edu/divisions/academic-affairs/wmi/>

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**Godfrey A. Uzochukwu, Director**

The Waste Management Institute (WMI) coordinates the interdisciplinary environmental and waste management efforts of the University. The approach to environmental and waste management education at the University rests upon a solid foundation of applied and physical sciences, life sciences, social sciences, engineering, technology, and law/policy. The following academic programs are involved in environmental and waste management activities: Agricultural Education, Agricultural Economics, Architectural Engineering, Animal Science, Bioengineering, Biological Engineering, Biology, Business Administration, Chemical Engineering, Chemistry, Civil Engineering, Computer Science, Construction Management and Safety, Criminal Justice, Economics, Environmental Sciences, Electrical Engineering, Elementary Education, Family and Consumer Science, Graphic Communications, History, Horticulture, Industrial Systems Engineering, Journalism and Mass Communications, Manufacturing Systems, Mechanical Engineering, Natural Resources, Landscape Architecture, Liberal Studies, Mathematics, Nursing, Political Science, Physics, Psychology, Sociology, Social Work and Soil Science. Additionally, the Waste Management Institute administers an Undergraduate and Graduate Certificate Program. The Waste Management Certificate “highlights” the training of N.C. A&T students in Environmental Security and Waste Management Issues and also adds value to degree programs (graduate and undergraduate). The Certificates are awarded at a special ceremony.

**WMI Certificate Requirements**

(1) Undergraduate students

18 credit hours of recommended waste management course work including a “CAPSTONE” seminar. A one page typed statement of environmental/waste management experiences (internships, projects completed, volunteer work, etc) including how environmental and waste management relate to student's major. Students must complete degree requirements in their disciplines with a 2.00 GPA.

**CORE COURSES IN WASTE MANAGEMENT****WMI 236. Recycling****Credit 1(1-0)**

This lecture class will cover how to manage solid wastes in a manner that allows for the least environmental impact and reduction in the amount of waste produced and disposed improperly. Students will develop their creativity, analytical skills and imagination. Sophomore standing and consent of instructor

**WMI 333. Waste Management Capstone Seminar I****Credit 1(1-0)**

The seminar introduces students to the interdisciplinary nature of waste management and covers the waste management aspects of natural sciences, physical sciences, social sciences, humanities, engineering, technology, and economics in an integrated manner. Students are introduced to waste management topics that enhance their critical thinking and problem-solving skills needed in post academic-endavors. The seminar incorporates current literature, research, and the consulting activities in environmental industry. Sophomore standing and consent of instructor.

**WMI 417. Environmental Ethics & Philosophy****Credit 2(2-0)**

This course introduces students to the interdisciplinary nature of ethics and philosophy of waste management and covers the waste management ethics and philosophy of natural sciences, physical sciences, social sciences, humanities, engineering, technology, and economics in an integrated manner. Students are introduced to topics in waste management ethics and philosophy that enhance their critical thinking and problem-solving skills needed in post-academic endeavors. Senior/Graduate standing and consent of instructor.

**WMI 419. Environmental Justice**

**Credit 3(3-0)**

This lecture class will cover case studies on landfills, air pollution issues, water pollution issues, solid waste disposal, chemical waste disposal, hazardous waste disposal, nuclear waste issues, biological wastes issues, ocean dumping, global oil spill and coastal impacts, incineration and climate issues. Senior/Graduate standing and consent of instructor.

**WMI 429. Hazmat Training**

**Credit 3(1-4)**

Students are introduced to regulations, toxicology, monitoring, chemistry, site characterization, safety plan, sampling, spill, control and emergency response. Emphasis is placed on 29 CFR 1910.120 OSHA regulations and other applicable standards. Students will receive a 40-hour Hazmat Training Certificate upon completion of this course in addition to a course grade. Senior/Graduate standing and consent of instructor.

**WMI 490. Independent Study in Environmental and Waste Management**

**Credit 3(1-4)**

Students will engage in an in-depth independent study of topics in environmental and waste management under the supervision of a faculty member. Senior standing and consent of instructor.

(2) Graduate students – See Graduate Bulletin

12 credit hours (6 credit hours of advanced waste management course work and 6 credit hours of waste management thesis/project including a “CAPSTONE” seminar. Students must complete advanced degree requirements in their disciplines with a 3.00 GPA.

Web address: [www.ncat.edu/~wmi](http://www.ncat.edu/~wmi) for courses, enrollment, application for certificate, etc). Note that courses do not include prerequisites and must be approved by Academic Advisors and the Director of the Interdisciplinary Waste Management Institute. The Waste Management Institute office is located in the Carver Hall 261.

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**THE GRADUATE COLLEGE**

<http://www.ncat.edu/tgc/index.html>

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**Sanjiv Sarin, Dean**

**A. Ayanna Boyd-Williams, Assistant Dean**

**Dean Campbell, Assistant Dean**

Graduate education at North Carolina Agricultural and Technical State University was authorized by the North Carolina State Legislature in 1939. The authorization provided for training in agriculture, technology, applied sciences, and other approved areas of study. An extension of the graduate program approved by the General Assembly of North Carolina in 1957 provided for enlargement of the curriculum to include teacher education, as well as such other programs of a professional or occupational nature as might be approved by the North Carolina Board of Higher Education. On July 1, 1967, the Legislature of North Carolina approved regional university status for the institution and renamed it North Carolina Agricultural and Technical State University. The University awarded its first master’s degree in 1941 to Woodland Ellroy Hall.

The Graduate College has an integrated and intercultural faculty and student body and beckons students from all over the world. It coordinates and administers advanced course offerings in departments within the College of Agriculture and Environmental Sciences, College of Arts Humanities and Social Sciences, College of Business and Economics, College of Education, College of Engineering, College of Health and Human Sciences, College of Science and Technology, and the Joint School of Nanoscience and Nanoengineering. Curricula leading to the Master of Arts, Master of Arts in Education, Master of Arts in Teaching, Master of Business Administration, Master of School Administration, Master of Science, Master of Social Work, and the Doctor of Philosophy degree are offered in a variety of disciplines.

The Graduate College provides a foundation of knowledge and techniques for those who wish to enhance their career options or to continue their education in doctoral programs. While studying at this university, it is expected that graduate students will (1) acquire special competence in their chosen fields; (2) further develop their ability to think independently and constructively; (3) develop and demonstrate the ability to collect, organize, evaluate, create, and report facts that will enable them to make a scholarly contribution to knowledge about their discipline; and (4) apply new and existing knowledge so as to contribute to their professions and to humankind.

**DEGREE AND CERTIFICATE PROGRAMS OFFERED**

The Graduate College at North Carolina A&T State University offers the following degree and certificate programs:

**Doctoral Degrees**

- Ph.D. Computational Science and Engineering
- Ph.D. Computer Science
- Ph.D. Electrical Engineering
- Ph.D. Energy and Environmental Systems with concentrations in:
  - Atmospheric Sciences

- Sustainable Bio Products
  - Energy and Environmental Sciences and Economics
- Ph.D. Industrial and Systems Engineering
- Ph.D. Leadership Studies\*
- Ph.D. Mechanical Engineering
- Ph.D. Nanoengineering
- Ph.D. Rehabilitation Counseling and Rehabilitation Counselor Education

#### Masters Degrees

- MA English and African American Literature
- MAEd Elementary Education
- MAEd Reading Education
- MAT Master of Arts in Teaching\* with concentrations in:
  - Biology Education
  - Business Education
  - Chemistry Education
  - Child Development: Early Education & Family Studies Birth-K
  - Elementary Education
  - English Education
  - Family and Consumer Sciences Education
  - History Education
  - Math Education
  - Physical Education
  - Special Education
  - Technology Education
- MBA Business Administration with concentrations in:
  - Accounting
  - Human Resource Management
  - Supply Chain Systems
- MS Adult Education
- MS Agricultural Education\* with concentrations in:
  - Professional Licensure
  - Professional Service
- MS Agricultural and Environmental Systems with concentrations in:
  - Integrated Animal Health Systems
  - Agribusiness & Food Industry Management
  - Natural Resources and Environmental Systems
- MS Applied Mathematics
- MS Bioengineering
- MS Biology
- MS Chemical Engineering
- MS Chemistry
- MS Civil Engineering
- MS Computational Science and Engineering
- MS Computer Science
- MS Electrical Engineering
- MS Food and Nutritional Science
- MS Industrial and Systems Engineering
- MS Information Technology\*
- MS Instructional Technology\*
- MS Mechanical Engineering
- MS Mental Health Counseling with concentrations in:
  - Mental Health Counseling – Clinical
  - Mental Health Counseling – Rehabilitation
- MS Nanoengineering
- MS Physics
- MS School Counseling
- MS Technology Management\*

- MSA School Administration
- MSW Social Work (Joint with UNCG)

Post Baccalaureate Certificate Programs

- Community College Teaching
- Family and Consumer Sciences\*
- Supply Chain Management
- Advanced Waste Management
- Marriage and Family Counseling
- Rehabilitation Counseling and Behavioral Addiction
- Rehabilitation Psychology and Behavioral Medicine
- Vocational Evaluation and Work Adjustment

Post Masters Certificate Programs

- School Administration

\*Approved for distance education

For more information on admission requirements, financial assistance, and program curricula, refer to the Graduate College catalog available online at: <http://www.ncat.edu/tgc/graduate-catalog/index.html>.

**DIRECTORY OF FACULTY – F.D. BLUFORD LIBRARY  
LIBRARY FACULTY**

<b>Stephen Bollinger</b> .....	<b>Associate Professor</b>
B.A., Michigan State University; M.S.I., The University of Michigan, Ann Arbor	
<b>Arneice Bowen</b> .....	<b>Associate Professor</b>
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<b>Vicki Coleman</b> .....	<b>Professor</b>
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<b>Francene Moore</b> .....	<b>Assistant Professor</b>
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<b>Octavious Spruill</b> .....	<b>Associate Professor</b>
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<b>John Teleha</b> .....	<b>Associate Professor</b>
B.S., Case Western Reserve University; M.S.L.S., Kent State University	