

Undergraduate Bulletin of North Carolina Agricultural and Technical State University

2021 – 2022

**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**

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August 1, 2021

Undergraduate Bulletin
of
NORTH CAROLINA
AGRICULTURAL AND TECHNICAL
STATE UNIVERSITY
GREENSBORO, NORTH CAROLINA
UNDERGRADUATE PROGRAMS
2021 – 2022

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**NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY
2021 – 2022 UNIVERSITY ACADEMIC CALENDAR**

FALL SEMESTER 2021

Deadlines are at close of business unless otherwise noted.

July 16	Friday	Last day to apply for fall 2021 readmission Last day to submit appeal for academic suspension or dismissal
August 4	Wednesday	Registration resumes
August 4 – 29	Monday – Friday	Graduate students apply for fall 2021 graduation without \$20 late fee Undergraduate students register for fall 2021 graduation
August 11 – 24	Wednesday – Tuesday	Late registration (\$50.00 late fee applies)
August 13	Friday	Faculty report New students move into residence halls, suites and apartment (9:00 a.m. – 3:00 p.m.)
August 16	Monday	Continuing students return to residence halls, suits and apartments (9:00 a.m. – 3:00 p.m.)
August 18	Wednesday	Classes begin
August 24	Tuesday (11:59 p.m.)	Last day to add courses (including tuition waivers) Last day to switch course sections Last day to drop course and receive financial credit
September 6	Monday	Labor Day – University holiday
September 29	Wednesday	Last day to remove incomplete(s) assigned spring or summer 2021
October 4 – 8	Monday – Friday	Final comprehensive exam week (graduate students)
October 11 – 12	Monday – Tuesday	Fall break
October 11	Monday	Advisement period begins for spring/summer 2022
October 15	Friday (11:59 p.m.)	Undergraduate mid-term grades due
October 22	Friday	Last day to defend thesis/dissertation
October 25	Monday	Last day to withdraw from a course without a grade evaluation Defended and approved thesis/dissertation due to The Graduate College
October 28	Thursday	Fall Convocation (classes suspended 10:00 a.m. – 12 noon)
October 30	Saturday	Homecoming
November 1 – 29	Monday – Monday	Registration period for spring/summer 2022 Graduate students apply for spring 2022 graduation without \$20 late fee Undergraduate students register for spring 2022 graduation
November 3	Wednesday	Last day to withdraw from the university without a grade evaluation
November 23	Tuesday	Residence halls close; campus closed to students
November 24 – 26	Wednesday – Friday	University holiday (Thanksgiving)
December 2	Thursday	Last day of classes
December 3	Friday	Reading Day
December 6 – 10	Monday – Friday	Final examinations
December 10	Friday	Waste Management and Global Studies Certificate Awards Program and ROTC Officer Commissioning Ceremonies
December 11	Saturday	Commencement
December 13	Monday (11:59 p.m.)	Final grades due
December 15	Wednesday	Last day to apply for spring 2021 readmission Last day to submit appeal for academic suspension for spring 2022
December 27	Monday	Registration resumes

**NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY
2021 – 2022 UNIVERSITY ACADEMIC CALENDAR**

SPRING SEMESTER 2022

Deadlines are at close of business unless otherwise noted.

December 15	Wednesday	Last day to apply for readmission Last day to submit appeal for academic suspension or dismissal
December 27	Monday	Registration resumes
January 5	Wednesday	Faculty report Residence halls open (3:00 – 5:00 p.m.) New Student Orientation
January 8	Saturday	Residence halls open (12:00 – 4:00 p.m.) Continuing Students
January 3 – 14	Monday – Friday	Late registration (\$50.00 late fee)
January 10	Monday	Classes Begin
January 14	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 17	Monday	Martin Luther King Jr. Community Service Day (No Classes; University Offices Closed)
January 24	Monday	Last day to receive a book allowance
January 28	Friday	Ronald E. McNair Memorial Day
February 1	Tuesday	February One Celebration
February 21	Monday	Last day to remove incomplete(s) assigned fall 2021
February 28–March 4	Monday – Friday	Final comprehensive exam week (Graduate Students)
March 7 – 11	Monday – Friday	Spring Break
March 5	Saturday	Residence halls close at 1:00 p.m.
March 13	Sunday	Residence halls re-open 9:00 a.m.
March 14	Monday	Advisement period begins for fall 2022
March 16	Wednesday (11:59 p.m.)	Undergraduate mid-term grades due
March 24	Thursday	Founders Day (classes suspended from 10:00 a.m. – 12:00 noon)
March 25	Friday	Last day to defend thesis/dissertation
March 28	Monday	Defended and approved thesis/dissertation due in The Graduate College Office Last day to drop a course without a grade evaluation
April 4 – 25	Monday – Monday	Registration period for fall 2020/summer and application period for December graduation
April 7	Thursday	Last day to withdraw from the university without a grade evaluation
April 13	Wednesday	Honor’s Convocation (classes suspended from 10:00 a.m. – 12:00 noon)
April 15	Friday	University Holiday
April 18	Monday	Last day to submit approved thesis/dissertation to The Graduate College
May 5	Thursday	Last day of classes
May 6	Friday	Reading Day
May 9 – 13	Monday – Friday	Final Examinations
May 13	Friday	Waste Management and Global Studies Certificate Awards Program ROTC Officer Commissioning Ceremony
May 14	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 16	Monday (11:59 pm)	Final grades due

Calendar subject to change

GENERAL INFORMATION

North Carolina Agricultural and Technical State University

www.ncat.edu

HISTORICAL STATEMENT

Established in 1891, under the Second Morrill Act of 1890, North Carolina Agricultural and Technical State University is a land-grant, historically black university categorized by The Carnegie Classification of Institutions of Higher Education as a doctoral university with high research activity. The Second Morrill Act expanded the nation's system of land-grant universities to include a historically Black college or university (HBCU) in those states where segregation denied minorities access to the land-grant institutions established by the First Morrill Act (1862).

Over the past 130 years, North Carolina A&T has maintained a rich tradition in academics, research, discovery and outreach, to become one of the nation's most highly respected institutions of higher education. The university aims to develop and preserve intellectual capital through interdisciplinary learning, discovery and engagement, and is committed to fulfilling its fundamental purposes through exemplary undergraduate and graduate instruction, scholarly and creative research, and effective public service and engagement. The current vision is to be recognized as a preeminent land-grant university and the institution of choice for high achieving students.

With an enrollment of 12,753 students in the fall of 2020, A&T is the largest HBCU in the nation. A&T awards baccalaureate, master's and doctoral degrees through the College of Agriculture and Environmental Sciences; College of Arts, Humanities and Social Sciences; Willie A. Deese College of Business and Economics; College of Education; College of Engineering; John R. and Kathy R. Hairston College of Health and Human Sciences; College of Science and Technology; The Graduate College; and the Joint School of Nanoscience and Nanoengineering.

A&T has adapted its curriculum and teaching methodologies to ensure that students in science, technology, engineering and mathematics (STEM) and other disciplines receive an education that allows them to be competitive in a changing world. Students across the disciplines are afforded opportunities to work and study with renowned scholars, researchers and other professionals who serve on the faculty and are held in high esteem across the nation and abroad. A&T is consistently ranked as a top public HBCU. It is among the top producers of African American engineers, agriculture graduates and certified public accountants in the nation, and is one of the top producers of African Americans with baccalaureate degrees in journalism/mass communication and psychology.

A&T has advanced in the area of research and, for more than a decade, has consistently ranked among The University of North Carolina System's three most productive research universities. The strength and potential of the research enterprise at A&T is demonstrated by the university's ability to sustain 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. The university is home to 19 centers and institutes that focus on faculty research expertise as well as areas of emerging significance.

Upon graduating, students join the university's numerous alumni of record who hold or have held positions of leadership in industries and communities around the world. Some of A&T's nationally acclaimed alumni include Henry E. Frye '53, former N.C. Supreme Court Chief Justice; Edolphus Towns Jr. '56, retired U.S. Congressman; Clara Adams-Ender '61, author and retired Army brigadier general; Alvin A. "Al" Attles Jr. '60, former NBA player, coach and general manager; Elvin Bethea '68, NFL Hall of Famer; Ezell Blair Jr./Jibreel Khazan '63, the late Franklin E. McCain Sr. '63, Joseph A. McNeil '63 and the late David Richmond '10 (degree awarded posthumously), members of the Greensboro Four/A&T Four; Joe L. Dudley Sr. '62, Dudley Products founder; Rev. Jesse L. Jackson Sr. '63, civil rights activist and former presidential candidate; Alma S. Adams '68, U.S. Congresswoman; and the late Dr. Ronald E. McNair '71, NASA astronaut.

Twelve presidents/chancellors have served the institution since its founding: Dr. John O. Crosby (1892–96), Dr. James B. Dudley (1896–1925), Dr. Ferdinand D. Bluford (1925–1955), Dr. Warmoth T. Gibbs (1956–1960), Dr. Samuel DeWitt Proctor (1960–64), Dr. Lewis C. Dowdy (1964–1980), Dr. Cleon Thompson Jr. (interim, 1980–81), Dr. Edward B. Fort (1981–1999), Dr. James C. Renick (1999–2006), Dr. Lloyd V. Hackley (interim, 2006–07), Dr. Stanley Battle (2007–09) and Dr. Harold L. Martin Sr. (2009–present).

MISSION OF THE UNIVERSITY

North Carolina Agricultural and Technical State University advances knowledge through scholarly exchange and transforms society with exceptional teaching, learning, discovery and community engagement. An 1890 land-grant doctoral research institution with a distinction in STEM and commitment to excellence in all disciplines, North Carolina A&T creates innovative solutions that address the challenges and economic needs of North Carolina, the nation and the world.

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 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

Randy Ramsey, Chair

Wendy Floyd Murphy, Vice Chair	Thomas C. Goolsby	Anna Spangler Nelson
Pearl Burriss-Floyd, Secretary	Reginald Ronald Holley	Raymond Palma
W. Louis Bissette, Jr., Emeritus	James L. Holmes, Jr.	R. Doyle Parrish
Kellie Hunt Blue	Mark Holton	Art Pope
C. Philip Byers	Terry Hutchens	David Powers
Jimmy D. Clark	W. Marty Kotis, III	Temple Sloan
Carolyn Coward	Steven B. Long	Dwight D. Stone
N. Leo Daughtry	J. Alex Mitchell	Michael Williford
Joel Ford		

THE UNIVERSITY OF NORTH CAROLINA

OFFICERS OF ADMINISTRATION

(Sixteen Constituent Institutions)

PETER HANS <i>President</i>	JENNIFER HAYGOOD <i>Senior Vice President for Finance & CFO</i>	ANDREW TRIPP <i>Senior Vice President for Legal Affairs and General</i>
NORMA HOUSTON		

Chief of Staff
JONATHAN PRUITT
Chief Operating Officer
KIMBERLY VAN NOORT
*Senior Vice President for
Academic Affairs and CAO*

MATTHEW BRODY
*Senior Vice President for
Human Resources and CHRO*
ANDREW P. KELLY
*Senior Vice President for Strategy
and Policy*

Counsel
BART GOODSON
*Senior Vice President for
Government Relations*

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

Mrs. Venessa Harrison, Chair
Mrs. Hilda Pinnix-Ragland, Vice Chair
Mr. John Bluford, III, Secretary
Mr. Calvin Brodie

Mr. Mark Copeland
Mr. William Dudley
Mrs. Kimberly Gatling
Mr. Timothy King

Judge Paul Jones
Mr. George Mainor
Mr. Joseph Parker, Jr.
Dr. Bhaskar Venepalli

Ex Officio Member

President, Student Government Association

OFFICERS OF ADMINISTRATION

Cabinet

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*Vice Chancellor for Business and
Finance*
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B.S., M.B.A.
*Vice Chancellor for University
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& Economic Development*
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Vice Chancellor for Student Affairs
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B.S., M.S., M.B.A.
*Vice Chancellor for Information
Technology Services/CIO*

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*Vice Chancellor for Human
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B.S., M.A., J.D.
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Director of Athletics

Division of Academic Affairs

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*Vice Provost for Undergraduate
Education*

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

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*Associate Vice Provost for
Enrollment Management*

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*Vice Provost for Graduate
Research and Dean of The
Graduate College*

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*Dean, College of Agriculture and
Environmental Sciences*

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*Dean, College of Arts, Humanities
and Social Sciences*

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*Dean, Willie A. Deese College of
Business and Economics*

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B.S., Ph.D.
*Dean, College of Education
Dean, College of Education*

ROBIN N. COGER
B.S., M.S., Ph.D.
Dean, College of Engineering

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*Dean, Hairston College of Health
and Human Sciences*

ABDELLAH AHMIDOUCH
B.S., M.S., Ph.D.
*Dean, College of Science and
Technology*

VICKI COLEMAN
B.S., M.S.I.L.
Dean, Library Services

REGINA WILLIAMS DAVIS
B.A., M.A., Ph.D.
*Interim Vice Provost for Student
Success*

MARGARET KANIPES
B.S., Ph.D.
Director, Honors Program

LOREATHA GRAVES
B.S., M.S.
*Director, Office of International
Affairs*

SHERRI AVENT
B.S., M.B.A.
Director, Financial Aid

REGINA WILLIAMS DAVIS
B.A., M.A., Ph.D.
Acting University Registrar

SHARON NEAL
B.A., M.A., Ph.D.
*Director, EPA Salary and Budget
Administration*

JAMEIA A. TENNIE
B.A., M.S.
*Director, Office of Undergraduate
Admissions*

JACQUELINE POWERS
B.S., M.S.
*Director, Orientation and New
Student Programs*

MARK WHISLER
B.S., M.S.
Professor, Aerospace Studies

LINDA S. WYNN
B.S., M.S.
Professor, Military Science

Division of Business and Finance

ROBERT POMPEY, JR.
B.S., M.B.A., C.P.A.
*Vice Chancellor for Business and
Finance*

HELEN BUCK
B.S., M.S., CGFM, C.P.A.
*Interim Associate Vice Chancellor
for Business and
Finance/Comptroller*

JACK W. MOORMAN
B.S., M.P.A., Ed.D.
*Interim Associate Vice Chancellor
for Police and Public Safety /
Chief of Police*

ANDREW M. PERKINS, JR.
B.S., M.S.
*Associate Vice Chancellor for
Business and Finance/Facilities*

ANGELA PETERSON
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*Associate Vice Chancellor for
Campus Enterprises*

CHARTARRA JOYNER
B.S.
*Assistant Vice Chancellor
for Budget and Planning*

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Director, Accounting

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*Director, Process Improvement/
Operational Excellence for
Business and Finance*

MARTINIQUE WILLIAMS
B.S.
Director, Procurement Services

ANGELA DUBOSE
B.S.
Treasurer

KATHERINE BURCKLEY
B.S., C.P.A.
Director, Financial Reporting

TAMMIE HILL
B.S.
Director, University Payroll

Division of Information Technology Services

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

Division of Research and Economic Development

ERIC R. MUTH
B.A., M.S., Ph.D.
*Vice Chancellor for Research
& Economic Development*

Division of Student Affairs

MELODY C. PIERCE
B.S., M.S., Ed.S., Ph.D.
Vice Chancellor for Student Affairs
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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 Affairs*
JACOB TEAGLE
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Administration*
PADONDA WEBB
DNP, MSN, FNP-BC
*Executive Director, Student
Health Services*
RASHANDA LOWERY
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*Interim Executive Director, Student
Activities*
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B.S., M. Ed, Ph.D.
*Executive Director, Housing and
Residence Life*
ROBERT MCNAIR
B.S., M.S.
*Interim Executive Director, Student
Center*

VIVIAN BARNETTE
B.S., M.S., Ph.D., ABPP
*Executive Director, Counseling
Services*
DONNA BLUE
B.S., M.S.
Director, Student Conduct
XAVIER CARRINGTON
B.A., M.A.
*Director, Intramural Sports
Program*
KYONNA HENRY
B.A., M.Ed.
Assistant Director, SUAB Advisor
TIFFANY SEAWRIGHT
B.S., M.S.
*Director of Leadership and
Engagement*
CHANTEA SWINSON-RHOE
B.A., M.Ed.
*Coordinator Student Clubs and
Organizations*
CHANTAL FLEMING
B.S., M.A.
*Executive Director, TRIO
Programs and Director, TRIO
Student Support Services*
VACANT
*Assistant Director, Fraternity and
Sorority Engagement/Greek Life
Advisor*

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, Intercultural Engagement
JUDY C. WILSON
B.S., M.S.
Director, TRIO Upward Bound
VERONICA HAIRSTON
B.S., M.Ed.
Assistant Director, SGA Advisor
KELLIE M. DIXON
A.A.S, B.S., M.S., Ed.D., C.L.C
*Assessment Coordinator, Office of
Student Affairs Assessment*
CHANTAL FLEMING
B.S., M.A.
*Director, TRIO Educational Talent
Search*
LEKESHIA FRANKLIN
B.A, B.S., MPA
*Coordinator Civic and Service
Learning*

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 Operations*
TERESA M. DAVIS
B.S., M.B.A.
*Associate Vice Chancellor for
Alumni Relations*
RALISHA M. MERCER
B.A.
*Associate Vice Chancellor for
Development*
P. KEVIN WILLIAMSON
B.A.
*Assistant Vice Chancellor for
Major Gifts & Constituent Giving*

ALANA V. ALLEN
B.S.
*Director of Alumni
Communications*
CRYSTAL W. BOYCE
B.S., M.S.
Director of Alumni Programs
DENISE D. DODSON
Director of Gift Services
ANIKA MADDEN
B.S.
*Director of Donor Relations &
Stewardship*
ARIEL A. PENA
B.S., M.A., M.A.
*Director of Advancement Systems
Reporting*
TAMISHA I. KEITH
B.S., J.D.
Director of Gift Planning

JOSCELYNE M. BRAZILE
B.S., M.S.
*Director of Corporate &
Foundation Engagement*
TAMERA T. ZIGLAR
B.S., M.S.
*Director of Development &
Corporate Engagement*
COURTNEY H. DABNEY
B.A.
Director of Development
KIMBERLY M. DAVIS
B.A.
Director of Development
G. CARLETTA SIMMONS
B.S., M.N.M.
Director of Development
BRIDGETT H. WILLIAMS
B.S., M.P.A.
Director of Development
VACANT
Director of Annual Giving

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 Willie A. Deese College of Business and Economics, the College of Education, the College of Engineering, The Graduate College, the John R. and Kathy R. Hairston 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:

Applied Engineering Technology – Engineering Technology Accreditation Commission of ABET, <http://www.abet.org>, and Association of Technology, Management, and Applied Engineering (ATMAE)

Automotive Engineering Technology – Association of Technology, Management, and Applied Engineering (ATMAE)

Business and Accounting programs – AACSB International – The Association to Advance Collegiate Schools of Business, <https://www.aacsb.edu/>

Certified Family Life Education – National Council on Family Relations, www.ncfr.org

Chemistry – American Chemical Society Certification Program

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>

Construct Construction Management – American Council for Construction Education (ACCE), and Association of Technology, Management (ATMAE), and Applied Engineering, and Applied and Natural Science Accreditation Commission of ABET, <http://www.abet.org>

Educator Preparation Programs – Council for the Accreditation of Educator Preparation, and North Carolina Department of Public Instruction www.caepnet.org

Electronics Technology – Association of Technology, Management, and Applied Engineering, and the Accreditation Board for Engineering and Technology (ABET)

Engineering: Architectural, Bio (Biomedical), 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 (ATMAE) and Applied and Natural Science Accreditation Commission of ABET, <http://www.abet.org>

Family and Consumer Sciences – American Association of Family and Consumer Sciences, www.aafcs.org

Family Financial Planning – Certified Financial Planner Board of Standards, www.cfp.net

Food Science – Institute of Food Technologists Higher Education Review Board, www.ift.org

Geomatics – Applied and Natural Science Accreditation Commission of ABET, <http://www.abet.org>

Graphic Communication Systems – Association of Technology, Management, and Applied Engineering, <https://www.atmae.org/>

Human Development and Services – Council on Accreditation for Counseling and Related Educational Programs, and Council on Rehabilitation Education

Human Lactation Pathway 2 Certificate Program – Commission on Accreditation of Allied Health Education Programs (CAAHEP), <https://www.caahep.org/>

Instructional Technology – National Council for Accreditation of Teacher Accreditation

Journalism and Mass Communication – Accrediting Council on Education in Journalism and Mass Communication (ACEJMC), <http://www.acejmc.org/>

Landscape Architecture – Landscape Architecture Accreditation Board, <https://www.asla.org>

Media Program – Association of Educational Communications and Technology

Mental Health Counseling (Clinical) – Council for the Accreditation of Counseling and Related Educational Programs, <https://www.cacrep.org>

Mental Health Counseling (Rehabilitation) – Council for the Accreditation of Counseling and Related Educational Programs, <https://www.cacrep.org>

Music – National Association of Schools of Music

Rehabilitation Counseling and Counseling Education – Council for the Accreditation of Counseling and Related Educational Programs, <https://www.cacrep.org>

School Counseling – Council for the Accreditation of Counseling and Related Educational Programs, <https://www.cacrep.org>

School of Nursing – Accreditation Commission for Education in Nursing (ACEN), North Carolina Board of Nursing (NCBON)

Social Work – Council on Social Work Education

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:

Accreditation Board for Engineering and Technology (ABET)
 Accrediting Council on Education in Journalism and Mass Communications (ACEJMC), www.acejmc.org
 Advancing Minorities' Interests in Engineering (AMIE)
 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 Educational Studies Association
 American Institute of Aeronautics and Astronautics
 American Historical Association
 American Institute of Aeronautics and Astronautics
 American Institute for Medical and Biological Engineering, Academic Council
 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 for the Study of African American Life and History
 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 Schools of Allied Health
 Association of Technology, Management, and Applied Engineering
 Black Theatre Network
 Board on Human Sciences
 Certified Financial Planners – Board of Standards
 Commission on Accreditation of Allied Health Programs
 Conference of Southern Graduate Schools
 Council for the Accreditation of Educator Preparation
 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
 Institute of Electrical and Electronic Engineers
 Institute of Food Technologists
 Institute of Industrial Engineers
 Kennedy Center American Theatre Festival Region IV
 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 GEM Consortium (GEM) <https://www.gemfellowship.org/>
 National Council for Family Relations
 National Institutional Teacher Placement Association

National League for Nursing
 National Retail Federation
 National Society of Black Engineers
 North American Colleges and Teachers of Agriculture
 North Carolina Association for Colleges and Teacher Educators
 North Carolina Association of Colleges and Universities
 North Carolina Board of Nursing
 North Carolina Criminal Justice Association
 North Carolina Library Association
 North Carolina Department of Public Instruction
 North Carolina Technology Association
 North Carolina Theatre Conference
 SAE International
 Society of Women Engineers
 Southeastern Library Association
 Southeastern Theatre Conference
 Southern Association of Schools and Colleges, Commission on Colleges
 Southern Regional Education Board Council on Collegiate Education for Nursing
 Southern Universities Research Association
 United States Institute of Theatre Technology
 University of North Carolina Exchange Program
 University of North Carolina Graduate Council

OFFICE OF INTERNATIONAL AFFAIRS

The Office of International Affairs works closely across divisions, departments and programs to ensure accurate and timely responses for information and assistance related to international affairs, education abroad, global experiences, and international travel. The Office works with the Office of the Provost regarding international travel. Charged with supporting internationalization strategies, international partnerships, faculty research, global experiences and managed growth for education abroad, the Office serves international students, research scholars, and exchange students with the issuance of Certificates I-20 and DS-2019 as required. The Office of International Affairs also manages agreements with overseas institutions and works with faculty to develop new international programs advancing the university's global engagement goals. In collaboration with the Liberal Studies Department, the Office helps with the administration of the nationally recognized Global Studies Certificate Program. In conjunction with its role to support enrollment of international students (F-1) and exchange visitors (J-1) the Office is responsible for maintaining the university's formal approval and privilege to recruit, admit, enroll, matriculate, graduate and employ international students and scholars. The Office also supports the development of programs and activities designed to promote international student success in academics and research, as well as the development of skills necessary for social and cultural adjustment to N.C. A&T and the Greensboro community. Services also includes guidance with international admissions, non-immigrant visa requirements, and orientation sessions for both international students and scholars. The Office provides global awareness activities through various cultural and educational programs during the year to create campus-wide awareness and promote a greater international presence on campus. The Office of International Affairs supports inclusion and demonstrates cultural engagement which leads to a rich, productive culturally inclusive community. 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 Undergraduate Education.

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 totaling 1230 or above or a 26 or greater on the ACT. Students applying for admission to the Honors Program are also required to submit the online application which includes an essay and their resume with extra-curricular activities and leadership development.

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.

Program Description

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 Requirements

Incoming freshmen who join the University Honors Program are required to take a minimum of 7 semester hours of Honors credit during the first year. In order to graduate from the University Honors Program, students must complete 25 hours of Honors coursework. Twelve of the total 24 hours must be taken as Honors courses and not satisfied by contracts. Students have multiple options for completing the Honors curriculum which include courses, seminar, contracts and experiential learning.

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, visit the Honors webpage (<https://www.ncat.edu/academics/honors/>) or contact the Honors Program Office, 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, excluding deficiency courses and remedial work for the bachelor's degree. Semester hour requirements beyond 120 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

Program Title

Agricultural and Environmental Systems
Agricultural and Environmental Systems
Agricultural and Environmental Systems
Agricultural Education
Agricultural Education
Animal Science
Animal Science
Biological Engineering
Child Development and Family Studies
Child Development and Family Studies
Family and Consumer Sciences
Family and Consumer Sciences
Food and Nutritional Sciences
Food and Nutritional Sciences
Laboratory Animal Science
Landscape Architecture

Concentrations

(Agribusiness and Food Industry Management)
(Environmental Studies)
(Sustainable Land and Food Systems)
(Agricultural Professional Service)
(Secondary Education)
(Animal Industry)
(Natural Resources and Bio Processing)
(Child Development and Family Relations)
(Early Education and Family Studies, B-K)
(Consumer Sciences)
(Fashion Merchandising and Design)
(Human Nutrition)
(Food Science)

College of Arts, Humanities and Social Sciences

Program Title

Criminal Justice
English
English
English
English
History
History
Journalism and Mass Communication
Journalism and Mass Communication
Journalism and Mass Communication
Liberal Studies

Concentrations

(Professional English)
(African-American Literature)
(Creative Writing)
(Secondary Education)
(Technical Writing)
(Secondary Education)
(Mass Media Production)
(Multimedia Journalism)
(Public Relations)
(African-American Studies)

Liberal Studies	(Applied Cultural Thought)
Liberal Studies	(Pre-Law)
Political Science	
Music	(General)
Music	(Performance)
Music	(Secondary Education)
Professional Theatre	(Performance)
Professional Theatre	(Theatre Technology)
Visual Arts, Design	
Visual Arts, Design	(Secondary Education)
Visual Arts, Design	(Visual Media Design)

Willie A. Deese College of Business and Economics

Program Title	Concentrations
Accounting	
Business Information Technology	
Economics	
Economics	(Business)
Economics	(Law)
Finance	
Management	
Management	(Business Administration)
Management	(Entrepreneurship and Innovation)
Management	(International Management)
Management	(Management Information Systems)
Marketing	
Marketing	(Sales)
Supply Chain Management	

College of Education

Program Title	Concentrations
Elementary Education	
Elementary Education/Special Education Dual Licensure	

College of Engineering

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

John R. and Kathy R. Hairston College of Health and Human Sciences

Program Title	Concentrations
Health Services Management	
Kinesiology	Exercise Science
Kinesiology	Recreation Sport Management
Psychology	
Nursing	Traditional Option
Nursing	Accelerated BSN Option
Nursing	Regionally Increasing Baccalaureate Nursing (RIBN) Option
Nursing	RN-BSN Completion Option
Social Work	
Sociology	
Speech	Communications
Speech	Speech Pathology/Audiology

Sport Science and Fitness Management

**College of Science and Technology
Concentrations**

Program Title

Applied Engineering Technology	
Atmospheric Sciences and Meteorology	
Automotive Engineering Technology	
Biology	
Biology	(Secondary Education)
Chemistry	
Chemistry	(Secondary Education)
Computer Graphics Technology	(User Experience)
Computer Graphics Technology	(Technical Design)
Construction Management	
Electronics Technology	
Environmental Health and Safety	
Geomatics	
Mathematics	
Mathematics	(Applied Mathematics)
Mathematics	(Mathematics Secondary Education)
Mathematics	(Statistics & Data Science)
Physics	
Physics	(Biophysics)
Physics	(Engineering Physics)
Physics	(Interdisciplinary Physics)
Physics	(Secondary Education)

FERDINAND DOUGLASS BLUFORD LIBRARY

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

The mission of F.D. Bluford Library is to support and advance teaching, learning and research at N.C. A&T through user-focused services, technologies, and physical and virtual learning spaces. Individuals have access to globally trusted information resources that equip them with the knowledge to provide solutions to society's challenges. The library features wireless access throughout four levels, individual and group study spaces, technology and media-enhanced collaboration rooms, public computers, tutoring and workshops for help with class assignments and research. The library maintains a rich print collection as well as digital resources and other online research tools providing 24/7 access. 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 1:00 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".

EXTENDED CAMPS

Extended Campus administers A&T Online, Continuing Education, and Summer Sessions. The Extended Campus provides services and educational programming focused on the needs of a variety of traditional and post-traditional learners year-round. A&T Online offers accredited undergraduate and graduate degree programs and certificates. Continuing Education provides non-credit professional development, certifications, skills trainings, conferences, youth camps and other lifelong learning opportunities. Summer Sessions features several convenient sessions of varying lengths: two five-week sessions (Summer I and Summer II); 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. The Virtual Immersion Pre-College (VIP) program for new undergraduate students is offered during Summer Session II. All summer sessions facilitate study aimed at meeting a wide range of academic success, career, and personal enrichment goals.

The Extended Campus works proactively with the N.C. A&T community and external collaborators to create high-quality, transformative online, professional, and lifelong learning opportunities, helping ensure A&T's preeminence within a changing higher education landscape.

INSTRUCTIONAL TECHNOLOGY TRAINING AND DEVELOPMENT

Instructional Technology Training and Development (ITTD) supports the use of educational technologies to enhance the teaching, learning, and research experiences of the faculty, students, and staff at the University. ITTD provides technology training and development, instructional design, multimedia services, and oversight of Blackboard, the University's learning management system. The department offers professional development opportunities that explore diverse technologies and a variety of teaching and learning pedagogies to enhance instructional activities and daily operations. The department offers in-person workshops, on-line learning experiences, handouts, and quick-reference guides to help empower students, faculty, and staff.

INFORMATION TECHNOLOGY SERVICES (ITS)

<https://hub.ncat.edu/administration/its/index.php>

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:

Instructional Technology Training and Development (ITTD)

Instructional Technology Training and Development (ITTD) supports the use of educational technologies to enhance the teaching, learning, and research experiences of the faculty, students, and staff at the University. ITTD provides technology training and development, instructional design, multimedia services, and oversight of Blackboard, the University's learning management system. The department offers professional development opportunities that explore diverse technologies and a variety of teaching and learning pedagogies to enhance instructional activities and daily operations. The department offers in-person workshops, on-line learning experiences, handouts, and quick-reference guides to help empower students, faculty, and staff.

Client Technology Services

The department of Client Technology Services provides support for client-facing technologies such as desktops, laptops, virtual desktops, 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 Project Management and Business Operations

This department manages the project portfolio and business operations 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 Systems Administration

The department of Network and System Administration is responsible for managing the university's network, telephony, fiber distribution, data centers and telecommunication rooms, and server and storage infrastructure. This includes managing the deployment and operation of switches, routers, firewalls, access points, VoIP phones, analog lines, cellular equipment, servers, virtual desktop infrastructure, storage, backup and related equipment. It also includes managing network access control (NAC), data 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. The department works with leaders across the campus to ensure the security of technology and data and manages the

campus cyber security awareness program. Information Security 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 an academic student support service unit designed to assist all students in reaching high levels of academic success. The mission for CAE is to communicate the University's student success priorities, foster undergraduate achievement, and monitor academic progress in support of the UNC Policy Manual 400.1.5 (www.northcarolina.edu). Services provided by the Center for Academic Excellence include: academic coaching, walk-in advising services, delivery of the College Success Course (FRST 101), administration of the Student Athlete Academic Enhancement Program (SAAEP), tutorial services (group, individual, and online delivery), supplemental instruction, academic monitoring, specialized mentoring programs and advising services for undeclared students.

WASTE MANAGEMENT INSTITUTE

<https://www.ncat.edu/provost/academic-affairs/wmi/index.php>

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 undergraduate and graduate certificate programs. The Waste Management Certificate highlights the training of NC A&T students in environmental security and waste management issues. The Certificate adds value to degree programs.

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's goals through the enhancement and management of private resources by expanding opportunities for engagement of diverse constituencies, increasing the University's resources and providing world class stewardship of private resources.

Organizationally, University Advancement is made up of four distinct units and organizations: Alumni Relations, University Development, Advancement Operations and the Foundation for N.C. A&T State University, Inc. Alumni Relations serves to help build and maintain history and traditions between the university and its alumni; University Development seeks to maximize private support for the University through high-quality collaboration with the various colleges and units; Advancement Operations gathers, organizes, manages and disseminates information to guide the sound, effective advancement and overall business decisions of the Division; and the Foundation, a 501(c)3 associated entity, promotes the welfare and future development of NC A&T State University in its educational and scientific endeavors by seeking private gifts for the benefit of the University.

Advancement Operations and University Development are located in the 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/>

The Division of Research & Economic Development manages all aspects of the research enterprise for the university led by the Vice Chancellor for Research & Economic Development. The Division is made up of the Vice Chancellor's management team, the Offices of Sponsored Programs, Intellectual Property and Commercialization, Research Compliance and Ethics, Research Services and Project Management, Financial Compliance and Contracts & Grants.

The Division's responsibilities include identification of funding opportunities; proposal development and preparation; proposal submission; research compliance oversight; project setup, monitoring, invoicing, and closeout; intellectual property protection and commercialization; managing subcontracts, non-disclosure agreements, and material transfer agreements; and reporting to sponsoring agencies.

CAMPUS ENTERPRISES

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, ELEMENTS (convenience 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. For hours of operation visit us at <https://www.ncat.edu/campus-life/campus-enterprises/index.php> or call (336) 334-7876.

ELEMENTS

ELEMENTS is your on campus convenience store which is located in the Student Center. We provide a limited number of consumable products. Students, faculty and staff can purchase a variety of items such as groceries, snack foods, candy, toiletries, beverages, greeting cards and much more. For hours of operation visit us at <https://www.ncat.edu/campus-life/campus-enterprises/elements.php> or call (336) 285-3285.

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 and fare to ride on the city HEAT Bus System. Also, you can deposit funds, manage and keep track of card activity with the GET App online tool at <https://get.cbord.com/ncat/full/login.php>.

The Aggie OneCard Center staff is located in Student Center, Suite 242. If your card is lost or stolen, please report it to the Aggie OneCard Center immediately at (336) 334-7114 or use the GET App. Also, you can contact the University Police Department. 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 a.m. to 5:00 p.m. There is a replacement fee of \$25.00 for any lost, stolen or damaged card.

UNIVERSITY BOOKSTORE

The bookstore is located in the Student Center. 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! The Bookstore has an extensive selection of course materials, school supplies, computer products, software, laptops, dorm essentials, and Aggie apparel. You will find located within the bookstore a Café proudly serving Starbucks coffee, assorted teas, cappuccinos/lattes, hot chocolate, ice coffee, cold beverages and a complement of pastries and fresh sandwiches. 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 @ncat_bookstore.

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 a variety of restaurants to engage with friends, take study breaks or relax and unwind 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. Meals or meal swipes can be used in Williams Dining Hall or the MarketPlace. Cash, Credit Cards, Apple Pay, Mobile Pay and Aggie One Cards are accepted at all Aggie Dining locations. 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 @ncatdining for updates, discounts and promotions. Visit our website at www.ncatdining.com or call (336) 334-7560 for more information.

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. - 5:00 p.m.; hours may vary depending on season and other events. For more information or to purchase tickets visit our website at <https://www.ncat.edu/campus-life/campus-enterprises/university-ticket-office/index.php> 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 incoming and outgoing 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. The Mail Center provides keyless mailboxes for our students. All letter mail and packages are to be addressed using OneID format. A notification will be emailed to student email for mail pickup. Students must present their Aggie OneCard to verify delivery and receive any mail or 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 mailcenter@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 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 Passio Go 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 <https://www.ncat.edu/campus-life/campus-enterprises/parking-and-transportation/index.php> or by phone at (336) 285-2027.

STUDENT LIFE
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.

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) Health Services, (3) Housing & Residence Life, (4) Student Center, (5) Leadership and Civic Engagement, (6) Student Activities and Campus Involvement (7) Student Conduct, (8) Veteran and Military Affairs, (9) Intercultural Engagement, (10) TRIO: Student Support Services, (11) TRIO: Upward Bound Program, (12) TRIO: Educational Talent Search, (13) University Event Center, (14) Administration, (15) BLUE & GOLD Marching Band, (16) Intramural Sports, (17) LGBTQA Resource Center, and (18) the Graduate Student Advisory Council. Some of the specific services are described as follows:

OFFICE OF STUDENT AFFAIRS ASSESSMENT AND PROFESSIONAL STAFF DEVELOPMENT

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 Dr. Kellie Dixon, Assessment Coordinator for the Division of Student Affairs at (336) 285-2727 or via email 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

<https://www.ncat.edu/campus-life/student-affairs/departments/health-services/index.php>

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. **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.
3. **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.
4. **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.
5. **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.
6. **Student Health Insurance:** All major insurance plans are accepted. Student Blue is available to all students sponsored by Blue Cross Blue Shield of North Carolina.
7. **Psychiatric/ Mental Health Services:** Provided by board certified healthcare providers. Services available by virtual or in person visits.
8. **Dental Services:** Coming Fall 2021
9. **Alternate Lifestyle Services:** Massage is 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.

*Provider on call: Monday – Friday from 7:01 p.m. – 10:00 p.m. | Weekends: Saturday – Sunday from 11:00 a.m. – 3:00 p.m.

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: <https://hub.ncat.edu/files/administrative/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 may 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

<https://www.ncat.edu/campus-life/student-affairs/departments/student-center/index.php>

The Student Center functions as the “Community Center” for the University and its constituency by providing a variety of services and activities. The Student Center is vital for the recruitment, retention and the matriculation of our students. The Student Center is a state of the art facility with 150,000 square feet of space that includes an array of amenities, conveniences, services, and programming capabilities that are sure to appease the needs of the students, faculty, staff, alumni, and guests. This facility is the home to the Office of Student Activities and Campus Involvement, Office of Leadership and Civic Engagement, LGBTA Resource Center, University Events Center, Office of Intercultural Engagement, Aggie OneCard, Barnes and Nobles Bookstore, Marketplace Dining, Recreation and Gaming area, Deese Ballroom and more. The Center employs about forty-five students each semester, which are recruited and supervised by full-time staff.

A primary goal of the Student Center is to promote an involved community through its various services, facilities, and co-curriculum 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 CRC has new and up-to-date 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, activities, and reservation are scheduled and implemented. The UEC services student organizations, faculty, staff, administrators, as well as, the outside community events including lectures, receptions, performances, press conferences, concerts, conferences, banquets, and athletic events. They also manage and supervise Harrison Auditorium.

LEADERSHIP AND CIVIC ENGAGEMENT

<https://www.ncat.edu/campus-life/student-affairs/departments/student-development/index.php>

The purpose of the Office of Leadership and Civic Engagement (OLCE) is to promote an environment at North Carolina A&T that provides for the overall growth and development of students. OLCE 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.

OLCE 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. The National Society of Leadership and Success, building leaders who make a better world. A Greek letter organization in which you are invited to join and must complete a series of leadership initiatives to be inducted.

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 Leadership and Civic Engagement 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.

CIVIC ENGAGEMENT AND SERVICE LEARNING

Opportunities and experiences that emphasize awareness, service and civic responsibility as critical competencies of a successful NC A&T graduate and active citizen. Through community connections, meaningful exchanges/ engagement and self-explorations, students are empowered as catalyst for positive change, social impact and constructive influence in their local, national and/or global

community. Previous volunteer opportunities include: MLK Day of Service, New Student Move-in, Out of the Garden mobile food bank and Beloved Community Center garden restoration.

STUDENT ACTIVITIES AND CAMPUS INVOLVEMENT

<https://www.ncat.edu/student-affairs/student-services/student-activities/index.html>

The Office of Student Activities & Campus Involvement (OSA) serves as a catalyst for co-curricular learning and experiences outside of the classroom which support the emergence of a holistic, well rounded student as they prepare for life after graduation. This is accomplished through the various entities encompassed within the OSA umbrella and the university sponsored groups housed within our office. They include but are not limited to the **Student Government Association** (SGA, Royal Court and the Senate), Campus Programming via the **Student University Activities Board** (SUAB), and the approximate 150 **Student Clubs and Organizations** which are managed by the Council of Presidents (COP) who serves to assist, advocate, govern and be a liaison keeping organizational life on campus meaningful. Also included within this group are national fraternities and sororities who are managed by the Joint Greek Council (JGC). OSA is also responsible for the Honda Campus All-stars Quiz Bowl Team and Special/Major Events such as Homecoming and AGGIEFEST.

We accomplish our mission through programming efforts, initiatives, and the provision of resources associated with our four (4) core functions. These functions and outcomes are, but are not limited to:

- Designing and supporting programs (cultural, educational, intellectual, recreational, and social) that cultivate student expression and foster interactions among the diverse members of the University community.
- Providing experiences and opportunities for student leadership, particularly through the Student Government Association; to develop them both ethically and morally through social responsibility in order to effectively lead and advocate for the entire student body.
- Providing students and advisors with ongoing training that will develop and enhance their organizational management and communication skills, personal accountability, leadership skills, and member recruitment capabilities.
- Providing experiences and opportunities for students involved in student organizations to learn and articulate their strengths and weakness through self-reflection, professional development, and social development.

One can find a listing of all active student organizations, their missions, objectives, contact information, and advisors on 1891 Connect once the semester begins. For questions, please contact or visit the Office of Student Activities on the top floor of the Student Center (Suite 332). We can be reached via email at osa@ncat.edu and by phone via (336) 285-4930.

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 may 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 until students are readmitted to the university. Transcripts are 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) recovery program offered by counseling services
 - 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 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/ 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 AND MILITARY 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 Veteran and Military 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 Veteran and Military 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.

INTERCULTURAL ENGAGEMENT

<https://www.ncat.edu/campus-life/student-affairs/departments/office-intercultural-engagement/index.php>

The Office of Intercultural Engagement (OIE) is an integral part of the University. Located in the Student Center, Suite 367, 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 OIE exists to promote understanding, respect and the appreciation of all diverse communities on the campus of North Carolina A&T State University. The Office of Intercultural Engagement offers leadership and cultural opportunities, diversity training, social and service activities, often in cooperation with other campus organizations. Numerous programs and services are available in the OIE 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 Office of Intercultural Engagement-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, Associate Director, Graduate Assistant and the OIE Student Ambassadors.

TRIO STUDENT SUPPORT SERVICES

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

The purpose of the TRIO Student Support Services Program (SSSP) at North Carolina A&T State University is to provide opportunities for academic development, assist students with basic college requirements, and to motivate students toward the successful completion of their postsecondary education. The academic support services are to increase the retention and graduation rates of the active participants who are enrolled in the University. The program identifies, selects and serves two hundred (206) first-generation, low-income and/or 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 TRIO Student Support Services program was established at North Carolina A&T State University in 1997. For more information please call (336) 334-7982 or visit 212 Murphy Hall, triosss@ncat.edu.

The TRIO SSS has been designed to provide optimum benefits for its participants. In order to achieve this goal, TRIO SSS personnel coordinates with 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. Informational Workshop Sessions, i.e. Study Skills, Financial Literacy and Time Management
2. Tutorial Services and Academic Coaching, Secondary Academic Advising
3. Career Exploration, Scholarship Application Assistance,
4. Summer Bridge program and Residential Living Community
5. Cultural and Educational Enrichment Activities

TRIO UPWARD BOUND

<https://www.ncat.edu/student-affairs/student-services/trio/upwardbound/index.html>

Upward Bound is an early intervention pre-college program that helps students prepare for higher education. Upward Bound brings high school students, from targeted Guilford County schools, to college campuses after school, on the weekends, and during the summer to receive instruction in mathematics, laboratory sciences, composition, literature, and foreign languages. Tutoring, counseling, mentoring, cultural enrichment, and work-study programs are additional components to the Upward Bound Program. The TRIO Upward Bound Program was established at North Carolina A&T State University in 1966. For more information please call (336) 334-7659 or visit 1020 East Wendover Avenue Suite 205.

TRIO EDUCATIONAL TALENT SEARCH

<https://www.ncat.edu/student-affairs/student-services/trio/talent-search/index.html>

The Educational Talent Search program identifies and assists individuals from disadvantaged backgrounds who have the potential to succeed in higher education. The program provides academic, career, and financial counseling to its Middle and High School participants from Guilford County School District, and encourages them to graduate from high school and continue on to and complete their postsecondary education. The program publicizes the availability of financial aid and assists participants with the postsecondary application process. Educational Talent Search also encourages persons who have not completed education programs at the secondary or postsecondary level to enter or re-enter and complete postsecondary education. The goal of Educational Talent Search is to increase the number of youth from disadvantaged backgrounds who complete high school and enroll in and complete their postsecondary education. The TRIO Educational Talent Search program was established at North Carolina A&T State University in 2016. For more information please call (336) 285-2503 or visit McNeil Hall (Aggie Village 6), Suite 625.

UNIVERSITY EVENT CENTER

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

The University Event Center (UEC) schedules and executes all on-campus activities. UEC services students, faculty, staff, administrators, as well as, the outside community in assisting with guest lectures, receptions, performances, conferences, concerts, fairs, athletic events and other scheduled activities.

The purpose of the UEC is to assist in the selection of venues, securing logistical support, audio/visual services, event conversions, floor-plan design, and marketing. UEC will operate to support any event that has been appropriately scheduled and coordinated with their office to ensure a well-executed event in accordance with policies and procedures.

For more information on the University Event Center or to schedule an event, please call (336) 285-2580 or email uec@ncat.edu.

EXPENSES AND FINANCIAL AID

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.

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 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 \$175 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 \$175 fee attached.

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

Payment – Each Semester

Residence Status:

In-State (Cohort Year 2017 – 2018) – \$4,675.06

In-State (Cohort Year 2018 – 2019) – \$4,675.06

In-State (Cohort Year 2019 – 2020) – \$4,675.06

In-State (Cohort Year 2020 – 2021) – \$4,675.06

In-State (Cohort Year 2021-2022) – \$4,675.06

Out-of-State – \$11,430.06

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

Payment – Each Semester

Residence Status:

In-State – \$5,277.56

Out-of-State – \$11,677.56

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

Payment – Each Semester

Residence Status:

In-State (Cohort Year 2017 – 2018) – \$6,666.34

In-State (Cohort Year 2018 – 2019) – \$6,666.34

In-State (Cohort Year 2019 – 2020) – \$6,666.34

In-State (Cohort Year 2020 – 2021) – \$6,666.34

Out-of-State – \$13,421.34

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

Payment – Each Semester

Residence Status:

In-State – \$7,268.84

Out-of-State – \$13,668.84

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 2017 – 2018) – \$8,870.84

In-State (Cohort Year 2018 – 2019) – \$8,870.84

In-State (Cohort Year 2019 – 2020) – \$8,870.84

In-State (Cohort Year 2020 – 2021) – \$8,870.84

In-State (Cohort Year 2021 – 2022) – \$8,870.84

Out-of-State – \$15,625.84

Graduate Student

Residence Status:

In-State – \$9,473.34

Out-of-State – \$15,873.34

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.

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

No. of Hours	Tuition	Other Required Fees	Total
1-5	\$442.50	\$636.17	\$1,078.67
6-8	\$885.00	\$2,264.73	\$3,149.73
9-11	\$1,327.50	\$2,905.06	\$4,232.56
12 or more	\$1,770.00	\$2,905.06	\$4,675.06

**NORTH CAROLINA STUDENT RATES
UNDERGRADUATE STUDENTS
COHORT YEAR 2018-2019**

1-5	\$442.50	\$636.17	\$1,078.67
6-8	\$885.00	\$2,264.73	\$3,149.73
9-11	\$1,327.50	\$2,905.06	\$4,232.56
12 or more	\$1,770.00	\$2,905.06	\$4,675.06

**NORTH CAROLINA STUDENT RATES
UNDERGRADUATE STUDENTS
COHORT YEAR 2019-2020**

1-5	\$442.50	\$636.17	\$1,078.67
6-8	\$885.00	\$2,264.73	\$3,149.73
9-11	\$1,327.50	\$2,905.06	\$4,232.56
12 or more	\$1,770.00	\$2,905.06	\$4,675.06

**NORTH CAROLINA STUDENT RATES
UNDERGRADUATE STUDENTS
COHORT YEAR 2020-2021**

1-5	\$442.50	\$636.17	\$1,078.67
6-8	\$885.00	\$2,265.73	\$3,149.73
9-11	\$1,327.50	\$2,905.06	\$4,232.56
12 or more	\$1,770.00	\$2,905.06	\$4,675.06

**NORTH CAROLINA STUDENT RATES
UNDERGRADUATE STUDENTS
COHORT YEAR 2021-2022**

1	\$147.50	\$422.72	\$570.22
2	\$295.00	\$529.45	\$824.45
3	\$442.50	\$636.17	\$1,078.67
4	\$590.00	\$742.89	\$1,332.89
5	\$737.50	\$849.61	\$1,587.11
6	\$885.00	\$2,264.73	\$3,149.73
7	\$1,032.50	\$2,371.45	\$3,403.95
8	\$1,180.00	\$2,478.17	\$3,658.17
9	\$1,327.50	\$2,584.90	\$3,912.40
10	\$1,475.00	\$2,691.62	\$4,166.62
11	\$1,622.50	\$2,798.34	\$4,420.84
12	\$1,770.00	\$2,905.06	\$4,675.06

**GRADUATE STUDENTS
(IN-STATE)**

No. of Hrs.	Tuition	Other Required Fees	Total
1	\$263.61	\$458.30	\$721.91
2	\$527.22	\$600.60	\$1,127.82
3	\$790.83	\$742.89	\$1,533.72
4	\$1,054.45	\$885.18	\$1,939.63

5	\$1,318.06	\$1,027.48	\$2,345.54
6	\$1,581.67	\$2,478.17	\$4,059.84
7	\$1,845.28	\$2,620.47	\$4,465.75
8	\$2,108.89	\$2,762.76	\$4,871.65
9	\$2,372.50	\$2,905.06	\$5,277.56

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

No. of Hrs.	Tuition	Other Required Fees	Total
1	\$710.42	\$422.72	\$1,133.15
2	\$1,420.84	\$529.45	\$1,950.29
3	\$2,131.26	\$636.17	\$2,767.42
4	\$2,841.67	\$742.89	\$3,584.56
5	\$3,552.09	\$849.61	\$4,401.70
6	\$4,262.50	\$2,264.73	\$6,527.24
7	\$4,972.92	\$2,371.45	\$7,344.37
8	\$5,683.34	\$2,478.17	\$8,161.51
9	\$6,393.75	\$2,584.90	\$8,978.65
10	\$7,104.17	\$2,691.62	\$9,795.78
11	\$7,814.58	\$2,798.34	\$10,612.92
12	\$8,525.00	\$2,905.06	\$11,430.06

**GRADUATE STUDENTS
(OUT-OF-STATE)**

No. of Hrs.	Tuition	Other Required Fees	Total
1	\$974.72	\$458.30	\$1,433.02
2	\$1,949.45	\$600.60	\$2,550.04
3	\$2,924.17	\$742.89	\$3,667.06
4	\$3,898.89	\$885.18	\$4,784.07
5	\$4,873.61	\$1,027.48	\$5,901.09
6	\$5,848.33	\$2,345.54	\$8,326.51
7	\$6,823.06	\$2,620.47	\$9,443.53
8	\$7,797.78	\$2,762.76	\$10,560.54
9	\$8,772.50	\$2,905.06	\$11,677.56

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	14.00	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	175.00
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	225.00
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
		Laundry Fee	\$40.00

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 2019-2020 academic year for an in-state graduate student registered for thesis only is \$1,202.87. The charge for an out-of-state graduate student is \$2,802.87.

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. 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.

Listed below is Summer 2021 Tuition and Fees.

SUMMER SCHOOL CHARGES PER CREDIT HOUR IN-STATE UNDERGRADUATE

No. of Credit	Tuition	Other Required Fees	Total
1	\$134.00	\$82.86	\$216.86
2	\$268.00	\$140.72	\$408.72
3	\$402.00	\$198.58	\$600.58
4	\$536.00	\$256.44	\$792.44
5	\$670.00	\$314.30	\$984.30
6	\$804.00	\$372.16	\$1,176.16
7	\$938.00	\$430.02	\$1,368.02
8	\$1,072.00	\$487.88	\$1,559.88
9 or more	\$1,206.00	\$545.74	\$1,751.74

OUT-OF-STATE UNDERGRADUATE

No. of Credit	Tuition	Other Required Fees	Total
1	\$598.00	\$82.86	\$680.86
2	\$1,196.00	\$140.72	\$1,336.72
3	\$1,794.00	\$198.58	\$1,992.58
4	\$2,392.00	\$256.44	\$2,648.44
5	\$2,990.00	\$314.30	\$3,304.30
6	\$3,588.00	\$372.16	\$3,960.16
7	\$4,186.00	\$430.02	\$4,616.02
8	\$4,784.00	\$487.88	\$5,271.88
9 or more	\$5,382.00	\$545.74	\$5,927.74

IN-STATE GRADUATE

No. of Credit Hrs.	Tuition	Other Required Fees	Total
1	\$194.00	\$82.86	\$276.86
2	\$388.00	\$140.72	\$528.72
3	\$582.00	\$198.58	\$780.58
4	\$776.00	\$256.44	\$1,032.44
5	\$970.00	\$314.30	\$1,284.30
6	\$1,164.00	\$372.16	\$1,536.16
7	\$1,358.00	\$430.02	\$1,788.02
8	\$1,552.00	\$487.88	\$2,039.88
9 or more	\$1,746.00	\$545.74	\$2,291.74

OUT-OF-STATE GRADUATE

No. of Credit Hrs.	Tuition	Other Required Fees	Total
1	\$656.00	\$82.86	\$738.86
2	\$1,312.00	\$140.72	\$1,452.72
3	\$1,968.00	\$198.58	\$2,166.58
4	\$2,624.00	\$256.44	\$2,880.44
5	\$3,280.00	\$314.30	\$3,594.30
6	\$3,936.00	\$372.16	\$4,308.16
7	\$4,592.00	\$430.02	\$5,022.02
8	\$5,248.00	\$487.88	\$5,735.88
9 or more	\$5,904.00	\$545.74	\$6,449.74

Boarding and Lodging – (Double Occupancy) – \$ \$1634.68 (based on 5 weeks)

DETAIL OF FEES, DEPOSITS AND CHARGES

	Per Semester	Per Year
Required Fees - N.C. Student Tuition		
Tuition	\$1,770.00	\$ 3,540.00
Other Required Fees	<u>2,905.06</u>	<u>5,810.12</u>
Total – N.C. Day Student*	\$4,675.06	\$ 9,350.12
Housing and Meals	\$4,195.78	\$ 8,391.56
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 Housing and Meals	\$4,255.78	\$ 8,511.56
Total N.C. Housing and Meals Student	\$8,930.84	\$17,861.68
Out-of-State Student Tuition	\$8,525.00	\$17,050.00
Other Required Fees	<u>\$2,905.06</u>	\$ 5,810.12
Total Out-of-State Student*	\$11,430.06	\$22,860.12
Total Housing and Meals	<u>\$4,255.78</u>	\$ 8,511.56
Total Out-of-State Housing and Meals Student	\$15,685.84	\$31,371.68

FINANCIAL AID AND SCHOLARSHIPS

<https://www.ncat.edu/admissions/financial-aid/index.php>

The Office of Financial Aid and Scholarships 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 Financial Aid and Scholarships 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 1st each year at studentaid.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

<https://www.ncat.edu/admissions/financial-aid/types-of-aid/index.php>.

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. 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. Students attending summer sessions must have a completed FAFSA for the respective year on file and complete the verification process.

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 Financial Aid and Scholarships. 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 Financial Aid and Scholarships 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 which 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 15th 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 Financial Aid and Scholarships 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 \$6,000.

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 "three 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 grade point average.

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 120, 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 Financial Aid and Scholarships 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 receives 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 Financial Aid and Scholarships of their right to appeal the decision. Students may appeal in writing to the Office of Financial Aid and Scholarships if they had extenuating circumstance(s) that led to their unsatisfactory academic progress. The student will be notified via email to their NCAT email 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 Financial Aid and Scholarships 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 via email to their NCAT email of the appeal decision. If an appeal is approved, the student must sign a Satisfactory Academic Progress Action Plan with the Office of Financial Aid and Scholarships. 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 Financial Aid and Scholarships will make every effort to promptly notify students of the cancellation of the award and their academic standings.

Withdrawals, Repayments and Refunds

The Federal Higher Education Act (HEA) of 1965 was amended in 1998 and new regulations were established with regard to Title IV student financial aid programs. Students earn their Title IV federal financial aid by attending classes. When a student is not enrolled through 60% of the semester or term, the "unearned" portion of their aid must be returned to the federal programs.

If a student withdraws from the University prior to completing the 60% of the semester or term, the financial aid office recalculates eligibility of Title IV funds. Recalculation is based on the percentage of earned aid using the following Federal Return of Title IV funds formula:

- Percentage of semester or term completed equal the number of days completed up to the withdrawal date divided by the total days in the semester or term.

The Withdrawal date is determined by the official date the student began the withdrawal process or notified the University of the Intent to withdraw.

- **Example:** Student A withdraws from Fall semester on September 28. The semester began on August 16 and ends on December 10. There are 119 days in the semester. The student attended 44 days in the semester.
 - $44 \text{ days} / 119 \text{ days} = 37\%$
 - Therefore the student has completed 37% of the semester and a return of Title IV calculation must be completed.

If a student earned less aid than what was disbursed, the university would be required to return a portion of the funds and the student would be required to return a portion of the funds. When Title IV funds are returned, the student may owe a balance due to the University.

If a student earned more aid than was disbursed to him/her, the University would owe the student a post-withdrawal disbursement which must be paid within 120 days of the student's withdrawal date.

Any unearned federal financial aid must be returned to program funds up to the amount of assistance the student has received from the program, in the priority order established by regulation: Unsubsidized Stafford Loan, Subsidized Stafford Loan, Plus Loan, Federal Pell Grant, Federal SEOG, and other Title IV programs.

Unofficial Withdrawals

If a student leaves the University without official notification, the university may establish a withdrawal date by using the midpoint of the semester or using the student's last day of attendance as documented by an academically related activity.

If a student earns all F's during a semester, it may be considered an unofficial withdrawal if the last date of attendance cannot be determined.

ADMISSIONS

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

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: <https://www.ncat.edu/admissions/undergraduate/index.php> or call us at (800) 443-8964.

The fall early action (*scholarship consideration*) domestic freshmen application for admissions deadline is October 15. The fall regular domestic freshmen application for admissions deadline is June 1. The domestic freshman application for admissions deadline is December 15 for the spring semester. The fall early action (*scholarship consideration*) domestic transfer application for admissions deadline is May 15. The fall regular domestic transfer application for admissions deadline is July 15. The domestic transfer application for admissions deadline is December 15 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. Applications for admission and a non-refundable application fee of \$60.00 can be submitted electronically at:

<https://aggieadmissions.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. The submission of test scores is optional for new freshmen applicants. If sent, official results of the Scholastic Aptitude Test (SAT) or American College Test (ACT) must be sent electronically from the 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://aggieadmissions.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 <https://www.ncat.edu/campus-life/student-affairs/departments/health-services/students.php>.

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 if submitted by the applicant. The submission of test scores is optional for new freshmen applicants. **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 25% 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

Undergraduate students who have attended an institution outside of the United States must have their international transcript(s) evaluated by one of the credential evaluation services. A list of the approved credential evaluation services can be found on the admissions webpage. (<https://www.ncat.edu/admissions/undergraduate/international-admissions.php>). The course-by-course evaluation should include high school and/ college coursework. There is a fee required for the course-by-course evaluation, which the student will be required to pay to the service provider selected.

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);
- Duolingo English Test
- ELS Language Center
- Pearson (PTE) Test
- Cambridge English Test
- English Composition I and II at a U.S. regionally accredited institution; 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. Official transcripts should be submitted sealed via postal mail or an electronic transcript service.

Campus Visits

The Office of Undergraduate Admissions hosts campus tours for prospective students on select Mondays through Fridays and on select Saturdays. For additional information about campus tours, including how to make a reservation, please visit <https://www.ncat.edu/visit/index.php> 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 complete a permission form to take courses at another institution. To access the form, please click the following link [Permission Form](#). Follow all directions before submitting the document to the Office of Transfer Articulation. 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 is located in 106 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 resident 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. The residency process should take place no later than the 30th day of the term for which they wish to be considered. To learn more about residency and complete a determination go to www.NCresidency.org.

OFFICE OF NEW STUDENT PROGRAMS

<https://www.ncat.edu/provost/academic-affairs/new-student-program/index.php>

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 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) Welcome Week
 - b) First Year Experience
- III. Aggie Family Programs
 - a) Aggie Family Weekend
 - b) Parent /Guest Orientation
- IV. NSP Student Leaders Program
 - a) Aggie Success Leaders
 - b) Tau Sigma National Honors Society (for Transfer Students)

ACADEMIC INFORMATION AND REGULATIONS

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

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.

AP EXAMINATION	<u>SCORE REQUIRED</u>	<u>HOURS GRANTED</u>	<u>UNIVERSITY COURSES SATISFIED</u>
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 or 163**
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
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
Statistics	3	3	MATH 224
Studio Art/Drawing	3	3	Art Elective
U.S. Government & Politics	3	3	POLI 110
United States History	3	6	HIST 104, 105
World History	3	3	HIST 206 or 207
	4	6	HIST 206 & 207

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

**COMP 163 will be awarded to Computer Science majors.

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.

CLEP Subject Exam	Minimum Acceptable Score	Course(s) and Credits Awarded	
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
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.

WAIVING FRESHMAN SEMINAR (FRST 101)

The Freshman Seminar (FRST 101) requirement may be waived for students who transfer with at least 30 hours of transfer coursework.

PROGRAM OF STUDY

Students should refer to the requirements of his/her academic department or college regarding his/her program of study and confer with his/her advisor whenever concerns 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, registration, add/drop and withdrawal 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 fewer than the hours advised or averaging fewer than 15-16 credit hours per semester; (2) changing majors frequently; (3) withdrawing from, failing, and repeating courses; (4) taking unnecessary courses; (5) adding a second major or a minor; (6) not meeting a pre-requisite mathematics requirement and (7) withdrawing from school.

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

Undergraduate students who earn a grade of 'C' or higher are not permitted to repeat the course. Undergraduate students who do not earn the minimum grade, as designated in their approved curriculum guide, or as a prerequisite to a course required in their approved curriculum guide, may repeat that course.

During a student's academic career at the University, a maximum of sixteen (16) credit hours may be repeated.

All grades earned will be recorded on the student's permanent academic record. When students repeat a course, the higher grade will be included in the official grade point average calculations and in determining graduation eligibility. If the student earns the same grade twice, the most recent grade will be included.

All grades earned are used in the calculation for satisfactory academic progress and graduation honors.

Official course withdrawals are not counted toward the total maximum 16 credit hours of repeats.

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 through CLEP, but a student must complete a minimum of three semesters as a full-time student in residence at the University. Fees NC 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 has implemented 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:

Grade	Description	Quality Points
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.	
CE	Credit by examination	
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; 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

Students will be placed on academic probation if they fail to earn a minimum cumulative GPA of 2.00 at the end of the semester or if they fail to meet the academic progression terms agreed upon in the written academic warning. 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 Registrar 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. Students' probationary standing will be removed, if they improve their cumulative GPA to 2.00 or above by completing coursework during a summer session. A student who completes coursework during a 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 they fail to meet the following academic expectations:

1. earn a 2.00 semester GPA, and
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 readmission 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 two years (24 consecutive months) may be eligible for readmission under the "Two 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 the Registrar 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 earned, excluding remedial and deficiency courses. The following classification scale applies to all students regardless of enrollment date:

<i>Classification</i>	<i>Semester Hours Earned</i>
Freshman	0-29
Sophomore	30-59

Junior
Senior

60-89
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.

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 Office of the Registrar.

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 sixteen (16) credit hours during the student's undergraduate academic career.

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 due 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 course 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 Office of the Registrar on or before the last day to withdraw from the university as published in the academic calendar.

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. Students who do not officially withdraw from the University will be assigned the final grade earned in each course in which they were 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.

Students withdrawing from the University with extenuating circumstances may affect a student's financial aid status and may affect a student's progress toward degree; however, the course or courses will not count in the tuition surcharge and 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.

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.

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 and wishes to get readmitted to the University may be considered for readmission to the University one of four ways:

- a. Earn an associate's degree: Associate of Arts (AA), Associate of Science (AS), Associate of Engineering (AE), Associate of Fine Arts (AFA) from a regionally accredited institution. Not all earned credit hours may transfer.
- b. Earn an Applied Associates Science (AAS), Associate of Applied Business (AAB), Associate of Applied Technology (AAT). Not all earned credit hours may transfer.
- c. Do not enroll at North Carolina Agricultural and Technical State University for 24 consecutive months. After that time, the student is eligible for readmission under the grade forgiveness policy.
- d. Return to Summer School as a summer-only readmit in an attempt to raise the grade point average.

A returning student who left the University as an undeclared student may be accepted as an undeclared student with the approval of the Director of the Center for Academic Excellence. All other returning students must be accepted into an academic major degree program; the individual may not be readmitted as an undeclared student.

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.

TWO YEAR READMISSION AND FORGIVENESS POLICY

Under the Two Year Readmission and Forgiveness Policy, an undergraduate student who has not been enrolled at North Carolina Agricultural and Technical State University for at least two (2) calendar years (24 consecutive months) may request that NCAT coursework in which a grade of F was earned and that is two 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 Two-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 Two-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.

During the first semester in which a student is readmitted, the student is required to develop an academic plan of action in consultation with the student's academic advisor and chair 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, the academic unit's retention coordinator, 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 for a course section 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. Students are not eligible for the Dean's List in any semester in which they receive 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. Students are not eligible for the Chancellor's List in any semester in which they receive 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 all students to learn and comply with the requirements set by the instructor for each class in which they are registered. Students 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 make up 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 OR ALTERNATE ASSIGNMENT

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.

Faculty have the right to assign participation in an event outside of their scheduled class time for a grade. However, if a student's established campus schedule conflicts with the assigned extracurricular event, then the faculty member must provide an alternative assignment to the student when requested with proper evidence. Examples of such conflicts may include, but are not limited to, other registered classes, practice for sports or band, or ROTC event.

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.); Conflict between a student's established campus schedule; 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 Student 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 they return 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 #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. Earn 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 a final cumulative GPA of 2.0 or higher.
5. Earn a final grade point average of 2.0 or higher for all courses in the major field of study.
6. Earn at least 30 of the last 45 credit hours for the degree from A&T courses. Exceptions 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.
7. Clear all academic conditions by the end of the semester preceding graduation.
8. 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.
9. 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, students may graduate under a bulletin published while they are a student. If a student elects to meet the requirements of a bulletin other than the one in force at the time of original admission, the student must meet all requirements of that bulletin.

SECOND BACCALAUREATE DEGREE

A student who has received a bachelor's degree from North Carolina Agricultural and Technical State University or another regionally-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.

The University will accept no more than 90 hours of undergraduate credits from previous regionally-accredited four-year institutions or approved international institutions.

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 Social Security Number, grades, or other private information – may be accessed without the student's 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 student records and personally identifiable information without the student's 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 student education records and personally identifiable information without student 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 student' 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 student consent personally identifiable information from student education records, and they may track student participation in education and other programs by linking such personally identifiable information to other personal information about the student 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. Students who believe that their 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 their 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 maintain current legal name and current address with the University. 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 have and present 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 (official or unofficial) are not processed for any current or former student 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.

Self-service 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, they 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 (UNCG).

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 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 follow the drop/add procedure at the host institution. Students 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 affects 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 UNCG*. The summer sessions are with UNCG 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.

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
Bennett College

Where to Register
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.

COLLEGE OF AGRICULTURE AND ENVIRONMENTAL SCIENCES

<https://www.ncat.edu/caes/index.php>

Mohamed Ahmedna, Dean and Research Director
Antoine J. Alston, Associate Dean for Academic Studies
Shirley Hymon-Parker, 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-Kindergarten. (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/Council for the Accreditation of Educator Preparation 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.

Department of Agribusiness, Applied Economics and Agriscience Education
Kenrett Jefferson-Moore, Chairperson

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 (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), Commodity Merchandising (15 credit 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 Educator Preparation Program within the College of Education, in addition to other admission requirements.

EDUCATOR PREPARATION PROGRAM

The goals and objectives of the Educator Preparation Program in agricultural education, as mandated by the Council for the Accreditation of Educator Preparation (CAEP) and the North Carolina Department of Public Instruction (NCDPI), 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 a plethora of jobs in the Agribusiness and Food Industry Management profession. 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

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENGL 101	3
MATH 101	3	*MLAR Elective	3
AGED 101	1	ENVS 201	3
*SR Elective	4	*SBS Elective	3
FRST 101	1	NARS 110	3
BIOE 114	3	Semester Total	15
Semester Total	15		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
AGED 200	3	*GL Elective	3
*AA Elective	3	Free Elective	5
ENGL 331	3	Second Major Concentration	3
*HFA Elective	3	ANSC 163	3
Second Major Concentration Elective	3	ABM 330	3
Semester Total	15	Semester Total	17
Junior Year: First Semester		Junior Year: Second Semester	
AGED 302	3	AGED 303	3
AGED 301	3	AGED 304	3
Second Major Concentration Elective	3	ANSC 214	3
HORT 334	3	Second Major Concentration Elective	3
Second Major Concentration Elective	3	SLMG 200	4
Semester Total	15	Semester Total	16
Senior Year: First Semester		Senior Year: Second Semester	
AGED 407	3	Second Major Concentration Elective	3
AGED 411	3	Agricultural Science Elective	3
AGED 408	3	Agricultural Science Elective	3
AGED498	6	AGED 406	3
Semester Total	15	Semester Total	12

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, ENV5 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: ENV5 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
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENGL 101	3
MATH 101	3	*MLAR Elective	3
*SR Elective	4	*AA Elective	3
EDPR 102	2	NARS 110	3
AGED 101	1	EDPR 110	2
FRST 101	1	ENV5 201	3
Semester Total	14	Semester Total	17
Sophomore Year: First Semester		Sophomore Year: Second Semester	
*HFA Elective	3	*SBS Elective	3
ANSC 163	3	EDPR 210	2
SPED 250	3	ANSC 214	3
BIOE 114	3	HORT 334	3
AGED 303	3	*GL Elective	3
Semester Total	15	ABM 330	3
		Semester Total	17
Junior Year: First Semester		Junior Year: Second Semester	
AGED 301	3	AGED 302	3
Second Major Concentration Elective	3	AGED 304	3
Second Major Concentration Elective	3	EDPR 420 (formerly CUIIN 520)	3
EDPR 410	2	SLMG 200	4
EDPR 455	3	AGED 406	3
Semester Total	14	Semester Total	16
Senior Year: First Semester		Senior Year: Second Semester	

AGED 405	3	EDPR 498 498	12
AGED 407	3	Semester Total	12
Second Major Concentration Elective	3		
Second Major Concentration Elective)	3		
Semester Total	12		

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	EDPR 498

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
Freshman Year: First Semester		Freshman Year: Second Semester	
ABM 130	1	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	Semester Total	14
SSF 226	2		
Semester Total	16		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
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 ¹	3
TSCM 240	3	Semester Total	15

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

Total Credit Hours: 120

¹Agricultural 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.

²Major 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 Agricultural Ed

Credit 1(1-0)

This course provides an opportunity for students to learn about agricultural education programs and delivery systems at the state and federal levels. The nature of teaching in school and non-formal settings will be analyzed. The types of agricultural program components, approaches to teaching, teacher characteristics, professional characteristics, and community relationships will be analyzed. Trends, developments, and opportunities in agriculture will be examined. **(F;S)**

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. Youth Program Management

Credit 3(3-0)

Methods involved in the organization, management, and evaluation of youth programs such as FFA, 4-H, and other Career and Technical Student Organizations will be examined. **(F;S)**

AGED 302. Educational Technology in Ag Education

Credit 3(3-0)

Students will refine, redefine, and reshape their perspectives and views of technology as it relates to their future careers, society, teaching, learning, and training. The course is designed to increase one's basic awareness of technology concepts and tools to provided experiences that facilitate individual thinking and learning. **(F;S)**

- AGED 303. Foundations of Ag Education** **Credit 3(3-0)**
An analysis of philosophies regarding agricultural education programs with an emphasis on history, legislation, and principles will be examined. (S)
- AGED 304. Adult Education in Ag** **Credit 3(3-0)**
An analysis of principles, techniques, and strategies for teaching adult learners in agriculturally-related workshops, trainings, and programs will be analyzed. (F;S)
- AGED 405. Clinical I Ag Teaching Methods** **Credit 3(3-0)**
This course provides agricultural education candidates with a structured, supervised clinical teaching experience in an agricultural discipline in an approved 6-12 school (minimum of 60 hours). Emphasis is on teaching methods, instructional planning, engaging students in learning, analysis of IEPs, providing feedback to guide learning, and using assessment to inform instruction to improve outcomes for student learners will be examined. Prerequisites: Formal Admission to EPP; EDPR 410. (F;S)
- AGED 406. Program Planning and Evaluation** **Credit 3(3-0)**
This course examines the process of program development, instructional planning, and program assessment evaluation. The course is designed to help students acquire and develop an understanding of program development from theory to practice; strengthen one's skills in planning, designing, implementing, evaluating, and accounting for educational programs to improve learning outcomes.
- AGED 407. Overview of Environmental Education** **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** **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. (F;S;SS)
- AGED 410. Intro to Ag Communications** **Credit 3(3-0)**
This course is designed to provide a basic understanding of the agricultural communications discipline. The course provides an overview of the history, philosophy, and theories of the discipline and introduces students to career options, skills, and practical competencies required of agricultural communicators. (F;S)
- AGED 411. Methods of Teaching Prof Serv** **Credit 3(3-0)**
Methodologies, concepts, and strategies for training and teaching youth, adults, people involved with Cooperative Extension programming, agricultural industries, and related agencies in non-formal educational settings will be examined. (F;S)
- AGED 415. Soft Skills Development in Ag** **Credit 3(3-0)**
This course is designed for agricultural students to develop their soft skills or employability skills for the agricultural workforce. Soft skills are grouped into six categories with multiple student-centered activities that are creative, hands-on and reflect universal design for learning principles. The six soft skills categories include the following: Communication, Enthusiasm and Attitude, Teamwork, Networking, Problem-Solving and Critical Thinking, and Professionalism. (F;S)
- AGED 420. Special Problems in Agricultural Education and Extension** **Credit 1-6(1-6)**
Special work in problems dealing with Agricultural Education and Extension will be examined. (Enrollment by permission of department)
- AGED 498. Practicum in Ag Prof Service** **Credit 6(6-0)**
Students will complete a minimum of 60 hours in a professional agricultural or closely-related work environment. Students will actively participate in a supervised experience in which they are expected to apply and demonstrate their agricultural education knowledge in a practical setting. The field experience will be supervised by an AgEd faculty member and the field supervisor. (F;S;SS)

Advanced Undergraduate and Graduate

- AGED 600. Youth Organizations** **Credit 3(3-0)**
Principles, theories, practices, and management techniques involved in organizing, conducting, supervising, and evaluating youth organizations and youth programs will be examined. Emphasis will be on the analysis of youth organizations and programs in Career and Technical Education or Career and Technical Student Organizations (CTSO) such as FFA, FFCLA, FBLA, TSA, and Cooperative Extension Education, 4-H. (SS)
- AGED 601. Adult Education** **Credit 3(3-0)**
This course will examine the principles, theories, strategies, and challenges of organizing, developing, and conducting programs for adult learners. Emphasis is placed on planning workshops, trainings, and programs in an agricultural setting. (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. Cooperative Extension** **Credit 3(3-0)**
The principles, objectives, organizational development, program development and foundations of 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** **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)**

- ABM 130. Introduction to Agribusiness and Food Industries** **Credit 1(1-0)**
 This course provides an introductory overview of the characteristics, scope and functions of the U.S. food and fiber production/processing/distributing system. **(F)**
- ABM 235. The Economics of World Food and Resources** **Credit 3(3-0)**
 This course provides an international and multidisciplinary perspective on food security and resources. **(S)**
- ABM 240. Information Technology in Agribusiness** **Credit 3(3-0)**
 This course is designed to include practical use of computers and information technology to manage agribusiness topics. **(F)**
- ABM 250. Dollar Enterprise** **Credit 3(3-0)**
 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.
- ABM 300. Rural Communities and Economic Development** **Credit 3(3-0)**
 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)**
- ABM 330. Applied Economics in Agribusiness** **Credit 3(3-0)**
 This course presents microeconomic and macroeconomic principles that relate to the consumption and production of food and fiber. **(F;S)**
- ABM 337. Introduction to Local Food Systems** **Credit 3(3-0)**
 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)**
- ABM 340. The Global Agricultural Economy, Hunger and Poverty** **Credit 3(3-0)**
 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)**
- ABM 406. Quantitative Analysis in Agribusiness** **Credit 3(3-0)**
 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)**
- ABM 430. Agribusiness Sales and Advertising** **Credit 3(3-0)**
 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)**
- ABM 432. Accounting for Agribusiness** **Credit 3(3-0)**
 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)**
- ABM 434. Food and Agribusiness Marketing** **Credit 3(3-0)**
 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)**
- ABM 436. Agricultural Prices and Forecasting** **Credit 3(3-0)**
 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)**
- ABM 438. Resource and Environmental Economics and Policy** **Credit 3(3-0)**
 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)

ABM 440. Alternative Marketing for Local Food Systems

Credit 3(3-0)

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)

ABM 442. Futures and Options Markets

Credit 3(3-0)

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)

ABM 444. Financial Analysis for Agribusiness

Credit 3(3-0)

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

Godfrey C. Ejimakor **Professor**
B.S., North Carolina State University; M.S., North Carolina A&T State University; Ph.D., Texas Tech

Paula Faulkner **Professor**
B.S., M.S., North Carolina A&T State University; Ph.D., Penn State University

Kenrett Y. Jefferson-Moore **Professor and Chairperson**
B.S., Southern University; M.S., Alabama A&M University; Ph.D., Auburn University

Chyi Lyi (Kathleen) Liang **Kellogg Distinguished Professor**
B.S., National Taiwan University; M.S., Ph.D., Purdue University

John P. Owens **Adjunct Instructor**
B.S., Appalachian State University; M.S., North Carolina A&T State University

Obed Quaiicoe **Teaching Assistant Professor**
B.S., University of Ghana; M.S., Ph.D., North Carolina A&T State University

Chantel Simpson **Assistant Professor**
B.S., M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University

Terrence Thomas **Research Professor**
B.S., University of West Indies; M.S., University of Wisconsin; Ph.D., Louisiana State University

Chastity Warren English **Professor**
B.S., M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University

Osei-Agyeman Yeboah **Research Professor**
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
Antoine J. Alston, Interim 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 437 and an interdisciplinary elective.

*Interdisciplinary elective courses will be selected by students in consultation with their academic advisor.

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 and LASC 398.

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
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENGL 101	3

LIBS 202 ³	3	MATH 112	4
MATH 111*	4	BIOL 100 or 101	4
LASC 161	1	ANSC 163	3
LASC 162	3	Semester Total	14
FRST 101	1		
Semester Total	15		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
HIST 130 ²	3	PSYC 101	3
Major Elective ³	3	ANSC 212	3
LASC 261	3	MATH 224	3
ANSC 214	3	SPCH 250	3
Semester Total	16	Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
CHEM 221	3	CHEM 222	3
CHEM 223	1	CHEM 224	2
LASC 459	4	LASC 460	3
LASC 365	4	PHYS 226	3
PHYS 225	3	PHYS 236	1
PHYS 235	1	Major Elective ³	3
Semester Total	16	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
CHEM 251	2	BIOL 221	4
CHEM 252	1	LASC 436 ¹ or ANSC 437, 431	3
MGMT 110	3	LASC 461 ¹	3
LASC 462	3	LASC 453	4
LASC 489	2	Semester Total	14
LASC 398 or 498 (Capstone)	3		
Semester Total	14		

Total Credit Hours: 120

¹The following courses can be used for humanities/fine arts: ENGL 201, 230; SPAN 101, 102; MUSI 216; PHIL 101, 104, 266, 267; African American: ENGL 333, 304; MUSI 220

²Global Awareness Studies: HIST 207, HIST 231, 216, PHIL 103, or 201

³Major electives include: ANSC 218, 314, 411, 421, 431, 441, 455

⁴Other Major courses which could be selected if needed: ANSC 451, LASC 464, 467

*MATH 111 (SAT Math Score 520-570, ACT Math Score 21-23); Otherwise students of 480-510 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 462
LASC 162	LASC 489
LASC 261	LASC 436
LASC 365	LASC 453
LASC 459	ANSC 163
LASC 460	ANSC 212

- 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 110 and/or 201

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

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
LASC 161	1	ANSC 163	3
LASC 162	3	PSYC 101	3
BIOL 100 or 101	4	HIST 106 ¹	3
FRST 101	1	Semester Total	15
Semester Total	15		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
CHEM 100	3	CHEM 104	3
CHEM 110	1	CHEM 114	1
HIST 130 ²	3	ABM 330	3
ACCT 210	3	ANSC 212	3
ANSC 214	3	BIOL 220 or 221	4
ABM 240	3	Semester Total	14
Semester Total	16		
Junior Year: First Semester		Junior Year: Second Semester	
ECON 201	3	ANSC 451	3
ABM 434	3	LASC 261	3
ANSC 411	3	LASC 398	3
ABM 436	3	MGMT 201	3
LASC 365	4	Major Elective ³	3
Semester Total	16	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
ABM 438	3	ANSC 416	3
ANSC 455	4	ABM 450	3
ANSC 413	2	SPCH 250	3
LASC 489	1	ANSC 435 (Capstone)	3
LASC 459	4	ANSC 441	3
Semester Total	14	Semester Total	15

Total Credit Hours: 120

¹The following courses can be used for a social/behavioral science: SOCI 200; African American: HIST 103, 107

²Global Awareness Studies: HIST 207, 216, 231, PHIL 103 or 201

³ Major electives include: ANSC 312, 415, 421, 431, 432, 436, 440, 455; LASC 261, 472

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 411
LASC 365	ANSC 416
LASC 398	ANSC 451
LASC 459	ANSC 413
LASC 489	ANSC 435
ANSC 163	ANSC 455

- 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 201 and/or 221
- 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

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENGL 101	3
LASC 161	1	MATH 112	4
LASC 162	3	ANSC 163	3
MATH 111*	4	BIOL 100 or 101	4
FRST 101	1	HIST 106 ¹	3
PSYC 101	3	Semester Total	17
Semester Total	15		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
HIST 130 ²	3	ANSC 441	3
ANSC 214	3	MATH 224	3
LASC 261	3	ANSC 212	3
ANSC 413	2	HPED Elective ³	2
Semester Total	15	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
CHEM 221	3	CHEM 222	3
CHEM 223	1	CHEM 224	2
ANSC 411	3	BIOL 220 or 221	4
LASC 459	4	ANSC 451	3
PHYS 225	3	LASC 460	3
PHYS 235	1	Semester Total	15
Semester Total	15		

Senior Year: First Semester		Senior Year: Second Semester	
CHEM 251	2	LASC 461	3
CHEM 252	1	Major Elective ⁴	3
PHYS 226	3	ANSC 437	3
PHYS 236	1	ANSC 435 (Capstone)	3
SPCH 250	3	ANSC 416	3
Major Elective ⁴	3	Semester Total	15
Semester Total	13		

Total Credit Hours: 120

¹The following courses can be used for a social/behavioral science: SOCI 200; African American: HIST 103, 107

²Global Awareness Studies: HIST 231, PHIL 103 or 201

³HPED electives include (HPED 104, 105, 119, 126)

⁴Major electives include (ANSC 312, 415, 421, 431, 432, 436, 440, 455; LASC 398, 498, 472)

*MATH 111 (SAT Math Score 520-570 or ACT Score 21-23) - Otherwise students of 480-510 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 411
LASC 459	ANSC 413
LASC 460	ANSC 416
LASC 461	ANSC 451
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 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 411. Livestock Production **Credit 3(2-2)**

Selection, breeding, feeding, management of beef cattle, goats and sheep. Prerequisite: ANSC 212. **(F)**

- 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 416. Swine Production** **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 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** **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** **Credit 3(2-2)**
Identification, grading and cutting of meats. (SS)
- ANSC 435. Special Problems in Livestock Management** **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 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)

EQUINE MANAGEMENT

- ANSC 218. Equine Science I** **Credit 3(2-2)**
Introduces the horse industry and emphasizes basic horse husbandry. Topics include history and development of the horse, status and future of the horse industry, breeds, types and classes of horses, cells, tissues, and organs, functional anatomy, biomechanics of movement, unsoundness, determining age, height, and weight of horses, genetics, reproduction and breeding. (F;S)
- ANSC 219. Equine Science II** **Credit 3(2-2)**
Course continues horse industry theory and practices and emphasizes basic horse husbandry and stable management practices. Topics continue from equine science and include digestion and nutrition, feeds and feeding, health management, parasite control, shoeing and hoof care, buildings and equipment, equitation, and career opportunities. Prerequisite: ANSC 218. (F;S)

- ANSC 220. Equine Conformation and Selection** **Credit 3(3-0)**
Evaluates conformation and movement. It covers related anatomy, identifies characteristics of major breeds, and introduces judging. Topics include the relationship of form to function and ideals and terminology for breed, halter, and performance specialties. (F;S)
- ANSC 313. Advance Horse Farm Management** **Credit 3(3-0)**
Course covers management skills for the different types of equine facilities. Topics will include breeding management, health management, pasture management, facility planning, marketing, record keeping, insurance, liability, contracts, and management of training and boarding facility. Prerequisite: ANSC 219. (F;S)
- ANSC 314. Equine Behavior and Training** **Credit 3(2-2)**
Application of fundamental behavioral concepts to training of horses and modification of undesirable behavioral patterns. Topics include early handling, halter breaking, lunging, long lining, and saddling and bridling through riding. Different training methods will be covered and practiced as appropriate. Prerequisite: ANSC 219. (F;S)

POULTRY SCIENCE

- ANSC 354. Fundamentals of Poultry Breeding** **Credit 4(3-2)**
Breeding, selection, and improvement of poultry. Prerequisites: ANSC 214 and 451. (S)
- ANSC 451. Poultry Production** **Credit 3(2-2)**
Principles and practices of poultry production. Prerequisite: ANSC 163. (F)
- ANSC 555. Advanced Commercial Poultry Management** **Credit 4(3-2)**
Management of poultry farm and hatchery operation will be emphasized. Prerequisite: 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 macro-environments that result in disease. Prerequisite: ANSC 451. (S)

LABORATORY ANIMAL SCIENCE

- LASC 161. Orientation I** **Credit 1(1-0)**
Orientation to college academic life with consideration for program demands, learning techniques and resources. (F)
- LASC 162. Introduction to Animal and Laboratory Animal Sciences** **Credit 3(3-0)**
Ethical considerations, basic sciences, history of use, laws, and guidelines in using livestock and laboratory animals. (F)
- LASC 261. Medical Terminology** **Credit 3(3-0)**
Introduction to medical terminology; vocabulary building using Latin and Greek terms as it relates to basic anatomy, physiology, and pathology. (F;S)
- LASC 365. Biology, Diseases and Care of Laboratory Animal** **Credit 4(3-3)**
The biology, diseases and care of laboratory animals; behavior of common laboratory animals; handling, restraint; necropsy and diagnostic procedures: anesthesia, aseptic surgical procedures. (F)
- LASC 398. Internship** **Credit 1-6(0-2 to 12)**
Preparation and field experiences with activities in Laboratory Animal Sciences. Prerequisites: Junior standing and special departmental permission. (F;S;SS)
- LASC 436. Principles of Toxicology** **Credit 3(2-3)**
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)
- LASC 453. Laboratory Animal Management and Clinical Techniques** **Credit 4(2-6)**
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)
- LASC 459. Integrated Anatomy** **Credit 4(3-3)**
The origin, development, and structure of bio-systems in laboratory animals, food animals and companion animals will be studied. Prerequisite: LASC 261. (F)
- LASC 460. Microscopic Anatomy** **Credit 3(2-3)**
Microscopic studies of cells and tissues of laboratory, food, and companion animals. Prerequisite: LASC 459. (F;S)
- LASC 461. Physiology of Domestic Animals** **Credit 3(2-3)**
Function of bio-systems in laboratory animals, farm animals, and companion animals. Prerequisite: LASC 459. (S)
- LASC 462. Principles of Medical Sciences** **Credit 3(3-0)**
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)
- LASC 464. Introduction to Research** **Credit 3(2-3)**
Biomedical research techniques including fundamental laboratory investigations, precepts of the scientific method and experimental design; application of scientific instrumentation. Prerequisite: Senior standing. (S)
- LASC 467. Immunological Techniques** **Credit 3(1-6)**
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)

- LASC 489. Seminar in Laboratory Animal Science (formerly LASC 569)** **Credit 1(1-0)**
 Discussion of current topics in laboratory animal science or histotechnology. (F)
- LASC 498. Internship II** **Credit 3-6(0-6 to 12)**
 Field experiences in veterinary medical activities, Animal Industry and Animal Sciences including Equine Management.
 Prerequisites: LASC 398 and special departmental permission. (F;S;SS)
- LASC 660. Special Techniques in Specimen Preparation, Immunological Techniques, Electron Microscopy, Radiology or Histotechnology** **Credit 3(1-6)**
 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

- Antoine J. Alston** **Professor and Interim Chairperson**
 B.S., M.S., North Carolina A&T State University; Ph.D., Iowa State University
- Uchenna Y. Anele** **Associate Professor**
 B.S., Michael Okpara University of Agriculture, Umudlike; M.S., University of Agriculture, Abeokuta; Ph.D., University of Bonn, Germany
- Derrick J. Coble** **Assistant Professor**
 B.S., M.S., North Carolina A&T State University; Ph.D., Iowa State University
- Kingsley A. Ekwemalor** **Teaching Assistant Professor**
 B.S., University of Port Harcourt; M.S., Ph.D., North Carolina A&T State University
- Yewande Fasina** **Associate Professor**
 B.A., Obafemi Awolowo University (Nigeria); M.Sc., Ph.D., University of Saskatchewan
- Andrea R. Gentry-Apple** **Assistant Professor and Laboratory Animal Science Coordinator**
 B.S., North Carolina A&T State University; DVM, North Carolina State University
- Radiyah Corn Minor** **Associate Professor**
 B.S., Florida A&M University; Ph.D., Meharry Medical College
- 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 Valerie Giddings, 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 (Human Nutrition) – Bachelor of Science

MINORS OFFERED

Child Development and Family Studies
Family Financial Planning

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, Early Education, and Family Studies (B-K Licensure) concentration is accredited by the Council for the Accreditation of Educator Preparation.

The Family Financial Planning Certificate program is approved by the Certified Financial Planner Board of Standards.

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
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
Scientific Reasoning Elective	4	BTEC 110	3

FCS 160	2	FCS 181	3
FCS 180	3	Knowledge Afri Amer Cult & Hist Elec	3
Semester Total	15	Semester Total	15
Sophomore Year: First Semester		Sophomore Year: Second Semester	
Global Awareness Elective	3	Scientific Reasoning Elective	3
Humanities and Fine Arts	3	ACCT 210	3
ART 136	3	ART 137	3
FCS 281	3	FCS 282	3
FCS 183	3	Elective	3
Semester Total	15	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
FCS 260	3	FCS 384	3
FCS 380	3	FCS 385	3
FCS 382	3	FCS 480	3
FCS 486	3	FCS 481	3
MGMT 201	3	Elective	3
Semester Total	15	Semester Total	15
Summer			
FCS 487	3		
Semester Total	3		
Senior Year: First Semester		Senior Year: Second Semester	
FCS 460	3	FCS 482	3
FCS 461	3	MGMT 343	3
FCS 484	3	Elective	3
FCS 483	3	Elective	3
MKGT 230	3	Semester Total	12
Semester Total	15		

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

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

FCS 160	FCS 385
FCS 180	FCS 460
FCS 181	FCS 461
FCS 183	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

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
Freshman Year: First Semester		Freshman Year: Second Semester	
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	Gen Ed: Knowledge of Afr Ameri Cult	3
Semester Total	17	MATH 112	4
		Semester Total	7
Sophomore Year: First Semester		Sophomore Year: Second Semester	
SPCH 250	3	FCS 157	3
FCS 245	3	PHYS 110	2
FCS 260	3	PHYS 111	1
BIOL 221	4	CHEM 222	3
CHEM 221	3	CHEM 224	2
CHEM 223	2	MATH 224	3
Semester Total	17	Semester Total	14
Junior Year: First Semester		Junior Year: Second Semester	
CHEM 251	2	FCS 345	3
CHEM 252	1	FCS 346	3
EHS 101	3	FCS 347	3
Gen Ed: Global Awareness	3	FCS 445	3
ABM 434	3	FCS 398	3
Semester Total	12	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
FCS 448	3	FCS 442	3
FCS 440	3	FCS 461	3
FCS 456	3	FCS 441	4
FCS 460	3	FCS 498	3
FCS 447	3	Semester Total	13
Semester Total	15		

Total Credit Hours: 120

¹CHEM 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 440
FCS 151	FCS 441
FCS 157	FCS 442
FCS 160	FCS 445
FCS 245	FCS 447
FCS 260	FCS 448
FCS 345	FCS 456
FCS 346	FCS 460

FCS 347	FCS 461
FCS 398	FCS 498

Department of Family and Consumer Sciences
Bachelor of Science in Food and Nutritional Sciences (Human Nutrition)
Major Code: FNS
Concentration Code: NTR

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
FCS 160	2	FCS 150	2
ENGL 100	3	FCS 151	1
Pre-Med (BIOL 101) or NTR (BIOL 100)	4	ENGL 101	3
MATH 111	4	MATH 112	4
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
Semester Total	17	Pre-Med (BIOL 102) or NTR (Gen Ed: Knowledge of African American Culture)	4-3
		Semester Total	17-18
Sophomore Year: First Semester		Sophomore Year: Second Semester	
FCS 245	3	FCS 157	3
FCS 260	3	MATH 224	3
CHEM 221	3	Elective	3
CHEM 223	1	Elective	2
SPCH 250	3	Gen Ed: Global Awareness	3
BIOL 221	4	Semester Total	14
Semester Total	17		
Junior Year: First Semester		Junior Year: Second Semester	
CHEM 251	2	FCS 346	3
CHEM 252	1	FCS 359	3
BIOL 350	4	FCS 352	3
Pre-Med (Gen Ed: Knowledge of African American Culture) or NTR (ENGL 331)	3	Pre-Med (PHYS 226/236) or NTR (FCS 345)	4-3
Pre-Med (PHYS 225/235) or NTR (FCS 316 or equivalent)	4-3	NTR (Elective)	3
Semester Total	13-14	Semester Total	15-16
Senior Year: First Semester		Senior Year: Second Semester	
FCS 460	3	FCS 461	3
FCS 451	3	FCS 498	3
FCS 456	3	FCS 458	3
FCS 457	3	Pre-Med (Elective) or NTR (Elective)	3
Pre-Med (BIOL 304) or NTR (FCS 450)	3	Semester Total	12
Semester Total	15		

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

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

FCS 150	FCS 359
FCS 151	FCS 450
FCS 157	FCS 451
FCS 160	FCS 456
FCS 245	FCS 457
FCS 316 or equivalent	FCS 458
FCS 345	FCS 460
FCS 346	FCS 461
FCS 352	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
Freshman Year: First Semester		Freshman Year: Second Semester	
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
Semester Total	15	Semester Total	15
Sophomore Year: First Semester		Sophomore Year: Second Semester	
SPCH 250	3	FCS 260	3
PHIL 201	3	PSYC 101 (<i>formerly PSYC 320</i>)	3
FCS 181	3	BUED 110 (<i>formerly BUED 210</i>)	3
Elective	3	FCS Cognate	3
ACCT 210	3	SSFM 226	3
Semester Total	15	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
FCS Cognate	3	FCS Cognate	3
FCS 356	3	FCS 403	3
FCS Cognate	3	MGMT 110	3
FCS 400	3	FCS Cognate	3
Elective	3	MGMT 303	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
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
Semester Total	15	Semester Total	15

Total Credit Hours: 120

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
Freshman Year: First Semester		Freshman Year: Second Semester	
ENG 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
BIOL 100 and Lab	4	ENVS 201	3
FCS 160	2	HIST 107 (AA Elective)	3
Elective	3	FCS 221	3
Semester Total	15	Semester Total	15
Sophomore Year: First Semester		Sophomore Year: Second Semester	
HIST 207	3	FCS 321	3
FCS 260	3	FCS 331	3
SPCH 250	3	FCS 334	3
SPED 250	3	HPED 219 or SOCI 224	3
Cognate Area Elective	3	SPCH 310	3
Semester Total	15	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
FCS 322	3	FCS 422	3
FCS 420	3	FCS 339	3
FCS 430	3	FCS 433	3
FCS 356	3	FCS 432	3
HPED 342	3	FCS 421	3
Cognate Area Elective	3	Semester Total	15
Semester Total	18		
Senior Year: First Semester		Senior Year: Second Semester	
FCS 460	3	FCS 429*	6-12
FCS 435 or FCS 437	3	FCS 428	3
FCS 461	3	Cognate Area Elective	3
Cognate Area Elective ⁸	3	Semester Total	12-15
Elective	3		
Semester Total	15		

Total Credit Hours: 120

*Note: Students completing six (6) credit hours for the internship (FCS 429) will complete an additional three (3) credit hour elective to meet the 120 total degree credit hours.

MAJOR PROGRAM REQUIREMENTS

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

FCS 160	FCS 422
FCS 221	FCS 428
FCS 260	FCS 429
FCS 321	FCS 430
FCS 322	FCS 432
FCS 331	FCS 433
FCS 334	FCS 435 or FCS 437
FCS 339	FCS 460
FCS 356	FCS 461
FCS 420	

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
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENG 101	3
FCS 160	2	FCS 260	3
BIOL 100	4	SPCH 250	3
MATH 101	3	MATH 102	3
EDPR 102	2	EDPR 110	2
Elective	1	HIST 107	3
Semester Total	15	Semester Total	17
Sophomore Year: First Semester		Sophomore Year: Second Semester	
EDPR 215	2	SPCH 310	3
HIST 207	3	FCS 334	3
ENVS 201	3	EDPR 210	3
FCS 321	3	FCS 335	3
SPED 250	3	Elective	3
Semester Total	14	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
FCS 338	3	FCS 427	3
FCS 430	3	ELED 444	3
FCS 460	3	FCS 439	3
EDPR 410	2	FCS 433	3

EDPR 455	3	FCS 461	3
Semester Total	14	SPED 448	3
		Semester Total	18
Senior Year: First Semester		Senior Year: Second Semester	
FCS 431	3	EDPR 498	12
FCS 435	3	Semester Total	12
FCS 436	3		
FCS 437	3		
EDPR 487	3		
Semester Total	15		

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

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

FCS 160	FCS 433
FCS 260	FCS 435
FCS 321	FCS 436
FCS 334	FCS 437
FCS 338	FCS 438
FCS 427	FCS 439
FCS 430	FCS 460
FCS 431	FCS 461

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 mankind'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 Industry** **Credit 3(3-0)**
 This course is an introduction to apparel business including discussions of how fashion apparel and accessories are designed, manufactured, and distributed in the global marketplace. (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. Textile Evaluation** **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 AGE 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** **Credit 3(2-2)**
 This course is an introduction to the fundamental principles of apparel construction using commercial patterns with emphasis on basic garment construction skills. Laboratory experience is required. (F;S;SS)
- FCS 282. Introduction to Patternmaking and Fit** **Credit 3(1-3)**
 This course integrates pattern drafting, fitting and alteration to demonstrate how 2D patterns can be manipulated to fit a 3D form. Through course projects, students will gain an introductory understanding of patternmaking techniques and will further develop apparel construction skills. 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 The relationship between the composition of the individual food components and their chemical and physical properties, and the chemical reactions of food components during processing and storage. 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 and FCS 151. (DEMAND)

- FCS 352. Intermediate Nutrition** **Credit 3(3-0)**
 This course is an introductory metabolism 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: FCS 157, CHEM 221, CHEM 223, CHEM 251 and CHEM 252.
- 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. Prerequisites: FCS 150, FCS 151, FCS 157 and BIOL 350. (F;S;SS)
- FCS 380. Visual Merchandising and Promotion** **Credit 3(2-2)**
 Practical application and skill development of visual merchandising concepts and techniques including software-based projects. Survey of product promotional strategies. Prerequisites: FCS 180, FCS 181, FCS 183, FCS 281, FCS 282. (F;S;SS)
- FCS 382. Design I: Flat Pattern** **Credit 3(2-2)**
 Students will apply the principles of flat pattern to create styled tops, bottoms, dresses and other garment components. Hand methods will be the focus, though CAD approaches to flat pattern design will be referenced. Students will study and sharpen their design point of view through an original garment design process that requires research, concept development, patternmaking, and application of industry-standard specifications to construct a final garment. Prerequisites: FCS 183, FCS 281, FCS 282. (F;S;SS)
- FCS 384. Historic Costume** **Credit 3(3-0)**
 Survey of historic costume from ancient times to present focusing on stylistic changes resulting from the social, political, economic, cultural, and technological shifts that influence dress. Prerequisites: FCS 180, FCS 181, FCS 183, FCS 281, FCS 282. (F;S;SS)
- FCS 385. Design II: Draping** **Credit 3(2-2)**
 Students will utilize draping methods of patternmaking to create basic and styled tops, bottoms, and dresses. Throughout the course, draping and flat pattern approaches will be compared, enabling students to identify best practices for the development of structured, semi-structured, and soft designs. Students will further develop their design point of view through original garment design processes that result in portfolio-ready products. Prerequisites: 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. (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 county 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 administering, 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. (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. (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(2-3)**

This course is the study of methods and analysis, instrumentation, and laboratory techniques for measuring the chemical composition of raw and value-added food products. Prerequisites: FCS 245, FCS 345, CHEM 221 and CHEM 223. (F;S;SS)

FCS 448. Animal Food Products **Credit 3(3-0)**

In this course, different aspects of muscle and meat, principles involved in the conversion of living animals to meat and by-products; inspection, grading, processing, preservation, and identification are examined.

FCS 450. Nutrition Assessment **Credit 3(2-2)**

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 359 and BIOL 350.

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: BIOL 350, FCS 359, FCS 352 and senior standing. (F;S;SS)

- FCS 452. Medical Nutritional Therapy I** **Credit 4(3-2)**
 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. Prerequisite: FCS 359. **(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. Prerequisite: FCS 359. **(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. Prerequisite: FCS 352. **(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. The influence of cultural and socioeconomic factors on food patterns and nutritional status will be explored. 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. CAD for Fashion** **Credit 3(2-2)**
 Students will use industry grade CAD technologies to develop original fashion design concepts. Software will be used to creatively convey line direction, sketch original line concepts, and develop technical components to guide construction processes. Students will be asked to integrate creative and technical design in the creation of marketable fashion products. Prerequisites: FCS 180, FCS 181, FCS 183, FCS 281, FCS 282, FCS 382. **(F;S;SS)**
- FCS 481. Retail Buying** **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, FCS 181, FCS 183, FCS 281, FCS 282, ACCT 210, and Junior Standing. **(F;S;SS)**
- FCS 482. Global Sourcing** **Credit 3(3-0)**
 This course introduces the concept of global sourcing and supply chain management in the fashion industry. Students will discuss supply chain members and analyze the micro-and-macro sourcing environment, production, logistics, and trade policies. Prerequisites: FCS 180, and senior standing. **(F;S;SS)**
- FCS 483. Apparel Product Development and Evaluation** **Credit 3(3-0)**
 This course presents a comprehensive view of the fashion retailing industry and establishments. A synthesis of fashion business knowledge, including interaction of retailers and consumers in the global marketplace will be included. Prerequisites: FCS 180, and junior standing. **(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. Professional Development for Fashion Careers** **Credit 3(3-0)**
 Professional development strategies for fashion merchandising and design careers. Course will include industry perspectives and encourage students to showcase skills through high quality visual, verbal, and written storytelling. Prerequisites: FCS 180, FCS 181, FCS 281. **(F;S;SS)**
- FCS 487. Fashion Internship** **Credit 3(0-7)**
 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: FCS 486, 15-18 earned credit hours in Fashion Merchandising and Design courses, and permission of instructor. **(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 food and nutrition sciences. Prerequisites: FCS 456 and 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 620. Didactic Instruction for Breastfeeding I **Credit 4(4-0)**
The course is structured to provide supervised breastfeeding support education in the context of clinical lactation services. Students receive culturally competent didactic training and will begin earning the 300+ clinical hours and 95 didactic hours required for program completion which comply with the requirements of an IBLCE Pathway 2 Program. **(F)**

FCS 621. Clinical Approach to Breastfeeding I **Credit 3(3-0)**
The course is structured to provide supervised breastfeeding support in a clinical setting. Students will receive one-on-one, culturally competent clinical training, and begin earning the required 300+ clinical hours required for program completion and compliance with the requirements of an IBLCE Approved Pathway 2 Program. **(F)**

FCS 622. Cultural Diversity and Communication in Healthcare I **Credit 2(2-0)**
The course is structured to develop culturally competent clinicians and also provides the 5 didactic hours in communication required for program completion and complies with the requirements of an IBLCE Approved Pathway 2 Program. **(F)**

FCS 623. Didactic Instruction for Breastfeeding II **Credit 4(4-0)**
The course is structured to provide supervised breastfeeding support education in the context of clinical lactation services. Students receive culturally competent didactic training and begin earning the 300+ clinical hours and 95 didactic required for program completion and to comply with the requirements of an IBLCE Approved Pathway 2 Program. In the classroom setting, students will begin to be exposed to lecture content that will assist them in laying a solid foundation in Lactation with will allow them to transfer the didactic content into their clinical experience when applicable. **(S)**

- FCS 624. Clinical Approach to Breastfeeding II** **Credit 3(3-0)**
 The course is structured to provide supervised breastfeeding support in a clinical setting. Students receive one-on-one, culturally competent clinical training, and begin earning the required 300+ clinical hours required for program completion and compliance with the requirements of an International Board of Lactation Consultant Examiners (IBLCE) Approved Pathway 2 Program. (S)
- FCS 625. Cultural Diversity and Communication in Healthcare II** **Credit 2(2-0)**
 This course will allow students to become self-aware of their own biases and assist them with learning how to effectively communicate with patients and their families whose beliefs and identities may be different from theirs. Likewise, stereotypes will also be discussed and students will learn the importance of “the people you meet” vs “the problem you treat.” (S)
- 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. Prerequisite: 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, CUIV 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

Ramine Alexander	Assistant Professor
B.S., Winston-Salem State University; M.S., Ph.D., Virginia Polytechnic Institute and State University	
Jennifer Mendoza Beasley	Assistant Professor
B.A., Yale University; M.S., Ph.D., University of North Carolina at Greensboro	
Guibing Chen	Associate Professor
B.S., M.S., Dalian University of Technology; Ph.D., Perdue University	
Heather L. Colleran	Assistant Professor
B.S., University of North Carolina at Wilmington; M.S., University of Massachusetts; Ph.D., University of North Carolina at Greensboro	
Devona L. Dixon	Associate Professor
B.S., Southern A&M University; M.S., Colorado State University; Ph.D., Louisiana State University	
Valerie L. Giddings	Associate Professor and Chairperson
B.S., Bennett College; M.S., Ph.D., Virginia Polytechnic Institute and State University	
Sherrell House	Assistant Professor
B.S., Howard University; M.S., University of Pittsburgh; Ph.D., Michigan State University	
Salam A. Ibrahim	Professor
B.S., University of Mosul; M.S., University of Georgia; Ph.D., University of Kentucky	
Geetika Jaiswal	Assistant Professor
B.S., N.D. University of Agriculture and Technology; M.S., G.B. Pant University of Agriculture and Technology; Ph.D., University of Missouri	
Hye Won Kang	Associate Professor
B.S., Dongduk Women's University; M.S., Korea University; Ph.D., University of Connecticut	
Sung-Jin Lee	Associate Professor
B.S., M.S., Chungnam National University; M.S., Ph.D., Virginia Polytechnic Institute and State University	
Valerie J. McMillan	Associate Professor
B.S., M.Ed., South Carolina State University; Ph.D., Iowa State University	
Elizabeth Newcomb Hopfer	Associate Professor
B.S., M.S., Ph.D. North Carolina State University	
Shengmin Sang	Professor
B.S., Shandong Normal University; Ph.D., Shanghai Institute of Material Medica, Chinese Academy of Sciences	
Roberta Claro da Silva	Assistant Professor
B.S., Paulista State University; M.S and Ph.D., Sao Paulo University	
Reza Tahergorabi	Associate Professor
B.S., University of Sistan and Baluchestan; M.S., Azad University; Ph.D., West Virginia University	
Leonard Williams	Professor and Director of the Center for Post-Harvest Technologies
B.S., M.S., North Carolina A&T State University; MBA, Wake Forest University; Ph.D., Alabama A&M University	
Meeshay Williams-Wheeler	Associate Professor
B.S., University of North Carolina at Greensboro; M.S., North Carolina Central University; Ph.D., University of North Carolina at Greensboro	
Jianmei Yu	Research Associate Professor
B.S., Yunnan Institute of Technology; M.S., South China University of Technology; Ph.D., Louisiana State University	

Department of Natural Resources and Environmental Design

Gregory Goins, 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: (Sustainable Land & Food Systems and Environmental Studies)
Biological Engineering – Bachelor of Science
Landscape Architecture – Bachelor of Science

Interdisciplinary certificate programs in Biotechnology and Waste Management (18 to 20 credit hours) are offered to students enrolled in Bachelor of Science programs at the University.

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

Landscape architecture majors learn how to blend science, technology, and artistic expression to develop sustainable, livable, and inspiring environments. Our graduates are part of a community of visionary, creative, and influential professionals, who deal with important global issues including climate change, impending food shortages, and decreasing biodiversity.

Landscape architecture is the design, planning, research and management of our landscapes and it is everywhere around us.

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 21st 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 to 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 1 hour 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 are strongly recommended.

Accreditation

The program is accredited by the Landscape Architecture 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.

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 professionals, and urban planners. 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 private landscape architecture firms or for governmental agencies, 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

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:

- 2) Have disciplinary knowledge and skills to conduct engineering practice or pursue post-baccalaureate studies.
- 3) Work effectively, inclusively and ethically in teams.
- 4) Be active in professional societies, continuing education through lifelong learning, and progress towards professional registration.

5) Be competent in creative engineering designs that consider environmental sustainability, human health, and safety.

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 (BLEN) degree, is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology <http://main.abet.org/aps/AccreditedProgramsDetails.aspx?OrganizationID=134&ProgramIDs=> (EAC-ABET). 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.

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

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
LDAR 103	3	LDAR 104	3
LDAR 147	3	LDAR 148	3
LDAR 170	3	LDAR 171	3
ENGL 100	3	ENGL 101	3
MATH 101	3	MATH 102	3
FRST 101	1	Semester Total	15
Semester Total	16		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
LDAR 204	3	LDAR 244	3
LDAR 247	6	LDAR 248	6
LDAR 299	1	LDAR 249	3
Social/Behavioral Science Elective	3	LDAR 255	3
Scientific Reasoning Elective	4	Semester Total	15
Semester Total	17		
Junior Year: First Semester		Junior Year: Second Semester	
LDAR 345	3	LDAR 349	3
LDAR 380	6	LDAR 381	6
African American Culture and History	3	Humanities/Fine Arts Elective	3
Global Awareness	3	Scientific Reasoning Elective	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
LDAR 440	3	LDAR 442	3
LDAR 447	6	LDAR 448	6
LDAR 455	3	Free Elective	3
Free Electives	3	Semester Total	12
Semester Total	15		

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

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

LDAR 103	LDAR 255
LDAR 104	LDAR 299
LDAR 147	LDAR 345
LDAR 148	LDAR 349
LDAR 170	LDAR 380
LDAR 171	LDAR 381
LDAR 204	LDAR 440
LDAR 244	LDAR 442
LDAR 247	LDAR 447
LDAR 248	LDAR 448
LDAR 249	LDAR 455

**Department of Natural Resources and Environmental Design
Bachelor of Science in Biological Engineering (Bioprocess Engineering Track)
Major Code: BIOE**

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
GEEN 111	1	BIOE 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
Semester Total	14	CHEM 117	1
		Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
MEEN 230	3	African/American Studies Elective	3
MATH 231	4	BIOL 101	4
PHYS 242	3	CAEE 334	2
PHYS 252	1	CHEM 221	3
Humanities Elective	3	CHEM 223	1
GEEN 161	2	MATH 341	3
BIOE 200	1	Semester Total	16
Semester Total	17		
Junior Year: First Semester		Junior Year: Second Semester	
CHEN 200	4	BIOL 221	4
ISEN 260	2	MEEN 260	2
CAEE 362	3	BIOE 320	3
MEEN 240	3	Global Studies Elective	3
BIOE 340	3	BIOE 350	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
Statistics Elective	3	BIOE 425	3
BIOE 422	3	BIOE 423	3

ECEN 340	3	BIOE 496	2
BIOE 434	3	BIOE Elective	3
BIOE 495	1	Social Behavioral Science Elective	3
Semester Total	13	Semester Total	14

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

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

MATH 131	BIOE 350
MATH 132	BIOE 495
MATH 231	BIOE 496
PHYS 241	

BIOE Electives:

BIOE 380, 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 ISEN 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 100, SOCI 200, SSFM 226 or courses approved by the faculty advisor.

Knowledge of African American Culture and History:

ENGL 333, ENGL 334, HIST 103, HIST 106, HIST 107, HIST 201, HIST 202, LIBS 202, MUSI 220 or courses approved by the faculty advisor.

Global Awareness:

HIST 130, HIST 207, HIST 216, HIST 231, MGMT 221, PHIL 103, PHIL 201 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: BIOE**

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
GEEN 111	1	BIOE 121	1
ENGL 100	3	ENGL 101	3
CHEM 106	3	MATH 132	4

CHEM 116	1	BIOL 101	4
MATH 131	4	PHYS 241	3
GEEN 100	2	PHYS 251	1
Semester Total	14	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
MEEN 230	3	African/ American Studies Elective	3
MATH 231	4	CAEE 334	2
PHYS 242	3	MATH 341	3
PHYS 252	1	BIOL 221	4
Humanities Elective	3	CAEE 362	3
GEEN 161	2	Semester Total	15
BIOE 200	1		
Semester Total	17		
Junior Year: First Semester		Junior Year: Second Semester	
ISEN 260	2	BIOE 216	3
MEEN 241	3	BIOE 320	3
BIOE 340	3	BIOE 350	3
BIOE 360	3	Global Studies Elective	3
BIOE 204	3	BIOE 380	3
Social Behavioral Science Elective	3	Semester Total	15
Semester Total	17		
Senior Year: First Semester		Senior Year: Second Semester	
Statistics Elective	3	BIOE 425	3
BIOE 400	3	BIOE 423	3
ECEN 340	3	BIOE 424	3
BIOE 434	3	BIOE 496	2
BIOE 495	1	BIOE Elective	2
Semester Total	13	Semester Total	13

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

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

MATH 131	BIOE 350
MATH 132	BIOE 495
MATH 231	BIOE 496
PHYS 241	

BIOE Electives:

BIOE 422, 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, ISEN 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 100, SOCI 200, SSFM 226 or courses approved by the faculty advisor.

Knowledge of African American Culture and History:

ENGL 333, ENGL 334, HIST 103, HIST 106, HIST 107, HIST 201, HIST 202, LIBS 202, MUSI 220 or courses approved by the faculty advisor.

Global Awareness:

HIST 130, HIST 207, HIST 216, HIST 231, MGMT 221, PHIL 103, PHIL 201 or courses approved by the faculty advisor.

**Department of Natural Resources & Environmental Design
Bachelor of Science in Agricultural and Environmental Systems (Sustainable Land and Food Systems)
Major Code: AES*
Concentration Code: SLFS**

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100 ¹	3	ENGL 101 ¹	3
MATH 101	3	MATH 102	3
NARS 100 ²	1	CHEM 103	3
NARS 110	3	Social Behavioral Science	3
African American Studies Elective ⁴	3	Global Awareness Elective ⁶	3
FRST 101 ⁵	1	NARS 225	1
Semester Total	14	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
CHEM 106	3	SLMG 200	4
CHEM 116	1	SPCH 250	3
Humanities and Fine Arts Elective	3	MATH 224	3
BIOL 101	4	PHYS 110	2
HORT 210	3	PHYS 111	1
Semester Total	14	Elective	3
		Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
HORT 301	3	ABM 330	3
SLMG 300	3	HORT 334	3
Concentration Electives	9	HORT 400	3
Semester Total	15	Concentration Electives	6
		Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
HORT 420	3	NARS 487	3
HORT 422	3	HORT 430	3
AGRI 400	3	Concentration Electives	9
Concentration Electives	6	Semester Total	15
Semester Total	15		

Total Credit Hours: 120

Required Courses for Concentration

NARS 100: Department Orientation (F)	HORT 210: The Science of Plants (F)
NARS 110: Intro to Urban Community Horticulture (F)	HORT 301: Disease Management Strategies (F)
NARS 225: Scientific Presentation (S)	HORT 334: Plant Propagation (S)
NARS 487: Capstone (S)	HORT 400: Adv. Tech. Hort. Crop Improve. (S)
SLMG 200: Soil Science (S)	HORT 422: Integrated Pest Management (F)
SLMG 300: Fundamentals of Soil Health (F)	HORT 430: Plant Nutrition (S)
ABM 330: Applied Economics Agribusiness (S)	HORT 420: Vegetables for Small-scale Prod. (F)
AGRI 400: Sustainable Food Systems (F)	

Required Courses for:

Land Systems

Food Systems

SLMG 350: Soil Health Management (S)	HORT 350: Factors Affecting Sustain. Food (F)
SLMG 400: Soil Ecology (F)	HORT 351: Practice in Sustainable Food (S)
SLMG 450: Environ Soil Microbiology (S)	HORT 402: Grapes and Small Fruits (S)
BIOE 204: Principles of Land Surveying (F S)	HORT 410: Season Extension (F)

Sustainable Land and Food Systems Electives

AGRI 499: Undergraduate Research (F S)	FCS 157: Intro to Human Nutrition (F/S)
ENVS 410: Sustainable Earth (S)	FCS 455: Cultural Aspects of Food (FS)
ENVS 344: Environmental Sustainability (F)	FCS 245: Intro to Food Science (FS)
BIOE 114: Home and Farm Maintenance (F)	FCS 346: Food Safety and Sanitation (S)
BIOE 216: Geographic Info Systems (S)	ABM 440: Alternative Markets Local Food (S)
MGMT 343: Entrepreneurship (FS)	ABM 337: Intro Local Food Systems (F)
NARS 250: Insects Man Environment (F)	ABM 450: Agricultural Cooperatives (S)
HORT 403: Specialty Crops (S)	ENVS 201: The Earth's Environment

MAJOR PROGRAM REQUIREMENTS

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

NARS 100	SLMG 300
NARS 110	HORT 334
HORT 210	HORT 400
NARS 225	NARS 487
SLMG 200	HORT 430
HORT 301	HORT 420
HORT 422	

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

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	

FRST 101	1	ENGL 101	3
ENGL 100	3	BIOL 101	4
NARS 110	3	CHEM 104	3
MATH 101	4	CHEM 114	1
CHEM 100	3	MATH 102	4
CHEM 110	1	Semester Total	15
NARS 100	1		
Semester Total	16		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
HPED 200	2	HIST 107	3
ENVS 201	3	PHYS 101	3
HIST 106	3	ASME 275	3
PHIL 201	3	MATH 224	3
SPCH 250	3	GEOG 200	3
Non Major Elective	3	Semester Total	15
Semester Total	17		
Junior Year: First Semester		Junior Year: Second Semester	
WMI 333	1	ENVS 209	3
ENVS 344	3	NARS 472	1
PHYS 110	3	POLI 250	3
PHYS 111 (lab)	1	BIOE 216	3
PSYC 101	3	OSH 394	3
ENVS 210	3	BIOE 323	3
Semester Total	14	Semester Total	16
Senior Year: First Semester		Senior Year: Second Semester	
ENVS 410	3	ENVS 422	3
NARS 498	3	ENVS 420	3
ANSC 413	3	ENVS 466	3
ENVS 444	3	Non Major Elective	3
ENVS 424	3	Semester Total	12
Semester Total	15		

Total Credit Hours: 120

MATH 111/112; CHEM 106/116; CHEM 107/117, PHYS 225/235 – Recommended for students who may wish to pursue graduate work

The environmental studies curriculum is a combination of interdisciplinary courses in which students develop their creativity, analytical skills and imagination by discovering alternative ways of applying basic concepts of science, coupled with their liberal education to environmental problem solving and sustainability issues. The concentration incorporates breadth and depth in interdisciplinary courses in which students learn to integrate analytical perspectives in a focus area of student's interest.

MAJOR PROGRAM REQUIREMENTS

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

ENVS 201	ENVS 444
ENVS 210	NARS 472
ENVS 410	NARS 498
ENVS 420	ASME 275
ENVS 422	WMI 333

Suggested Elective and Substitution Courses

ABM 438	FCS 346
ANSC 413	LASC 365
AREN 221	NARS 250
AREN 470	OSH 201
CIEN 212	OSH 210
CIEN 416	OSH 230

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 121. Intro to Biological Engineering **Credit 1(1-0)**

Introduction to the major and the profession of Biological Engineering. Professionalism, engineering ethics and responsible conduct, project management, working in a team, communication, and use of technology and innovation in problem solving. Global contemporary issues in Biological Engineering include climate change, food-water-energy nexus, sustainability, and global awareness. (F;S)

BIOE 200. Biological Engineering Design **Credit 1(1-0)**

The course will be taught as a lecture with following topics: (1) basic engineering calculations and presentations, (2) process variable (measurement, calculation & control), (3) material and energy balance calculations (draw and label flowcharts and solve material and energy balance equations). Class will also conduct a fermentation lab. Fall and Spring, Prerequisite: GEEN 100. (F;S;SS)

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, 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 110 or 131. (F;S;S)

BIOE 216. Geographic Information Systems **Credit 3(2-2)**

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 320. Heat and Mass Transfer in Biol Systems **Credit 3(3-0)**

This course covers the basic principles of heat and mass transfer applied to biological systems. The subjects of heat and mass transfer will be taught in conjunction with agricultural, biological and environmental engineering fields. Specific topics include governing equations and boundary conditions of heat and mass transfer, heat and mass transfer in living systems, steady and unsteady transport phenomena and numerical methods. Prerequisite: MEEN 241, CHEN 312, or equivalent. (F;S)

BIOE 340. 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 and MEEN 230 or equivalent. (F;S;SS)

BIOE 350. Engineering Systems Analysis and Design (formerly BIOE 330) **Credit 3(2-2)**

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; computational software; material selection; engineering statistics; and legal and ethical issues in design. Prerequisite: BIOE 340 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. Prerequisite: CAEE 362 or MEEN 416. (F;S)

BIOE 380. Physical and Engineering Properties of Soil (formerly BIOE 432, BIOE 332) **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 processes; methods of analysis applicable to solving practical problems related to agriculture, hydrological and environmental problems. Selected lab exercises will be conducted. Discussions will include equipment impact on soil due to agronomic practices or land preparation including planting; Soil textural triangle, volumetric heat capacity, saturated and unsaturated conductivity. Prerequisite: CAEE 362 or consent of instructor. (F;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)
- BIOE 403. Power and Machinery** **Credit 3(2-2)**
 This course covers the design principles of field machinery, evaluation of functional performance, and the efficiency of these machines. Also considered is the thermal analysis of internal combustion engines. Measurement and calculation of tractive and engine powers are included. Prerequisites: MEEN 230 or equivalent. (F;S;SS)
- 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: MEEN 230 or equivalent. (F;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. Prerequisite: BIOE 350 or equivalent. (F;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 is studied. Prerequisite: MEEN 241 and BIOL 221 or equivalents. (F;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 400. (F;S)
- BIOE 425. Instrumentation for Biological Systems** **Credits 3(3-0)**
 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: ECEN 340. (F;S)
- BIOE 426. Food Engineering (Formerly BIOE 522)** **Credit 3(3-0)**
 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)
- BIOE 434. Ecological Engineering** **Credit 3(3-0)**
 This course covers principles of ecological engineering design for integration into society and the environment for benefit of both. The principles are followed by the applications of ecological engineering to treat wastewaters, and to restore ecosystems. Some of the major technologies covered are treatment wetlands; land application, phytoremediation, and storm water BMPs, and stream restoration. Students will be able to integrate knowledge of engineering, mathematics, ecology and biology to solve complex environmental problems that arise from interaction of humans with their environment. These solutions will be environmentally friendly, socially acceptable, and economically feasible for sustainability. Lectures are complemented by discussions, case studies, presentations, videos, assignments and problem solving. Prerequisite: CAEE 362. (F;S)
- BIOE 485. Selected topics in Biological Engineering (formerly BIOE 505)** **Credit 1-4(1-4,0)**
 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)
- 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)
- 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 350. (F;S)
- BIOE 496. Engineering Design II (formerly BIOE 502)** **Credit 2(2-0)**
 In this course students complete the work plan established in BIOE 495. Prerequisite: BIOE 495. (F;S)

COURSE DESCRIPTIONS IN AGRICULTURAL AND ENVIRONMENTAL SYSTEMS

Concentration: Environmental Studies

- ENVS 201. The Earth'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. (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. Prerequisite: 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. Prerequisite: 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: Sustainable Land and Food Systems (Food Track)

- 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(3-0)**
 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 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 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. Urban and Local Food Systems **Credit 3(2-2)**

This course introduces concepts of urban agriculture and local food production through field trips, lectures and class discussions. It covers important environmental, policy and socio-economic factors that affect urban and local food systems, from production to food access. (S)

HORT 351. Practice in Sustainable Food **Credit 3(1-4)**

This course offers faculty-supervised practical hands-on and service learning experience in the community on projects exploring various facets of our local system, from sustainable food production to food access. Prerequisite: HORT 350. (F;S)

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(3-0)**

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(3-0)**

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 3(2-2)**

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(2-2)**

This course provides basic principles and skills on 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(2-2)**

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 430. 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. Prerequisites: NARS 110, SLMG 200. (F;S;SS)

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)

SLMG 200. Soil Science **Credit 4(3-2)**

This is an introductory soil science course that covers all the basic principles of soil science. It emphasizes the study of soil as a natural resource, soil formation, soil properties, and how they influence soil health and function in different land-use systems. (S)

SLMG 300. Fundamentals of Soil Health **Credit 3(3-0)**

The course will provide an overview of the fundamental soil health concepts, role of soil as a provider of ecosystem services and the soil physical, chemical and biological properties that serve as indicators of soil health. (F)

SLMG 350. Soil Health Management **Credit 3(3-0)**

The course will provide guidelines for standardized soil health measurement. It will also provide a comprehensive knowledge on how practical soil management practices like tillage, cover crops, intercropping, crop rotation, fertilizer management, animal amendments etc. affect soil health. (S)

SLMG 400. Soil Ecology **Credit 4(2-4)**

This course will provide information on the role of soil ecology in providing vital ecosystem services. It will discuss the living organisms in soil and their habitat, how different kinds of organisms co-exist in opaque, complex, semiaquatic niche that is soil. (F)

SLMG 450. Environ Soil Microbiology **Credit 3(3-0)**

This course will provide information on how soil microorganisms are classified and what environmental conditions influence their

distribution, activity and interaction in soil. It will also discuss how the soil microorganisms can be managed for sustained plant nutrient availability and environmental quality. (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)

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 environmental 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 103. Landscape Architecture Discovery (formerly LDAR 150)

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 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. Design Foundations

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 familiarity with methods and materials. (F;S;SS)

LDAR 148. Landscape Architecture Fundamentals

Credit 3(0-6)

Students in this studio course will explore basic principles and elements of design, specifically as they relate to the landscape. The course will give students a greater understanding of space through analysis of forms, proportions, and scale, and students will be introduced to the basics of sustainability and resiliency. (F;S;SS)

LDAR 170. Landscape Architecture Graphics I

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 Graphics II

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** **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 244. Designing with Plants (formerly LDAR 444)** **Credit 3(0-6)**
 This course will concentrate on the fundamentals of design as applied to aesthetic and functional arrangements of native and ornamental plant material. Activities will include preparation of planting plans, cost estimates and technical specifications. Prerequisite: LDAR 204. (F;S;SS)
- LDAR 247. Social Systems Studio** **Credit 6(0-9)**
 This studio course will explore further issues of design with emphasis on the social aspects of land use and development. Course material will emphasize analysis of cultural opportunities and constraints (i.e. zoning regulations, economic, social, political conditions, etc.). (F;S;SS)
- LDAR 248. Ecology Systems Studio** **Credit 6(0-9)**
 This studio course will concentrate on natural systems and emphasize the creation of sustainable landscapes. Course material will emphasize analysis of physical opportunities and constraints (ie soils, slopes, hydrology, plant materials, etc). Prerequisite: LDAR 247. (F;S;SS)
- LDAR 249. GIS Applications in Environmental Design** **Credit 3(3-0)**
 GIS Applications in Environmental Design is a 3 credit course addressing the fundamentals of geographic information systems (GIS), especially as they relate to applications by environmental planners and designers (including architects, landscape architects, urban designers and related professionals). The format of the course is a mixture of lecture, discussion, demonstration and laboratory components. We will focus on using geographic information systems (GIS) as tools. In this component, we will explore the techniques and procedures for acquiring, displaying, editing, analyzing and modeling spatial information. (F;S;SS)
- LDAR 255. Design Theory (formerly LDAR 443)** **Credit 3(3-0)**
 Discussion of historic and contemporary issues relating to the theory and practice of landscape architecture are the focus of this seminar. Research will be conducted individually and in groups. (F;S;SS)
- LDAR 299. Resume/Portfolio Seminar** **Credit 1(0-2)**
 Landscape architecture students will create professional-level self-promotional materials. (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. Site Systems** **Credit 3(0-6)**
 This course will focus on exercises and projects in site engineering with emphasis on sustainable landscapes. Prerequisites: MATH 101 and 102 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 349. Construction Documents (formerly LDAR 445)** **Credit 3(0-6)**
 This course will serve as the culmination of the landscape architecture construction sequence and will require the creation of complete sets of construction documents for landscape architecture projects. Prerequisite: LDAR 346. (F;S;SS)
- LDAR 380. Master Planning/Field Study Studio** **Credit 6(0-9)**
 This is a studio course for students to develop sustainable design solutions for large-scale projects. Students will develop programs, site analysis, concept, and presentation drawings. (F;S;SS)
- LDAR 381. Materials and Construction Studio (formerly LDAR 348)** **Credit 6(0-9)**
 This studio course concentrates on landscape construction materials and methods. Students will become familiar with a wide range of materials and how they are used together, and will learn about on-site processes used to construct a landscape project. Prerequisite: LDAR 347. (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. Prerequisites: 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 447. The Collaborative Studio** **Credit 6(0-9)**
 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. Capstone Project Studio** **Credit 6(0-9)**
 This studio course focuses on an approved design project 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. Prerequisites: LDAR 440, LDAR 447. (F;S;SS)
- LDAR 455. Current Issues & Topics in Landscape Architecture** **Credit 3(3-0)**
 This course addresses sustainable design in contemporary cities through theoretical discussion and practice projects. The emphasis is on identifying opportunities for landscape/ecological urbanism – where experience of urban landscapes and discovery of ideas go hand in hand by encouraging careful design and planning that informs long-term monitoring and adaptive management of the landscape. We will utilize Steiner’s method in a practice experiment, addressing a multi-purpose green infrastructure, urban forestry and landscape urbanism theory and practice, with applications in numerous urban contexts including urban river systems, green streets, brownfields, vacant lots, urban transit hubs and intensifying neighborhood districts for adaptation to global climate change and sustainable development in NC. (F;S;SS)

NATURAL RESOURCES

- AGRI 400. Sustainable Food Systems** **Credit 3(3-0)**
 The course will cover issues affecting future challenges, changes, and directions in the American and global food systems as they relate to sustainability from a technical, economic and, at times, a socially responsible viewpoint.
- NARS 100. Introduction to Natural Resources and Environmental Design** **Credit 1(1-0)**
 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 225. Scientific Presentation in Ag and Environment** **Credit 1(1-0)**
 This course will instruct students on how to collect, organize, manipulate and summarize data from experiments and laboratory exercises, and to properly cite references.
- 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. Prerequisite: BIOL 101 or any intro-biology, microbiology or biochemistry course. (F;S;SS)
- NARS 487. Capstone** **Credit 3(3-0)**
 Students will undertake a project and written assignments designed to encourage self-analysis of career and intellectual interests. The student will develop a detailed project proposal and complete a final capstone project linking the student’s area of study with career and intellectual interests. The final written project will consist of research, reviews, and analysis targeting a specified objective. A presentation of the project is required. (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

Laurent Ahiablame	Assistant Professor
B.S., North Carolina &T State University; M.S., Ph.D., Purdue University	
Niroj Aryal	Assistant Professor
B.S., Tribhuvan University, Nepal; M.S.; Ph.D., Michigan State University	
Arnab Bhowmik	Assistant Professor
B.S., Bidhan Chandra Krishi Viswavidyalaya; M.S., Punjab Agriculture University; Ph.D., North Dakota State University	
Steve Cancian	Assistant Professor
B.A., Columbia University; M.L.A., University of California, Berkeley	
Beatrice Dingha	Research Associate Professor
B.S., Nnamdi, Azikiwe University; M.S., University of Ghana; Ph.D., Auburn University	
Godfrey A. Gayle	Professor Emeritus
B.S., North Carolina A&T State University; M.S., Ph.D., North Carolina State University	
Gregory Goins	Professor and Chairperson
B.S., University of North Carolina at Chapel Hill; M.S., Ph.D. North Carolina State University; Postdoctoral, University of Minnesota	
Sanjun Gu	Extension Specialist, Horticulture
B.S., Shandong Agricultural University; M.S., China Agricultural University; Ph.D., University of Nebraska-Lincoln	
William Harrison	Assistant Professor and LDAR Program Coordinator
B.S., North Carolina A&T State University; M.S., University of North State University. M.S., North Carolina State University	
Odile N. Huchette	Lecturer
M.S., Institute Polytechnique de Lorraine	
Omoanghe S. Isikhuemhen	Professor
B.S., M.S. University of Benin, Nigeria, Ph.D. Institute of Microbiology, MS CR, Prague	
Louis E. Jackai	Professor and Graduate Coordinator
B.S., University of Cape Coast, Ghana, WA; M.S., University of Wisconsin-Superior; Ph.D., University of Illinois, Urbana-Champaign	
William Randle	Professor
B.S., University of Arizona; M.S., Michigan State University; M.S., Ph.D., University of Minnesota	
Abolghasem Shahbazi	Professor and BIOE Program Director
B.S., University of Tabriz; M.S., University of California at Davis, Ph.D., Pennsylvania State University (F.E.)	
Misty Terry	Extension Specialist, 4-H and STEM
B.S., M.S., Ph.D., North Carolina A&T State University	
Godfrey A. Uzochukwu	Professor and ENVS Coordinator
B.S., M.S., Oklahoma State University; Ph.D., University of Nebraska-Lincoln; Post-Doctoral, Texas A&M University	
Lijun Wang	Professor
B.S., Zhengzhou University; M.S., South China University of Technology; Ph.D., National University of Ireland, Dublin (P.E.)	
Guochen Yang	Professor
B.S., Jilin Agricultural University; M.S., Ph.D., University of Nebraska-Lincoln	

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 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, politics, 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.

Department of Criminal Justice Carla D. Coates, Interim Chairperson

OBJECTIVES

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

Criminal Justice – Bachelor of Science

Criminal Justice – Bachelor of Science with Certificate in Forensic Science – Crime Scene Investigation

GENERAL PROGRAM REQUIREMENTS

The admission of students to the undergraduate degree programs in the Department of Criminal Justice Program is based upon the general admission requirements of the University.

The Department of Criminal Justice 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 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 is structured as a concentration within the criminal justice program in the Department of Criminal Justice. The Certificate in Crime Scene Investigation (CSI) 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. The CSI 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 departments of Criminal Justice, History and Political Science, 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

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.

CAREER OPPORTUNITIES

A baccalaureate degree in **Criminal Justice** prepares students to enter the broad array of career fields. 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 Criminal Justice Bachelor of Science in Criminal Justice Major Code: CRJS

Curriculum Guide

COURSE	CR	COURSE	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
FRST 101 (SS)	1	CRJS 101	3
HIST 130 (GA)	3	FOLA II ¹	3
FOLA I ¹	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	Semester Total	15
Semester Total	16		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
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
Semester Total	16	Semester Total	15-16
Junior Year: First Semester		Junior Year: Second Semester	
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
Semester Total	15	Semester Total	15

Senior Year: First Semester		Senior Year: Second Semester	
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
Semester Total	15	Semester Total	13

Total Credit Hours: 120

¹Students must complete two courses (a minimum of 6 hours) of the same foreign language.

²Global 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 251 (formerly CRJS 290)
CRJS 101	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 240 (formerly CRJS 406)

Department of Criminal Justice
Bachelor of Science in Criminal Justice
Certificate in Forensic Science - Crime Scene Investigation
Major Code: CRJS

Curriculum Guide

COURSE	CR	COURSE	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
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
Semester Total	16	Semester Total	17
Sophomore Year: First Semester		Sophomore Year: Second Semester	
CRJS 260	3	CRJS 270	3
CRJS 280	3	ENGL 200 or 201 (HFA)	3
FOLA ¹	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
Semester Total	16	Semester Total	17
Junior Year: First Semester		Junior Year: Second Semester	

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
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
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		
Free Elective or Minor	3	CRJS 334 (formerly CRJS 420)	3
Semester Total	12	CRJS 371 (formerly CRJS 531)	3
		Semester Total	12

Total Credit Hours: 120

¹A student must complete two courses (a minimum of 6 hours) of the same foreign language.

²The 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 280
CRJS 101	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)

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 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(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. Prerequisites: Permission of the instructor, and 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. Prerequisite: 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 Criminal Justice topics and experiences. Students participating in co-op and study abroad experiences may also enroll in this course. Prerequisite: 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

Shon F. Barnes..... **Adjunct Instructor**
B.A., Elizabeth City State University; M.S., University of Cincinnati; Ph.D., North Carolina A&T State University

Catherine L. Bonventre **Assistant Professor**
B.A., Minot State University; J.D., Albany Law School; M.S., Ph.D., SUNY Albany

Carla Miller Coates..... **Interim Chairperson**
 B. A., M.A., Norfolk State University; Ph.D., Virginia Polytechnic Institute & State University
Keith L. Coleman **Senior Lecturer**
 B.A., University of South Florida; M.A., University of Massachusetts at Lowell
Saiyani T. Mukombe **Adjunct Instructor**
 B.A., M.A., Wake Forest University; J.D. North Carolina Central University
Tyrell R. Spencer..... **Adjunct Instructor**
 B.A., University of North Carolina at Greensboro; M.A., Southern Illinois University

Department of English
 Jason DePolo, 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 (Professional 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 57 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 52 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 69 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 51 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 48 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 211 or 212 (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 (18 hours)
- | | | |
|----------|----------|----------|
| ENGL 211 | ENGL 212 | ENGL 431 |
| ENGL 220 | ENGL 430 | ENGL 226 |
- B. Required English Capstone Course – ENGL 492

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
Freshman Year: First Semester		Freshman Year: Second Semester	
FRST 101 (SS)	1	PHIL 102 or MATH 102 (MLAR)	3
ENGL 100 (WC)	3	HIST 216 (GL)	3
ENGL 226	3	ENGL 201 or ENGL 231 (HFA)	3
MATH 101 (MLAR)	3	ENGL 101 (WC)	3
HIST 106 (SBS)	3	HPED	1
ENGL 210	3	ENGL 200 or ENGL 230 (HFA)	3
Semester Total	16	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
ENGL 220	3	ENGL 212 (AA)	3
FOLA I	3	ENGL 221	3
Science w/lab (BIOL 100 or CHEM 100/110) (SR)	4	FOLA II	3
ENGL 211 (AA)	3	ENVS 201 (SR)	3
ENGL 204	3	ENGL 205	3
Semester Total	16	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
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
Elective	3	Semester Total	15
Semester Total	18		
Senior Year: First Semester		Senior Year: Second Semester	
ENGL 405	3	ENGL 431	3
ENGL 410	3	Free Elective	3
ENGL 430	3	ENGL 492	3
Elective	3	Elective	3
Semester Total	12	Semester Total	12

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

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

ENGL 100	ENGL 331
ENGL 101	ENGL 342
ENGL 200 or 230	ENGL 343
ENGL 201 or 231	ENGL 345
ENGL 204	ENGL 404

ENGL 205	ENGL 405
ENGL 210	ENGL 406
ENGL 211	ENGL 408
ENGL 212	ENGL 410
ENGL 220	ENGL 430
ENGL 221	ENGL 431
ENGL 226	ENGL 435
ENGL 318	ENGL 494

Department of English
Bachelor of Arts in English - Professional English
Major Code: ENGL

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
FRST 101 (SS)	1	HPED	1
ENGL 100 (WC)	3	MATH 102 (MLAR)	3
ENGL 226	3	ENVS 201 (SR)	3
MATH 101 (MLAR)	3	ENGL 101 (WC)	3
HIST 106 or HIST 107 (SBS)	3	SPCH 250	3
Science w/lab (BIOL 100 or CHEM 100/110) (SR)	4	HIST 130 or HIST 207 (GL)	3
Semester Total	17	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
ENGL 220	3	ENGL 201 (HFA)	3
FOLA I	3	ENGL 221	3
ENGL 200 (HFA)	3	ENGL 231	3
ENGL 210	3	FOLA II	3
ENGL 240	3	ENGL 300 or ENGL 404	3
Semester Total	15	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
ENGL 211 (AA)	3	ENGL 212 (AA)	3
ENGL 430	3	ENGL 335	3
ENGL 336	3	ENGL 431	3
Elective	3	Elective	3
Elective	3	Elective	3
Semester Total	15	Semester Total	15
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	3
Elective	3	Elective	3
Elective	3	Semester Total	12
Semester Total	15		

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

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

ENGL 100	ENGL 300
ENGL 101	ENGL 335
ENGL 226	ENGL 336
ENGL 200	ENGL 405
ENGL 201	ENGL 406
ENGL 210	ENGL 410
ENGL 211	ENGL 430
ENGL 212	ENGL 431
ENGL 220	ENGL 435
ENGL 221	ENGL 436
ENGL 231	ENGL 492
ENGL 240	

Department of English
Bachelor of Arts in English - Technical Writing
Major Code: ENGL
Concentration Code: TCWR

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
FRST 101 (SS)	1	HPED	1
ENGL 100 (WC)	3	ENGL 101 (WC)	3
MATH 101 (MLAR)	3	MATH 102 (MLAR)	3
Science w/lab (BIOL 100 or CHEM 100/110) (SR)	4	ENVS 201 (SR)	3
SPCH 250	3	ENGL 226	3
		Elective	3
Semester Total	14	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
ENGL 200 (HFA)	3	ENGL 201 (HFA)	3
ENGL 244	3	ENGL 331	3
ENGL 220	3	FOLA II	3
FOLA I	3	HIST 107 (SBS)	3
HIST 130 (GL)	3	Elective	3
Elective	3	Semester Total	15
Semester Total	18		
Junior Year: First Semester		Junior Year: Second Semester	
ENGL 411	3	ENGL 431	3
ENGL 413	3	ENGL 212 (AA)	3
ENGL 430	3	GCS 381	3
ENGL 211 (AA)	3	Technical Writing elective	3
GCS 181	3	GCS elective	3
Technical Writing elective	3	Semester Total	15
Semester Total	18		

Senior Year: First Semester		Senior Year: Second Semester	
ENGL 415	3	ENGL 492 (formerly ENGL 502)	3
MGMT 110	3	English elective	3
GCS elective	3	Elective	3
Elective	3	Elective	3
Semester Total	12	Semester Total	12

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

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

ENGL 100	ENGL 331
ENGL 101	ENGL 411
ENGL 200	ENGL 413
ENGL 201	ENGL 415
ENGL 211	ENGL 430
ENGL 212	ENGL 431
ENGL 220	ENGL 492
ENGL 221	Technical Writing elective
ENGL 226	Technical Writing Elective
ENGL 244	English elective

Department of English
Bachelor of Arts in English (Secondary Education)
Major Code: ENGL
Concentration Code: ESCE

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
Written Communication (WC)	3	Written Communication (WC)	3
Scientific Reasoning w/Lab (SR)	4	Scientific Reasoning (SR)	3
Mathematical, Logical, and Analytical Reasoning (MLAR)	3	Mathematical, Logical, and Analytical Reasoning (MLAR)	3
ENGL 226	3	Global Awareness (GL)	3
EDPR 102 (SS)	2	EDPR 110	2
Semester Total	15	Semester Total	14
Sophomore Year: First Semester		Sophomore Year: Second Semester	
ENGL 210	3	Humanities/Fine Arts (HFA)	3
EDPR 215	2	ENGL 221	3
ENGL 220	3	EDPR 210	2
ENGL 240	3	African American Culture and History (AA)	3
ENGL 230 or 231	3	Social and Behavioral Science (SBS)	3
SPED 250	3	EDPR 310	2
Semester Total	17	Semester Total	16

Junior Year: First Semester		Junior Year: Second Semester	
EDPR 420	2	EDPR 410	3
EDPR 455	3	ENGL 405	3
ENGL 300	3	ENGL 406	3
ENGL 308	1	SPED 448	3
ENGL 430	3	ENGL 431	3
ENGL 410	3	ENGL 427	3
Semester Total	15	Semester Total	18
Senior Year: First Semester		Senior Year: Second Semester	
ENGL Elective (300-400 level)	3	EDPR 498	12
ENGL Elective (300-400 level)	3	Semester Total	12
ENGL 460	3		
EDPR 487	3		
Semester Total	12		

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: CRWR

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
FRST 101 (SS)	1	HPED	1
ENGL 100 (WC)	3	ENGL 101 (WC)	3
ENGL 226	3	ENGL 200 (HFA)	3
PHIL 102 (MLAR)	3	Math/Logic/Analytical Reasoning (MLAR)	3
Social /Behavioral Science (SBS)	3	Science w/lab (BIOL 100 or CHEM 100/110) (SR)	4
ENGL 105	3	Semester Total	14
Semester Total	16		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
ENGL 220	3	ENGL 206	3
ENGL 311 or 312	3	ENGL 221	3
FOLA I	3	ENGL 231 (HFA)	3
ENGL 210	3	FOLA II	3
Global Awareness (GL)	3	Scientific Reasoning (SR)	3
Semester Total	15	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
ENGL 211 (AA)	3	ENGL 212 (AA)	3
ENGL 318	3	ENGL 337	3
ENGL 421 or 422 or 235	3	ENGL 418	3

Humanities and Fine Arts Elective	3	Elective	3
Elective	3	Humanities and Fine Arts Elective	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
ENGL 406	3	ENGL 410	3
ENGL 430	3	ENGL 431	3
Elective	3	ENGL 497 (formerly ENGL 506)	3
Elective	3	Elective	3
Elective	3	Elective	3
Semester Total	15	Semester Total	15

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 330
ENGL 105	ENGL 337
ENGL 200	ENGL 406
ENGL 211	ENGL 410
ENGL 212	ENGL 418
ENGL 220	ENGL 421/422
ENGL 221	ENGL 430
ENGL 226	ENGL 431
ENGL 231	ENGL 495
ENGL 311/312	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. Prerequisite: ENGL 100.

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.

ENGL 308. Praxis II Exam Preparation

Credit 1(1-0)

This course is designed to prepare preservice teachers to take the Praxis II: English Content Knowledge exam (5038). The course is designed to introduce students to the Praxis II format, to review test-taking strategies, to determine strengths and weaknesses in English content knowledge, and to review content area topics in literature, informational texts and rhetoric, language use and vocabulary, and writing, speaking, and listening. A passing score on the Praxis II exam is required for North Carolina teaching licensure in secondary English (grades 9-12). Grade: Pass/Fail. Prerequisites: None.

ENGL 427. Teaching Secondary School Literature

Credit 3(3-0)

This course prepares pre-service educators to teach literature in secondary schools. Students will explore strategies, issues, and research related to adolescent literature, explore literary texts vital to a secondary school curriculum, and make decisions about planning instruction and developing assessments. A field experience in an approved school is required. Prerequisite: Admission to Educator Preparation.

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. Prerequisite: ENGL 101. (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 305. Film and Literature **Credit 3(3-0)**

This course will examine the relationships between literary texts and their cinematic counterparts to understand the adaptation practice employed by film makers and the effects of the adaptation process. Prerequisite: ENGL 101. (F;S;SS)

ENGL 306. Representations of Gender in Film **Credit 3(3-0)**

This course examines the cultural and generic archetypes of gender in film. Students will screen and analyze materials on film history and gender theory. Prerequisite: ENGL 101. (F;S;SS)

ENGL 307. The Science Fiction and Horror Film **Credit 3(3-0)**

This course will examine the complex interplay between science and technological progress with the filmmakers' use of the science fiction genre to comment on social trends and futuristic implications. It will also examine the horror film as symbolic text designed to address society's most sensitive issues and anxieties. Prerequisite: ENGL 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. Prerequisite: ENGL 101. (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

Credit 3(3-0)

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)

AFRICAN AMERICAN LITERATURE

ENGL 209. The History, Literary Connections, and Social Relevance of Hip-Hop

Credit 3(3-0)

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. Prerequisite: ENGL 100. This course is open to non-majors. (F;S)

ENGL 211. Survey of African-American Literature I

Credit 3(3-0)

This course is the study of prose, poetry, and drama by American authors of African ancestry from the 18th century to the turn of the 20th 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 20th 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. Prerequisite: ENGL 101. (F;S)

ENGL 212. Survey of African-American Literature II

Credit 3(3-0)

This is a survey course focusing on literature written by African-Americans from the beginning of the 20th 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. Prerequisite: ENGL 101. (F;S)

ENGL 316. Hip-Hop Discourse

Credit 3(3-0)

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. Prerequisite: ENGL 101. This course is open to non-majors of sophomore, junior, or senior standing. (F;S)

ENGL 318. African-American Film and Culture

Credit 3(3-0)

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. Prerequisite: ENGL 101. This course is open to non-majors. (F;S)

ENGL 342. African-American Male Writers

Credit 3(3-0)

This course examines the poetry, short stories, and novels of significant African-American male writers from the 20th 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)

ENGL 343. African-American Women Writers

Credit 3(3-0)

This course examines the poetry, short stories, and novels of significant Black women writers from the 20th 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. Prerequisite: ENGL 101. This course is open to non-majors. (F;S)

ENGL 345. The Survey of African-American Men's and Women's Autobiographical Writings

Credit 3(3-0)

This course surveys the genre of autobiographical writing from the 18th century to the 20th 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 101.

ENGL 407. African-American Drama**Credit 3(3-0)**

This course examines the dramatic literature of African-Americans, from the 20th century to the present. Focus will be given to the literary, historical, and cultural elements of the Black tradition of drama. Prerequisite: ENGL 101. This course is open to non-majors. (F)

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 20th 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. Prerequisite: ENGL 101. 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, Ngcobo 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. Prerequisite: 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. Prerequisite: 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 227. 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. (F;S;SS)

ENGL 235. 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. (F;S;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. Prerequisite: ENGL 105. (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. Prerequisite: ENGL 105. (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. Prerequisite: ENGL 105. (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. Prerequisite: ENGL 105. (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, and 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. Prerequisite: ENGL 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. (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 18th 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 20th Century **Credit 3(3-0)**
This course focuses on the short stories written by African American women during the 20th 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 19th and 20th 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. Prerequisite: ENGL 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 101. (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. Prerequisite: ENGL 101. (F)
- ENGL 431. American Literature II** **Credit 3(3-0)**
 This is a continuation of English 430, from 1865 to the present. Prerequisite: ENGL 101. (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 101. (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 101. (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. Prerequisite: ENGL 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. Prerequisite: ENGL 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. Prerequisite: ENGL 101. (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. Prerequisite: ENGL 101. (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. Prerequisite: ENGL 101. (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. Prerequisite: ENGL 101. (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. Prerequisite: ENGL 101. (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. Prerequisite: ENGL 101. (F;S;SS)

DIRECTORY OF FACULTY

Kendra Bryant	Assistant Professor
B.S., M.Ed., Florida A&M University; Ph.D., University of South Florida	
Jason DePolo	Associate Professor and Chairperson
B.A., Indiana University of Pennsylvania; M.A., North Carolina A&T State University; Ph.D., Indiana University of Pennsylvania	
Kimberly Harper	Assistant Professor
B.A. North Carolina A&T State University; M.A., Miami University; Ph.D., East Carolina University	
Marlene Hendricks	Lecturer
B.A., M.A., North Carolina A&T State University	
Moussa Issifou	Lecturer
B.A., M.A., Universite du Benin; Ph.D., University of North Carolina at Greensboro	
Hope Jackson	Lecturer
B.A., M.A., North Carolina A&T State University; Ph.D., University of North Carolina at Greensboro	
Elon Kulii	Professor
B.A., Winston-Salem State University; M.S., North Carolina A&T State University; Ph.D., Indiana University	
Gregory D. Meyerson	Professor
B. A., Miami University of Ohio; M.A., Ph.D., Northwestern University	
Faye Spencer Maor	Associate Professor
B.S., Florida A&M University; M.A., University of Colorado at Boulder; Ph.D., University of Illinois, Urbana-Champaign	
Jawanna Southerland-Little	Lecturer
B.A., M.A., North Carolina A&T State University, Ph.D., University of North Carolina at Greensboro	
Bryon Turman	Lecturer
B.A., M.A., North Carolina A&T State University	
Pauline A. Uwakweh	Associate Professor
B.A., University of Port Harcourt; Ph.D., Temple University	

Department of History and Political Science

Arwin D. Smallwood, Chairperson

OBJECTIVES

The Department of History and Political Science 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 and Political Science emphasizes the personal development of each student.

The specific objectives of the History and Political Science 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 and political content and professional training to students preparing for careers in fields such as education, law, religion, international affairs, social service, journalism, history, politics or government; 3) to offer a curriculum that allows students to learn the history and politics 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 history and political science.

In carrying out its aims and objectives, the Department offers a broad range of courses in history, political science, 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 five student organizations. The *History Scholars*, *Phi Alpha Theta* History Honor Society, *Political Science Society*, *Pi Sigma Alpha*, and *The Henry Frye Pre-Law Society* as well as The Annual Gibbs Lecture and Student Conference, and 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 Arts
Political Science – Bachelor of Arts

PROGRAM REQUIREMENTS

The admission of students to the undergraduate degree programs in the History and Political Science 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 Africana 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.

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.

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.

African American/ African History Minor – The minor in African American and African History will consist of 18 semester hours of history (HIST) courses distributed as follows:

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.

Military Leadership Minor – 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, AERO 321, 322, 331, 332.
- **Commission Track (Army):** HIST 209, MISC 301, 302, 305, 307.
- **Non-commission Track:** HIST 209, any of the following totaling 15 hours: AERO 221, 222, 321, 322, 421, 422, MISC 201, 202, 301, 302, 401, 402.

Students completing the Military Leadership minor must earn a grade of “C” or better in all courses for the minor.

Political Science Minor – The minor in Political Science will consist of 18 semester hours of Political Science (POLI) courses distributed as follows:

Required courses: POLI 110, 221, 250, 444.

Elective courses (6 hours to be selected from the following options): POLI 100, 101, 215, 233, 234, 240, 251, 252, 270, 310, 311, 312, 313, 314, 315, 350, 360, 361, 362, 363, 364, 365, 366, 431, 432, 433, 434, 441, 442, 443, 445, 446, 447, 490, 492, 498, 604, 642, 643, 644, 645, 646, 353.

Students should select two courses from the list of Political Science electives. A minimum grade of “C” must be achieved in all Political Science courses.

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.

The 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.

Department of History and Political Science Bachelor of Arts in History Major Code: HIST

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
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) ¹	3	HIST 107	3
Humanities/Fine Arts Elective (HFA) ²	3	Mathematical, Logical & Analytical Reasoning Elective (MLAR) ¹	3
FRST 101 (SS)	1	POLI 110	3
Semester Total	13	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
HIST 206	3	HIST 207 (GA)	3
HIST 250	3	ECON 201	3
Scientific Reasoning Elective (SR) ³	3	Social Science Elective ⁴	3
HIST 103	3	Humanities/Fine Arts Elective ¹ (HFA) ²	3
HIST 104 (<i>formerly HIST 204</i>)	3	HIST 105 (<i>formerly HIST 205</i>)	3
Semester Total	15	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
HIST Elective ⁵	3	HIST 335 (<i>formerly HIST 435</i>)	3
Social Science Elective ⁴	3	FOLA ⁶	3
Free Elective ⁷	3	HIST Elective ⁵	3
FOLA ⁶	3	HIST Elective ⁵	3
HIST 325	3	HIST Elective ⁵	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
Social Science Elective ⁴	3	HIST Elective ⁵	3
Free Elective ⁷	3	HIST Elective ⁵	3
Free Elective ⁷	3	Free Elective ⁷	3
HIST 492 (<i>formerly HIST 599</i>)	3	Free Elective ⁷	3
HIST Elective ⁵	3	Social Science Elective ⁴	3
Semester Total	15	HIST 498 (Internship)	1
		Semester Total	17

Total Credit Hours: 120

¹Students must take course from the approved Mathematical, Logical & Analytical Reasoning (MLAR) Electives General Education course list and should discuss options with their adviser.

²Students must take course from the approved Humanities/Fine Arts (HFA) Electives General Education course list and should discuss options with their adviser.

³Students must take course from the Scientific Reasoning (SR) Non-Lab General Education course list and should discuss options with their adviser.

⁴12 hrs. Students may take any Geography, Political Science, Psychology, Sociology, or Anthropology courses for which they meet the prerequisites.

⁵21 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.

⁶Students must take 6 credit hours of the same language.

⁷12 hrs. Students may take any courses offered at the University for which they meet the prerequisites.

Department of History and Political Science
Bachelor of Arts in Secondary Education (History)
Major Code: HIST
Concentration Code: HSCE

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100 (WC)	3	BIOL 100 (SR Lab)	4
HIST 106 (AA) (<i>formerly HIST 201</i>)	3	EDPR 110 (<i>formerly CUIIN 110</i>)	2
EDPR 102 (<i>formerly CUIIN 102</i>) (SS)	2	ENGL 101 (WC)	3
MATH 101 (MLAR) ¹	3	HIST 107	3
Humanities/Fine Arts Elective (HFA) ²	3	Mathematical, Logical & Analytical Reasoning Elective (MLAR) ¹	3
Semester Total	14	Semester Total	15
Sophomore Year: First Semester		Sophomore Year: Second Semester	
EDPR 215	2	EDPR 310 (<i>formerly EDPR 250</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	EDPR 210	2
SPED 250	3	Scientific Reasoning Elective (SR) ³	3
GEOG 210	3	POLI 110 (<i>formerly POLI 200</i>)	3
Semester Total	17	Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
EDPR 410 (<i>formerly CUIIN 410</i>)	2	EDPR 420 (<i>formerly ELED 444</i>)	3
EDPR 455	3	SPED 448	2
SOCI 100 or SOCI 200	3	HIST Elective ⁴	3
Humanities/Fine Arts Elective (HFA) ²	3	HIST 335 (<i>formerly HIST 435</i>)	3
HIST Elective ⁴	3	ECON 201	3
PSYC 101	3	Free Elective ⁴	3
Semester Total	17	Semester Total	17
Senior Year: First Semester		Senior Year: Second Semester	
EDPR 487	3	EDPR 498	12
HIST Elective ⁴	3	Semester Total	12
HIST Elective ⁴	3		
HIST 492 (<i>Capstone</i>) (<i>formerly HIST 599</i>)	3		
Semester Total	12		

Total Credit Hours: 120

¹Students must take course from the approved Mathematical, Logical & Analytical Reasoning (MLAR) Electives General Education course list and should discuss options with their adviser.

²Students must take course from the approved Humanities/Fine Arts (HFA) Electives General Education course list and should discuss options with their adviser.

³Students must take course from the Scientific Reasoning (SR) Non-Lab General Education course list and should discuss options with their adviser.

⁴12 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.

⁵3 hours – Students may take any courses offered at the University for which they meet the prerequisites.

**Department of History and Political Science
Bachelor of Arts in Political Sciences
Major Code: PLSC**

Curriculum Guide

COURSE	CR	COURSE	CR
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) (<i>formerly HIST 202</i>)	3
MATH 101 (MLAR)	3	MATH 102 (MLAR)	3
POLI 100 (<i>formerly POLI 150</i>)	3	BIOL 100 (SR)	4
POLI 110 (<i>formerly POLI 200</i>)	3	HPED 200 (<i>substitution of SSFM 226</i>)	2
Semester Total	16	Semester Total	18
Sophomore Year: First Semester		Sophomore Year: Second Semester	
POLI 215 (<i>formerly POLI 210</i>)	3	POLI 240 (<i>formerly POLI 340</i>)	3
ENGL 200 (HFA)	3	FOLA Elective ¹	3
FOLA Elective ¹	3	POLI 251 (<i>formerly POLI 290</i>)	3
PHYS 101 (SR)	3	POLI 252 (<i>formerly POLI 291</i>)	1
SPCH 250	3	ENGL 201 (HFA)	3
Semester Total	15	PSYC 101 (SBS)	3
		Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
POLI 233 (<i>formerly POLI 333</i>)	3	POLI 234 (<i>formerly POLI 334</i>)	3
POLI 442	3	POLI 443	3
ECON 200 or ECON 201	3	POLI 221 (<i>formerly POLI 440</i>)	3
Free or Minor Elective	3	IR and CP Restricted Requirement	3
POLI Elective	3	Free Elective	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
IR and CP Restricted Requirement	3	POLI 492 Capstone (<i>formerly POLI 505</i>)	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	Semester Total	12
Semester Total	13		

Total Credit Hours: 120

¹A student must complete two courses (a minimum of 6 hours) of the same foreign language.

²Students 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.

³Students 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)

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

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 15th century to the present. An underlying theme of the course will involve the environmental aspect of farming activities. Students will examine Colonial, Antebellum, Early 20th century and Modern agriculture, conversation 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 16th 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 19th century and the modern age. It also examines their efforts to restore their culture and language in the late 20th and early 21st 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 examines 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. 20th and 21st 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 20th 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 19th and 20th 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)**

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 5th 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)

DIRECTORY OF FACULTY

Ayanna R. Armstrong..... **Assistant Professor**

B.A., Spellman College; M.B.A., Ph.D., Clark Atlanta University

Paul Baker..... **Professor and Director of the University Galleries**

B.A., University of North Carolina at Chapel Hill; M.A., North Carolina State University; Ph.D., North Carolina A&T State University

Fuabeh P. Fonge..... **Professor**

B.A., University of Yaounde; M.A., Georgetown University; Ph.D., Howard University

Thomas E. Porter..... **Professor**

B.A., Loyola College; M.A., Ph.D., University of Washington

Philip Rubio..... **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

James A. Wood..... **Professor**

B.A., Tufts University; M.A., Ph.D., University of North Carolina at Chapel Hill

Yunqiu Zhang..... **Associate Professor**

B.A., Qufu Normal University; M.A., Ph.D., University of Toronto

Department of Journalism and Mass Communication

Gail Wiggins, Interim Chairperson

OBJECTIVES

The objectives of the Department of Journalism and Mass Communication are as follows:

1. cultivate in students the practice of acquiring interdisciplinary knowledge and developing analytical and critical skills for acquiring balanced views of world issues;
2. develop in students good oral and written communication skills necessary to the journalism profession;
3. develop in students at least one area of specialty and preferably the convergence of multiple areas in their chosen field;
4. develop the ability of students to collaborate with specialists in other fields to be informative, analytical, and critical in their reporting on issues;
5. cultivate in students an understanding of the historical, cultural, legal, ethical and moral contexts in which they apply their knowledge and skills;
6. prepare students for employment and career advancement in local, national and international media markets;
7. engage students in local community activities for them to apply their classroom knowledge to public use;
8. encourage students to participate in scholarly work and creative productions;
9. encourage students to explore new channels of communication and collaborative work that transcends departmental and institutional boundaries; and
10. maintain strong relationships with alumni, community, business and the non-profit sector.

ACEJMC PROFESSIONAL VALUES AND COMPETENCIES

The Accrediting Council on Education in Journalism and Mass Communications requires that, irrespective of their specialization, all graduates should be aware of certain core values and competencies.

ACEJMC Values

- understand and apply the principles and laws of freedom of speech and press for the country in which the institution that invites ACEJMC is located, as well as receive instruction in and understand the range of systems of freedom of expression around the world, including the right to dissent, to monitor and criticize power, and to assemble and petition for redress of grievances;
- demonstrate an understanding of the history and role of professionals and institutions in shaping communications;
- demonstrate an understanding of gender, race, ethnicity, sexual orientation and, as appropriate, other forms of diversity in domestic society in relation to mass communications;
- demonstrate an understanding of the diversity of peoples and cultures and of the significance and impact of mass communications in a global society;
- understand concepts and apply theories in the use and presentation of images and information;
- demonstrate an understanding of professional ethical principles and work ethically in pursuit of truth, accuracy, fairness and diversity;

ACEJMC Competencies

- think critically, creatively and independently;
- conduct research and evaluate information by methods appropriate to the communications professions in which they work;
- write correctly and clearly in forms and styles appropriate for the communications professions, audiences and purposes they serve;
- critically evaluate their own work and that of others for accuracy and fairness, clarity, appropriate style and grammatical correctness;
- apply basic numerical and statistical concepts;
- apply current tools and technologies appropriate for the communications professions in which they work, and to understand the digital world.

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. If criteria 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

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.

DEPARTMENTAL REQUIREMENTS

The Journalism and Mass Communication student must complete a minimum of 120 semester hours of University courses. Included are 42 semester hours of courses in the major and a minimum of 72 semester credit hours outside of journalism and mass communication and meets the liberal arts and sciences general education requirements of the university

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, Humanities and Social Sciences. They also must 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. Successfully complete the required capstone Professional Development Seminar course (JOMC 492).
- c. Complete an academic internship for credit with an approved media organization.
- d. 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
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Freshman Year: First Semester		Freshman Year: Second Semester	
BIOL 100 (SR) ^{1,9}	4	ENGL 101 (WC) ¹	3
ENGL 100 (WC) ¹	3	ENGL 226	3
FRST 101 (SS) ¹	1	HIST 130, 207,216 or 231 (GL) ^{1,2}	3
HIST 103, 106, or 107 (AA) ^{1,2}	3	JOMC 102 (formerly JOMC 202)	3
HPED Elective	1	MATH 102 (MLAR) ¹	3
MATH 101 (MLAR) ¹	3	Grammar Proficiency Exam (GPE) ³	0
Semester Total Hours	15	Semester Total Hours	15
Sophomore Year: First Semester		Sophomore Year: Second Semester	
Foreign Language Level I ⁴	3	Foreign Language Level II ⁴	3
JOMC 220	3	JOMC 231 ⁷	1
JOMC 276	3	JOMC 224 (formerly JOMC 324)	3
Scientific Reasoning Elective (SR) ^{1,9}	3	Minor or Elective ^{5,6}	3
SPCH 250 (HFA) ^{1,2}	3	Minor or Elective ^{5,6}	2
Semester Total Hours	15	PSYC 101 or SOCI 100 or SOCI 200 (SBS) ^{1,2}	3
		Semester Total Hours	15
Junior Year: First Semester		Junior Year: Second Semester	
JOMC 249 (formerly JOMC 309)	3	JOMC 386 (formerly JOMC 486)	3
JOMC 303	3	JOMC 393 (formerly JOMC 493)	3
JOMC 330	3	JOMC 396 (formerly JOMC 496)	3
JOMC 390	3	JOMC 492 ⁸ (formerly JOMC 591)	2
Minor or Elective ^{2,6,7}	3	Minor or Elective ^{6,7}	3
Semester Total Hours	15	Semester Total Hours	14
Senior Year: First Semester		Senior Year: Second Semester	
JOMC 498 (formerly JOMC 598)	3	Business School Elective	3
Minor or Elective ^{6,7}	3	English Literature Elective ¹⁰	3
Minor or Elective ^{6,7}	3	Geography Elective	3
Philosophy Elective	3	HPED Elective	1
Political Science Elective	3	JOMC Elective ¹¹	3
Semester Total Hours	15	Minor or Elective ^{6,7}	3
		Semester Total Hours	16

Total Credit Hours: 120

¹This 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.

²General 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.

³The Grammar Proficiency Exam is a pre and post assessment tool administered to students enrolled in JOMC 102 and again to students enrolled in JOMC 220 courses.

⁴Two levels of the same foreign language are required.

⁵Discuss minor or electives with your academic advisor.

⁶ACEJMC accreditation requires 72 credit hours outside the major.

⁷Consult the University Bulletin for Practicum requirements. Volunteers are encouraged to work in labs.

⁸Must 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).

⁹Scientific Reasoning Elective: Must have 7 credit hours in the scientific reasoning with one lab hour (see the General Education course list for course options).

¹⁰Select from any courses under the following English Department subheadings: African-American Literature, Literature, or Women Writers and Women in Literature.

¹JOMC 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.

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
Freshman Year: First Semester		Freshman Year: Second Semester	
BIOL 100 (SR) ^{1,9}	4	ENGL 101 (WC) ¹	3
ENGL 100 (WC) ¹	3	ENGL 226	3
FRST 101 (SS) ¹	1	HIST 130, 207, 216 or 231 (GL) ^{1,2}	3
HIST 103, 106, or 107 (AA) ^{1,2}	3	JOMC 102 (formerly JOMC 202)	3
HPED Elective	1	MATH 102 (MLAR) ¹	3
MATH 101 (MLAR) ¹	3	Grammar Proficiency Exam (GPE) ³	0
Semester Total Hours	15	Semester Total Hours	15
Sophomore Year: First Semester		Sophomore Year: Second Semester	
Foreign Language Level I ⁴	3	Foreign Language Level II ⁴	3
JOMC 220	3	JOMC 224 (formerly JOMC 324)	3
JOMC 231 ⁵	1	JOMC 249 (formerly JOMC 309)	3
JOMC 299	3	PSYC 101 or SOCI 100 or SOCI 200 (SBS) ^{1,2}	3
Minor or Elective ^{6,7}	3	Scientific Reasoning (SR) ^{1,9}	3
SPCH 250 (HFA) ^{1,2}	3	SPCH 116	1
Semester Total Hours	16	Semester Total Hours	16
Junior Year: First Semester		Junior Year: Second Semester	
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 ^{2,6,7}	3	JOMC 335 (formerly JOMC 425)	3
Minor or Elective ^{6,7}	4	JOMC 492 ⁸ (formerly JOMC 591)	2
Semester Total Hours	16	Semester Total Hours	14
Senior Year: First Semester		Senior Year: Second Semester	
JOMC Elective ¹¹	3	Business School Elective	3
JOMC 498 (formerly JOMC 598)	3	English Literature Elective ¹⁰	3
Minor or Elective ^{6,7}	3	HPED Elective	1
Philosophy Elective	3	Minor or Elective ^{6,7}	3
Political Science Elective	3	Minor or Elective ^{6,7}	3
Semester Total Hours	15	Semester Total Hours	13

Total Credit Hours: 120

¹This 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.

²General 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.

³The Grammar Proficiency Exam is a pre and post assessment tool administered to students enrolled in JOMC 102 and again to students enrolled in JOMC 220 courses.

⁴Two levels of the same foreign language are required.

⁵Consult the University Bulletin for Practicum requirements. Volunteers are encouraged to work in labs.

⁶Discuss minor or electives with your academic advisor.

⁷ACEJMC accreditation requires 72 credit hours outside the major.

⁸Must 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).

⁹Scientific Reasoning Elective: Must have 7 credit hours in the scientific reasoning with one lab hour (see the General Education course list for course options).

¹⁰Select from any courses under the following English Department subheadings: African-American Literature, Literature, or Women Writers and Women in Literature.

¹¹JOMC 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.

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
Freshman Year: First Semester		Freshman Year: Second Semester	
BIOL 100 (SR) ^{1,9}	4	ENGL 101 (WC) ¹	3
ENGL 100 (WC) ¹	3	ENGL 226	3
FRST 101 (SS) ¹	1	HIST 130, 207,216 or 231 (GL) ¹	3
HIST 103, 106, or 107 (AA) ^{1,2}	3	JOMC 102 (<i>formerly JOMC 202</i>)	3
HPED Elective	1	MATH 102 (MLAR) ¹	3
MATH 101 (MLAR) ¹	3	Grammar Proficiency Exam (GPE) ³	0
Semester Total Hours	15	Semester Total Hours	15
Sophomore Year: First Semester		Sophomore Year: Second Semester	
Foreign Language Level I ⁴	3	Foreign Language Level II ⁴	3
JOMC 220	3	HPED Elective	1
JOMC 231 ⁵	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) ^{1,2}	3	JOMC 275 (<i>formerly JOMC 405</i>)	3
Scientific Reasoning (SR) ^{1,9}	3	SPCH 250 (HFA) ^{1,2}	3
Semester Total Hours	16	Semester Total Hours	16
Junior Year: First Semester		Junior Year: Second Semester	
JOMC 249 (<i>formerly JOMC 309</i>)	3	JOMC 393 (<i>formerly JOMC 493</i>)	3
JOMC 303	3	JOMC 492 ⁸ (<i>formerly JOMC 591</i>)	2
JOMC 306 (<i>formerly JOMC 507</i>) or JOMC 375 (<i>formerly JOMC 508</i>)	3	Minor or Elective ^{6,7}	3
Minor or Elective ^{2,5,6}	3	Minor or Elective ^{6,7}	3
Minor or Elective ^{5,6}	3	Philosophy Elective	3
Semester Total Hours	15	Semester Total Hours	14
Senior Year: First Semester		Senior Year: Second Semester	

JOMC 498 (formerly JOMC 598)	3	Business School Elective	3
JOMC Elective #1 ¹⁰	3	English Literature Elective ¹¹	3
Minor or Elective ^{6,7}	2	Geography Elective	3
Political Science Elective	3	JOMC Elective #2 ¹⁰	3
Minor or Elective ^{6,7}	3	Minor or Elective ^{6,7}	3
Semester Total Hours	14	Semester Total Hours	15

Total Credit Hours: 120

¹This 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.

²General 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.

³The Grammar Proficiency Exam is a pre and post assessment tool administered to students enrolled in JOMC 102 and again to students enrolled in JOMC 220 courses.

⁴Two levels of the same foreign language are required.

⁵Consult the University Bulletin for Practicum requirements. Volunteers are encouraged to work in labs.

⁶Discuss minor or electives with your academic advisor.

⁷ACEJMC accreditation requires 72 credit hours outside the major.

⁸Must 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).

⁹Scientific Reasoning Elective: Must have 7 credit hours in the scientific reasoning with one lab hour (see the General Education course list for course options).

¹⁰JOMC 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.

¹¹Select from any courses under the following English Department subheadings: African-American Literature, Literature, or Women Writers and Women in Literature.

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. Video for Multimedia	Credit 3(2-2)
This course introduces basic video production and editing for TV and digital news packages. (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

Kortni Alston Assistant Professor

B.A., Delaware State University; M.B.A., Morgan State University; Ph.D., University of Florida

Michael Carter Lecturer

B.A., Bethany College; M.F.A., University of North Carolina at Greensboro

Dwight Davis Instructor

B.A., High Point University; M.A., University of North Carolina at Greensboro

Gary Guffey Lecturer

B.S., B.A., High Point University; M.B.A., Wake Forest University; M.A., Indiana University; Ph.D., University of Georgia

Emily Harris Student Newspaper Advisor and Lecturer

B.A., M.A., Marshall University

Allen Johnson	Lecturer
B.A., M.A., University of North Carolina at Chapel Hill	
Joseph Jowers	Instructor
B.A., Clark Atlanta University; M.F.A., Wake Forest University	
Yahya R. Kamalipour	Professor
B.A., Minnesota State University; M.A., University of Wisconsin – Superior; Ph.D. University of Missouri – Columbia	
Kevin Keenan	Instructor
B.A., M.S., University of Illinois; Ph.D., University of Georgia	
Gary Kenton	Instructor
B.A., Greensboro College; M.A. Fordham University	
Robbie Morganfield	Janice Bryant Howroyd/News & Record Endowed Professor
B.A. University of Mississippi, M.A., The Ohio State University, M.Div., Texas Christian University, Ph.D., University of Maryland	
Tira Murray	Lecturer
B.A., Bethune-Cookman University; M.A., Elon University	
Arthea Perry	Lecturer
B.A., Winston Salem State University; M.F.A., Savannah College of Art and Design	
Kimberly Smith	Associate Professor
B.A., Howard University; M.M.C., Ph.D., University of South Carolina	
David Squires	Lecturer
B.A., M.A., University of North Carolina at Chapel Hill	
Anthony Welborne	Instructor and General Manager, WNAA-FM
B.S., M.S., North Carolina A&T State University	
Sheila Whitley	Associate Professor and Interim Associate Dean
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	
Gail Wiggins	Assistant Professor and Interim Chairperson
B.A., M.S., North Carolina A&T State University	
Xueying Zhang	Assistant Professor
B.A., M.A., Beijing Foreign Studies University; M.A., Oklahoma State University; Ph.D., University of Alabama	

Department of Liberal Studies
Jeffery D. Mack, 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 90 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

The university is no longer offering a Placement Exam. Please, contact Dr. Jose Bravo de Rueda (bravoj@ncat.edu) if you have any questions.

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. 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.

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
OR		
SPAN 201	SPAN 202	SPAN 301
SPAN 302	SPAN 306	SPAN 490

STUDY ABROAD

The Department of Liberal Studies encourages all students to study abroad. The Office of International Programs, (336) 334-7551 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

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
FRST 101 (SS)	1	Science and Reasoning (Lab) ²	4
FOLA xxx ¹	3	FOLA xxx ¹	3
ENGL 100 (WC)	3	ENGL 101	3
MATH 101 (MLAR)	3	MATH 102 or PHIL 102 (MLAR)	3
HFA (GE)	3	SBS ²	3
AA (GE) ²	3	Semester Total	16
Semester Total	16		

Sophomore Year: First Semester		Sophomore Year: Second Semester	
LIBS 200	3	MGMT110	3
GL ²	3	Concentration Studies ³	6
ENGL 226	3	Business Elective ⁵	3
Science and Reasoning (Non-Lab)	3	LIBS or PHIL Elective ⁶	3
LIBS 223	3	Semester Total	15
HPED Elective ⁴	1		
Semester Total	16		
Junior Year: First Semester		Junior Year: Second Semester	
ENGL 240 or 300	3	LIBS 300	3
Concentration Studies ³	6	Free Elective	3
LIBS or PHIL Elective ⁶	3	Concentration Studies ³	6
Free Elective	3	LIBS or PHIL Elective ⁶	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
LIBS or PHIL Elective ⁶	6	SPCH Elective ⁷	3
Concentration Studies ³	3	Free Electives	6
Free Elective	3	LIBS 475	3
LIBS 499	3	Semester Total	12
Semester Total	15		

Total Credit Hours: 120

¹Six credit hours in the same foreign language.

²Students must take course from the approved General Education course list and should discuss options with their advisor.

³Concentration 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.

⁴Any HPED course without pre-requisites or major restrictions.

⁵Business Elective: Any ACCT, FIN, BUED, ECON or MGMT course.

⁶Student should select a LIBS or PHIL elective in consultation with their academic advisor and consider getting a minor in philosophy using their elective hours.

⁷Student 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
LIBS 300	

Department of Liberal Studies
 Bachelor of Arts in Liberal Studies (Applied Cultural Thought)
 Major Code: LBS*
 Concentration Code: ACT

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
African-American Studies (AA) ^{1,2}	3	ENGL 101 (WC) ¹	3
ENGL 100 (WC) ¹	3	Global Learning (GL) ^{1,2}	3
FRST 101 (SS) ¹	1	Humanities and Fine Arts (HFA) ^{1,2}	3
HPED Elective	1	LIBS 200	3
MATH 101 (MLAR) ¹	3	MATH 102 (MLAR) ¹	3
Scientific Reasoning with Lab (SR) ^{1,3}	4	Semester Total Hours	15
Semester Total Hours	15		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
Elective ⁴	3	Foreign Language Level II ⁵	3
Foreign Language Level I ⁵	3	LIBS Coursework (Any Level) ⁶	3
LIBS Coursework (Any Level) ⁶	3	Elective ⁴	3
Scientific Reasoning w/o Lab (SR) ^{1,3}	3	Elective ⁴	3
Social and Behavioral Science (SBS) ^{1,2}	3	Elective ⁴	3
Semester Total Hours	15	Semester Total Hours	15
Junior Year: First Semester		Junior Year: Second Semester	
Elective ⁴	3	Elective ⁴	3
Elective ⁴	3	Elective ⁴	3
Elective ⁴	3	Elective ⁴	3
LIBS Coursework (Any Level) ⁶	3	LIBS Coursework (Any Level) ⁶	3
LIBS Coursework (300-Level and Higher) ⁷	3	LIBS Coursework (300-Level and Higher) ⁷	3
Semester Total Hours	15	Semester Total Hours	15
Senior Year: First Semester		Senior Year: Second Semester	
Elective ⁴	3	Elective ⁴	3
Elective ⁴	3	Elective ⁴	3
Elective ⁴	3	Elective ⁴	3
LIBS Coursework (300-Level and Higher) ⁷	3	Elective ⁴	3
LIBS 475 Senior Seminar/Capstone	3	LIBS Coursework (300-Level and Higher) ⁷	3
Semester Total Hours	15	Semester Total Hours	15

Total Credit Hours: 120

¹This 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.

²General 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.

³Scientific Reasoning Elective: Must have 7 credit hours in the scientific reasoning with one lab hour (see the General Education course list for course options).

⁴Discuss minor or electives with your academic advisor.

⁵Two levels of the same foreign languages are required.

⁶Must have 12 credit hours of Liberal Studies coursework (courses offered by the Department of Liberal Studies) at any level (100, 200, 300, or 400).

⁷Must 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
Freshman Year: First Semester		Freshman Year: Second Semester	
FRST 101 (SS)	1	ENGL 101 (WC)	3
ENGL 100 (WC)	3	Thought and Reasoning Elective ³	3
SBS ¹	3	GL ¹	3
Fine Arts Elective ²	3	Free Elective	3
Thought and Reasoning Elective ³	3	MATH 101	3
HFA ¹	3	Semester Total	15
Semester Total	16		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
Science and Reasoning (Lab) ¹	4	Science and Reasoning (Non-Lab) ¹	3
BUED 110	3	LES Elective ⁴	3
LES Elective ⁴	3	PHIL 311 (Required Concentration)	3
AA ¹	3	Concentration Studies ⁵	3
PHIL 102 (MLAR, Required Conc.)	3	LIBS 200	3
Semester Total	16	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
Free Elective	3	Thought and Reasoning Elective ³	3
Philosophy Elective Course	3	PHIL 402 (Required Concentration)	3
Concentration Studies ⁵	6	PHIL 406 (Required Concentration)	3
LES Elective ⁴	3	LIBS 300	3
Semester Total	15	Concentration Studies ⁵	3
		Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
Concentration Studies ⁵	6	Free Electives	9
Free Electives	4	LES Elective ⁴	3
LIBS 499 ⁶	3	LIBS 475 Capstone	3
Semester Total	13	Semester Total	15

Total Credit Hours: 120

¹Students must take course from the approved General Education course list and should discuss options with their advisor.

²Fine Arts Elective: Any ART, DANC, MUSI or THEA course.

³Thought and Reasoning Elective: Any CRJS, PHIL, POLI, PSYC, or SOCI course.

⁴LES Elective: Any LIBS, ENGL, or SPCH course 200-level or higher.

⁵Concentration 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.

⁶LIBS 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 on 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 is 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 of 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 beings, 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 the many 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, including 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 diverse 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 worldview/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, conflicting, 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)

FREN 462. French Literature of the Nineteenth Century **Credit 3(3-0)**

The great literary currents of the nineteenth century Romanticism and Realism will be studied. (F;S)

FREN 463. The French Theatre **Credit 3(3-0)**

This course is a thorough study of the French theatre from the Middle Ages to the present. (F;S)

FREN 464. The French Novel **Credit 3(3-0)**

The novel from the Seventeenth Century to the present will be studied. (F;S)

FREN 465. French Syntax **Credit 3(3-0)**

This course is designed to teach advanced grammar. (F;S)

FREN 466. Contemporary French Literature **Credit 3(3-0)**

This course deals with the chief writers and literary currents from 1900 to the present. (F;S)

FREN 485. Selected Afro-French Poets

Credit 3(3-0)

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)

FREN 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. Prerequisites: FREN 201 or 304. (F;S)

FREN 492. Seminar in Foreign Languages

Credit 3(3-0)

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)

**Students are required to purchase supplemental materials for this course.*

SPANISH

SPAN 101. Elementary Spanish I*

Credit 3(3-0)

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)

SPAN 102. Elementary Spanish II*

Credit 3(3-0)

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)

SPAN 201. Intermediate Spanish I*

Credit 3(3-0)

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)

SPAN 202. Intermediate Spanish II*

Credit 3(3-0)

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)

SPAN 203. Elementary Spanish Conversation Composition*

Credit 3(3-0)

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)

SPAN 301. Spanish 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 Spanish. Prerequisite: SPAN 202. (F;S)

SPAN 302. Spanish Grammar I

Credit 3(3-0)

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)

SPAN 303. Spanish Grammar II

Credit 3(3-0)

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 *por* and *para*. It is conducted in Spanish. Prerequisite: SPAN 302 or consent of instructor. (F;S)

SPAN 304. Spanish Phonetics

Credit 3(3-0)

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)

SPAN 305. Intermediate Spanish Conversation

Credit 3(3-0)

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 animal and human 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 the many 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 Africana World** **Credit 3(3-0)**
 This course analyzes the main ideas of Marxism and their development in the Africana 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 Africana 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, conflicting, 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

José Alberto Bravo de Rueda	Professor
B.A., Pontificia Universidad Católica; M.A., Ph.D., University of Maryland – College Park	
Temeka Carter	Lecturer
M.A., North Carolina A&T State University, Ph.D., University of North Carolina at Greensboro	
Michael Cundall, Jr.	Associate Professor
B.A., University of Kentucky; Ph.D., University of Cincinnati	
Marrissa Dick	Lecturer
B.S., Shaw University; M.S. North Carolina A&T State University; Ph.D., University of North Carolina at Greensboro	
Galen Foresman	Associate Professor
B.A., University of North Carolina at Chapel Hill; M.A., Ph.D., Bowling Green State University	
Karen L. Hornsby	Associate Professor
B.A., California State University-Sacramento; M.A., Ph.D., Bowling Green State University	
Chinedum Emmanuel Ikegwu	Professor
B.A., University of the District of Columbia; M.A., Antioch School of Law; Ph.D. Howard University	
Jeffery D. Mack	Professor
B.A., Valdosta State University; M.A., University of Kentucky; Ph.D., University of Kansas	
Frederick H. Smith	Assistant Professor
B.A. George Mason University; M.A. College of William and Mary; Ph.D., University of Florida	

Department of Visual & Performing Arts
Anthony M. McEachern, Chairperson

OVERVIEW

The Department of Visual and Performing Arts comprises the Programs of Music, Theatre, Visual Arts and a Dance minor. 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 to medium 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 (MINOR IN DANCE)

Melanie Dalton, Program Director

MINOR OFFERED

The dance minor at NC A&T focuses on diversity that is inherent in the course offerings and distinguishes us from other programs. The emphasis of many dance programs researched is the traditional approach to dance focusing on modern and ballet. Most universities include a few courses in world dance forms. NC A&T is a Historically Black College and University, and the intent of the [dance minor curriculum](#) is to highlight the dance forms, histories, theories and techniques that most uniquely reflect African American experience in the African Diaspora and in America. At the same time, students will be exposed to modern and ballet technique and dance history. The minor offers two options. Option one is 18 hours and option two includes a study abroad requirement.

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 basis 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 475. Dance Ethnography (formerly DANC 500)

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 **Assistant 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 **Part-Time Lecturer**
B.S., M.S., North Carolina A&T State University; M.Ed., Ph.D., Temple University

MUSIC PROGRAM

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 Arts

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 Arts 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.A. in secondary education 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

Freshman Year: First Semester		Freshman Year: Second Semester	
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
Semester Total	14	Semester Total	14
Sophomore Year: First Semester		Sophomore Year: Second Semester	
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>)	
Semester Total	16	or SOCI 100	3
		Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
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
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
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 (<i>formerly MUSI 501</i>)	3	Elective	3
Elective	3	Elective	3
DANC 100	2	Elective	3
Semester Total	16	Semester Total	15

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
Freshman Year: First Semester		Freshman Year: Second Semester	
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
Semester Total	15	Semester Total	15
Sophomore Year: First Semester		Sophomore Year: Second Semester	
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
Semester Total	17	Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	

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
Semester Total	15	Semester Total	14
Senior Year: First Semester		Senior Year: Second Semester	
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
Semester Total	14	Semester Total	14

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
Freshman Year: First Semester		Freshman Year: Second Semester	

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
Semester Total	15	MUSI 121	1
		Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
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
Semester Total	17	Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
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
Semester Total	15	DANC 100	2
		Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
MUSI 409 or MUSI Elective	2	MUSI 464 (formerly MUSI 563)	2
MUSI 464 (formerly MUSI 563)	2	MUSI 460* (formerly MUSI 550)	1
MUSI 306	1	MUSI 306	1
MUSI 301	1	MUSI 301	1
MUSI 307	0	MUSI 307	0
MUSI 401 (formerly MUSI 501)	2	MUSI 490 (formerly MUSI 551)	3
MUSI 420 (formerly MUSI 503)	2	MUSI Elective	2
MUSI 260	1	Free Elective	3
Free Elective	2	Semester Total	13
Semester Total	13		

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

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
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
Semester Total	14	MUSI 218	2
		Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
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
Semester Total	17	Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
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
Semester Total	14	Elective	2
		Semester Total	16
Senior Year: First Semester		Senior Year: Second Semester	
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
Semester Total	14	Semester Total	13

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
Freshman Year: First Semester		Freshman Year: Second Semester	
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
Semester Total	16	MUSI 107	1
		CUIN 110	2
		Semester Total	18
Sophomore Year: First Semester		Sophomore Year: Second Semester	
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 ⁺⁺	2	MUSI 220	3
MUSI 216	3	CUIN 255 (<i>formerly</i> CUIN 255)	2
CUIN 210	2	ENVS 201	3
Semester Total	14	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
CUIN 432 (<i>formerly</i> 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 (<i>formerly</i> CUIN 531)	3
MUSI 425, 426, 428, or 430 ⁺⁺	2	CUIN 430 (<i>formerly</i> CUIN 530)	2
CUIN 410	2	Semester Total	15
Semester Total	16		
Senior Year: First Semester		Senior Year: Second Semester	
PSYC 101 (<i>formerly</i> PSYC 320)	3	CUIN 460 (<i>formerly</i> CUIN 660)	9
HIST 130, 207, or 216	3	CUIN 470 (<i>formerly</i> CUIN 670)	3
MUSI 425, 426, 428, or 430 ⁺⁺	2	Semester Total	12
MUSI 300, 301 or 308	1		
MUSI 307	0		
MUSI 401 (<i>formerly</i> MUSI 501)	2		
MUSI 420 (<i>formerly</i> MUSI 503)	2		
MUSI 460 ⁺⁺ (<i>formerly</i> MUSI 550)	1		
Semester Total	14		

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

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
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
Semester Total	15	MUSI 107	1
		CUIN 110	2
		Semester Total	17
Sophomore Year: First Semester		Sophomore Year: Second Semester	
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 (formerly CUIN 310)	2
HIST 130, 207, or 216	3	MUSI 216	3
ENVS 201	3	Semester Total	15
Semester Total	17		
Junior Year: First Semester		Junior Year: Second Semester	

MUSI 432 (formerly MUSI 532)	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 (formerly CUIN 531)	3
MUSI 413, 423, 433, 443, 453 or 463	2	MUSI 300, 301 or 308	1
MUSI 426	2	CUIN 430 (formerly CUIN 530)	2
CUIN 410	2	Semester Total	15
Semester Total	16		
Senior Year: First Semester		Senior Year: Second Semester	
PSYC 101 (formerly PSYC 320)	3	CUIN 460 (formerly CUIN 660)	9
MUSI 300, 301 or 308	1	CUIN 470 (formerly CUIN 670)	3
MUSI 307	0	Semester Total	12
MUSI 401 (formerly MUSI 501)	2		
MUSI 420 (formerly MUSI 503)	2		
MUSI 428	2		
MUSI 425	2		
MUSI 460* (formerly MUSI 550)	1		
Semester Total	13		

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 CUIN 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).

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

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, Varese, 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, 20th 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.

- 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:

- The ability to perform a solo.
- The ability to perform an excerpt from a book in which the applicant has studied that will demonstrate musicianship and technical skill.
- The ability to play at sight representative literature which is characteristic of the instrument.
- Previous ensemble in band and/or orchestra. Additional competencies for snare drum:

- Basic knowledge of rudiments.

- 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:

- Basic knowledge of timpani techniques.

- A thorough knowledge of the range of each timpani.

MUSI 143, 243. Principal Applied Percussions

- Competencies:
 - Snare Drum: Fundamentals, military techniques, reading and control.
 - Mallets: Fundamentals, reading technique-musical orientation.
- Studies: Price, Beginning Snare Drum; Goldeberg, Mallet Instruments; Stone, Stack Control; Bower, Drum Method; Gardner, Modern Method, Book 1, Stone, Mallet Control.
- 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

- Competencies:
 - Snare Drum: Fine control, orchestra techniques.
 - Mallets: Reading, advanced techniques, tambourine, castanets, brass drum, and cymbals.
 - Timpani: Kettle technique, tuning exercises and control.
 - Latin-American Instruments.
 - Percussion: "Trap" techniques, tambourine, castanets, brass drum, and cymbals. Basic skills on each.
- 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

1. Competencies: Breathing, embouchure and tone production; tonguing; progressive major and minor scale technique; practical problems of artistic performance.
2. Studies: Rubank, Intermediate Method for French Horn; Modern Pares Foundation.
3. Studies: Whistler, Daily Exercises for French Horn, Pottag.
4. Literature: Selected from NIMAC-Music Educator's National Conference.

MUSI 413-2, 419-2 (formerly MUSI 513-2). Principal Applied French Horn

1. Competencies: Intonation, embouchure techniques, breath control and tone quality; articulations; reading; style; performance techniques.
2. Studies: Rubank, Advanced Method for French Horn.
3. Literature: Selected from NIMAC-Music Educator's National Conference.

MUSI 123-1, 223-1. Principal Applied Trombone-Euphonium

1. 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.
2. 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.
3. Literature: Selected from NIMAC-Music Educator's National Conference.

MUSI 423-1, 421-1 (formerly MUSI 523-1). Principal Applied Trombone-Euphonium

1. Competencies: Intonation, embouchure techniques; breath control and tone quality; articulations; reading; style; performance techniques.
2. Studies: Rubank, Advanced Method for Trombone and Baritone.
3. Literature: Selected from NIMAC-Music Educator's National Conference.

MUSI 123-2, 223-2. Principal Applied Tuba

1. 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.
2. 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.
3. Literature: Selected from NIMAC-Music Educator's National Conference.

MUSI 423-2, 421-2 (formerly MUSI 523-2). Principal Applied Tuba

1. Competencies: Intonation, embouchure techniques breath control and tone quality; articulation; reading; style, performance techniques.
2. Studies: Rubank, Advanced Method for Tuba.
3. 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

Travis W. Alexander **Adjunct Instructor**
B.M., M.M., University of North Carolina at Greensboro

Van-Anthoney Hall **Adjunct Instructor (Full Time Faculty)**
B.A., North Carolina A&T State University; M.M., Southern Methodist University; Ph.D., University of Illinois at Urbana

Paula Harrell **University Choir and Chamber Singers Accompanist**
B.M., North Carolina Central University; M.M., The Ohio State University; D.M.A.

John P. Henry, Jr. **Associate Professor and Program Director**
B.M., M.M., University of Akron; D.M.A., University of Houston

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B.M., University of North Carolina at Greensboro; M.M., Northwestern University; M.M., University of North Carolina at Chapel Hill

Valerie Johnson **Adjunct Instructor**
B.M., University of Southern Mississippi; M.M., Howard University

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B.M.E, M.M., D.M.A., University of North Carolina at Greensboro

Michael Long **Adjunct Instructor**
B.A. M.M. D.M.A., University of North Carolina Greensboro

UNIVERSITY BAND STAFF

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B.A., Morris Brown College; M.M.E., Florida State University College of Music

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**THEATRE ARTS PROGRAM
VACANT, 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 as 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 (KCACTF Region IV)
 - 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 should 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
Freshman Year: First Semester		Freshman Year: Second Semester	
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
Semester Total	15	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
Humanities and Fine Arts Elective I ^{1,2}	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
Semester Total	16	Semester Total	18
Junior Year: First Semester		Junior Year: Second Semester	
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	Semester Total	13
Semester Total	18		
Senior Year: First Semester		Senior Year: Second Semester	
THEA 398	3	THEA Elective	3
Free Elective	3	THEA 368	3
THEA 496	3	THEA 413	3
THEA 390	3	THEA 490	3
Semester Total	12	Semester Total	12

Total Credit Hours: 120

¹See the [list of courses](#) which may be taken as electives.

²Must 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

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
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	Semester Total	16
THEA 201	1		
Semester Total	16		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
Humanities and Fine Arts Elective ^{1,2}	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 ¹	3
THEA 131	3	THEA 370	3
Semester Total	15	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	

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
Semester Total	18	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
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	Semester Total	12
Semester Total	13		

Total Credit Hours: 120

¹See the [list of courses](#) which may be taken as electives.

²Must 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

Donna Baldwin-Bradby	Visiting Assistant Professor
B.F.A., North Carolina A&T State University; M.F.A., Virginia Polytechnic University	
Vanecia Boone	Part-time Instructor
B.F.A., North Carolina A&T State University; M.F.A, University of Nevada LasVegas	
Amy DaLuz	Lecturer
B.A., University of San Diego; M.F.A., University of North Carolina at Greensboro	
Gregory J. Horton	Associate Professor
B.S., North Carolina Central University; M.F.A., Michigan State University	
Deborah Kintzing	Part-time Lecturer
B.A., University of Tennessee; M.F.A., University of North Carolina at Greensboro	
Miller Lucky, Jr.	Associate Professor
B.F.A., North Carolina A&T State University; M.F.A, University of Florida (Gainesville)	
Tyler Madden	Part-time Lecturer
B.F.A., North Carolina A&T State University; M.F.A., Certificate in African American Studies, University of Louisville	
Jeffrey Richardson	Professor
B.A., Morgan State University; M.F.A., Purdue University	
David Tidwell	Associate Professor
B.A., California State University (Long Beach); M.F.A., University of Kansas	

VISUAL ARTS PROGRAM 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
Freshman Year: First Semester		Freshman Year: Second Semester	

FRST 100	1	MATH 102	3
MATH 101	3	ENGL 101	3
ENGL 100	3	ART 250 (formerly ART 300)	3
ART 100	3	ART 119 (formerly ART 219)	3
ART 118 (formerly ART 218)	3	ART 137 (formerly ART 227)	3
ART 136 (formerly ART 226)	3	Semester Total	15
Semester Total	16		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
BIOL 100	4	PHYS 101	3
HIST 106 (formerly HIST 201)	3	SOCI 100	3
ART 315 (formerly ART 402)	3	ART 229	3
Primary Studio: Level One	3	Primary Studio: Level Two	3
Secondary Studio: Level One	3	Secondary Studio: Level Two	3
Semester Total	16	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
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
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
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
Semester Total	14	Semester Total	14

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 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
Freshman Year: First Semester		Freshman Year: Second Semester	
FRST 100	1	PHIL 262	3
MATH 101	3	ENGL 101	3
ENGL 100	3	ART 119 (<i>formerly ART 219</i>)	3
ART 100	3	ART 137 (<i>formerly ART 227</i>)	3
ART 118 (<i>formerly 218</i>)	3	CUIN 101	1
ART 136 (<i>formerly ART 226</i>)	3	CUIN 110	2
Semester Total	16	Semester Total	15
Sophomore Year: First Semester		Sophomore Year: Second Semester	
BIOL 100	4	PHYS 101	3
HIST 106 (<i>formerly HIST 201</i>)	3	SOCI 100	3
ART 124 (<i>formerly ART 224</i>)	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 (<i>formerly CUIN 310</i>)	2
Semester Total	17	Semester Total	17
Junior Year: First Semester		Junior Year: Second Semester	
ART 444 (<i>formerly ART 600</i>)	3	CUIN 420 (<i>formerly CUIN 520</i>)	2
ART 310	3	ART 333 (<i>formerly ART 520</i>)	3
ENGL 206	3	ART 487 (<i>formerly ART 607</i>)	2
Primary Studio: Level Three (ART 435)	3	PHIL 103 (<i>formerly PHIL 265</i>)	3
FOLA I	3	FOLA II	3
Semester Total	15	Semester Total	13
Senior Year: First Semester		Senior Year: Second Semester	
CUIN 425 (<i>formerly CUIN 525</i>)	3	CUIN 660	9
ELED 316	3	CUIN 670	3
ART 496 (<i>formerly ART 526</i>)	3	Semester Total	12
Free Elective I	3		

Free Elective II	3	
Semester Total	15	

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 <i>(formerly ART 405)</i>	ART 306 <i>(formerly ART 406)</i>	ART 328 <i>(formerly ART 528)</i>	ART 329 <i>(formerly ART 529)</i>
Material Arts	ART 245 <i>(formerly ART 401)</i>	ART 315 <i>(formerly ART 402)</i>	ART 369 <i>(formerly ART 606)</i>	ART 422 <i>(formerly ART 608)</i>
Art Criticism / History	ART 124 <i>(formerly ART 224)</i>	ART 275 <i>(formerly ART 400)</i>	ART 344 <i>(formerly ART 459)</i>	ART 488 <i>(formerly ART 502)</i>

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
Freshman Year: First Semester		Freshman Year: Second Semester	

FRST 100	1	MATH 102	3
MATH 101	3	ENGL 101	3
ENGL 100	3	ART 250 (formerly ART 300)	3
ART 100	3	ART 119 (formerly ART 219)	3
ART 118 (formerly ART 218)	3	ART 137 (formerly ART 227)	3
ART 136 (formerly ART 226)	3	Semester Total	15
Semester Total	16		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
BIOL 100	4	PHYS 101	3
HIST 106 (formerly HIST 201)	3	SOCI 100	3
ART 315 (formerly ART 402)	3	ART 229	3
Primary Studio: Level One	3	Primary Studio: Level Two	3
Secondary Studio: Level One	3	Secondary Studio: Level Two	3
Semester Total	16	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
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
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
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
Semester Total	14	Semester Total	14

Total Credit Hours: 120

Choose a Primary and Secondary Area of Focus:				
Area of Study	Level 1	Level 2	Level 3	Level 4
Art Direction / Design	ART 350 (formerly ART 450)	ART 351 (formerly ART 451)	ART 340 (formerly ART 540)	ART 341 (formerly ART 541)
Illustration	ART 222	ART 205 (formerly ART 405)	ART 355 (formerly ART 452)	ART 356 (formerly ART 525)
Typography	ART 210 (formerly ART 101)	ART 230 (formerly ART 524)	ART 260 (formerly ART 453)	ART 325 (formerly ART 460)

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

Marvette Aldrich	Part-time Instructor
B.A., North Carolina Central University; M.F.A., University of North Carolina at Greensboro	
James Barnhill	Associate Professor
B.S., University of North Carolina at Chapel Hill; M.F.A., University of North Carolina at Greensboro	
Roymieco 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	
Darlene McClinton	Part-time Instructor
B.A., North Carolina A&T State University; M.F.A., Howard University	
Anthony McEachern	Professor and Chairperson
B.F.A., M.F.A., Ph.D., Howard University	
Kendrick Shackelford	Part-time Instructor
B.F.A., Reinhardt University; M.F.A., University of North Carolina at Greensboro	
Amy Schwartzott	Assistant Professor
B.A., Drew University; M.A., University at Buffalo; Ph.D., University of Florida	
Kristen Solar	Part-time Instructor
B.A. Bridgeford College; M.F.A., University of North Carolina at Greensboro	

WILLIE A. DEESE COLLEGE OF BUSINESS AND ECONOMICS

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

Kevin James, Dean
Danielle Winchester, Associate Dean

VISION

The vision of the Willie A. Deese College of Business and Economics is to be a national leader in global business education that transforms students' lives.

MISSION

The mission of the Willie A. Deese College of Business and Economics is to develop agile, culturally competent, and diverse leaders who use analytical skills to meet the challenges of the future. We accomplish our mission through evidence-based instruction, professional and community engagement, and high-quality impactful research.

ACCREDITATION

The undergraduate accounting and business programs of the Willie A. Deese 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 Information Technology – Bachelor of Science
Economics (General) – Bachelor of Science
Economics (Business) – Bachelor of Science
Economics (Law) – Bachelor of Science
Finance – Bachelor of Science
Management (Business Administration) – Bachelor of Science
Management (General Management) – Bachelor of Science
Management (Management Information Systems: MIS) – Bachelor of Science
Management (Innovation & Entrepreneurship) – 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 Willie A. Deese 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.

COLLEGE 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 Willie A. Deese 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, 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 Deese College of Business and Economics must earn a minimum grade of "C" in ENGL 100, 101; MATH 111, 112; ACCT 221, 222, MGMT 260, ECON 200, 201, 206, FIN 343, MGMT 110, 201, 303, 315, 495, BUAN 132, 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 Deese College 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 101, 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 Deese College.

Students majoring in programs in the Deese College 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 Willie A. Deese 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 Deese 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 Willie A. Deese 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 (100-200 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 Willie A. Deese 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 Deese 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 Willie A. Deese College of Business and Economics.

UPS ENDOWED CHAIR

The UPS Endowed Chair was established in the Willie A. Deese 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 Willie A. Deese College of Business and Economics and the College of Engineering to create an interdisciplinary unit that conducts research, provides public service, and offers 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.

BETA GAMMA SIGMA

Beta Gamma Sigma (BGS) is the international scholastic honor society for majors in the Willie A. Deese 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.

Accounting and Finance

Lisa A. Owens-Jackson, Chairperson

MISSION

The mission of the Department of Accounting and Finance is to deliver innovative instruction and relevant practical scholarship in a diverse, inclusive, and collaborative 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

MINORS OFFERED

Accounting

Finance

The minor in accounting is open to all non-accounting majors. Accounting is the language of business and is a discipline that is needed by every organization. The minor offers the basic knowledge and understanding of financial and managerial accounting with a supporting skill set. The accounting minor course sequence is a strong complement to all business majors, as well as architectural engineering and computer science, to name a few. The minor provides students with basic knowledge of accounting, such as financial statement preparation, financial analysis, cost volume profit analysis, and budget preparation, while also working on students' communication, teambuilding, and leadership abilities.

The minor in finance is open to all non-finance majors. Finance is a discipline that is also needed by every organization. The minor offers the basic knowledge and understanding to allow use of finance, accounting, and economics information to identify wealth-consummating opportunities. The finance minor course sequence is a strong complement to all business majors, as well as industrial engineering, mathematics and computer science, to name a few. The minor provides students with basic knowledge of finance, such as financial statement analysis, enterprise valuation, and personal finance, while also working on students' communication, teambuilding, and leadership abilities.

COLLEGE 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 Willie A. Deese College of Business and Economics must earn a minimum grade of "C" in ENGL 100, 101, MATH 111 (or the combination of MATH 103/104), 112, ACCT 221, 222, BUAN 132, ECON 200, 201, 206, FIN 343, MGMT 110, 201, 260, 303, 315, 495, and MKTG 230.

DEPARTMENT REQUIREMENTS

Majors in the department must earn a minimum grade of "C" in the 10 courses (30 credit 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. Accounting majors must also earn a minimum grade of "C" in ACCT 201 and ACCT 202. Accounting majors must earn a minimum grade of "C" in BTEC 110.

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.

MINORS IN ACCOUNTING AND FINANCE

A student must complete at least 24 hours of academic credit before declaring a minor and must have a minimum GPA of 2.00. A student may not have more than two (2) minors. 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. Courses that are a part of the student's designated **MAJOR** program (10 major courses) cannot be used towards the minor. Instead, that course (courses) must be replaced with a course(s) from the elective courses. All courses counting toward the minor must have a grade of "C" or better.

MINOR IN ACCOUNTING – Students desiring a minor in accounting must complete 18 semester hours in accounting courses. Required courses (12 hours): ACCT 221, 222, 331, 332

Elective courses: 6 hours to be selected from the following: ACCT 344, 362, 443, 455, 461, 490, 491, 495

MINOR IN FINANCE – Students desiring a minor in finance must complete 18 semester hours of finance, accounting and economics courses.

Required courses (9 hours): ACCT 221, FIN 343, and ECON 200 or 201

Elective courses: 9 hours from the following: FIN 350, 355, 369, 451, 454, 456, 458, 464

Employment opportunities for the Accounting and Finance minors will depend upon the elective courses selected.

Department of Accounting and Finance
 Bachelor of Science in Accounting
 Major Code: ACCT

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	BTEC 110	3
FRST 101	1	ENGL 101	3
MATH 111	4	MGMT 110	3
African-American Culture and History Elective	3	MATH 112	4
Scientific Reasoning Elective	4	Scientific Reasoning Elective	3
Semester Total	15	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
ACCT 201	1	ACCT 202	1
ACCT 221	3	ACCT 222	3
BUAN 132	3	ECON 201	3
ECON 200	3	MGMT 260	3
ECON 206	3	Global Awareness Elective	3
SPCH 250	3	Elective	3
Semester Total	16	Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
ACCT 331	3	ACCT 332	3
ACCT 344	3	ACCT 362	3
FIN 343	3	FIN 454 or MGMT 355	3
MGMT 315	3	MGMT 201	3
Elective	3	MKTG 230	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
ACCT 443	3	ACCT 461	3
ACCT 455	3	ACCT 495	3
MGMT 303	3	MGMT 429 or ACCT 463	3
Business Elective	3	MGMT 495	3
Elective	3	Semester Total	12
Semester Total	15		

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

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

ACCT 221	ACCT 362
ACCT 222	ACCT 443
ACCT 331	ACCT 455
ACCT 332	ACCT 461
ACCT 344	ACCT 495

Department of Accounting and Finance
 Bachelor of Science in Finance
 Major Code: FIN

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	BTEC 110	3
FRST 101	1	ENGL 101	3
MATH 111	4	MATH 112	4
MGMT 110	3	SPCH 250	3
Scientific Reasoning I	4	Scientific Reasoning II	3
Semester Total	15	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
ACCT 221	3	ACCT 222	3
BUAN 132	3	ECON 201	3
ECON 200	3	FIN 343	3
ECON 206	3	MGMT 260	3
African-American Culture and History Elective	3	Elective	3
Semester Total	15	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
ACCT 331	3	ACCT 332 or ACCT 443	3
ECON 315	3	FIN 355	3
FIN 350	3	FIN 356	3
MGMT 303	3	MKTG 230	3
Technical Area Elective	3	Technical Area Elective	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
FIN 451	3	FIN 454	3
MGMT 201	3	MGMT 495	3
MGMT 315	3	Business Elective	3
Finance Elective	3	Finance Elective	3
Global Elective	3	Elective	2
Semester Total	15	Semester Total	14

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

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

ACCT 222	FIN 350
ACCT 331	FIN 355
ACCT 332 or ACCT 443	FIN 356
ECON 315	FIN 451
FIN 343	FIN 454

COURSE DESCRIPTIONS IN ACCOUNTING

ACCT 201. Accounting Colloquium I **Credit 1(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 **Credit 1(1-1)**
Accounting Colloquium II is a continuation of ACCT 201. Prerequisites: Minimum grade of C in ACCT 201 or permission of Chairperson, sophomore standing, and Accounting major. (F;S)

ACCT 210. Fundamentals of Accounting for Decision Making **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 College 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 231. Accounting in a Global Environment **Credit 3(1-4)**
This course will study international accounting and business in the context of a study abroad experience. Site visits to both country specific and international enterprises will be used to understand the fundamental differences of doing business abroad as compared to the United States. Furthermore, cultural and historical tours will serve as a means to further understand the environment in which foreign enterprises conduct business. Prerequisites: Sophomore standing, 2.50 GPA, C or above in MGMT 110 or equivalent, and permission of instructor. (F;S)

ACCT 232. Global Accounting Issues **Credit 3(3-0)**
This course will examine the ongoing global harmonization of accounting standards through the analysis of the similarities and differences in US GAAP and IFRS. Furthermore, issues facing preparers and users of accounting information in an increasingly globalized environment will be discussed related to currency exchange, currency strategy and international financial reporting. Students will be exposed to the aforementioned accounting practices, standards and topics within the context of a country's cultural norms, history and political structure. Prerequisites: Sophomore standing, 2.50 GPA, C or above in MGMT 110 or equivalent, and permission of instructor. (F;S)

ACCT 326. Managerial Accounting **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 **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 **Credit 3(3-1)**
This course is a continuation of ACCT 331. 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. Prerequisites: C or above in ACCT 331, Accounting and Finance majors only. (F;S;SS)

ACCT 344. Cost Accounting **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** **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** **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. Prerequisites: 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. Prerequisites: C or above in ACCT 222, junior standing, and Accounting majors only. (F;S)
- ACCT 455. Advanced Accounting** **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. Prerequisites: C or above in ACCT 332, and Accounting majors only. (F;S)
- ACCT 461. Auditing Principles** **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. Prerequisites: 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** **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** **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 (formerly ACCT 442), 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 495. Strategic Application in Accounting** **Credit 3(3-1)**
 This is an interactive capstone course that focuses on fundamental accounting concepts, principles and procedures. Cases will be used to integrate different areas of accounting. Projects will be assigned to develop critical thinking and communication skills. Prerequisites: C or better in ACCT 332, 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

- FIN 201. Finance Colloquium** **Credit 1(1-1)**
 This course introduces finance majors to the finance profession and to the resources needed to prepare for a career in finance. Topics covered include career opportunities in the finance profession, professional certificate exams, current and emerging issues in finance and development of communication, analytical and other professional skills. Prerequisites: Sophomore standing and Finance major. (F)

- FIN 279. Personal Finance** **Credit 3(3-0)**
 This course examines the challenges faced by individuals in managing personal incomes and expenditures. Emphasis is placed upon credit, budgeting, borrowing, saving, and insurance. Prerequisites: Sophomore standing. (S)
- FIN 343. Principles of Finance** **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, minimum grade of C in MATH 112, and sophomore standing. (F;S;SS)
- FIN 350. Financial Analysis and Valuation** **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. Prerequisites: ECON 200, ECON 201, ACCT 222 and a minimum grade of C in FIN 343. (F;S;SS)
- FIN 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 FIN 343. (F;S)
- FIN 356. Financial Markets and Institutions** **Credit 3 (3-0)**
 This course stresses the allocation, accumulation, and liquidity adjustment functions of financial markets. Financial tools, such as flow and funds data, portfolio theory, theories of financial structure of interest rates, and security pricing (valuation) techniques, are integrated into the course. Prerequisites: A minimum grade of C in FIN 343 and ECON 315. (F;S;SS)
- FIN 365. Real Estate** **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)
- FIN 366. Real Estate Finance** **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. Prerequisites: A minimum grade of C in FIN 365, FIN 343, or instructor consent. (S)
- FIN 369. Principles of Financial Planning** **Credit 3(3-0)**
 This course provides an in-depth analysis of the financial planning process and the development of a comprehensive personal financial plan. The course takes an economic- and psychology-based approach to analyzing personal finance decision making. Topics include client interactions, consumption smoothing, asset allocation and investment planning, financial plan integration as well as the financial planning profession and ethical standards. Prerequisite: A minimum grade of C in FIN 343. (S)
- FIN 451. Intermediate Financial Management** **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 FIN 343. (F;S;SS)
- FIN 452. Commercial Bank Management** **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 FIN 343 and ECON 315. (S)
- FIN 454. International Finance** **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 FIN 343. (F)
- FIN 457. Cases in Business Finance** **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, FIN 464 and FIN 369 and senior standing. (DEMAND) (F;S;SS)
- FIN 458. Securities Analysis and Management** **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 FIN 355. (S)

FIN 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. Prerequisites: A minimum grade of C in FIN 343 and junior standing. (F)

FIN 485. Selected Topics in Finance

Credit 3(3-0)

This course examines current topics, issues, and opportunities in finance and financial services. The curriculum covered in the course is also intended to provide the requisite knowledge and a better understanding of the topics tested on a selected industry-specific examination such as the Securities Industry Essentials (SIE) Examination and/or other professional designation. Course content may vary from semester to semester. Prerequisites: A minimum grade of C in FIN 343 and/or approval of instructor. (F;S;SS)

DIRECTORY OF FACULTY

Md Nazmul Hasan Bhuyan	Assistant Professor
B.B.A., University of Dhaka; M.B.A., Lamar University; Ph.D., Florida Atlantic University; CFA	
Ronald Campbell	Assistant Professor
B.A., Oakwood College; M.B.A., Ohio State University; Ph.D., Texas A & M University; CPA	
Eun Ho Cho	Assistant Professor
B.A., Sogang University; M.B.A., KAIST, Ph.D., Sogang University; CFA, FRM	
Malissa Davis	Assistant Professor
B.S., Mississippi State University; M.B.A., East Carolina University; M.S., Florida International University; D.B.A., Jacksonville University; CPA	
Gwendolyn Highsmith-Quick	Associate Professor
B.S., North Carolina A&T State University; M.B.A., University of Wisconsin – Madison; Ph.D., University of Houston; CPA	
Kevin James	Associate Professor and Dean
B.B.A., M.B.A., Middle Tennessee State University; Ph.D., University of Tennessee; CPA	
Cynthia Khanlarian	Assistant Professor
B.A., Converse College; M.S., Ph.D., University of North Carolina at Greensboro; CPA, CMA	
Mohammad Hashemi Joo	Assistant Professor
B.S., Isfahan University of Technology; M.B.A., Multimedia University; M.S., University of Texas at San Antonio; Ph.D., Florida International University	
Charles Malone	Associate Professor
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	
Nicole McCoy	Assistant Professor
B.S., University of North Carolina at Charlotte; M.B.A., LaSalle University; Ph.D., Southern Illinois University; CPA, CIA, CISA	
Gwendolyn McFadden-Wade	Associate Professor
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	
Collins Okafor	Assistant Professor
B.S., Stetson University; M.B.A., M.Sc., Texas A&M International University; MPacc, Ph.D., Texas A&M University	
Lisa Owens-Jackson	Associate Professor and Chairperson
B.S., North Carolina A&T State University; M.A., The Ohio State University; Ph.D., Oklahoma State University; CPA	
Brandis Phillips	Associate Professor
B.A., Michigan State University; M.B.A., University of Iowa; Ph.D., Michigan State University; CPA	
Kecia Williams Smith	Assistant Professor
B.S., North Carolina A&T State University; Ph.D., Texas A&M University; CPA	
Peter Theuri	Associate Professor
B.S., Oakwood College; M.B.A., University of Central Oklahoma; D.B.A., Mississippi State University; CPA	
Danielle Winchester	Associate Professor
B.S., M.B.A., University of North Carolina at Greensboro; Ph.D., Texas Tech University	

Department of Business Information Systems and Analytics

Pankaj Chaudhary, Chairperson

MISSION

The Department of Business Information Systems and Analytics prepares professionals with necessary business, information technology, and analytics skills for the information systems field, which offers diverse career choices. The emphasis of the curriculum is on understanding organizational problems and offer information technology solutions to solve those problems for enhanced efficiency and effectiveness. Innovation in process design through the use of information technology is also incorporated.

The programs align with the Willie A. Deese College of Business and Economics' goals to build students' business knowledge and to enhance their skills in technology, communication, critical thinking, leadership, ethics, research, and team building.

ACCREDITATION

The Business Information Systems and Analytics programs are included in the programs accredited by AACSB International.

DEGREES OFFERED

Business Information Technology – Bachelor of Science – offered on campus and online
 Management (Management Information Systems concentration) – Bachelor of Science

CERTIFICATE OFFERED

The Business Information Systems and Analytics department administers a Certificate in Business Analytics that offers all students an application-oriented learning experience to build key knowledge, skills, and abilities to make effective decisions using data extracted from internal and external sources and analyzed using techniques in statistics, machine learning, and data mining. Students learn skills needed to execute the complete analytics life cycle comprised of data discovery, data aggregation, planning data models, model execution, communication of results, and operationalization. Students can use the skills gained to supplement their major field of study for making data-driven decisions.

The certificate is open to all undergraduate students who are currently enrolled in a degree program at North Carolina A&T University and have a GPA of 2.5 and above. Interested students are required to complete 18 semester hours of the following courses: BUAN 132, ECON 206, BUAN 280, BUAN 320, BUAN 434, and BUAN 400. A grade of 'C' or better is required for all courses in the certificate. Additional prerequisites of MGMT 110, MATH 111 or equivalent, and MGMT 260 are required for non-business majors.

COLLEGE REQUIREMENTS

Students in the Willie A. Deese College of Business and Economics must earn a minimum grade of "C" in ENGL 100, 101; MATH 111 (or the combination of MATH 103/104), 112; ACCT 221, 222; BUAN 132; ECON 200, 201, 206; FIN 343; MGMT 110, 201, 260, 303, 315, 495; and MKTG 230.

DEPARTMENT REQUIREMENTS

Students in the department must complete general education courses and required business core courses in the Willie A. Deese College of Business and Economics. Students must earn a minimum grade of "C" in each of the 10 course (30 credit hours) listed as major program requirements. In addition, all students must earn a minimum grade of "C" in all major program elective courses.

Business Information Technology students must also select additional Information Technology electives from an approved list. Business Information Technology students are required to complete business work experience as part of their curriculum requirements.

CAREER OPPORTUNITIES

Graduates of the Department of Business Information Systems and Analytics are prepared for career opportunities such as business analysts, systems analysts, data analyst, information technology specialists, consultants, project managers, and a variety of other careers in business, industry, government, and other organizations. There are ample opportunities in the analytics area in different fields like marketing analytics, security analytics, etc.

Department of Business Information Systems and Analytics Bachelor of Science in Business Information Technology Major Code: BIT, BITO (ONLINE)

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
MATH 111 ¹	4	MATH 112	4
ENGL 100	3	ENGL 101	3
MGMT 110	3	BTEC 110	3
Science Elective w/Lab ²	4	Science Elective ²	3
FRST 101	1	African American Culture and History Elective ³	3
Semester Total	15	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
ACCT 221	3	ACCT 222	3
ECON 200 ⁴	3	ECON 201	3

ECON 206	3	MGMT 201	3
BUAN 132	3	MKTG 230	3
Humanities/Fine Arts Elective ⁵	3	Global Awareness Elective ⁶	3
Semester Total	15	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
BTEC 298 ⁷	1	HPED Elective	1
MGMT 260	3	FIN 343	3
BTEC 342	3	MGMT 303	3
MGMT 315	3	BUAN 335	3
Information Technology Elective ⁸	3	Information Technology Elective ⁸	3
Information Technology Elective ⁸	3	Information Technology Elective ⁸	3
Semester Total	16	Semester Total	16
Senior Year: First Semester		Senior Year: Second Semester	
BTEC 400	3	BTEC 447	3
BTEC 444	3	BTEC 468	3
BTEC 485	3	MGMT 495	3
Free Elective ⁹	3	Free Elective ⁹	3
Free Elective ⁹	3	Semester Total	12
Semester Total	15		

Total Credit Hours: 120

¹MATH 111 can be replaced with the combination of MATH 103 and MATH 104. MATH 101E might be a prerequisite based on SAT/ACT math scores.

²Recommended science electives for online students include BIOL 100 for the four-credit lab, and ASME 234 or ENVS 201 for the three-credit course. See the approved General Education list for other on-campus options.

³African-American Culture and History electives include ENGL 211, ENGL 212, LIBS 202, HIST 103, HIST 106, HIST 107, or MUSI 220.

⁴ECON 200 fulfills the General Education Social and Behavioral Sciences requirement.

⁵Recommended elective for Humanities and Fine Arts is PHIL 201, Business Ethics. See the approved General Education list for other options.

⁶Global Awareness electives include MGMT 221 (recommended), PHIL 103, PHIL 201, HIST 130, HIST 207, HIST 216, or HIST 231.

⁷BTEC 298 requires 100 internship hours in a business or IT-related position (or documentation of at least two years of related work experience).

⁸See the Department's list of recommended IT electives.

⁹Free 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:

BTEC 110	BTEC 468
BTEC 342	BTEC 485
BTEC 400	BUAN 335
BTEC 444	Info. Technology Electives (4 courses)
BTEC 447	

Department of Business Information Systems and Analytics
Bachelor of Science in Management (Management Information Systems)
Major Code: MGMT
Concentration Code: MIS

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENGL 101	3
FRST 101	1	MATH 112	4
MATH 111 ¹	4	BUAN 132	3
MGMT 110	3	Scientific Reasoning Elective ²	3
Scientific Reasoning Elective w/lab ²	4	Free Elective ³	2
Semester Total	15	Semester Total	15
Sophomore Year: First Semester		Sophomore Year: Second Semester	
ACCT 221	3	ACCT 222	3
ECON 200 ⁴	3	MGMT 260	3
ECON 206	3	ECON 201	3
MGMT 201	3	MGMT 221 ⁶	3
Humanities & Fine Arts (HFA) Elective ⁵	3	BUAN 234	3
Semester Total	15	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
ACCT 326	3	FIN 343	3
MGMT 315	3	MGMT 303	3
MGMT 321	3	MGMT 322	3
BUAN 310	3	MGMT 330	3
MKTG 230	3	BUAN 337	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
MGMT 429	3	MGMT 427	3
MGMT 430	3	MGMT492	3
BUAN 432	3	MGMT 495	3
BUAN 434	3	Free Elective ³	3
African American Culture & History Elective ⁷	3	Free Elective ³	3
Semester Total	15	Semester Total	15

Total Credit Hours: 120

¹MATH 111 can be replaced with the combination of MATH 103 and MATH 104. MATH 101E might be a prerequisite based on SAT/ACT math scores.

²Recommended science electives for online students include BIOL 100 for the four-credit lab, and ASME 234 or ENVS 201 for the three-credit course. See the approved General Education list for other on-campus options.

³Free electives include any three-credit undergraduate course at or above the 100 level.

⁴ECON 200 fulfills the General Education Social and Behavioral Sciences requirement.

⁵ Recommended elective for Humanities and Fine Arts is PHIL 201, Business Ethics. See the approved General Education list for other options.

⁶MGMT 221 fulfills the Global Awareness requirement.

⁷African-American Culture and History electives include ENGL 211, ENGL 212, LIBS 202, HIST 103, HIST 106, HIST 107, or MUSI 220.

MAJOR PROGRAM REQUIREMENTS

Students must earn a C or better (not C-) in the following courses:

MGMT 221	MGMT 330
BUAN 234	MGMT 427

MGMT 321	MGMT 429
MGMT 322	MGMT 430
ACCT 326	BUAN 434

COURSE DESCRIPTIONS IN BUSINESS INFORMATION SYSTEMS AND ANALYTICS

BTEC 110. Business Computer Applications **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)**

BTEC 231. Study Abroad in Business Technology/Communication **Credit 3(3-0)**
 This course will study international practices in business technology and/or communication and include a related study abroad experience. Course materials, assignments, foreign site visits, and cultural and historical tours will be used to understand fundamental differences among business environments and practices in the U.S. and internationally. Prerequisites: MGMT 110 or equivalent, minimum grade of C; minimum overall 2.50 GPA; sophomore standing or above. **(F;S;SS)**

BTEC 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)**

BTEC 239. Computer-Mediated Communication **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. Prerequisites: ENGL 100 or equivalent, minimum grade of C; ENGL 101 or equivalent, minimum grade of C; or approval of the chairperson. **(F;S;SS)**

BTEC 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: BUAN 132 or equivalent. **(F;S;SS)**

BTEC 398. Internship II **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)**

BTEC 400. Business Reports and Presentations **Credit 3(3-0)**
 This course focuses on advanced applications of business and technical writing principles as well as short, formal, and visual reports. Emphasis is placed on research, formal writing, and oral presentations supported by appropriate software and multimedia technology (i.e., infographics). Prerequisites: MGMT 260 or equivalent, minimum grade of C; ECON 206 or equivalent, minimum grade of C; or approval of the chairperson. **(F;S;SS)**

BTEC 424. E-Commerce Design and Implementation **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)**

BTEC 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: BTEC 110 or BUAN 132 or ECT 213 or approval of chairperson. **(F)**

BTEC 447. Advanced Business Computer Applications **Credit 3(2-1)**
 This course focuses on advanced computing concepts and applications related to information design, production, management, and dissemination in business. Although integrated software packages will be used, this course will focus primarily on advanced spreadsheet tools for data analysis. Prerequisite: BTEC 110 or ECT 210 or approval of chairperson. **(S)**

BTEC 468. Business Research Methods and Technologies **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: MGMT 260 or equivalent, and ECON 260 or equivalent, or approval of the chairperson. **(F)**

BTEC 485. Special Topics in Business IT **Credit 3(3-0)**
 This course covers the business technological evolution in the context of disruptive technologies. Theoretical concepts from disruptive innovation theory, change management, and risk planning will be applied. Topics include history of business technology, the nature of innovation, and how companies adopt and plan for associated risks.

- BTEC 498. Internship III** **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)
- BUAN 132. Introduction to Management Information Systems** **Credit 3(3-0)**
 This course is an introduction to management information systems and its role in collecting data and converting it into information and knowledge that can be used in managing organizations. Topics include: a survey of software used in typical business units, enterprise resource planning, customer relationship management, supply chain management, and decision support systems. Students will also perform hands on activities with current software used in spreadsheet modeling, data visualization, and applying basic analytics. Prerequisite: MGMT 110. (F;S;SS)
- BUAN 232. Business Analysis for Business Decision Making** **Credit 3(3-0)**
 This course uses management information systems applications to model, analyze and report business process performance across organizational units. Business operations and information are modeled and analyzed using Enterprise systems, such as SAP, and Excel. Prerequisite: BUAN 132.
- BUAN 234. Informatics, Programming and Applications** **Credit 3(3-0)**
 This course will introduce fundamentals and data analytic applications used in informatics. Programming techniques for information representation, data analysis, business mashups, and data visualization that are embedded in applications such as the Python data analysis library, Excel, and statistical software (e.g., SAP, SAS, R) packages are covered. Prerequisite: BUAN 132. (S)
- BUAN 280. Foundations of Business Analytics** **Credit 3(3-0)**
 This course provides students with fundamental concepts and tools to understand business analytics and its role in decision making. Concepts such as how analytics are used in businesses, the types of analytics, the analytics process, data quality, ethics in analytics, and careers in analytics are covered. Students are introduced to tools and statistical techniques which are utilized to transform data for descriptive and predictive analyses. Prerequisite: Minimum grade of C in BTEC 110 or BUAN 132, and in ECON 206. (F;S;SS)
- BUAN 310. 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 organizational performance monitoring and decision making. Emphasis will be placed on strategies to identify impactful performance metrics and current techniques and tools used in descriptive and predictive analytics. The use of large data sets will allow students to develop the skills needed to model different business cases and interpret data analysis results. Prerequisite: ECON 206 or equivalent. (F;S)
- BUAN 320. Programming for Business Analytics I** **Credit 3(3-0)**
 This course introduces programming and advanced data analytic applications used in business analytics. Programming techniques for information representation, data analysis, business mashups, and data visualization are covered. The course also covers practical issues in statistical computing. Strategies in selecting specific analytics techniques, appropriate data, and algorithms to address typical business problems are performed using working examples. Prerequisite: Minimum grade of C in BUAN 280. (F;S;SS)
- BUAN 325. Programming for Business Analytics II** **Credit 3(3-0)**
 This is an advanced course in using statistical programming, applications, and processes used in advanced business analytics by organizations to gain insight into business performance. Advanced statistical techniques and algorithms specific to predictive and prescriptive analytics techniques for business analysis are covered. A case-based approach is used to facilitate an understanding of concepts and techniques. Prerequisite: Minimum grade of C in BUAN 320. (F;S;SS)
- BUAN 335. Management of Information Resources** **Credit 3(3-0)**
 This course extends the management information systems concepts studied in BUAN 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: BUAN 132. (F;S)
- BUAN 337. Business Process and Systems Analysis** **Credit 3(3-0)**
 This course covers the requirements analysis, modeling, and reengineering of business processes from an enterprise architecture perspective. Also covered are the requirements analysis, design, and implementation phase of systems development, using traditional life cycle techniques and rapid application development techniques. Students will prepare formal design documents such as business process models, feasibility analyses, data flow diagrams, entity-relationship diagrams, interface designs, and a project management plan. Prerequisites: BUAN 132, BUAN 234. (S)
- BUAN 400. Data Visualization and Communication** **Credit 3(3-0)**
 This course focuses on advanced applications of data communication. Students should end the semester with the ability to clearly and ethically present data to audiences of various literacy levels. Emphasis is placed on visual communication of data. Prerequisite: Minimum grade of C in MGMT 260 and in ECON 206 or MATH 224. (F;S;SS)
- BUAN 420. Business Intelligence Modeling** **Credit 3(3-0)**
 This course is an introduction to the field of business intelligence. Business intelligence is the use of information systems and analytics to transform raw data into useful information and knowledge to support a wide array of business decision-making processes. Major topics covered include the mathematical modeling of data into useful information, integrating decision making tools to improve business processes, and visualization and reporting using business intelligence. Prerequisite: Minimum grade of C in BUAN 325. (F;S;SS)

- BUAN 432. Business Intelligence Applications** **Credit 3(3-0)**
 This course provides an introduction to Business Intelligence methodologies used to transform business data into useful information and support business decision making. Major topics covered include modeling work systems and associated information, business process/application integration approaches, and visualization and reporting using business intelligence such as SAP, SAS, and/or R. Prerequisite: BUAN 132. (F)
- BUAN 434. Database and Knowledge Management** **Credit 3(3-0)**
 This course covers data modeling and analytical functions performed in data management and knowledge discovery in databases (KDD) using query and reporting functions, multidimensional analysis, and data mining. Topics include use of structured query language (SQL) and extraction-transformation-loading (ETL) to transform information and knowledge. Knowledge management strategies and dissemination of information to enhance organizational decision making, efficiency, and facilitate innovation are also covered. Prerequisite: Minimum grade of C in BUAN 132. (F)
- BUAN 454. Enterprise and Big Data Management** **Credit 3(3-0)**
 This course examines current topics in enterprise and big data management from data generation, storage, transfer, and business analytics. Topics include, but are not limited to: 1) comparison of in-memory versus distributed file system approaches, 2) differences between relational and NoSQL databases, and 3) social network and sentiment analysis. It also covers principles of cloud databases and data centers. Prerequisites: Minimum grade of C in BUAN 325 and in BUAN 434. (F;S;SS)
- BUAN 480. Business Analytics Capstone** **Credit 3(3-0)**
 This is the capstone course for undergraduate analytics majors and for other senior students who are interested in business analytics topics. Projects are required for students to demonstrate their knowledge of the business analytics process and the proper tools to analyze data for decision making. Topics in the course will vary. Prerequisites: Minimum grade of C in BUAN 400 and in BUAN 420. (F;S;SS)

DIRECTORY OF FACULTY

Hayward P. Andres	Associate Professor
B.S., Southern University; M.S., University of West Florida; Ph.D., Florida State University	
Wiley Brown	Instructor
B.S.B.A., M.B.A., Appalachian State University; Ph.D., University of North Carolina at Greensboro	
Pankaj Chaudhary	Associate Professor and Chairperson
B.Tech., IIT Delhi; M.B.A., IIM Ahmedabad; Ph.D. Southern Illinois University at Carbondale	
Sherrie Drye	Associate Professor
B.S., M.S.B.E., M.S.I.T.M, Ph.D., University of North Carolina at Greensboro	
Stephanie Kelly	Associate Professor
B.S., M.S., Murray State University; Ph.D., University of Tennessee	
Ewuukgem Lomo-David	Associate Professor
B.S., Mankato State University; M.Ed., Ed.D., University of Memphis	
Beryl C. McEwen	Professor and Provost and Executive Vice Chancellor for Academic Affairs
B.Ed., University of Technology, Jamaica; M.S., Ph.D., Southern Illinois University at Carbondale	
Richelle Oakley	Associate Professor
B.S., M.B.A., University at Albany, State University of New York; Ph.D. University of North Carolina at Greensboro	
Belinda P. Shipps	Associate Professor
B.A., Michigan State University; A.A.S., Richland College; M.S., Ph.D., University of Wisconsin-Milwaukee	
Hong Wang	Professor
B.S., Dalian University of Technology; M.A., Ph.D., The Ohio State University	
Alexander Yap	Associate Professor
B.A., University of the Philippines; M.A., Williams College; M.B.A., Exeter University; Ph.D., Copenhagen Business School	

Department of Economics
 Scott Simkins, Chairperson

MISSION

The mission of the Department of Economics is to develop globally competitive graduates with high-quality analytical reasoning, quantitative, and communication skills in economics and the potential for leadership positions in business, law, education, non-profit organizations, and the government.

ACCREDITATION

The Economics (Business) program is included in the programs accredited by AACSB International – The Association to Advance Collegiate Schools of Business.

DEGREES OFFERED

Economics – Bachelor of Science – Offered on campus and online
 Economics (Business) – Bachelor of Science

COLLEGE REQUIREMENTS

All students completing the Bachelor of Science in Economics degree programs in the Department of Economics must complete a minimum of 120 semester hours, consistent with the respective economics curriculum guides. Students in the Willie A. Deese College of Business and Economics must earn a minimum grade of “C” in the following courses **when required as part of their degree program**: ENGL 100, 101; MATH 111, 112; ACCT 221, 222; BUAN 132; ECON 200, 201, 206; FIN 343; MGMT 110, 201, 260, 303, 315, 495; and MKTG 230.

DEPARTMENT REQUIREMENTS

In addition to meeting the General Program Requirements above, majors in the department must earn a minimum grade of “C” (not C-) in the 10 courses (30 credit hours) listed as major program requirements for their chosen major in the applicable Undergraduate Bulletin. Economics majors must also earn a minimum grade of “C” (not C-) in the economics electives required in their major program.

CAREER OPPORTUNITIES

Students majoring in economics are prepared for a variety of careers with regional, national and international companies, government agencies, and not-for-profit organizations, as well as law school and graduate programs in economics and related fields. Our graduates are hired by manufacturing companies, banks, insurance companies, securities and investment companies, economic research firms, and management consulting firms, among others. Economics graduates also have career options in a wide range of government and nonprofit agencies. Economics graduates will find that the analytical, quantitative, communication and critical thinking skills developed in the major are in high demand in a wide variety of careers.

**Department of Economics
Bachelor of Science in Economics
Major Code: ECON**

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
MATH 111 ¹	4	MATH 112	4
ENGL 100	3	ENGL 101	3
Scientific Reasoning I ²	3	Scientific Reasoning II ²	3
Scientific Reasoning I Lab ²	1	BTEC 110	3
MGMT 110	3	Humanities and Fine Arts Elective ²	3
FRST 101	1	Semester Total	16
Semester Total	15		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
ECON 200 ³	3	ECON 201	3
BUAN 132	3	ECON 212	3
ECON 206	3	ECON 290	3
African American Culture and History Elective ²	3	Global Awareness Elective ²	3
Free Elective ⁴	3	Free Elective ⁴	3
HPED Elective	1	HPED Elective	1
Semester Total	16	Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
ECON 311	3	ECON 313	3
ECON 314	3	ECON 315	3
Foreign Language Elective I	3	Foreign Language Elective II	3
Free Elective ⁴	3	MGMT 260	3
Free Elective ⁴	3	ECON Elective I	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
ECON 452	3	ECON 492	3
BTEC 400	3	Free Elective ⁴	3

ECON Elective II	3	Free Elective ⁴	3
Free Elective ⁴	3	Free Elective ⁴	3
Free Elective ⁴	3	Semester Total	12
Semester Total	15		

Total Credit Hours: 120

¹MATH 111 can be replaced with MATH 103 + MATH 104 (combined); MATH 101 might be required first based on SAT/ACT math scores. MATH 131 and MATH 132 are recommended in place of MATH 111 and MATH 112 for those considering graduate study.

²See the University's website for the approved list of electives for this General Education category.

³ECON 200 fulfills the General Education Social and Behavioral Sciences requirement.

⁴Free electives include any three-credit undergraduate course at or above the 100 level.

MAJOR PROGRAM REQUIREMENTS

Students must earn a C (not C-) or better in the following courses:

ECON 200	ECON 311
ECON 201	ECON 313
ECON 206	ECON 314
ECON 212	ECON 315
ECON 290	ECON 492

Department of Economics
 Bachelor of Science in Economics (Law)
 Major Code: ECON
 Concentration Code: LAW

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
MATH 111 ¹	4	MATH 112 ¹	4
ENGL 100	3	ENGL 101	3
Scientific Reasoning I ²	3	Scientific Reasoning II ²	3
Scientific Reasoning I Lab ²	1	BTEC 110	3
MGMT 110	3	SPCH 250 ³	3
FRST 101	1	Semester Total	16
Semester Total	15		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
ECON 200 ³	3	ECON 201	3
BUAN 132	3	ECON 212	3
ECON 206	3	ECON 290	3
PHIL 102	3	Law and Philosophy (LP) Elective ⁵	3
African American Culture and History Elective ²	3	Global Awareness Elective ²	3
HPED Elective	1	HPED Elective	1
Semester Total	16	Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
ECON 311	3	ECON 313	3
ECON 314	3	ECON 315	3

ECON Elective I	3	MGMT 260	3
Foreign Language Elective I	3	Foreign Language Elective II	3
Communications (COMM) Elective ⁶	3	Law and Philosophy (LP) Elective ⁵	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
ECON 452	3	ECON 492	3
MGMT 303	3	MGMT 429	3
Free Elective ⁴	3	ECON Elective II	3
Law and Philosophy (LP) Elective ⁵	3	Communications (COMM) Elective ⁶	3
Semester Total	12	Free Elective ⁴	3
		Semester Total	15

Total Credit Hours: 120

¹MATH 111 can be replaced with MATH 103 + MATH 104 (combined); MATH 101 might be required first based on SAT/ACT math scores. MATH 131 and MATH 132 are recommended in place of MATH 111 and MATH 112 for those considering graduate study.

²See the University's website for the approved list of electives for this General Education category.

³SPCH 250 fulfills the General Education Humanities and Fine Arts requirement; ECON 200 fulfills the General Education Social and Behavioral Sciences requirement.

⁴Free electives include any three-credit undergraduate course at or above the 100 level.

⁵Law and Philosophy (LP) electives include POLI 442, POLI 443, CRJS 220, CRJS 312, PHIL 101, PHIL 104, PHIL 201, PHIL 263, PHIL 266, PHIL 311, PHIL 314, PHIL 316, PHIL 317, PHIL 402, PHIL 406. **(THREE LP ELECTIVES REQUIRED)**

⁶Communications (COMM) electives include ENGL 226, ENGL 240, ENGL 324, ENGL 331, SPCH 251, SPCH 401, SPCH 453. **(TWO COMM ELECTIVES REQUIRED)**

NOTE: At least three of the COMM and LP electives must be 300-level (or higher) courses.

MAJOR PROGRAM REQUIREMENTS

Students must earn a C (not C-) or better in the following courses:

ECON 200	ECON 313
ECON 206	ECON 314
ECON 212	ECON 315
ECON 290	ECON 492
ECON 311	MGMT 303

Department of Economics
 Bachelor of Science in Economics (Business)
 Major Code: ECON
 Concentration Code: BUSN

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
MATH 111 ¹	4	MATH 112	4
ENGL 100	3	ENGL 101	3
Scientific Reasoning I ²	3	Scientific Reasoning II ²	3
Scientific Reasoning I Lab ²	1	BTEC 110	3

MGMT 110	3	Humanities and Fine Arts Elective ²	3
FRST 101	1	Semester Total	16
Semester Total	15		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
ACCT 221	3	ACCT 222	3
ECON 200 ³	3	ECON 201	3
ECON 206	3	ECON 212	3
BUAN 132	3	ECON 290	3
African American Culture and History Elective ²	3	Global Awareness Elective ²	3
HPED Elective	1	HPED Elective	1
Semester Total	16	Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
ECON 311	3	ECON 313	3
ECON 314	3	ECON 315	3
FIN 343	3	MGMT 201	3
ECON Elective I	3	MGMT 260	3
Foreign Language Elective I	3	Foreign Language Elective II	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
ECON 452	3	ECON 492	3
MGMT 303	3	MGMT 495	3
MGMT 315	3	MKTG 230	3
ECON Elective II	3	Free Elective ⁴	3
Free Elective ⁴	3	Semester Total	12
Semester Total	15		

Total Credit Hours: 120

¹MATH 111 can be replaced with MATH 103 + MATH 104 (combined); MATH 101 might be required first based on SAT/ACT math scores. MATH 131 and MATH 132 are recommended in place of MATH 111 and MATH 112 for those considering graduate study.

²See the University's website for the approved list of electives for this General Education category.

³ECON 200 fulfills the General Education Social and Behavioral Sciences requirement.

⁴Free electives include any three-credit undergraduate course at or above the 100 level.

MAJOR PROGRAM REQUIREMENTS

Students must earn a C (not C-) or better in the following courses:

ECON 200	ECON 311
ECON 201	ECON 313
ECON 206	ECON 314
ECON 212	ECON 315
ECON 290	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. Approved for General Education Social and Behavioral Sciences category. (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. Approved for General Education Social and Behavioral Sciences category. (F;S;SS)

ECON 206. Statistics for Decision Making

Credit 3(3-1)

This course focuses on descriptive and inferential statistics. Prerequisite: A minimum grade of C in MATH 111, MATH 104, or MATH 131. (F;S;SS)

ECON 212. Quantitative Analysis

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, analytical geometry, and matrix algebra to illustrate the 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 231. Global Experience in Economics

Credit 3(3-0)

Students in this course will study international economic and business practices and will include a related international experience. Course materials, assignments, foreign site visits, and cultural and historical tours will be used to understand fundamental differences between economic and business environments in the U.S. and internationally. Prerequisite: Approval of Department of Economics Chairperson. (DEMAND)

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. (DEMAND)

ECON 290. Data Skills for Economics

Credit 3(3-0)

This course develops statistics knowledge and introduces programming skills necessary for data visualization and econometric analysis. The course also reviews and expands on related concepts and applications from ECON 206. Prerequisites: A minimum grade of C in BTEC 110, ECON 200 or ECON 201, and ECON 206. (F;S)

ECON 303. Public Finance

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 MATH 111 or MATH 131. (DEMAND)

ECON 304. History of Economic Thought

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

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 212 or consent of instructor. (F;S)

ECON 313. Intermediate Macroeconomic Theory

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; C or better in MATH 104, MATH 111, or MATH 131. (F;S)

ECON 314. Introduction to Econometrics

Credit 3(3-0)

This course is intended to provide a working knowledge of applications of modern statistical tools for the formulation and 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, ECON 290, and MATH 112 or MATH 131. (F;S)

ECON 315. Money and Banking

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: A minimum grade of C in ECON 201; C or better in MATH 104, MATH 111, or MATH 131. (F;S;SS)

ECON 330. Sports Economics

Credit 3(3-0)

This course applies economic models from the fields of industrial organization, public finance, and labor economics to evaluate the behavior of owners, managers, players, and the media in professional and amateur sports markets. Primary attention will be given to market structures and outcomes, the market for franchises, barriers to entry, discrimination and other labor market imperfections, as well as public finance aspects of sports. Prerequisite: A minimum grade of C in ECON 200. (DEMAND)

ECON 331. Health Economics

Credit 3(3-0)

This course introduces students to microeconomic concepts and theories underlying the behavior of individuals, health care providers, public and private organizations, and governments in the health care market. Primary attention will be given to the cost structure of the health care industry, market failure associated with the provision of health care, and the evaluation of health care policy. Prerequisite: A minimum grade of C in ECON 200. (DEMAND)

- ECON 372. Economics and Society** **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** **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. Prerequisites: Senior standing, a minimum grade of C in ECON 200 and ECON 212, or consent of instructor. **(DEMAND)**
- ECON 422. Consumer Economics** **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: A minimum grade of C in ECON 200 and ECON 201. **(DEMAND)**
- ECON 423. Economic, Political and Social Aspects of the Black Experience** **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 consent of instructor. **(DEMAND)**
- ECON 451. Labor Relations** **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 200, ECON 201, and MATH 112 or MATH 131. **(DEMAND)**
- ECON 452. International Economics** **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. Prerequisite: A minimum grade of C in ECON 311. **(F;S)**
- ECON 453. Business Cycles** **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** **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** **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** **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. Prerequisites: ECON 200 and ECON 201. **(DEMAND)**
- ECON 490. Independent Study** **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. **(DEMAND)**
- ECON 492. Economics Seminar** **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. Prerequisites: A minimum grade of C in ECON 311, ECON 313, ECON 314, and senior standing. **(F;S)**
- ECON 494. Supervised Research in Economics** **Credit 3(0-6)**
 This course provides academic credit for conducting economic research under the supervision of a faculty member to enhance research and reporting skills in economics. Prerequisites: Consent of the faculty advisor and department chairperson. **(DEMAND)**
- ECON 498. Internship in Economics** **Credit 3(0-9) or 6(0-18)**
 This course is designed for students involved in a full-time work experience related to economics in a business, government agency, or non-profit organization. Prerequisites: Consent of the faculty advisor and department chairperson. **(DEMAND)**

Advanced Courses

ECON 606. Foundation of Economics for Graduate Students **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 708. Managerial Economics **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, profit maximization, capital budgeting and financial decisions in the long-run. Prerequisites: A minimum grade of C in ACCT 708, MGMT 705, MGMT 712, ECON 706 and MGMT 715. **(F;S)**

DIRECTORY OF FACULTY

Fafanyo Asiseh..... **Associate Professor**
B.S., University of Ghana-Legon, Accra, Ghana; M.S., University of Idaho; Ph.D., Washington State University

Mark Burkey **Professor**
B.S., Appalachian State University; Ph.D., Duke University

Johnny Ducking..... **Associate Professor**
M.A., University of Mississippi; M.S., Ph.D., University of Kentucky

Jeffrey Edwards **Professor**
B.A., University of North Carolina at Chapel Hill; M.A., Ph.D., Virginia Polytechnic Institute and State University

Lyubov Kurkalova **Professor**
B.S., Tajik State University, USSR; Ph.D., Iowa State University

Huan Li **Assistant Professor**
B.S., Xi'an University of Technology, Xi'an, Shaanxi, China; M.A., North China Electric Power University, Beijing, China; M.A., Ph.D., State University of New York at Binghamton

Eduardo Minuci **Assistant Professor**
B.A., Winthrop University; M.S., Ph.D., West Virginia University

Cephas Naanwaab **Associate Professor**
B.S., University for Development Studies, Tamale, Ghana; M.S., Ph.D., Auburn University

Alfredo Romero Aguirre..... **Associate Professor**
B.A., University of the Americas, Puebla, Mexico; M.A., Ph.D., Virginia Polytechnic Institute and State University

Ryoichi Sakano **Associate Professor**
B.S., Keio University, Tokyo, Japan; M.B.A., M.A., University of North Carolina at Greensboro; Ph.D., University of Alabama

Scott Simkins **Associate Professor and Chairperson**
B.A., St. John's University (MN); Ph.D., University of Iowa

Department of Management
Lisa Gueldenzoph Snyder, Interim Chairperson

MISSION

The mission of the Department of Management, aligned with that of the Willie A. Deese 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 Deese College of Business and Economics, the University, professional organizations, and the community.

DEGREES OFFERED

Management (Business Administration) – Bachelor of Science
Management (Entrepreneurship and Innovation) – Bachelor of Science
Management (International Management) – Bachelor of Science

MINOR OFFERED

The minor in entrepreneurship is open to all non-management (Entrepreneurship and Innovation) majors. The entrepreneurship minor at North Carolina A&T State University teaches students the necessary skills to develop an entrepreneurial mindset. 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 prepares students to start successful ventures and encourages students to think and act entrepreneurially in any occupational setting. A minor in entrepreneurship, coupled with any major, 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 OFFERED

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 open to all non-management (Entrepreneurship and Innovation) 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.

COLLEGE REQUIREMENTS

All majors in programs in the Department of Management must complete a minimum of 120 credit hours. Students in the Willie A. Deese College of Business and Economics must earn a minimum grade of “C” in ENGL 100, 101; MATH 111 (or the combination of MATH 103/104), 112; ACCT 221, 222; BUAN 132; ECON 200, 201, 206; FIN 343; MGMT 110, 201, 260, 303, 315, 495; and MKTG 230.

DEPARTMENT REQUIREMENTS

Students in the department must earn a minimum grade of “C” in each of the 10 course (30 credit hours) listed as major program requirements for the selected major as indicated on the second page of their curriculum guide.

CAREER OPPORTUNITIES

Practically all organizations offer a variety of management career opportunities. The Bachelor of Science 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 a wide variety of positions in nearly all business fields. Examples include project management, organizational development, compensation systems, ethics compliance, quality assurance systems, corporate planning and analysis, and many more. Additionally, the entrepreneurship curriculum is designed to prepare outstanding students for success as 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 and offers the Student Entrepreneur of the Year Award as well as 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 which is specific to management majors, 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.

Department of Management Bachelor of Science in Management Major Code: MGMT

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENGL 101	3
FRST 101	1	MATH 112	4
MGMT 110	3	BUAN 132	3
MATH 111	4	Scientific Reasoning Elective w/out lab	3
Scientific Reasoning Elective with/lab	4	Free Elective	2
Semester Total	15	Semester Total	15
Sophomore Year: First Semester		Sophomore Year: Second Semester	
ACCT 221	3	ACCT 222	3
ECON 200 (Satisfies Social & Behavioral Sciences Elective)	3	MGMT 260	3
ECON 206	3	ECON 201 (Satisfies Social & Behavioral Sciences Elective)	3

MGMT 201	3	MGMT 221 (Satisfies Global Awareness Elective)	3
Humanities & Fine Arts (HFA) Elective	3	MKTG 230	3
Semester Total	15	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
ACCT 326	3	FIN 343	3
MGMT 315	3	MGMT 303	3
MGMT 321	3	MGMT 330	3
MGMT 322	3	MGMT 375 (<i>Offered Spring Only</i>)	3
MGMT 373 (<i>Offered Fall Only</i>)	3	African Amer. Culture & Hist. Elective	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
MGMT 429	3	MGMT 427	3
MGMT 430	3	MGMT 495	3
MGMT Elective	3	MGMT Elective	3
MGMT Elective	3	Free Elective	3
Free Elective	3	Free Elective	3
Semester Total	15	Semester Total	15

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

Students must earn a C (not C-) or better in the following courses:

MGMT 221	MGMT 375
MGMT 321	MGMT 427
MGMT 322	MGMT 429
MGMT 330	MGMT 430
MGMT 373	ACCT 326

Department of Management
Bachelor of Science in Management (Business Administration)
Major Code: MGMT

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENGL 101	3
FRST 101	1	MATH 112	4
MATH 111	4	BUAN 132	3
MGMT 110	3	Scientific Reasoning Elective w/out lab	3
Scientific Reasoning Elective with/lab	4	Free Elective	2
Semester Total	15	Semester Total	15
Sophomore Year: First Semester		Sophomore Year: Second Semester	
ACCT 221	3	ACCT 222	3
ECON 200 (Satisfies Social & Behavioral Sciences Elective)	3	ECON 201 (Satisfies Social & Behavioral Sciences Elective)	3
ECON 206	3	MGMT 221 (Satisfies Global Awareness Elective)	3
MGMT 201	3		

Humanities & Fine Arts (HFA) Elective	3	MKTG 230	3
Semester Total	15	African Amer. Culture & Hist. Elective	3
		Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
ACCT 326	3	MGMT 260	3
MGMT 315	3	FIN 343	3
MGMT 321	3	MGMT 303	3
MGMT 322	3	MGMT 330	3
MGMT 323	3	Business Elective	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
MGMT 373 (<i>Fall Only Offering</i>)	3	MGMT 375 (<i>Spring Only Offering</i>)	3
Business Elective	3	MGMT 427	3
Business Elective	3	MGMT 495	3
Business Elective	3	Free Elective	3
Free Elective	3	Free Elective	3
Semester Total	15	Semester Total	15

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

Students must earn a C (not C-) or better in the following courses:

MGMT 221	MGMT 373
MGMT 321	MGMT 375
MGMT 322	MGMT 427
MGMT 323	Business Elective
MGMT 330	Business Elective

Department of Management
 Bachelor of Science in Management (Entrepreneurship and Innovation)
 Major Code: MGMT
 Concentration Code: ENTP

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENGL 101	3
FRST 101	1	MATH 112	4
MATH 111	4	BUAN 132	3
MGMT 110	3	Scientific Reasoning Elective w/o lab	3
Scientific Reasoning Elective w/lab	4	Free Elective	2
Semester Total	15	Semester Total	15
Sophomore Year: First Semester		Sophomore Year: Second Semester	
ACCT 221	3	ACCT 222	3
ECON 200 (Satisfies Social & Behavioral Sciences Elective)	3	MGMT 260	3
ECON 206	3	ECON 201 (Satisfies Social & Behavioral Sciences Elective)	3
MGMT 201	3	MGMT 343	3

Humanities & Fine Arts (HFA) Elective	3	MKTG 230	3
Semester Total	15	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
ACCT 326	3	FIN 343	3
MGMT 221 (Satisfies Global Awareness Elective)	3	MGMT 303	3
MGMT 315	3	MGMT 322	3
MGMT 321	3	MGMT 330	3
MGMT 442 (<i>Fall only Offering</i>)	3	MGMT 347 (<i>Spring Only Offering</i>)	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
MGMT 429	3	MGMT 427	3
MGMT 430	3	MGMT 345	3
MGMT Elective	3	MGMT 495	3
MGMT Elective	3	African Amer. Culture & History Elective	3
Free Elective	3	Free Elective	3
Semester Total	15	Semester Total	15

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

Students must earn a C (not C-) or better in the following courses:

MGMT 221	MGMT 345
MGMT 321	MGMT 427
MGMT 322	MGMT 429
MGMT 330	MGMT 430
MGMT 343	ACCT 326

Department of Management
 Bachelor of Science in Management (International Management)
 Major Code: MGMT
 Concentration Code: INMG

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENGL 101	3
FRST 101	1	MATH 112	4
MATH 111	4	BUAN 132	3
MGMT 110	3	Scientific Reasoning Elective w/o lab	3
Scientific Reasoning Elective w/lab	4	Free Elective	2
Semester Total	15	Semester Total	15
Sophomore Year: First Semester		Sophomore Year: Second Semester	
ACCT 221	3	ACCT 222	3
ECON 200 (Satisfies Social & Behavioral Sciences Elective)	3	MGMT 260	3
ECON 206	3	ECON 201 (Satisfies Social & Behavioral Sciences Elective)	3
MGMT 201	3	MGMT 221 (Satisfies Global Awareness	

Humanities & Fine Arts (HFA) Elective	3	Elective)	3
Semester Total	15	MKTG 230	3
		Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
ACCT 326	3	FIN 343	3
MGMT 315	3	MGMT 303	3
MGMT 321	3	MGMT 353	3
MGMT 322	3	MGMT 330	3
African Am. Culture & History Elective	3	MGMT 355	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
MGMT 429	3	MGMT 427	3
MGMT 430	3	MGMT 495	3
Foreign Language Elective	3	Foreign Language Elective	3
MGMT Elective	3	Free Elective	3
Free Elective	3	Free Elective	3
Semester Total	15	Semester Total	15

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

Students must earn a C (not C-) or better in the following courses:

MGMT 221	MGMT 355
MGMT 353	MGMT 427
MGMT 321	MGMT 429
MGMT 322	MGMT 430
MGMT 330	ACCT 326

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 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.

MGMT 260. Business Communication

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 100 or equivalent, minimum grade of C; ENGL 101 or equivalent, minimum grade of C; or approval of the chairperson. (F;S;SS)

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. (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 206, 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. Prerequisite: MGMT 201. (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 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. (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. (S)

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. Prerequisites: MGMT 343 and ACCT 221. (S)

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. (S)

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, 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. Prerequisite: ECON 206. (F)
- 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. (S)
- 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. (S)
- 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 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)
- 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 474. Service Operations Management** **Credit 3(3-0)**
 This course focuses on the creation of value through service system design, service quality assurance, scheduling, performance metrics and the management of customer interactions. Prerequisite: MGMT 330 or instructor approval. (F;S;SS)
- 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

Adelle J. Bish	Associate Professor
B.A., California State University, Long Beach; M.S., The University of Queensland, Brisbane, Australia; Ph.D., Queensland University of Technology, Brisbane, Australia	
Jason Caldwell	Instructor
B.M.E., University of North Carolina at Greensboro; M.A., Liberty Baptist Theological Seminary; D.M. Colorado Technical University	
Subrata Chakrabarty	Professor
B.E., Ph.D., Texas A&M University	
Seho Cho	Assistant Professor
B.A., B.S.B.A., Hankuk University of Foreign Studies; M.S., Korea University	
Verona P. Edmond	Associate Professor
B.S., North Carolina A&T State University; M.B.A., University of Illinois; Ph.D., Syracuse University	
Marka B. Fleming	Associate Professor
B.S., Wake Forest; J.D., North Carolina Central School of Law	
Jorge A. Gaytan	Associate Professor
B.B.A., Western Michigan University; M.B.A., Ed.D., The University of Texas at El Paso	
Rhonda L. Hensley	Associate Professor
B.S., M.B.A., James Madison University; Ph.D., Virginia Commonwealth University	
Maranda McBride	Professor
B.S., M.S., North Carolina A&T State University; M.B.A., Wake Forrest University; Ph.D., North Carolina A&T State University	
Anju Mehta	Assistant Professor
B.A., M.A., Maharshi Dayanand Univeristy; M.I.B., Kurukshetra University; M.S., Ph.D., Auburn University	
Shona D. Morgan	Professor
B.S., Spelman College; M.S., Ph.D., North Carolina State University	
Juliet Oriaiifo	Lecturer
B.A., University of North Carolina at Greensboro; M.B.A., North Carolina A&T State University	
Patrick Rogers	Associate Professor
B.S., B.A., M.B.A., Western Carolina University; Ph.D., University of Tennessee at Knoxville	
Lisa Gueldenzoph Snyder	Professor and Interim Chairperson
B.S., Northern Michigan University; M.Ed., Ph.D., Bowling Green State University	
Monica D. Speight	Instructor
B.S., North Carolina A&T State University; J.D., University of North Carolina at Chapel Hill	
George S. Swan	Associate Professor
B.A., Ohio State University; J.D., University of Notre Dame; LL.M., S.J.D., University of Toronto Faculty of Law	
Christina H. Tupper	Assistant Professor
B.A., Louisiana Tech University; M.B.A., Jacksonville State University; Ph.D., Old Dominion University	
Isaiah O. Ugboro	Professor
B.S., Utah State University; M.B.A., Ph.D., University of North Texas	

Department of Marketing and Supply Chain Management
Joseph R. Huscroft, Jr., Chairperson

OBJECTIVES

The objective of the Department of Marketing and Supply Chain Management (MSCM) is to produce business leaders, in the marketing and supply chain management 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
 Supply Chain Management

The minors in marketing and professional sales are open to all non-marketing majors, and they provide students with a thorough understanding of the fundamental concepts of marketing and how to apply these concepts through the use of case studies and company and non-profit organization projects. Students also gain an understanding of consumer behavior and 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.

The minor in supply chain management is open to all non-supply chain management majors. It provides a strong complement to business, industrial engineering, and agricultural science majors, to name a few. Supply chain management is a discipline that is needed by virtually every organization. The minor offers the basic knowledge and understanding of supply chain management generates employment opportunities with a supporting skill set for supply chain operations. The minor provides students with basic knowledge of supply chain management topics, such as distribution strategies, planning, and procurement, while also working on students' communication, negotiation, and leadership abilities.

COLLEGE REQUIREMENTS

All majors in programs in the Department of Marketing and Supply Chain Management (MSCM) must complete a minimum of 120 credit hours. Students in the Willie A. Deese College of Business and Economics must earn a minimum grade of "C" in ENGL 100, 101, MATH 111 (for the combination of MATH 103/104), 112, ACCT 221, 222, ECON 200, 201, 206, FIN 343, MGMT 110, 132, 201, 260, 303, 315, 495, and MKTG 230.

DEPARTMENT REQUIREMENTS

Students in the department must earn a minimum grade of "C" in the 10 courses (30 credit 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.

**Department of Marketing and Supply Chain Management
 Bachelor of Science in Marketing
 Major Code: MKT**

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
MATH 111 (MATH 103/104) ¹	4	MATH 112	4
ENGL 100	3	ENGL 101	3
Science Reasoning w/Lab ²	4	Science Reasoning w/out Lab ³	3

MGMT 110	3	BTEC 110	3
FRST 101	1	PSYC 101	3
Semester Total	15	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
ACCT 221	3	ACCT 222	3
ECON 200 ⁴	3	ECON 201	3
ECON 206	3	MGMT 201	3
MKTG 230	3	BUAN 132	3
MGMT 260	3	SCMG 240	3
Semester Total	15	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
MKTG 332	3	MKTG 335	3
MKTG 333	3	MKTG 338	3
FIN 343	3	MGMT 315	3
Global Awareness Elective ⁶	3	MGMT 303	3
Humanities & Fine Arts Elective ⁵	3	African American Studies Elective ⁷	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
MKTG 444	3	MKTG 489	3
MKTG 445	3	MKTG 447	3
MGMT 495	3	MKTG Elective ⁹	3
MKTG Elective ⁹	3	Free Elective ⁸	3
Free Elective ⁸	2	Free Elective ⁸	3
Semester Total	14	Semester Total	15

Total Credit Hours: 120

¹MATH 111 can be replaced with the combination of MATH 103 and MATH 104

²Recommended Scientific Reasoning courses include BIOL 100; CHEM 100 & 110 (lab), or PHYS 110 & 111 (lab) for the four-credit lab course

³Recommended Scientific Reasoning courses include ASME 234, ENVS 201, PHYS 101, PHYS 104, PHYS 105 for the three-credit course

⁴ECON 200 fulfills the Social and Behavioral Sciences course requirement

⁵Humanities and Fine Arts courses include LIBS 202, PHIL 101,103, 104, 201, 266, 267, SPCH 250, ENGL 200, 201, 230, 231, 333, 334, MUSI 216, 220

⁶Global Awareness courses include PHIL 103, PHIL 201, HIST 130, HIST 206, HIST 207, HIST 216, HIST 231, or MGMT 221

⁷African-American courses include ENGL 333, ENGL 334, LIBS 202, HIST 103, HIST 106, HIST 107, or MUSI 220

⁸Free electives include any three-credit undergraduate course at or above the 100 level

⁹MKTG electives can be any course in COBE or outside of COBE that is related to your major, at or above the 100 level. Need Department Chair approval.

Review all General Education Courses options:

<https://www.ncat.edu/provost/general-education-resources/gec-list.php>

MAJOR PROGRAM REQUIREMENTS

Students must earn a C (not C-) or better in the following courses:

ENGL 100	MKTG 445
ENGL 101	MKTG 447
ACCT 221	MKTG 489
ACCT 222	MATH 111 (103/104)
ECON 200	MATH 112

ECON 201	BUAN 132
ECON 206	MGMT 110
FIN 343	MGMT 201
MKTG 230	MGMT 260
MKTG 332	MGMT 303
MKTG 333	MGMT 315
MKTG 335	MGMT 495
MKTG 338	SCMG 240
MKTG 444	

Department of Marketing and Supply Chain Management
Bachelor of Science in Marketing (Sales)
Major Code: MKT
Concentration Code: SALE

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
MATH 111 (MATH 103/104) ¹	4	MATH 112	4
ENGL 100	3	ENGL 101	3
Science Reasoning w/Lab ²	4	Science Reasoning w/out Lab ³	3
MGMT 110	3	BTEC 110	3
FRST 101	1	PSYC 101	3
Semester Total	15	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
ACCT 221	3	ACCT 222	3
ECON 200 ⁴	3	ECON 201	3
ECON 206	3	MGMT 201	3
MKTG 230	3	BUAN 132	3
MGMT 260	3	SCMG 240	3
Semester Total	15	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
MKTG 332	3	MKTG 335	3
MKTG 334	3	MKTG 338	3
FIN 343	3	MGMT 315	3
Global Awareness Elective ⁶	3	MGMT 303	3
Humanities & Fine Arts Elective ⁵	3	African American Studies Elective ⁷	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
MKTG 444	3	MKTG 489	3
MKTG 445	3	MKTG 486	3
MGMT 495	3	MKTG Elective ⁹	3
MKTG Elective ⁹	3	Free Elective ⁸	3
Free Elective ⁸	2	Free Elective ⁸	3
Semester Total	14	Semester Total	15

Total Credit Hours: 120

¹MATH 111 can be replaced with the combination of MATH 103 and MATH 104

²Recommended Scientific Reasoning courses include BIOL 100; CHEM 100 & 110 (lab), or PHYS 110 & 111 (lab) for the four-credit lab course

³Recommended Scientific Reasoning courses include ASME 234, ENVS 201, PHYS 101, PHYS 104, PHYS 105 for the three-credit course

⁴ECON 200 fulfills the Social and Behavioral Sciences course requirement

⁵Humanities and Fine Arts courses include LIBS 202, PHIL 101,103, 104, 201, 266, 267, SPCH 250, ENGL 200, 201, 230, 231, 333, 334, MUSI 216, 220

⁶Global Awareness courses include PHIL 103, PHIL 201, HIST 130, HIST 206, HIST 207, HIST 216, HIST 231, or MGMT 221

⁷African-American courses include ENGL 333, ENGL 334, LIBS 202, HIST 103, HIST 106, HIST 107, or MUSI 220

⁸Free electives include any three-credit undergraduate course at or above the 100 level

⁹MKTG electives can be any course in COBE or outside of COBE that is related to your major, at or above the 100 level. Need Department Chair approval.

Review all General Education Courses options:

<https://www.ncat.edu/provost/general-education-resources/gec-list.php>

MAJOR PROGRAM REQUIREMENTS

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

ENGL 100	MKTG 445
ENGL 101	MKTG 486
ACCT 221	MATH 111 (103/104)
ACCT 222	MATH 112
ECON 200	MKTG 489
ECON 201	BUAN 132
ECON 206	MGMT 110
FIN 343	MGMT 201
MKTG 230	MGMT 260
MKTG 332	MGMT 303
MKTG 334	MGMT 315
MKTG 335	MGMT 495
MKTG 338	SCMG 240
MKTG 444	

**Department of Marketing and Supply Chain Management
Bachelor of Science in Supply Chain Management
Major Code: SCMG**

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
MATH 111 (MATH 103/104) ¹	4	MATH 112	4
ENGL 100	3	ENGL 101	3
Science Reasoning with a Lab ²	4	Science Reasoning without a Lab ³	3
MGMT 110	3	BTEC 110	3
FRST 101	1	Humanities & Fine Arts Elective ⁵	3

Semester Total	15	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
ACCT 221	3	ACCT 222	3
ECON 200 ⁴	3	ECON 201	3
ECON 206	3	SCMG 260	3
SCMG 240	3	MGMT 260	3
BUAN 132	3	BUAN 335	3
Semester Total	15	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
SCMG 325	3	SCMG 350	3
MKTG 230	3	SCMG 331	3
MGMT 315	3	MGMT 303	3
MGMT 201	3	MGMT 330	3
FIN 343	3	African American Studies Elective ⁷	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
SCMG 471	3	SCMG 473	3
SCMG 480	3	SCMG 493	3
MGMT 495	3	Global Awareness Elective ⁶	3
SCMG Elective ⁹	3	SCMG Elective ⁹	3
Free Elective ⁸	2	Free Elective ⁸	3
Semester Total	14	Semester Total	15

Total Credit Hours: 120

¹MATH 111 can be replaced with the combination of MATH 103 and MATH 104

²Recommended Scientific Reasoning courses include BIOL 100; CHEM 100 & 110 (lab), or PHYS 110 & 111 (lab) for the four-credit lab course

³Recommended Scientific Reasoning courses include ASME 234, ENVS 201, PHYS 101, PHYS 104, PHYS 105 for the three-credit course

⁴CON 200 fulfills the Social and Behavioral Sciences course requirement

⁵Humanities and Fine Arts courses include LIBS 202, PHIL 101,103, 104, 201, 266, 267, SPCH 250, ENGL 200, 201, 230, 231, 333, 334, MUSI 216, 220

⁶Global Awareness courses include PHIL 103, PHIL 201, HIST 130, HIST 206, HIST 207, HIST 216, HIST 231, or MGMT 221

⁷African-American courses include ENGL 333, ENGL 334, LIBS 202, HIST 103, HIST 106, HIST 107, or MUSI 220

⁸Free electives include any three-credit undergraduate course at or above the 100 level

⁹SCMG electives can be any course in COBE or outside of COBE that is related to your major, at or above the 100 level. Need Department Chair approval.

Review all General Education Courses options:

<https://www.ncat.edu/provost/general-education-resources/gec-list.php>

MAJOR PROGRAM REQUIREMENTS

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

ENGL 100	MATH 111 (103/104)
ENGL 101	SCMG 473
ACCT 221	SCMG 480
ACCT 222	SCMG 493
ECON 200	MATH 112
ECON 201	BUAN 132

ECON 206	MKTG 230
FIN 343	MGMT 110
SCMG 240	MGMT 201
SCMG 260	MGMT 260
SCMG 325	MGMT 303
SCMG 331	MGMT 315
SCMG 350	MGMT 330
SCMG 471	MGMT 495

COURSE DESCRIPTIONS IN MARKETING

MKTG 230. Marketing Concepts **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 231. Study Abroad in Marketing **Credit 3(3-0)**
This course will study international practices in marketing and include a related study abroad experience. Course materials, assignments, foreign site visits, and cultural and historical tours will be used to understand fundamental differences among business environments and practices in the U.S. and internationally. Prerequisites: Marketing and Supply Chain Management Department Chair Approval. (F;S;SS)

MKTG 332. Consumer Behavior **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 **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 **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 **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. Prerequisite: MKTG 230. (F;S)

MKTG 338. Integrated Marketing Communications/Advertising **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 **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 **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 **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 **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 485. Special Topics in Customer Relationship Marketing & Management **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 **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 **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

SCMG 231. Study Abroad in Supply Chain Management **Credit 3(3-0)**

This course will study international practices in supply chain management and include a related study abroad experience. Course materials, assignments, foreign site visits, and cultural and historical tours will be used to understand fundamental differences among business environments and practices in the U.S. and internationally. Prerequisites: Marketing and Supply Chain Management Department Chair Approval. (F;S;SS)

SCMG 240. Introduction to Supply Chain Management a Logistics Approach **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)

SCMG 260. Introduction to Transportation **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)

SCMG 325. Economics of Transportation **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: SCMG 260, ECON 200, or permission of instructor. (F;S)

SCMG 331. Supply Chain Analysis **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: SCMG 240, ECON 206 and MGMT 315. (F;S)

SCMG 350. Carrier Management **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: SCMG 240, SCMG 260, and SCMG 325. (F;S)

- SCMG 370. Urban Transportation Concepts** **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)
- SCMG 451. Transportation La** **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)
- SCMG 460. National Transportation Policy** **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)
- SCMG 471. Materials Management** **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: SCMG 240 and MGMT 315. (F;S)
- SCMG 473. Purchasing and Supply Management** **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: SCMG 240. (F;S)
- SCMG 480. International Logistics and Supply Chain Management** **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: SCMG 240. (F;S)
- SCMG 485. Special Topics in Transportation and Logistics** **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: SCMG 240 and consent of the department chair and/or the instructor. (F;S;SS)
- SCMG 490. Independent Study** **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)
- SCMG 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, SCMG 240, SCMG 260, SCMG 471, MGMT 315, and MGMT 335. (F;S)

DIRECTORY OF FACULTY

- Kathryn Cort** **Associate Professor**
 B.S.Ed., M.A., The Ohio State University; M.B.A. and Ph.D., Kent State University
- Joseph R. Huscroft, Jr.** **Associate Professor and Chairperson**
 B.S., United States Air Force Academy; M.P.A, Troy University; M.S., Air Force Institute of Technology; Ph.D., Auburn University
- Ahren Johnston** **Associate Professor**
 B.S., M.T.L.M., Ph.D., University of Arkansas
- Roland Leak** **Associate Professor**
 B.S., North Carolina A&T State University; M.B.A., Wake Forest University; Ph.D., University of South Carolina
- Laquanda Leaven Johnson** **Associate Professor**
 B.S., University of Michigan; MS, Ph.D., North Carolina A&T State University
- Amit S. Malhan** **Assistant Professor**
 B.S., Dharmsinh Desai University, India; M.S., University of Texas; Ph.D., University of North Texas
- Kimberly R. McNeil** **Associate Professor**
 B.S., North Carolina A&T State University; Ph.D., Florida State University

Kofi Obeng..... **Professor**
 B.Sc., University of Science & Technology (Kumasi, Ghana); M.U.P., McGill University (Montreal, Canada); A.M., Ph.D.,
 University of Pennsylvania

Arim Park..... **Assistant Professor**
 B.L., M.S., Inha University (Incheon, Korea); Ph.D., Rutgers University

George W. Stone..... **Professor**
 B.S., United States Military Academy, West Point; M.B.A., Boston University; Ph.D., University of Mississippi

Jacqueline Williams **Associate Professor**
 B.S., Drexel University; M.B.A., University of Delaware; Ph.D., Florida State University

Omar Woodham..... **Associate Professor**
 B.Sc., University of the West Indies; M.B.A., Rochester Institute of Technology; Ph.D. Syracuse University

COLLEGE OF EDUCATION
<http://www.ncat.edu/CEd/index.html>

Paula Groves Price, Dean

Through its three 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, and the Department of Leadership Studies and Adult Education have programs leading to degrees at the undergraduate and graduate levels. All Educator Preparation 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, counseling programs are accredited by the Council for the Accreditation of Counseling and Related Educational Programs (CACREP). North Carolina A&T State University was 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 the secondary licensure programs are housed in other academic units, the College of Education is responsible for providing the core educational curriculum, coordinating and monitoring admission, placements, and assessment for all professional education students at the university. North Carolina A&T offers 35 licensure programs at the undergraduate (initial licensure) and graduate levels. The Dean chairs the Council of Educator Preparation Program (CEPP), which is the governance structure for all professional education (licensure) programs at the university. The CEPP 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 CEPP is responsible for overseeing (a) state mandated re-visioning 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 Educator Preparation programs. The Department of Educator Preparation offers a bachelor's degree in elementary education with dual licensure in special education. 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 and Reading.

The Department of Counseling offers master's level programs in School Counseling, Clinical Mental Health 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 Master of School Administration 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.

MISSION

The mission of the College of Education is to prepare highly skilled, culturally responsive and sustainable educators, leaders, and counselors 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, scholarship and effective public service, the College of Education offer degrees at the baccalaureate, master's, and doctoral levels. Our graduates are catalysts for transformative action to improve education and counseling in diverse contexts and 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

Educator Preparation 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 2017) and the Council on Rehabilitation Education (reaffirmed in 2017).

DEGREES OFFERED

Elementary Education – Bachelor of Science

GENERAL PROGRAM REQUIREMENTS

General program requirements for the College of Education programs can be found in this catalogue under the departmental sections.

EDUCATOR PREPARATION

Educator Preparation at North Carolina Agricultural and Technical (N.C. A&T) State University reflects the North Carolina Standards for Teachers and the 21st century knowledge, skills, and dispositions embedded in them through the University's Professional Education Conceptual Framework. Educator Preparation degree programs are housed in five colleges and schools at

the University; the licensure component is coordinated and managed by the College of Education. Each Educator Preparation degree program is composed of the general program requirements as defined by the General Education Council, 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 to be successful stewards of the profession. It provides candidates with multiple opportunities to gain knowledge, appreciation, and understanding through the study of a broad range of concepts across the humanities, the arts, the social sciences, the natural sciences and mathematics. Furthermore, it provides a broad understanding of cultural heritage and of 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 students to understand the theoretical and practical basis upon which subject area content is developed and organized. It also provides students opportunities to gain greater breadth and depth in a selected discipline. The function of knowledge and the knowledge production process through research is also emphasized in this segment of the prospective teacher's experiences.

Professional Education Core

Educator Preparation 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 the Educator Preparation Program. 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 21st Century Professional Educators who understand the complex needs of a pluralistic global society and who are responsive to these needs by creating interdisciplinary learning environments where critical thinking, collaboration, communication, and commitment to service guide behavior and actions. As such, the Professional Education Program at North Carolina A&T State University is committed to the development of 21st-Century Professional Educators who are responsive to the needs 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 pedagogies and forms of technology to manage instruction and assessment.

The Professional Education Program has adopted the theme “Learn to Lead. Lead to Transform: Equity, Access, and Advocacy” as its core belief to produce “Aggie Educators” (candidates) who work with learners of all ages with varying experiences and 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 21st 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 Educator Preparation 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. PLC I aligns with the freshman year and introduces candidates to the profession. Each candidate will be required to take the course EDPR 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 21st century classrooms. During the sophomore year, candidates develop a context for designing, presenting and assessing learning in PLC II by completing two courses – EDPR 210 Culturally Relevant Pedagogy and EDPR 310 Assessment & Technology for P-12 Student Learning. A thirty-hour field experience is required in EDPR 210 Culturally Relevant Pedagogy. In PLC III, candidates in the junior year learn to implement instructional plans for all students. The two required courses are: EDPR 410 Differentiated Instruction and EDPR 420 Content Area Literacy. The forty-hour field experience in PLC III focuses on the application of theories in the school. PLC IV is completed during the candidate's senior year and provides candidates the opportunity to practice the teaching profession. During PLC IV, candidates will complete EDPR 487 Clinical Practice I in P-12 Schools, and EDPR 498 Clinical Practice II P-12 Schools. During EDPR 487 Clinical Practice I in P-12 Schools, candidates complete the sixty-hour field experience which focuses on pedagogical strategies within the content area. In EDPR 498 Clinical Practice II in P-12 Schools, Educator Preparation candidates are assigned to a school Monday through Friday for the entire school day. 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 status reports detailing their progress toward completing each transition point. Additionally, during each PLC, candidates develop evidences that build upon the knowledge, skills and disposition needed to complete program competencies and the Education Teacher Performance Assessment (edTPA), a nationally normed and valid assessment of clinical practice.

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: EDPR 102 (or meet testing equivalent), 110, 210, 215, 310, 410, 420, 455, 487, 498; SPED 250, 448; ELED 444. All courses numbered 400 and above in this sequence require formal admission to the Educator Preparation 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 Educator Preparation Program, (2) an approved Student Teaching or MAT Internship Application submitted in TaskStream (3) a cumulative GPA of 2.80 or higher, (4) copy of individual scores on the Pearson or Praxis II examination tests in the licensure area, (5) criminal background check, and (6) proof of educator's liability insurance.

Students enrolled in a clinical practice course 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 Educator Preparation 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 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 the Educator Preparation Program. 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.

Admission, Retention, and Licensure

The Dean of the College 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 initial licensure in the following fields:

- | | |
|---------------------------------|---|
| 1. Agriculture Education | 9. English Education |
| 2. Art Education | 10. Mathematics Education |
| 3. Biology Education | 11. Music Education |
| 4. Birth through Kindergarten | 12. Physics Education |
| 5. Business Education | 13. School Social Work |
| 6. Chemistry Education | 14. Special Education (Add on) |
| 7. Comprehensive Social Studies | 15. Technology Education |
| 8. Elementary Education | 16. Trade and Industrial Education (Add on) |

ADMISSION

All candidates who are recommended for licensure must be admitted to the Educator Preparation Program. Undergraduate candidates are expected to be admitted to the Educator Preparation Program during their Freshman/Sophomore year. Failure to be formally admitted to the Educator Preparation Program will limit candidates' progress in completing the Professional Education core (see section on Enrollment in Advanced Courses). The application for admission includes:

- Purchase and create a Taskstream account
- Complete Disposition Survey via Taskstream
- Maintain a minimum overall GPA of 2.8
- Complete the Application for Admission to Educator Preparation
- Pass Praxis Core I or meet the exemption requirements
- Complete the Notification and Acknowledgement of Criminal Background Form

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 College of Education. The GPA is verified before the candidate is admitted to the Educator Preparation Program.

Retention

To remain in the Educator Preparation Program, candidates must maintain a minimum cumulative academic overall grade point average of 2.80. Candidates 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 dismissed 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 College of Education.

Readmission To Educator Preparation

Once a candidate has been dropped from the Educator Preparation Program for any reason, the following steps must be taken before a candidate will be readmitted:

1. The students must file a formal application for re-admittance to the Educator Preparation 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 Council of Educator Preparation for action.
3. The student, program coordinator, department chairperson, and dean of the school involved will be notified in writing of the Council of Educator Preparation's decision on the student's application for readmission to the Educator Preparation Program.

Licensure

Upon completing the Educator Preparation 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 the Education Teacher Performance Assessment (edTPA), Praxis II test or the Reading Foundations and General Curriculum tests before being recommended for licensure. The University reserves the right to refuse to recommend 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 Educator Preparation Program

All students transferring into the Educator Preparation Program must have a cumulative GPA of 2.80 (on a 4.0 scale) and must meet all other requirements for entry to the Educator Preparation Program.

Department of Educator Preparation
Gerrelyn C. Patterson, 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 and master's degree levels. The department cooperates with the various academic departments of the University for educator preparation. In addition, the department offers graduate programs in the areas of elementary education, special education, and reading.

ACCREDITATION

The Elementary Education programs are accredited by the Council for the Accreditation of Educator Preparation (CAEP) and approved by the North Carolina State Department of Public Instruction (NC DPI) under the University wide accreditation and approval of educator preparation programs.

DEGREE OFFERED

Elementary Education – Bachelor of Science

PROFESSIONAL EDUCATION CORE

The Professional Education Core (PEC) of the Educator Preparation Program is designed to provide for the development of those competencies essential to the professional role of the teacher centered on the theme, "Learn to Lead. Lead to Transform: Equity, Access, and Advocacy." Integrated throughout the professional components are core principles for our educator preparation programs which are assessment leaders, global thinkers, galvanizing visionaries, inclusive agents of change, equitable educators and advocates, and transformative scholars (AGGIES).

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.

Within the PEC, all candidates study in Professional Learning Communities (PLCs). There are four PLCs – one associated with each academic year. PLC I aligns with the freshman year and introduces candidates to the profession. Each candidate will be required to take the course EDPR 110 Ethics of Teaching, which has an accompanying twenty-hour field experience. During the sophomore year in PLC II, candidates develop a context for designing, presenting and assessing learning by completing two courses – EDPR 210 Culturally Relevant Pedagogy and EDPR 310 Assessment & Technology for P-12 Student Learning. A thirty-hour field experience is required in EDPR 210 Culturally Relevant Pedagogy. In PLC III, candidates in the junior year learn to implement

instructional plans for all students. The two required courses are: EDPR 410 Differentiated Instruction and EDPR 420 Content Area Literacy. The forty-hour field experience in EDPR 410 Differentiated Instruction during PLC III focuses on the application of theories in the school. PLC IV is completed during the candidate's senior year and provides candidates the opportunity to practice the teaching profession. During PLC IV, candidates will complete EDPR 487 Clinical Practice I in P-12 Schools and EDPR 498 Clinical Practice II P-12 Schools. During EDPR 487 Clinical Practice I in P-12 Schools, candidates complete a sixty-hour field experience which focuses on pedagogical strategies within the content area. In EDPR 498 Clinical Practice II in P-12 Schools, candidates complete a culminating student teaching experience in a P-12 school Monday through Friday for the entire school day.

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 dispositions.

The emphasis of the program is on the application of learning theory and 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 enable 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 Educator Preparation Program.

INITIAL LICENSURE REQUIREMENTS

Undergraduate Students – The candidate is required to pass the Praxis Core I test in reading, writing, and mathematics (or meet exemption requirements). For licensure, candidates must pass the Foundations of Reading and General Curriculum Mathematics Subtest or the Praxis II Mathematics Content Knowledge for Teaching test. Candidates must attain passing scores on these respective tests as established by the NC State Board of Education.

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 the Educator Preparation Program (EPP). Individuals should refer to the section entitled *Educator Preparation Admission and Retention Standards (Undergraduate Bulletin)* for pertinent information relative to requirements as an EPP candidate. Students must accumulate a minimum of "C" in major courses, specialty area courses, and demonstrate a professional disposition.

The State of North Carolina requires teacher candidates to obtain a Standard Professional License (SP1). Upon completing the Educator Preparation degree, candidates are eligible to apply for state licensure with the North Carolina Department of Public Instruction. Program completers are able to apply for and update their North Carolina licenses online within the online licensure system. The office of the Dean will review all applications to confirm all requirements have been met and a recommendation submitted with the Department of Public Instruction.

All candidates are required to take and pass the Education Teacher Performance Assessment (edTPA), Praxis II test or the Reading Foundations and General Curriculum tests before being recommended for licensure. The University reserves the right to refuse to recommend applicants for licensure when they are deficient in mental or physical health, scholarship, character, educator dispositions, or other qualifications deemed necessary for success in the education profession.

COROLLARY STUDIES

Elementary Education Majors MUST Select One Area (12 hours)

Diverse Learners Corollary: CUI 302, SPED 254, and six approved credit hours from FCS, SOCI, SOWK, or HIST that address different cultural groups, languages, global international experiences and/or engagement and involvement of parents and community.

STEM Corollary: ELED 357, INST 605, *Choose from the following:* PHYS 101, or PHYS 105, or *Choose from the following:* six credits in consultation with Academic advisor approval TECH, INST, ENV5, BIOL, MATH, WMI or other STEM aligned courses may be taken.

Special Education Corollary: SPED 254, 255, 260, 339, 340. 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 250 – Introduction to Exceptional Children (3 hours)

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)

SPED 340 – Research Based Strategies for Teaching Mathematics (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)

**Department of Educator Preparation
Bachelor of Science in Elementary Education
Major Code: ELEM**

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENGL 101	3
BIOL 100	4	PHIL 103 or PHIL 201	3
MATH 101	3	EDPR 110 ¹	2
EDPR 102	2	MATH 102	3
SPCH 250	3	ENVS 201	3
Semester Total	15	SSFM 226	3
		Semester Total	17
Sophomore Year: First Semester		Sophomore Year: Second Semester	
EDPR 215	2	ELED 121	3
SPED 250	3	ELED 300	3
ELED 120	3	EDPR 310	2
HIST 103, HIST 106, or HIST 107	3	EDPR 210 ¹	2
ELED 216	3	Corollary Study ^{2,3}	3
Corollary Study ^{2,3}	3	Corollary Study ^{2,3}	3
Semester Total	17	Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
SPED 341 (<i>formerly SPED 441</i>)	2	ELED 310	3
EDPR 442	3	ELED 312	3
ELED 314	3	ELED 313	3
ELED 311	3	ELED 444	3
EDPR 410 ¹	2	SPED 448	3
EDPR 455	3	Semester Total	15
Semester Total	16		
Senior Year: First Semester		Senior Year: Second Semester	
ELED 404	0	EDPR 498	12
EDPR 443	3	Semester Total	12
EDPR 305	3		
EDPR 487	3		
Corollary Study ^{2,3}	3		
Semester Total	12		

Total Credit Hours: 120

¹Course requires a field experience component where hours are completed in a public school classroom.

²See academic advisor for approved courses.

³College transfer students may substitute 6 approved credit hours - consult academic advisor.

⁴Students may select PHIL 103 (World Religions) or PHIL 201 (Business Ethics).

⁵Course requires a 15-week full-time supervised student teaching experience in a public school classroom.

MAJOR PROGRAM REQUIREMENTS

*Course denoted with * are major program requirements with pass/no-pass
Students must earn a C or better in the following courses:*

EDPR 102*	EDPR 487
EDPR 110	EDPR 498
EDPR 210	ELED 216
EDPR 215	ELED 310
EDPR 310	ELED 311
EDPR 305	ELED 312
EDPR 410	ELED 313
EDPR 442	ELED 314
EDPR 443	ELED 404*

COURSE DESCRIPTIONS IN CURRICULUM AND INSTRUCTION

- CUIN 302. Field Experiences and Community Services** **Credit 3(3-0)**
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 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)
- CUIN 426. Methods of Teaching English** **Credit 3(3-0)**
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)
- CUIN 429. Methods of Teaching Mathematics** **Credit 3(3-0)**
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)
- CUIN 430. Public School Music Methods** **Credit 2(2-0)**
This course is a comprehensive study of materials and methods in the teaching of public school music. (F;S)
- CUIN 431. Vocal Methods and Materials** **Credit 3(3-0)**
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)
- CUIN 432. Band Methods** **Credit 3(3-0)**
This course is a study of the school band organization and administration. (F)
- CUIN 435. Methods of Teaching of Science** **Credit 4(3-1)**
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)
- CUIN 439. Methods of Teaching Social Sciences** **Credit 3(3-0)**
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)
- CUIN 451. Foundations of Early Childhood Education** **Credit 2(2-0)**
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)
- CUIN 470. Clinical Application Capstone** **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: CUIN 487 and admission to Teacher Education. Corequisite: CUIN 498. (F;S)
- CUIN 500. Principles and Curricula of Secondary Schools** **Credit 3(3-0)**
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)
- CUIN 501. Methods of Research and Evaluation in Health Physical Education** **Credit 2(1-2)**
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)

CUIN 519. Preschool Materials, Methods and Practicum

Credit 3(2-2)

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)

CUIN 527. Methods of Teaching Foreign Languages

Credit 3(3-0)

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)

COURSE DESCRIPTIONS IN EDUCATOR PREPARATION

EDPR 102. Introduction to Teacher Education I

Credit 3(3-0)

This course is designed to provide prospective (new and freshman) teacher education students with an orientation to the Educator Preparation 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)

EDPR 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. (F;S;SS)

EDPR 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: EDPR 110. (F;SS)

EDPR 215. Curriculum Design and Instructional Planning

Credit 2(2-0)

This course introduces candidates to developmentally appropriate, content-specific, interdisciplinary instructional planning. Emphasis is placed on planning for research-based instruction and utilizing state and professional standards. (F;S;SS)

- EDPR 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)
- EDPR 310. Assessment and Technology for P-12 Student Learning** **Credit 2(2-1)**
 This course examines the intersect in assessment practices and technological tools that effective teachers use to inform their daily classroom routine and instruction. Candidates will explore and apply research-based assessment strategies for the P-12 classroom that promotes data analytics to improve student learning (F;S;SS)
- EDPR 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: EDPR 310 and admission to Teacher Education. (F)
- EDPR 420. Content Area Literacy** **Credit 3(3-0)**
 This course provides candidates with opportunities to learn and apply research-based literacy practices to plan and deliver literacy strategies to assess student content knowledge. Prerequisite: Formal admission to the EPP. (F;S;SS)
- EDPR 442. Children’s Literature and Instructional Media** **Credit 3(3-0)**
 This course provides multimedia approaches to literature for children with emphasis on the integration of literature across the curriculum. (F;S;SS)
- EDPR 443. Educational Media** **Credit 3(3-0)**
 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)
- EDPR 455. Educational Psychology and Classroom Management** **Credit 3(3-0)**
 This course explores a broad range of psychological principles of growth and development of PK-12 learners. Teacher candidates examine, assess, and apply educational philosophies and research-based classroom management strategies that are responsive to students from diverse cultures and backgrounds. Prerequisite: Formal Admission to EPP. (F;S;SS)
- EDPR 487. Clinical Practice I in P-12 Schools** **Credit 3(3-1)**
 This course provides education with a structured, supervised clinical experience in an appropriate discipline in an approved P-12 school (minimum 60 hours). Emphasis will be placed on instructional planning, engaging students in learning, providing feedback to guide learning and using assessment to inform instruction. Prerequisite: EDPR 410 or equivalent. (F;S)
- EDPR 498. Student Teaching** **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: EDPR 487 or equivalent and admission to EPP. (F;S)
All courses numbered 500 and above require formal admission to the Educator Preparation Program and methods courses require a 60 hour field experience.

COURSE DESCRIPTIONS IN 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 21st 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 21st century classroom instructional practices that follow national and state standards. Prerequisite: Admitted to EPP. (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: EDPR 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: EDPR 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 310, 313. Prerequisite: EDPR 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 310, 312. Prerequisite: EDPR 102. **(F;S)**
- ELED 314. Mathematics in the Elementary School** **Credit 3(3-0)**
 This course is a study of the underlying basic principles underlying the science and mathematics curriculum. Concepts and skills relating to the scope and importance of science and mathematics in K-6 schools are examined through simulated teaching experiences. To be taken with ELED 311. **(F;S;SS)**
- ELED 357. Curriculum Methods for Science and Mathematics for Early Childhood Education** **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. Prerequisite: EDPR 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 “Pass” in this course. Grade: Pass/Fail. Prerequisite: Admission to Teacher Education. **(F;S;SS)**
- ELED 444. Diagnostic-Prescriptive Reading Instruction in Elementary Education** **Credit 3(3-0)**
 This course focuses on administering diagnostic reading assessments and implementing prescriptive interventions based on data analysis. Prerequisite: Formal Admission into the EPP. **(F;S;SS)**
- 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 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)**

COURSE DESCRIPTIONS IN SPECIAL EDUCATION

- SPED 250. Introduction to Exceptional Children** **Credit 3(3-0)**
 This course introduces teacher candidates to the laws, instructional strategies, and accommodations for individuals with varying exceptionalities and characteristics across 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 EPP and 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 EPP. **(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 EPP, ELED 120, ELED 121. (F;S;SS)

SPED 341. Teacher-Parent Community Resources for Exceptional Children **Credit 2(2-0)**

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 EPP. (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 IEP Development **Credit 3(3-0)**

This course provides candidates with the opportunities to identify, assess, and respond to students with special learning needs and understand the development of IEP's for effective, appropriate instructional and behavioral interventions. Prerequisite: Formal Admission to EPP. (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 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 20hour field experience in an approved setting is required. Prerequisite: Admission to Teacher Education. (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: Formal Admission to EPP and PRAXIS II passage. (F;S)

DIRECTORY OF FACULTY

Kimberly Bunch-Crump.....Assistant Professor
 B.S., Elizabeth City State University; M.Ed., Ph.D., University of North Carolina at Charlotte
Tyrette Carter.....Associate Professor
 B.A., University of Virginia; M.Ed., Averett College; Ph.D., University of Virginia

Nicole Dobbins..... **Associate Professor**
 B.A., M.A., Spelman College; Ph.D., University of Nevada at Las Vegas

Kimberly Erwin..... **Associate Professor and Associate Dean**
 B.S., M.S., North Carolina A&T State University; Ph D., Virginia Polytechnic Institute and State University

Ioney James..... **Associate Professor**
 B.A., The University of the West Indies; M.S., Central Connecticut State University; Ph.D., University of Albany State

Cathy Kea **Professor**
 B.A., North Carolina Central University; MS., University of Wisconsin-LaCross; Ph.D., University of Kansas

Gerrelyn Patterson..... **Associate Professor and Chairperson**
 B.A., North Carolina Central University; M.Ed., University of Virginia; Ph.D., University of North Carolina at Chapel Hill

Cailisha Petty..... **Assistant Professor**
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Nichole Smith..... **Associate Professor**
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 B.S., Livingstone College; M.Ed., Ph.D., University of North Carolina at Greensboro

Jared Webb..... **Assistant Professor**
 B.S., North Carolina State University; 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

COLLEGE OF ENGINEERING

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

Robin N. Coger, Dean

Bala Ram, Associate Dean for Academic Affairs

Leotis Parrish, Assistant Dean for Student Affairs

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 Department. 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 collective producer of African American engineers at across the BS, MS, and PhD degree levels (Diverse Issues in Higher Ed, 2020), and has continued for over a decade to support an engineering student population that is over 30% women engineers, at the undergraduate and graduate levels. The College ranked 1st in the percentage of master's degree awarded to women (ASEE, 2018), and 14th in the percentage of doctoral degrees awarded to women (ASEE, 2019). The College is also 4th in the nation in the number of African-American tenured and tenure-track faculty (ASEE, 2019).

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

VISION

The College of Engineering at North Carolina A&T State University cultivates leaders who excel at academics, innovation, and research.

MISSION

The College of Engineering is committed to excellence in engineering and computer science. The College, through education and research, creates innovative and collaborative solutions that address the evolving societal and economic challenges of North Carolina, the nation and the world.

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, High School GPA (weighted), and the curriculum completed in high school. 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-Calculus, 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 and have successfully completed Calculus I.

TRANSFER CREDIT EVALUATION

Students are advised to receive prior approval from their academic advisor and department chairperson for courses from other colleges and universities to be considered for transfer credit. 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.

MINIMUM GRADE REQUIREMENTS

The following minimum grade policy applies to all engineering and computer science programs in the College of Engineering. Some course listed with an "*" do not apply to Computer Science majors. Other courses subject to the minimum grade policy stated below, are included in the Curriculum Guides for each undergraduate program.

- MATH 131 • MATH 132*
- MATH 231* • PHYS 241*

When an engineering program requires students to take any of these listed courses, students will be required to obtain a minimum grade of "C-" in each such course to meet graduation requirements.

Individual programs may have additional courses that also require a minimum grade of "C" or "C-". Please refer to the requirements for each program stated in this undergraduate bulletin.

Students receiving a "D" or "D+" grade in the courses listed above (MATH131, MATH132, MATH231, and PHYS241) can take a competency test administered by the College of Engineering; if a grade of "C-" or above is obtained by the student in this test, the minimum "C-" grade requirement for this course will be waived.

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.

Department of Chemical, Biological, and Bioengineering
Stephen B. Knisley, Chairperson

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 problem solving through leadership, collaboration and teamwork and multi-disciplinary approaches.
3. Been active in their communities and professional societies.
4. Enhanced their professional development through life-long learning.

PROGRAM REQUIREMENTS

The Bioengineering 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 Bioengineering, leading to the Bachelor of Science in Bioengineering degree, is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. North Carolina Agricultural and Technical State University is the first Historically Black College or University in the USA to offer the Bachelor of Science in Bioengineering degree, and to achieve ABET accreditation of the Bachelor of Science in Bioengineering degree.

CAREER OPPORTUNITIES

According to the Bureau of Labor Statistics, Occupational Outlook Handbook, July 2019, most biomedical engineers work in manufacturing, universities, hospitals, and research facilities of companies and educational and medical institutions. Employment areas include electromedical and control instruments manufacturing, general medical and surgical hospitals, and government agencies such as the Food and Drug Administration and National Institutes of Health, and research organizations. A 7% growth in jobs is projected through 2026 for this occupation. 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)

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) Have disciplinary knowledge and skills to conduct engineering practice or pursue post-baccalaureate, studies.
- 2) Work effectively, inclusively and ethically in teams.
- 3) Be active in professional societies, continuing education through lifelong learning, and progress towards professional registration.
- 4) Be competent in creative engineering designs that consider environmental sustainability, human health, and safety.

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=134&ProgramIDs=>. 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.

CAREER OPPORTUNITIES

A degree in this field prepares a student for careers in engineering design, management, research, consulting, sales, teaching and product development, government 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 that increases its value. Chemical engineers often become employed by a company that 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 at North Carolina A&T State University 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 problem-solving through leadership, collaboration and teamwork and multi-disciplinary approaches.
3. Been active in their communities and professional societies.
4. Enhanced their professional development through lifelong learning.

PROGRAM REQUIREMENTS

The chemical 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 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 (General)
Major Code: BIEN

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
GEEN 111	1	ENGL 101	3
ENGL 100	3	BIOL 101	4
CHEM 106	3	PHYS 241	3
CHEM 116	1	PHYS 251	1
MATH 131	4	MATH 132	4
GEEN 100	2	GEEN 121	1
Semester Total	14	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
Social and Behavioral Science	3	Humanities and 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
Semester Total	16	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
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
Semester Total	17	Semester Total	17
Senior Year: First Semester		Senior Year: Second Semester	
Global Awareness	3	African, American Culture and History	3
BMEN 480	3	BMEN 481	3
BMEN 411	3	Advance Engineering Elective	3
CHEN 312	4	Advance Science or Engineering Elective	3
Semester Total	13	Semester Total	12

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

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

BIOL 101	MATH 131
BMEN 220	MATH 132
PHYS 241	MATH 231

Department of Chemical, Biological, and Bioengineering
Bachelor of Science in Bioengineering (Innovation)
Major Code: BIEN

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
GEEN 111	1	ENGL 101	3
ENGL 100	3	BMEN 101	4
CHEM 106	3	PHYS 241	3
CHEM 116	1	BMEN 225	1
MATH 131	4	MATH 132	4
GEEN 100	2	BMEN 132	1
Semester Total	14	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
Social and Behavioral Science	3	Humanities and Fine Arts	3
BMEN 220	3	MATH 341	3
MATH 231	4	BMEN 218	3
BMEN 231	1	CHEM 221	3
MEEN 104	2	BMEN 223	1
CHEM 107	3	GEEN 161	2
CHEM 117	1	Semester Total	15
Semester Total	17		
Junior Year: First Semester		Junior Year: Second Semester	
BMEN 310	3	BMEN 320	3
CHEN 300	3	BMEN 325	2
MEEN 230	3	ECEN 340	3
BMEN 350	3	BMEN 311	3
PHYS 242	3	BMEN 321	3
BMEN 252	1	BMEN 322	3
Semester Total	16	Semester Total	17
Senior Year: First Semester		Senior Year: Second Semester	
Global Awareness	3	African, American Culture and History	3
BMEN 480	3	BMEN 481	3
BMEN 411	3	Advance Engineering Elective	3
CHEN 312	4	Advance Science or Engineering Elective	3
Semester Total	13	Semester Total	12

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

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

BMEN 101	MATH 131
BMEN 220	MATH 132

PHYS 241

MATH 231

Department of Chemical, Biological, and Bioengineering
Bachelor of Science in Biological Engineering (Bioprocess Engineering Track)
Major Code: BLEN

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
GEEN 111	1	BIOE 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
Semester Total	14	CHEM 117	1
		Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
MEEN 230	3	African/American Studies Elective	3
MATH 231	4	BIOL 101	4
PHYS 242	3	CAEE 334	2
PHYS 252	1	CHEM 221	3
Humanities Elective	3	CHEM 223	1
GEEN 161	2	MATH 341	3
BIOE 200	1	Semester Total	16
Semester Total	17		
Junior Year: First Semester		Junior Year: Second Semester	
CHEN 200	4	BIOL 221	4
ISEN 260	2	MEEN 260	2
CAEE 362	3	BIOE 320	3
MEEN 241	3	Global Studies Elective	3
BIOE 340	3	BIOE 350	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
Statistics Elective	3	BIOE 425	3
BIOE 422	3	BIOE 423	3
ECEN 340	3	BIOE 496	2
BIOE 434	3	BIOE Elective	3
BIOE 495	1	Social Behavioral Science Elective	3
Semester Total	13	Semester Total	14

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

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

BIOE 350	MATH 132
BIOE 495	MATH 231
BIOE 496	PHYS 241

MATH 131

PHYS 242

BIOE Electives:

BIOE 426, BIOE 380, BIOE 485, BIOE 490, CIEN 310 or other junior and senior level engineering courses approved by the faculty advisor.

Statistics Electives:

MATH 224, ECON 206, STAT 214, CAEE 304, and ISEN 370

Humanities/Fine Arts:

ENGL 200, ENGL 201, ENGL 211, ENGL 212, ENGL 230, ENGL 231, LIBS 202, MUS 216, MUS 220, PHIL 101, PHIL 103, PHIL 104, PHIL 201, PHIL 266, PHIL 267, SPCH 250.

Social/Behavioral Sciences:

BUED 279, ECON 200, ECON 201, FCS 135, FCS 181, FCS 260, HIST 103, HIST 104, HIST 105, HIST 106, HIST 107, HIST 206, HIST 207, HIST 216, HIST 231, JOMC 240, POLI 110, PSYC 101, SOCI 100, SOCI 200, SSFM 226.

Knowledge of African American Culture and History:

ENGL 211, ENGL 212, HIST 103, HIST 106, HIST 107, LIBS 202, MUSI 220.

Global Awareness:

HIST 130, HIST 206, HIST 207, HIST 216, HIST 231, MGMT 221, PHIL 103, PHIL 201.

**Department of Chemical, Biological, and Bioengineering
Bachelor of Science in Biological Engineering (Natural Resources Engineering Track)
Major Code: BLEN**

Curriculum Guide Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
GEEN 111	1	BIOE 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	BIOL 101	4
Semester Total	14	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
GEEN 161	2	African American Studies Elective	3
MEEN 230	3	CAEE 362	3
MATH 231	4	CAEE 334	2
PHYS 242	3	BIOL 221	4
PHYS 252	1	MATH 341	3
Humanities Elective	3	Semester Total	15
BIOE 200	1		
Semester Total	17		
Junior Year: First Semester		Junior Year: Second Semester	
BIOE 204	3	BIOE 216	3
MEEN 241	3	BIOE 332/ SLSC 632	3
ISEN 260	2	BIOE 330	3
BIOE 360	3	BIOL 320	3
Social Behavioral Science Elective	3	Global Studies Elective	3

BIOE 340	3	Semester Total	15
Semester Total	17		
Senior Year: First Semester		Senior Year: Second Semester	
Statistics Elective	3	BIOE 424	3
BIOE 400	3	BIOE 423	3
BIOE 434	3	BIOE 496	2
ECEN 340	3	BIOE 425	3
BIOE 495	1	BIOE Elective	2
Semester Total	13	Semester Total	13

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

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

BIOE 350	MATH 132
BIOE 495	MATH 231
BIOE 496	PHYS 241
MATH 131	PHYS 242

BIOE Electives:

BIOE 422, 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 206, STAT 214, ISEN 370, and CAEE 304.

Humanities/Fine Arts:

ENGL 200, ENGL 201, ENGL 211, ENGL 212, ENGL 230, ENGL 231, LIBS 202, MUS 216, MUS 220, PHIL 101, PHIL 103, PHIL 104, PHIL 201, PHIL 266, PHIL 267, SPCH 250.

Social/Behavioral Sciences:

BUED 279, ECON 200, ECON 201, FCS 135, FCS 181, FCS 260, HIST 103, HIST 104, HIST 105, HIST 106, HIST 107, HIST 206, HIST 207, HIST 216, HIST 231, JOMC 240, POLI 110, PSYC 101, SOCI 100, SOCI 200, SSFM 226.

Knowledge of African American Culture and History:

ENGL 211, ENGL 212, HIST 103, HIST 106, HIST 107, LIBS 202, MUSI 220.

Global Awareness:

HIST 130, HIST 206, HIST 207, HIST 216, HIST 231, MGMT 221, PHIL 103, PHIL 201.

**Department of Chemical, Biological, and Bioengineering
Bachelor of Science in Chemical Engineering
Major Code: CHEN**

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	

GEEN 111	1	CHEN 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
Semester Total	14	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
Social and Behavioral Sciences	3	Humanities and Fine Arts	3
MATH 231	4	CHEN 226	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
Semester Total	17	Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
Global Awareness	3	CHEN 320	3
CHEN 300	3	CHEN 330	2
CHEN 312	4	CHEN 340	3
CHEM 441	3	MEEN 230	3
PHYS 242	3	ECEN 340	3
PHYS 252	1	Semester Total	14
Semester Total	17		
Senior Year: First Semester		Senior Year: Second Semester	
CHEN 430	3	CHEN 440	3
CHEN 400	3	CHEN 448	3
CHEN 410	2	CHEN Elective	3
CHEN 422	3	Advanced CHEM Elective	3
African Ameri. Culture and History	3	Semester Total	12
Semester Total	14		

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

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

CHEN 200	MATH 132
PHYS 241	MATH 231
MATH 131	

COURSE DESCRIPTIONS IN BIOENGINEERING

BMEN 101. Biol Fund Biomed Sci Eng Honor

Credit 4(3-2)

This combined lecture and laboratory course provides an introduction to biological knowledge that is useful for creation of engineering solutions to problems in biomedicine and healthcare. Lectures emphasize the fundamental bioprocesses important for production of biologics, antibiotics and bioactive chemicals, design of bioreactors, synthetic biological systems, biomimetics and engineered biomedical devices. In the laboratory, students consider real biomedical problems impacting society, and create engineered prototypes to solve the problems. Students perform experiments to test biological principles used in designs and to validate prototypes. (F;S)

BMEN 132. Analytic Design Lab

Credit 1(0-2)

Topics in analytical 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. In the laboratory, students apply quantitative analytical methods to engineering research and design problems. Prerequisite: MATH 131. (F;S)

BMEN 218. Stat Analysis of Chemical and Bio Engn 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 and biomedical engineering analysis. Statistical methods including error analysis, curve fitting and regression, analysis of variance, confidence intervals, hypothesis testing, and control charts are covered. In the laboratory, students apply analyses to contemporary engineering research and design problems. Prerequisite: MATH 132 (With C or higher grade). (F;S)

BMEN 220. Introduction to Biomedical Engineering Design

Credit 3(2-2)

This course is an introduction to the application of engineering principles to solve problems in biomedicine and healthcare. Engineered approaches to diagnosis and treatment of human organ system diseases are discussed. Students examine bioethics and IP issues in emerging life science applications and research. In the laboratory, students consider a real biomedical problem and its solution criteria. Students perform experiments to test biomedical principles used in design and to evaluate a prototype. Prerequisite: BMEN 101 and MATH 131 (Both with C or higher grades). (F;S)

BMEN 223. Biochemical Design Lab

Credit 1(0-2)

This laboratory course emphasizes the design of bioactive compounds and the measurement of their physical, chemical and functional properties. Modern instrumentation such as gas and column chromatography, infrared and ultraviolet analyses, and bioreactive assays are used. Corequisite: CHEM 221. (F;S)

BMEN 225. Biophysics Design Lab

Credit 1(0-2)

Students perform experiments to gain research skills and understanding of biophysical fundamentals. Experimental technique and evaluation of experimental results are emphasized. Students apply biophysical principles to design and evaluate a solution to a real-world problem. (F;S)

BMEN 231. Geometric Design Lab

Credit 1(0-2)

This course covers plane curves and polar coordinates, vector and solid geometry, vector valued functions, partial differentiation, multiple integrals and vector analysis. In the laboratory, students apply quantitative geometric analyses to engineering research and design problems. Prerequisite: MATH 132. (F;S)

BMEN 252. Bio Energy Interactions Lab

Credit 1(0-2)

In this course students apply physical principles to measure energy fields and their interactions with biological materials. Corequisite: PHYS 242. (F;S)

BMEN 310. Biomaterials

Credit 3(2-2)

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. In the laboratory, students design processes and material compositions to enhance properties of biomaterials. Prerequisite: BIOL 101 (or BMEN 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 Human Physiological Systems

Credit 3(2-2)

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. In the laboratory, students design systems for measurement of human physiological parameters. Prerequisites: BMEN 220 and MATH 341. (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. Students identify limitations of measurement methods and design improvements. Prerequisite: BMEN 220. (F;S)
- BMEN 350. Molecular Bioengineering** **Credit 3(2-2)**
 This course examines the molecular basis of major cell functions, alterations caused by diseases, and the molecular mechanisms of treatments. In the laboratory, students examine biomolecules using imaging techniques and design methods to alter the molecules. Prerequisites: CHEM 107, CHEM 117. (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/internships 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 121. Intro to Biological Engineering** **Credit 1(1-0)**
 Introduction to the major and the profession of Biological Engineering. Professionalism, engineering ethics and responsible conduct, project management, working in a team, communication, and use of technology and innovation in problem solving. Global contemporary issues in Biological Engineering including climate change, food-water-energy nexus, sustainability, and global awareness. (F;S)
- BIOE 200. Biological Engineer Design** **Credit 1(1-0)**
 The course will be taught as a lecture with following topics: (1) basic engineering calculations and presentations, (2) process variable (measurement, calculation & control), (3) material and energy balance calculations (draw and label flowcharts and solve material and energy balance equations). Class will also conduct a fermentation lab. Fall and Spring, Prerequisite: GEEN 100. (F;S;SS)

- 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)
- Geographic** 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 320. Heat and Mass Transfer in Biological Systems** **Credit 3(3-0)**
 This course covers the basic principles of heat and mass transfer applied to biological systems. The subjects of heat and mass transfer will be taught in conjunction with agricultural, biological and environmental engineering fields. Specific topics include governing equations and boundary conditions of heat and mass transfer, heat and mass transfer in living systems, steady and unsteady transport phenomena and numerical methods. Prerequisite: MEEN 241 or CHEN 312 or equivalent. (F;S)
- BIOE 340. Engineering Properties of Biological Materials (formerly BIOE 440)** **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, Corequisites: MEEN 230 or equivalent. (F;S;S)
- BIOE 350. Engineering Systems Analysis and Design (formerly BIOE 330)** **Credit 3(2-2)**
 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: BIOE 340 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. Prerequisite: CAEE 362. (F;S;S)
- BIOE 380. Soil Mechanics and Engineering (formerly BIOE 332)** **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 processes; methods of analysis applicable to solving practical problems related to agricultural, hydrological and environmental problems. Lab Exercises: Selected lab exercises will be conducted. Discussions will include: equipment impact on soil due to agronomic practices of land preparation including planting; Soil textural triangle, volumetric heat capacity, saturated and unsaturated conductivity. Prerequisites: CAEE 362 or consent of instructor. (F;S;SS)
- 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 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: MEEN 230 or equivalent. (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 350 and BIOL 221 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 is studied. Prerequisite: MEEN 241 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, water laws, hydraulic structures, open channel flow, introduction to aquifer analysis and contamination, pipe flow (fundamentals of fluid flow), well development (pumps and pumping), flow through porous media (theory of groundwater flow), water demand and water stress supply quantity and quality, best management practices, wetlands, water table management and watershed models. Prerequisite: BIOE 360. (F;S;S)
- BIOE 425. Instrumentation for Biological Systems** **Credit 3(2-2)**
 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: ECEN 340. (F;S;SS)

- BIOE 426. Food Engineering** **Credit 3(3-0)**
 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 106. (F;S;S)
- BIOE 434. Ecological Engineering** **Credit 3(2-2)**
 This course covers principles of ecological engineering design for integration into society and the environment for benefit of both. The principles are followed by the applications of ecological engineering to treat wastewaters, and to restore ecosystems. Some of the major technologies covered are treatment wetlands, land application, phytoremediation, stormwater BMPs, and stream restoration. Prerequisite: CAEE 362 or Consent of Instructor. (F;S;SS)
- BIOE 485. Selected topics in Biological Engineering** **Credit 1-4(1-4,0)**
 This is an in-dept lecture course covering several advanced topics in Biological Engineering. Topics are selected to match student interest and faculty expertise. Prerequisite: Senior Standing in Biological Engineering. (F;S;SS)
- BIOE 490. Independent Study in Biological Engineering** **Credit 1-4(1-4,0)**
 This is independent study course 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. Prerequisite: Permission of Instructor. (F;S;SS)
- 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 outlines the work plan. This project integrates design concepts from previous courses. Prerequisite: BIOE 350. (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 121. Intro Comp Dsgn Tools Chem Eng** **Credits 1(0-2)**
 This course introduces computational tools for creation and evaluation of designed solutions for problems in chemical engineering. Programming skills, data types, operations and graphical representations of design parameters are introduced. The use of numerical engineering tools including matrix manipulations, vectors and algebraic equation systems is discussed. A case study of a chemical process design is examined using contemporary computational tools. Prerequisite: MATH 131 (with a grade C or higher) or permission of instructor (F;S;SS)
- 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 226. Comp Dsgn Methods in Chem Eng** **Credit 3(2-2)**
 In this course students learn to apply contemporary numerical methods including linear algebraic solutions for chemical engineering design problems. Numerical methods of differentiation, integration, interpolation, root-finding, linear and nonlinear regression, matrix manipulation, linear simultaneous equations, and solution of ordinary differential equations are discussed. Using process simulation software in the lab, students create a design with idealized mixing, reaction, separation, and mass energy balances, and evaluate performance parameters. Prerequisites: CHEN 200 (with a grade of C or higher), CHEN 121 (with a grade of 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 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 406. Introduction to Biochemical Engineering **Credit 3(3-0)**

This course explores the use of living organisms or parts of them (e.g., enzymes) for the production of chemical or biological materials. The course emphasis is upon bioprocess development and bioreactor design. Topics covered include enzyme kinetics and biocatalysts, microbial growth and product formation, immobilization of enzymes and whole cells, bioreactor scale-up and design of batch and continuous bioreactors. Students are required to complete a bioprocess design or project with the option of using a process simulator such as Aspen. Prerequisite: Senior standing in CHEN or permission of instructor. (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. Interrelationships between design and process variables using computer simulation are studied. Optimization methods are applied to chemical process design. A current 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. Co-operative Industrial Experience in Engineering** **Credit 3(3-0)**
 This course is a supervised learning experience in a specified private or government facility. Students who have completed at least three co-op sessions with the same company may enroll in this course. Course requirements include employer evaluations of the student for each co-op session and student evaluations of the employer for each session. Written reports for each co-op session and an oral report summarizing the work experiences will be presented to a faculty committee. Prerequisite: Senior standing in engineering or permission of instructor. (F;S;SS)

DIRECTORY OF FACULTY

- Yusuf G. Adewuyi** **Professor**
 B.S., Ohio University; M.S., Ph.D., University of Iowa
- Laurent Ahiablame** **Assistant Professor**
 B.S., North Carolina A&T State University; M.S., Ph.D., Purdue University
- Niroj Aryal** **Assistant Professor**
 B.S., Tribhuvan University; M.S., Ph.D., Michigan State University
- Mohammad Azad** **Assistant Professor**
 B.S., M.S., Bangladesh University of Engineering and Technology; Ph.D., New Jersey Institute of Technology
- Narayan Bhattarai** **Associate Professor**
 B.S., M.S., Tribhuvan University; M.S., Ph.D., Chonbuk National University
- Arvind Chandrasekaran** **Assistant Professor**
 B.E., University of Madras; M.A.Sc., Concordia University; Ph.D., Concordia University, Professional Engineer
- Shamsuddin Ilias** **Professor**
 B.S., Bangladesh University of Engineering and Technology; M.S., University of Petroleum and Minerals; Ph.D., Queen's University; Professional Engineer
- Vinayak N. Kabadi** **Professor**
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- Jianzhong Lou** **Professor**
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- Abolghasem Shahbazi** **Professor**
 B.S., University of Tabriz; M.S., University of California at Davis; Ph.D., Pennsylvania State University (EIT)
- Yao Sun** **Teaching Assistant Professor**
 B.S., N.E., Inst. of Electric Power Eng.; M.S., Tsinghua University; Ph.D., University of Florida
- Lijun Wang** **Professor**
 B.S., Zhengzhou University; M.Sc., South China University of Technology; Ph.D., National University of Ireland, Dublin
- Yoheung Yun** **Professor**
 B.S., M.S., Chonbuk National University, Ph.D., University of Cincinnati

DEPARTMENT OF CIVIL, ARCHITECTURAL AND ENVIRONMENTAL ENGINEERING
 Leotis Parrish, Interim Chairperson

DEGREES OFFERED

Architectural 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:

- **Objective 1** – Graduates employed as Architectural Engineers or in associated professions related to Architectural Engineering and will demonstrate the ability to work productively in the main areas of Architectural Engineering.
- **Objective 2** – Graduates recognized for their interdisciplinary perspective to problem-solving and for their teamwork and leadership skills.
- **Objective 3** – Graduates who are active in a professional society and involved in continuing education making progress towards professional registration.
- **Objective 4** – Graduates who contribute to society, the diversity of their company, and their profession.

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.

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.

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:

- **Objective 1** – Graduates employed as Civil Engineers with designations of at least Engineer-in-Training (EIT) and will demonstrate the ability to work productively in the main areas of civil engineering.
- **Objective 2** – Graduates who demonstrate 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.
- **Objective 3** – Graduates who continue to learn and adapt to changing technologies, procedures and concepts in civil engineering.
- **Objective 4** – Graduates who 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
Freshman Year: First Semester		Freshman Year: Second Semester	
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	Semester Total	14
Semester Total	16		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
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
Semester Total	15	Semester Total	17
Junior Year: First Semester		Junior Year: Second Semester	
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	Semester Total	15
Semester Total	17		
Senior Year: First Semester		Senior Year: Second Semester	

AREN 480	2	AREN 483 (formerly AREN 486)	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
Semester Total	14	Semester Total	12

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

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

MATH 131	ECEN 340
MATH 132	CAEE 231
MATH 231	CAEE 232
PHYS 241	CAEE 362
PHYS 242	

Department of Civil, Architectural and Environmental Engineering
 Bachelor of Science in Civil Engineering
 Major Code: CIEN

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
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	Semester Total	14
Semester Total	16		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
MATH 231	4	MATH 341	3
CAEE 231	3	Global Studies Electives	3
CAEE 230	1	CIEN 281	1
PHYS 242	3	CAEE 232	3
PHYS 252	1	CAEE 240	3
CM 214 Surveying	2	CAEE 362 Fluid Mechanics	3
CM 224 Surveying Lab	1	Semester Total	16
Semester Total	15		
Junior Year: First Semester		Junior Year: Second Semester	
CAEE 363	1	CIEN 320	3
CAEE 325	3	CIEN 321	1
CIEN 350	3	CAEE 304	3
CAEE 330	3	CIEN 364	3
CAEE 335	1	CAEE 430	3
CAEE 334	2	CIEN 310	3

CAEE 400	1	CIEN 311	1
Semester Total	14	Semester Total	17
Senior Year: First Semester		Senior Year: Second Semester	
CIEN 483	1	CIEN 484	2
CAEE 436	3	Social Science Elective	2
CAEE 481	3	Science Electives	3
CIEN 412	3	CIEN 453	3
Humanities Elective	3	CIEN 405	1
CIEN 422	3	Semester Total	12
Semester Total	16		

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

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

MATH 131	CHEM 106
MATH 132	CAEE 231
MATH 231	CAEE 232
PHYS 241	CAEE 362

COURSE DESCRIPTIONS IN CIVIL, ARCHITECTURAL, AND ENVIRONMENTAL ENGINEERING

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)**

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. **(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. **(S)**

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 Positioning Systems is also included. Prerequisite: MATH 102 or consent of instructor. **(F;S)**

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)**

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)**

CAEE 232. Engineering Solid Mechanics I **Credit 3(3-0)**

This course covers stress and strain, axial and torsional loadings, bending moment and shear distributions from transverse loads, combined stress analysis, deformation and deflection of shafts and beams, transformation of stress and strain, column buckling, and an introduction of the analysis of statically determinate beams. Prerequisites: CAEE 231 and MATH 132. **(S)**

- CAEE 240. Numerical Methods and MATLAB** **Credit 3(0-6)**
 This course covers the basic of MATLAB 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, Corequisite MATH 341. (S)
- 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. Corequisite: CIEN 330. (F)
- 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)
- 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)
- CAEE 401. Engineering Topics Review** **Credit 0(0-2)**
 This course is a review course for students taking the Fundamentals of Engineering Exam. (S)
- CAEE 430. Structural Design in Steel** **Credit 3(3-0)**
 This course will introduce the students to the preliminary design of structural systems and element design in structural steel. The students will be taught to define structural system layouts, structural loads and design simply supported steel joists, beams, and columns. Prerequisite: CAEE 232. Corequisite: CAEE 325. (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. (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) (DEMAND)
- 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)
- 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 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)
- 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)
- 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)
- 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. (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. 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)

AREN 467 Electrical Systems and Smart Buildings **Credit 3(3-0)**

Analysis and design of electrical systems in buildings using the National Electrical Code (NFPA_70). The topics include panel boards, motors, transformers, electrical distribution in buildings, grounding, methodology of reducing the available short circuit, and power systems harmonics. As well, this course includes the foundations of a smart building, communications systems, system control, electrical power management systems, and economics. Students will perform design project. Prerequisite: AREN 348. (S)

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 483. 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)

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) (DEMAND)

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. (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. (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. (S)

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. (F)
- 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. (S)
- 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 405. Civil Engineering Topics Review** **Credit 1(0-2)**
 This course covers and reviews the Civil Engineering topics of the Fundamentals of Engineering (FE) exam. The course emphasizes extensive problem solving and helps students prepare for the FE exam. Prerequisite: 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. (F)
- 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. (S)
- 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 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)
- 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. (S)

DIRECTORY OF FACULTY

- Taher Abu-Lebdeh**..... **Professor**
 B.S., M.S., Yarmouk University, Jordan; Ph.D., Louisiana State University; Professional Engineer
- Tameka Coly**..... **Lecturer and Undergraduate Specialist**
 B.S., M.S. North Carolina A&T State Univrsity
- Sameer A. Hamoush**..... **Professor**
 B.S., University of Damascus; M.S., University of Nebraska; Ph.D., North Carolina State University; Professional Engineer
- Manoj K. Jha** **Associate Professor**
 B.E., Tribhuvna University; M.E. Asian Insitute of Technology; M.S., Ph.D., Iowa State University; Professional Engineer
- Stephanie Luster-Teasley**..... **Professor**
 B.S., North Carolina A&T State University; M.S., Ph.D., Michigan State University

Ahmed Megri	Associate Professor
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	
Venktesh Pandey	Assistant Professor
B.S. Indian Institute of Technology; M.S., Ph.d., The University of Texas at Austin	
Miguel Picornell	Professor
B.S., Madrid Polytechnic University; M.S., Ph.D., Texas A&M University; Professional Engineer	
Robert Powell	Associate Professor
B.S., Stanford University; M.Arch., M.I.T.	
Joshua Robbins	Lecturer
B.S., M.S., North Carolina State University	
Raymond Tesiero	Assistant Professor
B.S., Rochester Institute of Technology; M.S., Ph.D., North Carolina A&T State University	
Renzun Zhao	Assistant Professor
B.S., M.S., Harbin Institute of Technology; Ph.D., Virginia Polytechnic Institute and State University; Professional Engineer	

Department of Computer Science
Xiaohong Dorothy Yuan, 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 and remain effective through life-long learning in a computer science related career.
2. Perform effectively in graduate programs where an undergraduate degree in computer science is required.
3. Effectively communicate ideas and collaborate professionally with colleagues and clients.

EDUCATIONAL OUTCOMES

The Computer Science Program enables students to achieve the following outcomes by the time of graduation:

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program’s discipline.
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program’s discipline.
6. Apply computer science theory and software development fundamentals to produce computing-based solutions.

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, 167, 280, 285. Computer Science students must earn a grade of “C-“ or better in MATH 131.

**Department of Computer Science
Bachelor of Science in Computer Science
Major Code: COMP**

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
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	Semester Total	16
Semester Total	15		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
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
Semester Total	16	COMP 200	1
		Semester Total	17
Junior Year: First Semester		Junior Year: Second Semester	
Approved Science Elective	4	ENGL 331	3
Approved Statistics Elective	3	COMP 322	3
COMP 360	3	COMP 365	3
Approved Computer Architecture Elective	3	COMP 350	3
Approved COMP Elective	3	COMP 390	3
Semester Total	16	COMP 300	1
		Semester Total	16
Senior Year: First Semester		Senior Year: Second Semester	
COMP 385	3	COMP 496 (formerly COMP 596)	3
COMP 410	3	Approved COMP Elective	3
COMP 476	3	Approved COMP Elective	3
Free Elective	3	Free Elective	3
Semester Total	12	Semester Total	12

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

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

COMP 163 (formerly GEEN 163)	COMP 280
COMP 167 (formerly GEEN 165)	COMP 285

MINOR IN COMPUTER SCIENCE

The Computer Science Minor program is designed to meet the growing demand for professionals with computing knowledge and skills. This program provides the training needed to apply computer science knowledge, techniques and tools to produce computing-based solutions. Students who have completed a minimum of 24 semester hours with a minimum GPA of 2.5 may elect to declare the minor. The declaration or change of a minor must be completed in the Office of the Registrar. Students should have taken MATH131 with a grade of C- or better, and have taken COMP180 or MATH 123 or ECEN 227.

The Computer Science Minor requires six 3-credit courses: four required course and 2 elective courses.

Required courses:

- COMP 163 Introduction to Computer Programming
- COMP 167 Computer Program Design (Prerequisite: COMP 163)
- COMP 280 Data Structures (Prerequisite: COMP167 and (MATH 123 or COMP 180 or ECEN 227)
- COMP 285 Design and Analysis of Algorithms (Prerequisite: COMP 280, MATH 131)

Two Elective courses: any 200, 300, or 400 level 3-credit hour computer science courses, or MATH 360, MATH 365, and CST 340.

UNDERGRADUATE CERTIFICATE IN CYBERSECURITY

The undergraduate certificate program in cybersecurity is a multidisciplinary program designed for Computer Science and non-Computer Science undergraduate students to gain cybersecurity knowledge and skills in order to meet the diverse requirements of cybersecurity-related positions. A student interested in this program must submit an application form, a certificate plan of study along with a current transcript. To earn the certificate, a student must complete four three-credit hour certificate courses, and earn at least a C grade in each of these courses. The certificate requires one core course (COMP 320) and three elective courses. The elective courses can be chosen from COMP 420 or CST 315, COMP 422 or COMP 620, COMP 423 or COMP 621, ISEN 380, CST 326, ECEN 452, ECEN 421, ECEN 485, and CRJS 485.

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. C++ Programming for Engineers (formerly GEEN 160)

Credit 3(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 161. Python for Data Science

Credits 3(2-2)

This course teaches the Python programming language along with an environment and standards that encourage efficient production of well-developed code. The course addresses numerical computing, data manipulation and analysis, plotting and visualization, machine learning, and language processing by focusing on the most important Python libraries (e.g. NumPy, pandas, Matplotlib, ggplot2, statsmodels, scikit-learn and NLTK) that enable the student to do data science effectively using Python. (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: COMP 167 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 and 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 280. (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 361. Data Analytics in Python** **Credits 3(3-0)**
 This course teaches how to develop efficiently well-designed, well-documented, tested, and integrated Python code for users to solve problems in data analytics. The student will become proficient with standard Python packages in NumPy (numerical computing) pandas (data manipulation and analysis), Matplotlib (plotting), ggplot2 (visualization), and statsmodels and other statistical packages. The student will also be introduced to machine learning (package scikit-learn), natural language processing (package NLTK), and network science (package NetworkX). Prerequisite: COMP 280. (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. Artificial Intelligence and Machine Learning** **Credit 3(3-0)**
 This course discusses the theory and applications of artificial intelligence with a focus on machine learning. It covers the concepts related to search, knowledge representation, logical reasoning, supervised learning and unsupervised learning. Also, students will write computer programs implementing artificial intelligence and machine learning concepts. 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 285. (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 280. (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 422. Information Privacy and Security** **Credit 3(3-0)**
 This course examines the security and privacy issues associated with information systems. There are cost/risk trade-offs to be made. Discussed topics include technical, physical, and administrative methods of providing security, access control, identification, and

authentication. Encryption is examined, including Data Encryption Standards (DES) and public key crypto-systems. Management considerations such as key protection and distribution, orange book requirements, and OSI data security standards are covered. Privacy issue is covered, as is current cryptographic research. The topics to be covered include; Authentication, Access Control, Encryption, Intrusion Detection, Entropy and Uncertainty, Key Management, Privacy issues, the State-of-the-Art and Research Topics on Information Privacy and Security. Prerequisite: COMP 280. (F;S;SS)

COMP 423 Web Security

Credit 3(3-0)

This course will focus on the technologies that provide security services for the World Wide Web. It will introduce a set of procedures, practices, and technologies for protecting web servers, web users, and their surrounding organizations. We will discuss, understand and use various security technologies for the World Wide Web (WWW). How these technologies secure WWW applications will also be addressed. The concept of cloud computing and cloud computing security will be introduced. Prerequisite: COMP 280. (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 285. (F;S;SS)

COMP 452. Network Science

Credit 3(3-0)

This course considers empirical aspects of various kinds of networks, formal modeling and analysis of networks, and especially computational modeling and analysis. To this end, the course thoroughly covers a standard software package for network analysis and the language using the package, and it introduces packages for allied activities including machine learning. All analysis is accompanied by use of the package. Cloud resources are used for familiarity with big-data aspects, and public network libraries are used. Assignments have conceptual, formal, and especially programming components. Students should have programming experience. Prerequisite: COMP 285.

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 454. Virtual and Augmented Reality

Credit 3(3-0)

This course covers core and state-of-art technologies and techniques of Virtual Reality, Augmented Reality, and Mixed Reality. Topics covered include: head-tracked and head-mounted displays, 3D tracking, 3D user interfaces and interactions, VR/AR applications, human perception, cognition and factors, evaluation of VR and other VR related topics. Prerequisite: COMP 280. (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 280. (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

Mahmoud Abdelsalam	Assistant Professor
B.S., Arab Academy for Science and Technology; M.S., Ph.D., University of Texas at San Antonio	
Mohd Anwar	Associate Professor
B.S., Winona State University; M.S., North Dakota State University; Ph.D., University of Saskatchewan	
Kelvin Bryant	Assistant Professor
B.S., M.S., Ph.D., North Carolina State University	
Edward Carr	Teaching Assistant Professor
B.S., Wingate University; M.S., Western Carolina University; M.S., Ph.D., North Carolina A&T State University	
Albert Esterline	Associate Professor
B.A., Lawrence University; M.Litt., Ph.D., University of St. Andrews; M.S., Ph.D., University of Minnesota	
Jung Hee Kim	Associate Professor
B.A., Korea University; M.S., Ph.D., Illinois Institute of Technology	
Sajad Khorsandroo	Assistant Professor
B.E., University of Applied Science and Technology; M.S., University of Malaya; Ph.D., University of Texas at San Antonio	
Letu Qingge	Assistant Professor
B.S., Inner Mongolia University; M.S., Beijing University of Chemical Technology; Ph.D., Montana State University	
Kaushik Roy	Associate Professor
B.S., M.S., University of Rajshahi; M.S., Ph.D., Concordia University	
Madhuri Maddy Siddula	Assistant Professor
B.S., Osmania University; M.S., Indraprastha Institute of Information Technology Delhi; Ph.D., George State University	
Jinsheng Xu	Associate Professor
B.S., Nanjing University; M.S., Beijing University; Ph.D., Michigan State University	
Huiming Anna Yu	Professor and Director of Graduate Studies
B.S., Xiamen University; M.S., Hefei Polytechnic University; Ph.D., Stevens Institute of Technology	
Xiaohong Dorothy Yuan	Professor and Chairperson
B.S., Huazhong University of Science and Technology; Ph.D., Institute of Automation, Chinese Academy of Sciences; Ph.D., Florida Atlantic University	

Department of Electrical and Computer Engineering

Abdullah Eroglu, 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. Electrical Engineering graduates will utilize skills gained in the program to obtain gainful employment in industry, government or academia.
2. Electrical Engineering graduates will be engaged in the design, analysis, test or support of systems, or processes through agile, skillful, and innovative methods, while respecting economic, environmental, cultural, and ethical standards or constraints.
3. Electrical Engineering graduates will be active and participate in communities and professional societies.
4. Electrical Engineering graduates engage and take leading roles in life-long learning opportunities.

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. Computer Engineering graduates will utilize skills gained in the program to obtain gainful employment in industry, government or academia.
2. Computer Engineering graduates will be engaged in the design, analysis, test or support of systems, or processes through agile, skillful, and innovative methods, while respecting economic, environmental, cultural, and ethical standards or constraints.
3. Computer Engineering graduates will be active and participate in communities and professional societies.
4. Computer Engineering graduates engage and take leading roles in life-long learning opportunities.

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
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENGL 101	3
ECEN 101	3	ECEN 102	3
MATH 131	4	CHEM 106	3
GEEN 100	2	CHEM 116	1
GEEN 111	1	PHYS 241	3
COMP 160	3	PHYS 251	1
Semester Total	16	MATH 132	4
		Semester Total	18
Sophomore Year: First Semester		Sophomore Year: Second Semester	
ECEN 200	3	ECEN 212	3
ECEN 206	1	ECEN 218	1

PHYS 242	3	ECEN 300	3
PHYS 252	1	ECEN 306	1
MATH 231	4	MEEN 230	3
MATH 341	3	Social/Behavioral Science	3
Semester Total	15	Semester Total	14
Junior Year: First Semester		Junior Year: Second Semester	
ECEN 320	3	ECEN 351	3
ECEN 326	1	ECEN 357	1
ECEN 325	3	ECEN 400	3
ECEN 356	3	ECEN 460	3
ISEN 260	2	ECEN 466	1
Knowledge of African-American Culture and History	3	Global Awareness	3
Semester Total	15	Semester Total	14
Senior Year: First Semester		Senior Year: Second Semester	
ECEN 478 ^a	3	ECEN 479 ^a	3
ECEN 4xx ^b	3	ECEN 4xx ^b	3
ECEN 4xx ^b	3	ECEN 4xx ^b	3
ECEN 4xx ^b	3	ECEN 4xx ^c	3
ECEN 4xx ^c	3	SPCH 250 ^d	3
Semester Total	15	Semester Total	15

Total Credit Hours: 122

^aCapstone Design Course

^bTechnical Elective (maximum of 2 courses from a given area); (ECEN 449, ECEN 452, ECEN 459), (ECEN 408, ECEN 426, ECEN 450, ECEN 470), (ECEN 323, ECEN 421, ECEN 441, ECEN 447), (ECEN 461, ECEN 468, ECEN 474, ECEN 477)

^cTechnical Elective (ECEN 410, ECEN 430, ECEN 462, ECEN 472)

^dThis 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 326
ECEN 102	ECEN 351
ECEN 200	ECEN 356
ECEN 206	ECEN 357
ECEN 212	ECEN 400
ECEN 218	ECEN 460
ECEN 300	ECEN 466
ECEN 306	ECEN 478
ECEN 320	ECEN 479
ECEN 325	COMP 160

Department of Electrical and Computer Engineering
 Bachelor of Science in Computer Engineering
 Major Code: CPEN

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENGL 101	3
ECEN 101	3	ECEN 102	3
MATH 131	4	PHYS 241	3
GEEN 100	2	PHYS 251	1
GEEN 111	1	MATH 132	4
COMP 163	3	Semester Total Hours	14
Semester Total Hours	16		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
PHYS 242	3	MATH 231	4
PHYS 252	1	COMP 280	3
MATH 341	3	ECEN 200	3
COMP 167	3	ECEN 206	1
ECEN 212	3	ECEN 375	3
ECEN 218	1	ECEN 381	1
ECEN 227	3	Semester Total Hours	15
Semester Total Hours	17		
Junior Year: First Semester		Junior Year: Second Semester	
COMP 285	3	ECEN 320	3
ECEN 300	3	ECEN 326	1
ECEN 306	1	ECEN 351	3
ECEN 323	3	ECEN 357	1
ECEN 329	1	ECEN 356	3
Social and Behavioral Science	3	ECEN 400	3
Semester Total Hours	14	Knowledge of African American Culture & History	3
		Semester Total Hours	17
Senior Year: First Semester		Senior Year: Second Semester	
ECEN 478 ^a	3	ECEN 479 ^a	3
Technical Elective ^b	3	Technical Elective ^b	3
Technical Elective ^{b or c}	3	Technical Elective ^{b or c}	3
ECEN 421	3	COMP 350	3
SPCH 250 ^d	3	Global Awareness	3
Semester Total Hours	15	Semester Total Hours	15

Total Credit Hours: 123

^aCapstone Design Courses

^bMust choose from these courses: ECEN 325, ECEN 424, ECEN 441, ECEN 447, ECEN 457, ECEN 459, or ECEN 485 (approved case-by-case)

^cMust choose from these courses: COMP 322, COMP 360, COMP 4xx, or ECEN 4xx

^dThis 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 351
ECEN 102	ECEN 356
ECEN 200	ECEN 357
ECEN 206	ECEN 375
ECEN 212	ECEN 381
ECEN 218	ECEN 400
ECEN 227	ECEN 421
ECEN 300	ECEN 478
ECEN 306	ECEN 479
ECEN 320	COMP 163
ECEN 323	COMP 167
ECEN 326	COMP 280
ECEN 329	

COURSE DESCRIPTIONS IN ELECTRICAL AND COMPUTER ENGINEERING

ECEN 101. Engineering Problem Solving with MATLAB

Credit 3(3-0)

Introduction to the use of MATLAB for solving engineering problems. Emphasis on problem solving techniques with applications of modern high-level structured programming languages: algorithm development, looping techniques, files and data structures, solving linear algebraic equations, simple statistical techniques, files and plotting techniques. (F;S;SS)

ECEN 102. Introduction to Problem Solving for Electrical and Computer Engineers II

Credit 3(3-0)

This is the second in a sequence of courses that introduce students to the fields of electrical and computer engineering by providing an experiential- based high-level overview of computing systems applications. Individual and team experiences with problem-solving and design techniques related to practical computing systems are enabled by introductory-level computer-aided engineering software and hardware learning platforms. Standard systematic thinking and the engineering design process will be utilized for developing practical computing applications individually and in teams. Written and oral reports will be required along with demonstrations for learning activities. Prerequisite: ECEN 101. (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. Prerequisites: ECEN 101 and MATH 132. Corequisite: ECEN 200. (F;S;SS)

ECEN 212. 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. Corequisite: ECEN 218. (F;S;SS)

ECEN 218. 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 212. (F;S;SS)

ECEN 227. Discrete Systems Modeling

Credit 3(3-0)

This course is an introduction to applied discrete mathematics as it relates to computer engineering. Topics include set theory, propositional logic, functions, relations, recursion, Boolean algebra, applications of elementary graph theory, trees, and mathematical techniques for algorithm analysis. Prerequisite: ECEN 101. (F;S;SS)

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. Prerequisites: ECEN 200 and MATH 341. (F;S)

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. Prerequisites: ECEN 200 and ECEN 206. Corequisite: ECEN 300. (F;S)

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. Prerequisites: ECEN 200 and PHYS 242. (F;S)

ECEN 323. Digital Systems Design I

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, and performance issues in digital circuits. In addition, the student will be exposed to the hardware description language-based system analysis and synthesis, hardware-software co-design, data-flow models, and digital system primitives. Prerequisite: ECEN 212. (F;S;SS)

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 hardware for experiments on various microelectronic components and circuits. Prerequisites: ECEN 206. Corequisite: ECEN 320. (F;S;SS)

ECEN 329. Digital Systems Design I 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 results. Labs also include the use of Field Programmable Gate Arrays (FPGA) for building circuits described in the HDL. Prerequisites: ECEN 212 and ECEN 218. Corequisite: ECEN 323. (F;S;SS)

ECEN 340. 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 341 and PHYS 242. (F;S)

ECEN 351. Introduction to Microprocessor-based Systems

Credit 3(3-0)

This course introduces the fundamentals of design using microprocessors, microcomputers, and microcontrollers. Both software and hardware concepts are addressed. Software concepts include high and low-level programming, flowcharts, and development/debugging techniques. Hardware concepts include communication ports, interrupts, memory, and interfacing to digital and analog devices such as sensors and actuators. Prerequisites: ECEN 200 and ECEN 212. (F;S;SS)

ECEN 356. Probability and Random Variables

Credit 3(3-0)

This course covers sample space and events, conditional probabilities, independent events, Bayes formula, discrete and continuous random variables, expectation of random variables, joint distribution, conditional expectation, Gaussian random variables, and multiple random variables. Prerequisite: MATH 341. (F;S;SS)

ECEN 357. Microprocessor Laboratory

Credit 1(0-3)

This course provides practical experience in microprocessor hardware and software, interfacing, and applications. Microprocessor evaluation boards and development software are utilized throughout the course. Prerequisite: ECEN 206 and ECEN 218. Corequisite: ECEN 351. (F;S)

ECEN 377. Engineering Applications of Artificial Intelligence

Credit 3(3-0)

The course objective is to prepare students to learn artificial intelligence techniques using contemporary open source AI tool sets. Students will apply the acquired skills through multiple AI related engineering applications. Basic concepts needed for deep learning development such as linear algebra and calculus will be covered. Students will learn to deploy different deep learning models on edge hardware. In addition, reasoning-based AI concepts will be introduced. Moreover, evolutionary computation concepts and applications will be introduced. Prerequisites: MATH 131 and COMP 163. (F;S)

ECEN 381. Computer Architecture Laboratory

Credit 1(0-2)

This course covers the design and implementation of architectural components of computer systems. Topics include instruction set architecture, architectural simulation, boot processes, memory systems, input/output systems, advanced architectures, and virtual architectures. Corequisite: ECEN 375. Prerequisites: ECEN 212, ECEN 218, and ECEN 227. (F;S;SS)

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;SS)

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. **(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 300. **(S)**
- ECEN 415. Application Development for Smart Devices** **Credit 3(3-0)**
This course introduces programming for smart devices. Topics such as installation of development tools, device resources, user interface, and user data will be covered. Advanced topics such as sensors, local database support, and publishing to the application store will also be discussed. This course will solidify basic device concepts, how to use resources correctly and how to push updates as needed. Students must complete projects and a case study. Prerequisites: ECEN 351 or ECEN 375. **(F;S)**
- ECEN 421. Embedded Systems Design** **Credit 3(3-0)**
This course is a comprehensive study of both software and programmable hardware-based application-specific systems, using high-level and low-level languages. Topics covered include hardware/software design processes, scheduling, performance, memory, power optimizations, and real-time operating systems. Software integrated development environments (IDEs), along with compatible hardware evaluation boards, for implementation are covered. Prerequisites: ECEN 351 and ECEN 375. **(F)**
- ECEN 424. Digital Systems Design II** **Credit 3(3-0)**
This is a second course on digital systems design. The course focuses on top-down design and analysis. Topics include timing, power and performance issues in digital circuits, and interfacing modern peripherals. Hardware description language-based system analysis and synthesis, hardware-software co-design, data-flow models, and digital system primitives will also be covered. The course consists of FPGA-based implementation projects. Prerequisite: ECEN 323. **(F)**
- ECEN 426. Introduction to Microwave Engineering** **Credit 3(3-0)**
This course covers principles of microwave components such as transmission line, couplers, filters, power dividers, attenuators, circulators, mixers, oscillators, and amplifiers. Students will be exposed to CAD tools. Prerequisite: ECEN 450 (with C or higher grade). **(F;S;SS)**
- 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 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 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 212 and ECEN 320. **(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 300. **(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. Prerequisites: ECEN 356 and ECEN 400. **(F;S)**
- 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). Prerequisites: ECEN 356 and ECEN 400. **(F;S)**
- 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. Prerequisites: ECEN 356 and ECEN 400. (F;S)

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 462. Industrial Controls and Manufacturing **Credit 3(3-0)**

Students are introduced to industrial controls and the fundamentals of manufacturing with hands-on experience based on lab projects using industry software and hardware for communications and control. Prerequisites: ECEN 300 or ECEN 340. (F;S)

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 468. Theory of Linear Control Systems **Credit 3(3-0)**

This course introduces the theory of linear systems represented by state equations. Topics include the Jordan canonical, form, solutions to state equations, relationship to transfer functions, stability, controllability, and pole placement design. Prerequisite: ECEN 410. (F)

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 325. (F;S)

ECEN 472. Modeling and Control of Autonomous Vehicles **Credit 3 (3-0)**

This course introduces a systematic approach to modeling and control of Unmanned Aerial Vehicles (UAVs). The course explores different topics including UAV mathematical model, automatic control, flight sensing and control mechanisms, and flight control design. In addition, the course will have some lab sessions for actual implementation of flight control systems on a small drone and/or software development and flight simulations. Prerequisite: ECEN 400. (F;S)

ECEN 474. Genetic Algorithms **Credit 3(3-0)**

This course covers the theory and application of genetic algorithms. Genetic algorithms combine a Darwinian survival-of-the-fittest with a randomized, yet structured, information exchange to form an improved search mechanism with surprising 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 and MATH 341. (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 information 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. Prerequisites: ECEN 326 and 357. (F;S;SS)

ECEN 479. Senior Design Project II **Credit 3(1-6)**

This is a continuation of ECEN 478 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

Ali Abul-Fadl	Adjunct Professor
B.S., M.S., Ph.D., University of Idaho	
Kory Bennett	Director of Robotics Outreach and Lecturer
B.S.E.E., Temple University; M.S., Ph.D., North Carolina A&T State University	
Tadilo E. Bogale	Assistant Professor

B.S., Jimma University; M.S., Karlstad University; Ph.D., University Catholique de Louvain	
Stephen Crist	Adjunct Professor
B.S.E.E., Rensselaer Polytechnic Institute; M.S.E.E., Arizona State University; Ph.D. Appalachian State University	
Numan S. Dogan	Professor
B.S., Karadeniz Technical University; M.S., Polytechnic Institute of New York; Ph.D., University of Michigan	
Christopher C. Doss	Associate Professor
B.S.E.E., University of South Florida; M.S.E.E., Ph.D., North Carolina State University	
William W. Edmonson	Professor
B.S., Kettering University; M.S., Georgia Institute of Technology; Ph.D., North Carolina State University	
Abdullah Eroglu	Professor and Chairperson
B.S.E.E., University of Gaziantep; M.S.E.E., Ph.D., Syracuse University	
Walter Gilmore	Adjunct Professor
B.S.E.E., M.S.E.E., Ph.D., North Carolina A&T University	
Corey A. Graves	Associate Professor
B.S.E.E., North Carolina State University; M.S.E.E., North Carolina A&T University; Ph.D., North Carolina State University	
Abdollah Homaifar	Professor
B.S., M.S., State University of New York-Stony Brook; Ph.D., The University of Alabama	
Christopher K. Horne	Lecturer
B.S., M.S., North Carolina State University; Ph.D., North Carolina A&T State University	
Ali Karimoddini	Associate Professor
B.S., Amirkabir University of Technology; M.S., Petroleum University of Technology; Ph.D., National University of Singapore	
John C. Kelly, Jr.	Associate Professor
B.S., Ph.D., University of Delaware	
Daniel B. Limbrick	Associate Professor
B.S., Texas A&M University; M.S., Ph.D., Vanderbilt University	
Mahmoud Nabil Mahmoud	Assistant Professor
B.S., M.S., Cairo University; Ph.D. Tennessee Technological University	
Harold L. Martin, Sr.	Professor and Chancellor
B.S., M.S., North Carolina A&T State University; Ph.D. Virginia Polytechnic Institute and State University	
Hieu T. Nguyen	Assistant Professor
B.S. Hanoi University of Science and Technology; M.S. Southern Taiwan University of Science and Technology; Ph.D. Institut National de la Recherche Scientifique	
Ali Osareh	Adjunct Professor
B.S., University of Colorado; M.S., University of Missouri; Ph.D., Virginia Polytechnic Institute and State University	
Ioannis Raptis	Assistant Professor
B.S., Aristotle University of Thessaloniki; M.S. The Ohio State University; Ph.D., University of South Florida	
Zhijian Xie	Associate Professor and Graduate Coordinator
B.S., M.S., University of Science and Technology of China; Ph.D., Princeton University	
Binbin Yang	Assistant Professor
B.S., Hunan University; M.S., University of Chinese Academy of Sciences; Ph.D., North Carolina State University	

Department of Industrial and Systems Engineering
Paul Stanfield, Interim Chairperson

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 aligned with University, College, and Departmental vision, mission, and values and are based on the needs of our constituencies. Within a few years of graduation, alumni of the ISE program will be:

1. Improving the design, efficiency, and quality of systems, products and processes through application of technical knowledge and business acumen.
2. Integrating system design, production, usability, operational and costing processes using analytical and computational tools.
3. Leading and collaborating on diverse and inclusive teams to produce positive change.
4. Contributing to their employers, communities, and the profession of industrial and systems engineering.
5. Adapting to societal needs and technological innovation by engaging in continuous learning which might include graduate studies.

DEGREES OFFERED

Industrial and Systems Engineering – Bachelor of Science

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 ABET, www.abet.org.

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

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENGL 101	3
CHEM 106	3	Humanities/Fine Arts Elective ¹	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
Semester Total	14	ISEN 121	1
		Semester Total	17
Sophomore Year: First Semester		Sophomore Year: Second Semester	
PSYC 101 ¹	3	Global Awareness Elective ¹	3
ISEN 102	2	African-American Culture / HIST Elective ¹	3
ISEN 246	3	MEEN 260	2
MATH 351	3	ISEN 255	3
PHYS 242	3	ISEN 286	1
PHYS 252	1	MATH 231	4
Semester Total	15	Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
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
Semester Total	14	MEEN 230	3
		Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
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 ¹	3
ISE Technical Elective ¹	3	Semester Total	13
Semester Total	16		

Total Credit Hours: 120

¹See 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:

MATH 131	ISEN 370
MATH 132	PHYS 241
MATH 231	

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.

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 121. College of Engineering Colloquium II

Credit 1(1-0)

This course includes lectures, seminars and activities important to the retention and matriculation of 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.

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.

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 engagement and leadership development of industrial and systems engineering students. Topics covered include learning styles, group dynamics, industrial and systems engineering history, and whole person 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 Visual Basic. Topics include flow chart construction and interpretation, procedural control flow, user and application interface development, and spreadsheets. A design project is required.

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. A design project is required. 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 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. 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 370, senior standing.

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/concurrent: MATH 351.

ISEN 435. Stochastic Operations Research **Credit 3(3-0)**

This course introduces the concepts of probabilistic operations research models and solution techniques. Specific topics include Poisson processes, Markov chains, queuing models and their applications, and decision and risk analysis. Prerequisites: ISEN 370. Prerequisites/Concurrent: MATH 351.

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. A design project is required. Prerequisites: ISEN 380, ISEN 430.

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 scheduling and job scheduling. Relationships with demand-driven methods and supply chain management are covered. Prerequisite/Concurrent: 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 462. Data-Driven Modeling and Analysis in Python and R** **Credit 3(3-0)**
 This course provides an introduction to system modeling and data analytics using R and Python. Specific topics include data structures, data visualization, data cleansing, and writing programs to analyze large data sets. Datasets related to engineered systems are emphasized. Prerequisite: Senior standing in Engineering.
- 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 ISE 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 and a design project are required. Prerequisite: Junior standing as ISE 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 provides an overview of systems engineering processes including needs analysis, technology assessment, requirements definition, system architecting and system design. Course topics include analytical, quantitative and computational tools to promote functionality, usability, producibility, supportability, and disposability. Group work is emphasized. A design project is required. Prerequisite: ISEN361 or ISEN260 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. Prerequisite: Senior standing as ISE major, ISEN 361, ISEN 430, ISEN 465, ISEN 471 and senior standing.

DIRECTORY OF FACULTY

Faisal Alkaabneh **Assistant Professor**
 B.S., University of Jordan; M.S., Masdar Institute of Science and Technology; Ph.D., Cornell University

Lauren Davis	Professor
B.S., Rochester Institute of Technology; M.S., Rensselaer Polytechnic Institute; Ph.D., North Carolina State University	
Jaqueline Chestnut	Teaching Assistant Professor and Undergraduate Student Specialist
B.S., M.S., North Carolina A&T State University; Ph.D., Mississippi State University	
Salil Desai	Professor
B.S., University of Mumbai; M.S., Ph.D., University of Pittsburgh	
Michael Hamilton	Assistant Professor
B.S., M.S., Ph.D., Mississippi State University	
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	Principal Lecturer
B.S., M.S., University of Wisconsin	
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 Special Assistant to the Chancellor
B.S., M.S., Indian Institute of Technology Delhi; Ph.D., State University of New York; Professional Engineer	
Younho Seong	Professor
B.S.I.E., M.S.I.E., Inhwa University; Ph.D., State University of New York	
Tonya Smith-Jackson	Professor and Senior Vice Provost for Academic Affairs
B.A., University of North Carolina at Chapel Hill; M.S., Ph.D., North Carolina State University; Certified Professional Ergonomist	
Paul Stanfield	Professor and Interim Chairperson
B.S., M.S., Ph.D., North Carolina State University; M.B.A., University of North Carolina at Greensboro; Professional Engineer	

Department of Mechanical Engineering
Frederick Ferguson, Chairperson

MISSION

The mission of the Bachelor of Science in Mechanical Engineering (BSME) program at North Carolina A&T State University 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

Within a few years of graduating from the Bachelor of Science in Mechanical Engineering Program, graduates are expected to:

1. Perform effectively in mechanical engineering related positions in industry or in graduate/professional schools.
2. Demonstrate proficiency in teamwork and leadership skills for solving problems.
3. Be active in their professional societies and in their communities.
4. Engage in professional development through lifelong learning.

DEGREE OFFERED

Mechanical Engineering – Bachelor of Science

PROGRAM REQUIREMENTS

The Mechanical Engineering major must complete 120 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 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
Freshman Year: First Semester		Freshman Year: Second Semester	
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	Semester Total	14
MEEN 104	2		
Semester Total	16		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
MATH 231	4	African-American Studies Elective	3
ISEN 260	2	PHYS 242	3
MEEN 202	1	PHYS 252	1
MEEN 210	3	MEEN 232	3
MEEN 231	3	MEEN 233	3
MEEN 261	3	MEEN 241	3
Semester Total	16	Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
MEEN 267	1	ECEN 340	3
MATH 341	3	MEEN 317	1
ISEN 370	3	MEEN 321	3
MEEN 316	3	MEEN 324	3
MEEN 361	3	MEEN 341	3
MEEN 363	3	MEEN 343	3
Semester Total	16	Semester Total	16
Senior Year: First Semester		Senior Year: Second Semester	
Humanities & Fine Arts Elective	3	Social & Behavioral Sciences Elective	3
MEEN 421	3	MEEN 481	3
MEEN 424	3	MEEN 492	1
MEEN 425	1	MEEN 4xx Tech or Math/Sci Elective	3
MEEN 480	3	MEEN 4xx Technical Elective	3
Semester Total	13	Semester Total	13

Total Credit Hours: 120

Department of Mechanical Engineering
 Bachelor of Science in Mechanical Engineering (Aerospace)
 Major Code: MEEN

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENGL 101	3
CHEM 106	3	PHYS 241	3
CHEM 116	1	PHYS 251	1

Course	CR	Course	CR
MATH 131	4	MATH 132	4
GEEN 100	2	Global Awareness Elective	3
GEEN 111	1	Semester Total	14
MEEN 104	2		
Semester Total	16		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
MATH 231	4	African-American Studies Elective	3
ISEN 260	2	PHYS 242	3
MEEN 202	1	PHYS 252	1
MEEN 210	3	MEEN 232	3
MEEN 231	3	MEEN 233	3
MEEN 261	3	MEEN 241	3
Semester Total	16	Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
MEEN 267	1	ECEN 340	3
MATH 341	3	MEEN 318	3
ISEN 370	3	MEEN 321	3
MEEN 315	3	MEEN 324	3
MEEN 361	3	MEEN 319	1
MEEN 363	3	MEEN 343	3
Semester Total	16	Semester Total	16
Senior Year: First Semester		Senior Year: Second Semester	
Humanities & Fine Arts Elective	3	Social & Behavioral Sciences Elective	3
MEEN 421	3	MEEN 482	3
MEEN 424	3	MEEN 492	1
MEEN 425	1	MEEN 4xx Tech or Math/Sci Elective	3
MEEN 480	3	MEEN 4xx Technical Elective	3
Semester Total	13	Semester Total	13

Total Credit Hours: 120

MAJOR PROGRAM REQUIREMENTS

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

MATH 131	MATH 132
MATH 231	PHYS 241

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 202. Mechanical Engineering Project Lab

Credit 1(0-2)

This is a hands-on course to equip students with skills in a machine shop to make a mechanical device. Topics include machining, tolerances, surface finish, assembly and selection of common mechanical components. Prerequisite: MEEN 104. (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)**
 This course covers 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; and 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 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. Prerequisite: Consent of instructor. (F;S)
- MEEN 421. Design of Machine Elements** **Credit 3(3-0)**
 This course covers the theory, design and selection of machine elements, including gears, bearings, fasteners, springs, and brakes. Finite element analysis will also be introduced. 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 232 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 433. Aluminum-Based Product Design and Manufacturing** **Credit 3(3-0)**
 This course introduces students to the principles of product and manufacturing process design specifically applicable to aluminum-based materials. Material properties of aluminum are compared with those of other commercial materials. Raw material fabrication and product manufacturing processes are presented. The interactions between processes and material properties are described. Case studies are presented to guide the student in successful completion of design projects. Prerequisite: MEEN 261 and MEEN 321. (F;S)
- MEEN 434. Advanced Manufacturing Processes** **Credit 3(3-0)**
 Theory, application, and design considerations for forming and machining are covered in this course. Design of molds, dies, presses, jigs and fixtures automated machinery are covered. Prerequisite: MEEN 363. (F;S)
- MEEN 435. Computer Integrated Mechanism Design** **Credit 3(3-0)**
 This is a course in modern computer simulation tools and the underlying theories for synthesis and analysis of mechanical systems consisting of linkages, cams, and gears. Prerequisite: MEEN 324. (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 480 culminating in a final product which incorporates multiple design constraints. Oral presentations and written reports are 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. Senior 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

- Daniel Acree**..... **Instructor/Lab & Projects Coordinator**
 B.S., M.S., North Carolina A&T State University
- Paul Akangah** **Teaching Assistant Professor**
 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
- Michael D. Atkinson**..... **Assistant Professor**
 B.S., M.S., North Carolina A&T State University; Ph.D., University of Dayton
- David Carmon** **Adjunct Associate Professor**
 B.S., North Carolina A&T State University; M.S., Rutgers University; Ph.D., North Carolina A&T State University; Professional Engineer
- 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 and Undergraduate Program Coordinator**
 B.S., M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University

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B.S., Makerere University; M.S., Ph.D., Case Western Reserve University

Dhananjay Kumar..... **Professor**
B.S., Bhagalpur University; M.S., Magadh University, Ph.D., Indian Institute of Technology

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B.S., Kwame Nkrumah University of Science and Technology; M.S., University of Applied Sciences, Hochschule Offenburg, Germany; Ph.D., North Carolina A & T State University

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B.E., University of Madras; M.E., Concordia University, Ph.D., Lehigh University

J. David Schall..... **Assistant Professor and Director for Assessment**
B.S., M.S., Ph.D., North Carolina State 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

Sun Yi..... **Professor**
B.S., Seoul National University; M.S., Ph.D., University of Michigan-Ann Arbor

COLLEGE OF HEALTH AND HUMAN SCIENCES

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

Lenora Campbell, Dean
Elimelda Onger, Associate Dean for Research and Innovation
Anna Lee, Interim Associate Dean

The College of Health and Human Sciences has a cadre of highly qualified and accomplished faculty who are committed to exemplary teaching, scholarship and service. We deliver innovative educational programs that capitalize on the strengths of a diverse group of faculty who prepare our students to solve complex population health and human concerns, while improving the quality of life for individuals and communities. The interaction between and among the disciplines allows students, faculty, and graduates to gain a more comprehensive understanding of social and human conditions, leading to more creative and impactful teaching and learning, research and discovery opportunities and graduate outcomes.

VISION

The College of Health and Human Sciences (CHHS) aspires to be recognized internationally as a premier academic community 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.

MISSION

Grounded in North Carolina A&T State University's legacy of social justice, rich tradition of academic research, and student and community outreach, the College of Health and Human Sciences (CHHS) promotes:

- a supportive academic and intellectual environment that encourages critical thinking and exchange of ideas among its undergraduate and graduate students;
- excellence in innovative teaching and learning practices and instructional technology;
- cutting-edge interdisciplinary research that seeks to enhance health and improve human conditions;
- responsiveness to changing health and workforce needs locally, regionally, nationally and globally;
- integrity and ethical practices as educators, scholars, and practitioners; and
- community partnerships and collaborations that encourage diversity, inclusion, and regard for all people while challenging oppression, inequality, and discrimination.

CORE VALUES

Excellence in the conscientious pursuit of one's work;

Honesty and truthfulness in all dealings;

Integrity demonstrated by ethical behavior and high moral character;

Respect for the rights, dignity, and differences of others; and

Accountability for personal conduct and actions in the academic environment.

DEGREES OFFERED

Health Services Management – Bachelor of Science

Kinesiology (formerly Sport Science and Fitness Management) – Bachelor of Science

Psychology – Bachelor of Arts

Nursing – Bachelor of Science

Sociology – Bachelor of Arts

Social Work – Bachelor of Social Work

Speech Communication Studies – Bachelor of Arts

See the graduate catalog for information on the Master of Science and doctoral degrees in social work.

ACCREDITATION & CERTIFICATION

Nursing and social work have nationally accredited programs. The Accreditation Commission on Education in Nursing accredits the baccalaureate program in nursing. The Council on Social Work Education accredits the baccalaureate and the joint master's programs in social work. Graduates are prepared to take nationally recognized licensure and certification exams.

STUDENT ACTIVITIES

Students have many opportunities to participate in research, professional, and leadership development activities through student organizations and honor societies, faculty and peer mentoring, internships and practicum experiences, study abroad, Living Learning communities and other diverse curricular and co-curricular activities. Overall these opportunities, in addition to campus and community services activities, promote personal, social and professional development.

ADMISSION REQUIREMENTS

Students admitted into undergraduate degree programs in the College of Health and Human Sciences must meet university requirements (<https://www.ncat.edu/admissions/undergraduate/freshmen-admissions/criteria.html>). Students must also meet admission requirements for nursing (<https://www.ncat.edu/chhs/departments/nurs/>), psychology

(<https://www.ncat.edu/chhs/departments/psyc/prospective-students/>), social work (<https://www.ncat.edu/chhs/departments/social-work-and-sociology/forms-and-policies.php>), and kinesiology (<https://www.ncat.edu/chhs/departments/kinesiology/undergraduate-programs/index.php>).

TRANSFER CREDIT EVALUATION

Transfer Credits are accepted only from the regional accrediting agencies (<https://www.ncat.edu/admissions/transfer-admissions/transfer-credits/>). A minimum grade of “C” is required for all transferable coursework. Grades of “C- (minus)” and below are not transferable. Accepted courses are entered on students' academic records, but grade points are not calculated on transferred courses. N.C. A&T does not accept transfer credit for remedial coursework and coursework where grades of “P/F” were earned.

Maximum Transfer Credits Policy:

- For coursework completed at a two-year institution, the maximum number of transferable credits is 64.
- For coursework completed at a four-year institution, the maximum number of transferable credits is 90.
- For coursework completed at both a two-year and a four-year institution, the maximum number of transferable credits is 90.

ADVISING

All students will be assigned an academic advisor. Faculty advisors may be identified through Aggie Access (<https://www.ncat.edu/divisions/academic-affairs/cae/find-your-advisor.html>). 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.

CAREER OPPORTUNITIES

Students completing the kinesiology (formerly, sports science and fitness management) major have found careers as sports agents and managers, fitness managers, sports marketers, fitness trainers and instructors, and managers of health clubs and recreational facilities. Graduates are also prepared for advanced study in physical therapy, sports medicine, athletic training and other science, health and fitness-related careers.

Nursing majors typically enjoy careers as registered nurses, with specialties in neonatal and critical care nursing, adult health, pediatrics, among others. Nursing graduates are also prepared for advanced study as advanced practice nurses, nurse anesthetists, nurse educators and other areas requiring advanced study.

Psychology graduates, although typically requiring masters or doctoral degrees to carry out the practice of the discipline, serve as clinicians, counselors, and educators. Some other specialties include, but are not limited to, health, forensic and occupational psychology.

Social Work majors enjoy a wide range of opportunities upon completing the BS degree in the discipline. Graduates are frequently employed in social and health service roles. With additional formal education, these majors enter the fields of geriatrics, medicine, public health, school, and community social work. Their advanced skills prepare them for careers as social researchers and licensed clinical social workers.

A Bachelor of Arts in Sociology instills within students' critical thinking and analysis skills that allow them to be creative problem solvers across a wide range of career opportunities. For instance, the American Sociological Association reports that recent graduates of sociology programs find employment in social services and counseling, sales and marketing, administrative support, teaching and education, service occupations, IT and public relations, social science research, and management. Additionally, the strong research methodology and data analysis skills students graduate with prepare them to enter graduate studies in sociology or related disciplines.

Speech Communication majors enjoy a wide range of opportunities in the areas of business, human relations, training and development, marketing, corporate public affairs, audience and media analysis and planning and health advocacy. Speech Communication majors with a concentration in Speech Language Pathology and Audiology enjoy a wide range of opportunities including working to prevent, assess, diagnose, and treat speech, language, social communication, cognitive-communication, and swallowing disorders in children and adults.

Health Services Management majors will find career opportunities as practice and program managers, medical coders, patient service managers, healthcare representatives (medical device or pharmaceutical sales), operations managers, medical and business office managers, health navigators, billing managers, case managers, etc.

SPEECH PROGRAM

Deana Lacy McQuitty, Speech Program Director

OBJECTIVES

The Speech Program prepares pre-professional students in the two concentrations of Speech Communication Studies (Speech Communications) and Speech Language Pathology and Audiology (Communication Sciences and Disorders) at the undergraduate level. 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 Speech Program is to provide academic and clinical training and prepare knowledgeable and skilled visionary leaders for an ever-changing diverse society in the areas of speech language pathology and audiology (communication sciences and disorders) and speech communication studies.

VISION

The Speech Program strives to prepare nationally competitive scholars, practitioners, and innovators who positively impact their professions and society through their knowledge, skills, and dispositions.

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 collaborative research opportunities, scholarly publications and creative productions for undergraduate students.
5. To provide instruction in the major theories of communication and the relevance of these theories to the students' concentration.
6. To integrate academic training and research with clinical practice using teacher/scholar and analogous clinician/research models in the context of evidence-based clinical practice.
7. To provide students with the knowledge of ethical dimensions of communicative acts ranging from classical Aristotelian ethics to the numerous points of ethical contact that exist in human communication today.
8. 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.
9. To provide inter- and multi-disciplinary learning opportunities such as international and global service-learning experiences.

DEGREES OFFERED

Speech (Communication Studies– Bachelor of Arts

Speech (Speech/Language Pathology & Audiology-Communication Sciences and Disorders) – 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.

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 (Communication Sciences and Disorders) will prepare students to enter a graduate program in Speech / Language Pathology, Audiology (Communication Sciences and Disorders) 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 early intervention, preschool, K-12 schools, colleges/universities, hospitals, residential healthcare facilities, nonresidential health care facilities, private practice, corporate speech language pathology, local, state and federal government agencies, and global speech language pathology.

Speech Program
Bachelor of Arts in Speech (Communication Studies)
Major Code: SPH*
Concentration Code: SPCM

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
FRST 101 (SS)	1	ENGL 101 (WC)	3
ENGL 100 (WC)	3	MATH 102 (MLAR)	3
MATH 101 (MLAR)	3	FOLA xxx ¹	3
FOLA xxx ¹	3	SOCI 100 (SBS)	3
BIOL 100/L (SR)	4	CST 101	3
HPED	1	Semester Total	15
Semester Total	15		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
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
Semester Total	15	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
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
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
SPCH 410	3	SPCH 402	3
SPCH 453	3	ENGL 411	3
SPCH 575	3	SPCH 461	3
SPCH 441 (formerly SPCH 541)	3	SPCH 408	3
Elective	3	Elective	3
Semester Total	15	Semester Total	15

Total Credit Hours: 120¹Foreign 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 575

Speech Program
Bachelor of Arts in Speech-Pathology & Audiology (Communication Sciences and Disorders)
Major Code: SPH*
Concentration Code: SPTH

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
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 ¹	3
FOLA xxx ¹	3	Free Elective	3
SPCH 116	1	Semester Total	15
Semester Total	15		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
LIBS 202 (AA)	3	SPCH 309 or SPCH 307	3
HIST 207 (GL)	3	SPCH 316	3
ENGL 226	3	SPCH 319 or SPCH 310	3
SPCH 250 (HFA)	3	PSYC 101 (SBS)	3
SPCH 259	3	SPED 250	3
Semester Total	15	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
PSYC 250	3	SPCH 379	3
HPED xxx	2	SPCH 381	3
Free Elective	3	SPCH 424	1
SPCH 426	3	SPCH 410	3
SPCH 382	3	SPCH 269	3
Semester Total	14	SPCH 484	3
		Semester Total	16
Senior Year: First Semester		Senior Year: Second Semester	
SPCH 509	3	SPCH 483	3
SPCH 521	3	SPCH 432 (formerly SPCH 530)	3

SPCH 426	3	SPCH 475	3
SPCH 429 (formerly SPCH 529)	3	SPCH 478	3
SPCH 427 (formerly SPCH 522)	3	SPCH 490/SPCH 575	3
Semester Total	15	(or 3 credit hours course related to the field of Speech-Language Pathology and/or Audiology)	
		Semester Total	15

Total Credit Hours: 120

¹Foreign 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 426
SPCH 250	SPCH 429
SPCH 259	SPCH 432
SPCH 269	SPCH 475
SPCH 309	SPCH 478
SPCH 316	SPCH 483
SPCH 319	SPCH 484
SPCH 379	SPCH 509
SPCH 381	SPCH 521
SPCH 382	SPCH 522
SPCH 410	SPCH 575/580
SPCH 424	

COURSE DESCRIPTIONS IN SPEECH

SPCH 116. Voice and Diction Lab I

This is a course in speech improvement with emphasis on articulation, pronunciation and projection. (F;S)

Credit 1(0-2)

SPCH 203. Introduction to Communication Studies

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.

Credit 3(3-0)

SPCH 240. Communication in the Digital Age

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.

Credit 3(3-0)

SPCH 250. Speech Fundamentals

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)

Credit 3(3-0)

SPCH 251. Public Speaking

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)

Credit 3(3-0)

SPCH 259. Introduction to Speech-Language Pathology

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)

Credit 3(3-0)

- SPCH 269. 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 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 453. 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 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 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 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 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)

SPCH 575. Internship

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)

DIRECTORY OF FACULTY

June Bethea	Adjunct Professor
B.A., M.S., South Carolina State University; Ph.D., University of North Carolina at Greensboro	
Michelle Cavanagh	Adjunct Lecturer
B.A., Norfolk State University; M.A., Northeastern University	
Johnetta Chavis	Adjunct Lecturer
B.A., North Carolina A&T State University, M.A., Appalachian State University	
Sam Cook	Adjunct Lecturer
B.A., M.A., University of North Carolina at Greensboro	
Dwight Davis	Adjunct Lecturer
B.A., High Point University; M.A., University of North Carolina at Greensboro	
Regina Williams Davis	Associate Professor
B.A., Hampton University, M.H.R. University of Oklahoma, Ph.D., University of North Carolina at Greensboro	
Ingram Land-Deans	Adjunct Lecturer
B.A., North Carolina State University; M.A., Michigan State University	
Joy Kennedy	Assistant Professor
B.A., M.A., North Carolina Central University; Ph.D., University of North Carolina at Greensboro	
Deana Lacy McQuitty	Associate Professor and Speech Program Director
B.A., North Carolina A&T State University; M.S., Southern Connecticut University; SLPD, Nova Southeastern University	
Daniel Richardson	Adjunct Lecturer
B.A., M.A., University of North Carolina at Greensboro	
Robin Terry-Armstrong	Adjunct Lecturer
B.S., Shaw University; M.A., Ohio State University	
Davi Thornton	Assistant Professor
B.A., Samford University; M.A., Ph.D., University of Georgia	
Sharita Williams-Crossen	Adjunct Lecturer
B.A., North Carolina A&T State University; M.A., North Carolina Central University; Ph.D., Nova Southeastern University	

Department of Kinesiology
Robert Lyons Jr., Chairperson

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

Kinesiology-Bachelor of Science and Sport Science and Fitness Management – Bachelor of Science (phasing out)

DEPARTMENTAL REQUIREMENTS

There are two concentrations in the Kinesiology (KINS) degree program: Exercise Science (EXCS) and Recreation Sport Management (RSM) Students must maintain a minimum cumulative GPA of 2.5 grade point average in both concentrations, and must receive a minimum grade of 'C' in all KINS courses.

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. **This degree program is phasing out and not currently accepting new students.**

Students in the Business Administration or Leisure Studies option must maintain a minimum cumulative 2.3 grade point average (GPA). Students in the Pre-Physical Therapy option must maintain a minimum cumulative 2.8 GPA. All students must receive a minimum grade of a “C” in all major core courses.

CAREER OPPORTUNITIES

Career opportunities for all Kinesiology and 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 exercise science concentration take additional courses in preparation for American College of Sports Medicine (ACSM) and other nationally recognized certifications, and for future graduate study in Exercise Science and related programs. Students in the recreation and sports management concentration take additional courses related to the operations of sports programs. 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, occupational therapy and athletic training. 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 Kinesiology
Bachelor of Science in Kinesiology
Major Code: EXSC**

Curriculum Guide (Exercise Science)

Students must earn a C or better in all KINS courses.

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
FRST 101 ^{SS}	1	AA History & Culture ²	3
Humanities/Fine Arts ²	3	KINS 102	1
PSYC 101 ^{1SBS}	3	CHEM 104/114 or 106/116 ^{1SR}	4
BIOL 100 ^{1SR}	4	ENGL 101 ^{WC}	3
ENGL 100 ^{WC}	3	MATH 111 ^{MLAR**}	4
KINS 130	2	Semester Total	15
Semester Total	16		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
Global Awareness ²	3	MATH 224 ¹ or STAT 214 ^{MLAR}	3
KINS 208	4	KINS 209	3
PHYS 225/235 ¹	4	KINS 201/202	3
KINS 203	2	KINS 204/205	3
Free Elective	3	Free Elective	3
Semester Total	16	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
KINS 345/346	3	KINS 304/305 ^{CS}	3
KINS 370/371	4	KINS 306 ^{CS}	2
KINS 375/376	3	KINS 303 ^{CS}	3
KINS 333/334	3	KINS 307	3
KINS 389	1	KINS 301/302	3
Semester Total	14	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
KINS 470/476	4	KINS 407	3
KINS 401 ^{CS}	3	KINS 408 ^{CS}	3
KINS 406	1	KINS Directed Elective	3

KINS 469	3	KINS Directed Elective	3
KINS 487	3	KINS 498	3
Semester Total	14	Semester Total	15

Total Credit Hours: 120

¹HPLS internal requirement.

²Student chooses from the university's list of approved courses to meet this requirement

^{WC}Meets Written Communications requirement

^{SR}Meets Scientific Reasoning requirement

^{SS}Meets Student Success requirement

^{SBS}Meets Social & Behavior Science requirement

^{MLAR}Meets Mathematical, Logical, and Analytical Reasoning requirement

^{CS}Course is SSFM concentration specific

**If student has not met Math SAT/ACT requirements, must take MATH 103 & MATH 104 instead.

Department of Kinesiology
Bachelor of Science in Kinesiology
Major Code: RCSM

Curriculum Guide (Recreation & Sport Management)

Students must earn a C or better in all KINS courses.

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
FRST 101 ^{SS}	1	AA History & Culture ²	3
Humanities and Fine Arts ²	3	KINS 102	1
PSYC 101 ^{1SBS}	3	CHEM 104/114 or 106/116 ^{1SR}	4
BIOL 100 ^{1SR}	4	ENGL 101 ^{WC}	3
ENGL 100 ^{WC}	3	MATH 111 ^{MLAR**}	4
KINS 130	2	Semester Total	15
Semester Total	16		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
Global Awareness ²	3	MATH 224 ^{1MLAR}	3
KINS 208	4	KINS 209	3
PHYS 225/235 ¹	4	KINS 201/202	3
KINS 203	2	KINS 204/205	3
KINS 270	3	Free Elective	3
Semester Total	16	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
KINS 345/346	3	KINS 372 ^{CS}	3
KINS 370/371	4	KINS 373 ^{CS}	3
KINS 375/376	3	KINS 374 ^{CS}	3
KINS 333/334	3	KINS 307	3
KINS 389	1	KINS 301/302	4
Semester Total	14	Semester Total	16
Senior Year: First Semester		Senior Year: Second Semester	
KINS 470/476	4	KINS 407	3
KINS 469	3	KINS 473 ^{CS}	3
KINS 487	3	KINS Directed Elective	3
Free elective	3	KINS Directed Elective	3
Semester Total	13	KINS 498	3
		Semester Total	15

Total Credit Hours: 120

¹HPLS internal requirement.

²Student chooses from the university's list of approved courses to meet this requirement

^{WC}Meets Written Communications requirement

^{SR}Meets Scientific Reasoning requirement

^{SS}Meets Student Success requirement

^{SBS}Meets Social & Behavior Science requirement

^{MLAR}Meets Mathematical, Logical, and Analytical Reasoning requirement

^{CS}Course is SSFM concentration specific

****If student has not met Math SAT/ACT requirements, must take MATH 103 & MATH 104 instead.**

**Department of Kinesiology
Bachelor of Science in Sport Science and Fitness Management
Major Code: SSFM**

Curriculum Guide (Pre-Physical Therapy) (Phasing out)**

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENGL 101	3
FRST 101	1	Humanities/Fine Arts ^a	3
SSFM 130	3	Global Awareness ^a	3
BIOL 100 (SR)	4	A-A Culture & History ^a	3
CHEM 106/116 (Sr)	4	MATH 111 (MLA)	4
Semester Total	15	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
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
Semester Total	17	Semester Total	17
Junior Year: First Semester		Junior Year: Second Semester	
HPLS Elective ^d	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 ^c	3
Semester Total	16	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
HPED 342	3	Free Elective ^b	3
SSFM 469	3	Free Elective ^b	3
SSFM 471	3	SSFM 498	6
SSFM 472	3	Semester Total	12
Semester Total	12		

Total Credit Hours: 120

^a12 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 Kinesiology department recommends its students to use SSFM 226 as their Social/Behavioral Sciences course.

^b6 hours – Free Electives: Students may take any courses for which they meet the prerequisites.

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.

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.

Department of Kinesiology
Bachelor of Science in Sport Science and Fitness Management
Major Code: SSFM

Curriculum Guide (Leisure Studies) (Phasing out)**

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENGL 101	3
FRST 101	1	A-A Culture and History ^a	3
Human/Fine Arts ^a	3	BIOL 100	4
Global Awareness ^{*a}	3	MATH 102	3
MATH 101	3	LSS 160	3
SSFM 130	3	Semester Total	16
Semester Total	16		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
SSFM 201	3	Free Elective ^b	3
SSFM 261	4	Social/Behavioral Sciences ^a	3
HPED 250	3	SSFM 225	3
LSS 260	3	SSFM 272	3
Scientific Reasoning Elective ^c	3	LSS 246	3
Semester Total	16	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
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
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
HPLS Elective	3	Free Elective ^b	3
SSFM 469	3	LSS 365	3
SSFM 471	3	SSFM 498	6
SSFM 472	3	Semester Total	12
Free Elective ^b	3		
Semester Total	15		

Total Credit Hours: 120

^a12 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.

^b9 hours – Free Electives: Students may take any courses for which they meet the prerequisites.

^c7 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.

Department of Kinesiology
Bachelor of Science in Sport Science and Fitness Management
Major Code: SSFM

Curriculum Guide (Business Administration) (Phasing out)**

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100 (WC)	3	ENGL 101 (WC)	3
FRST 101	1	A-A Culture and History ^a	3
Human/Fine Arts ^a	3	BIOL 100	4
Global Awareness ^{*a}	3	MATH 102	3
MATH 101	3	MGMT 110	3
SSFM 130	3	Semester Total	16
Semester Total	16		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
SSFM 201	3	Social/Behavioral Sciences*	3
SSFM 261	4	SSFM 202	3
SSFM 220	3	SSFM 225	3
Free Elective ^b	3	SSFM 272	3
Scientific Reasoning Elective ^c	3	MGMT / MKTG Elective	3
Semester Total	16	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
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
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
SSFM 469	3	Free Elective ^b	3
SSFM 471	3	Free Elective ^b	3
SSFM 472	3	SSFM 498	6
MKTG 230	3	Semester Total	12
HPLS Elective	3		
Semester Total	15		

Total Credit Hours: 120

^a12 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 kinesiology department recommends its students to use SSFM 226 as their Social/Behavioral Science course.

^b9 hours – Free Electives: Students may take any courses for which they meet the prerequisites.

^c7 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 KINESIOLOGY MAJORS

Students must earn a C or better in all KINS courses

- KINS 102. Medical Terminology** **Credit 1(1-0)**
 Medical terminology is the study of the principles of medical word building to help the student develop the extensive medical vocabulary used in health care occupations. Students receive a thorough grounding in basic medical terminology through a study of root words, prefixes and suffixes. The study focuses on correct pronunciation, spelling and use of medical terms in the fields of Anatomy, Physiology, and Pathology of disease. No previous knowledge of these topics is necessary. Prerequisite: KINS majors only.
- KINS 130. Introduction to Kinesiology** **Credit 2(2-0)**
 This course introduces students to the definition of Kinesiology in its broadest form, as well as explains the absolute and relative contribution of the sub-field of Exercise Science within Kinesiology. The course exposes students to sub-fields of Kinesiology, graduate degree options, and the criteria for acceptance. The course further explains the professional memberships and certifications commonly utilized in Kinesiology. Prerequisite: KINS majors only.
- KINS 201. Principles of Strength and Conditioning I** **Credit 2(2-0)**
 This course provides students with scientific principles 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 guidelines. Prerequisites: KINS major and a minimum grade of “C” in KINS 130 and KINS 208. Corequisite: KINS 202.
- KINS 202. Principles of Strength and Conditioning I Lab** **Credit 1(0-2)**
 This course is the lab component of KINS 201 and complements the scientific principles taught in the lecture portion. Labs provide students with practical skills to teach safe and effective cardiovascular and resistance training exercise to apparently healthy populations. The knowledge, skills, and abilities learned are based upon American College of Sports Medicine and National Strength and Conditioning Association guidelines. Prerequisites: KINS major and a minimum grade of “C” in KINS 130 and KINS 208. Corequisite: KINS 201.
- KINS 203. Exercise Psychology** **Credit 2(2-0)**
 This course is designed to provide students with basic information concerning the interaction of biological, psychological, Behavioral, sociocultural and environmental processes that influence physical activity to improve health and prevent chronic disease. Theories developed to explain health behaviors at the interpersonal, interpersonal, and group/community levels will be introduced and critiqued, and intervention-based research examples will be used to provide a basis for understanding applications of behavior change research in kinesiology. Practical techniques, tools, and interventions to enhance exercise adoption and adherence will be discussed. Ethical considerations inherent to efforts designed to produce health-related behavior change will be examined. Prerequisites: KINS major only and a minimum grade of C in KINS 130.
- KINS 204. Fitness and Health Assessment** **Credit 2(2-0)**
 This course focuses on the principles and field techniques used in the assessment of physical fitness and health. The course engages the students with the learning and practice of health and fitness screening processes and tools prior, during, and after exercise and/or exercise testing. The course further engages the students in the learning and understanding of the advantages, disadvantages, and theory behind each process and measurement. Prerequisites: KINS major and a minimum grade of “C” in KINS 208 or 209. Corequisite: KINS 205.
- KINS 205. Fitness and Health Assessment Lab** **Credit 1(1-0)**
 This course is the lab component of KINS 204 and complements the scientific principles taught in the lecture portion. Labs provide students with practical skills in conducting pre-activity screening and indirect measures of cardiorespiratory endurance, muscular fitness, body composition, and flexibility assessments including, but not limited to blood pressure measurement, 1.5 mile run, 1RM, isometric assessment, BMI, and sit and reach. Prerequisites: KINS major and a minimum grade of “C” in KINS 208 or 209. Corequisite: KINS 204.
- KINS 208. Kinetic Anatomy** **Credit 4(4-0)**
 The emphasis of this course is on the functional anatomy of the skeletal, muscular, nervous, and sensory systems. The focus is on human movement and exercise. Common musculoskeletal pathologies will be introduced. Prerequisites: KINS major only and minimum grade of D in BIOL 100.
- KINS 209. Intro to Clinical/Applied Physiology** **Credit 3(3-0)**
 This course introduces the basic concepts of human physiology concerning cells, organs, and systems. Systems and function discussed include cardiovascular, respiratory, digestive, lymphatic and endocrine as relevant to applied and allied health sciences. Prerequisites: KINS major only and minimum grade of C in KINS 130, D in BIOL 100; AND, CHEM 104 or CHEM 106.
- KINS 301. Principles of Strength and Conditioning II** **Credit 2(2-0)**
 This course is designed to meet specific competencies needed for students interested in pursuing certification as a strength and conditioning specialist. Training methods such as plyometrics, core stability, Olympic weightlifting, and anaerobic capacity programs are emphasized. The concepts of periodization, proper spotting technique, and test administration are also discussed. Prerequisites: KINS Majors only and minimum grade of C in KINS 201/202 and KINS 345. Corequisite: KINS 302.
- KINS 302. Principles of Strength and Conditioning II Lab** **Credit 1(0-2)**
 This course is the lab component of KINS 301 and complements the scientific principles taught in the lecture portion. Labs provide students with practical skills to demonstrate various training methods for the athletic population such as plyometrics, core stability, Olympic weightlifting, and anaerobic capacity programs. Prerequisites: KINS Majors only and minimum grade of C in KINS 201/202 and KINS 345. Corequisite: KINS 301.

- KINS 307. Principles of Exercise Prescription** **Credit 3(3-0)**
 This course will involve the study and application of evidence-based safe and effective exercise programming for people who are apparently healthy. The course teaches how to exercise people of different ages and sex. The course focuses on understanding and applying the key principles in determining the type exercise, overall workload of a workout, and the loading process, best suited for a person based on their specific characteristics. Prerequisites: KINS majors only and a minimum grade of C in KINS 201/202, KINS 204/205 and KINS 345/346.
- KINS 333. Prevention and Care of Sports Injuries** **Credit 2(2-0)**
 This course is an introductory course to the fundamentals of athletic training. This course introduces concepts and practical skills of athletic training, including the prevention, recognition, evaluation, and management of injuries and general medical conditions. Prerequisites: KINS majors only and a minimum grade of C in KINS 201/202 and KINS 208. Corequisite: KINS 334.
- KINS 334. Prevention and Care of Sports Injuries Lab** **Credit 1(0-2)**
 This course emphasizes the hand-on skills needed to practice sports medicine in an exercise or sports setting. It is taken in conjunction with KINS 333, Prevention and Care of Sport Injury. Prerequisites: KINS majors only and a minimum grade of C in KINS 201/202 and KINS 208. Corequisite: KINS 333.
- KINS 345. Biomechanics** **Credit 2(2-0)**
 The purpose of KINS 345 is to introduce students to concepts of mechanics as they apply to human movement, particularly those pertaining to exercise and physical activity. The student should gain an understanding of the mechanical and anatomical principles that govern human motion and develop the ability to link the structure of the human body with its function from a mechanical perspective. Prerequisites: KINS majors only and a minimum grade of C in KINS 208 and a minimum grade of D in PHYS 225. Corequisite KINS 346.
- KINS 346. Biomechanics Lab** **Credit 1(0-2)**
 This course emphasizes the hand-on skills needed to apply biomechanical principles to exercise situations. It is taken in conjunction with KINS 345, Biomechanics. Prerequisites: KINS majors only and a minimum grade of C in KINS 208 and a minimum grade of D in PHYS 225. Corequisite: KINS 345.
- KINS 370. Exercise Physiology** **Credit 3(3-0)**
 This course provides scientific, theoretical, and practical experience in studying physiological concepts as they apply to acute and chronic effects of exercise in humans. Content and discussion will include understanding the impact of exercise on the systemic integration in relation to functional and structural exercise-induced adaptations on skeletal muscle, body composition, the cardiovascular, endocrine, pulmonary, and nervous systems. Students will gain knowledge of the metabolic, muscular, neuro muscular, central and peripheral nervous system, cardiovascular, endocrine, and respiratory to acute and chronic exercise. Prerequisites: KINS majors only and a minimum grade of C in KINS 209, and a minimum grade of D in CHEM 104 or CHEM 106. Corequisite: KINS 371.
- KINS 370. Exercise Physiology Lab** **Credit 1(0-2)**
 This course provides practical experience in studying, measuring, and testing physiological responses to exercise in humans. The laboratory sessions support and enrich the lecture material from KINS 370. All topics are related to the material covered during lectures but often have a more applied focus and are designed to help you develop solid data collection and testing skills that are commonly used in the field of exercise physiology. Prerequisites: KINS majors only and a minimum grade of C in KINS 209, and a minimum grade of D in CHEM 104 or CHEM 106. Corequisite: KINS 370.
- KINS 375. Neuromuscular Control** **Credit 2(2-0)**
 This course addresses the neurological components of gait, posture, balance, coordination and reflexes. Other topics include closed- and open-loop processing, the role and function of sensory processes, and attention. Prerequisites: KINS majors only and a minimum grade of C in KINS 208. Corequisite: KINS 376.
- KINS 376. Neuromuscular Control Lab** **Credit 1(0-2)**
 This course emphasizes the hand-on skills needed to apply theory related to neuromuscular control to exercise situations. Prerequisites: KINS majors only and a minimum grade of C in KINS 208. Corequisite: KINS 375.
- KINS 389. Professional Distinction in Kinesiology** **Credit 1(0-2)**
 This course aims to award students with an understanding of key knowledge and specific skills needed for success in the field of kinesiology. The course incorporates professional terminology, values, and information while engaging the students in a proactive way. The course utilizes guest visitors as part of its methods of content conveying. Finally, the course provides information that will prepare the student for internships. Prerequisites: KINS majors only and junior status.
- KINS 407. Exercise Prescription for Clinical Populations.** **Credit 3(3-0)**
 The focus of this course is on exercise programming guidelines and recommendations for a variety of clinical populations, including but not limited to cardiovascular disease, metabolic disease, pulmonary disease, and musculoskeletal conditions. Pathophysiology of these conditions, as well as the effects of common medications on the ability to exercise, is also discussed. Prerequisites: KINS majors only and a minimum grade of C in KINS 102, KINS 209, and KINS 307.
- KINS 469. Research Methods** **Credit 3(3-0)**
 The methods, techniques, and application of the research process related to a variety of functions typically found in Kinesiology professions are discussed. Students will learn to communicate in both oral and written applications relevant research literature while learning to critique, analyze, and synthesize. Practical application tools will be emphasized related to research methodology and basic data analysis which include computer applications. This course aims to improve understanding of how research is conducted and communicated to better interpret the findings/conclusions. The course is broken down into three components: Basics of

Research, Designing a Study, and Deriving Meaning, which will allow students the opportunity to create and develop their own research. Prerequisites: KINS major and a minimum grade of D in MATH 224 or STAT 214.

KINS 470. Advanced Exercise Physiology

Credit 3(3-0)

This course provides advanced scientific, theoretical and practical experience in studying physiological concepts as they apply to acute and chronic effects of exercise in humans. Prerequisites: KINS majors only and a minimum grade of C in KINS 370/371. Corequisite: KINS 476.

KINS 476. Advanced Exercise Physiology Lab

Credit 1(0-2)

This course provides practical experience in studying, measuring, and testing physiological responses to exercise in humans. The laboratory sessions support and enrich the lecture material from KINS 470. All topics are related to the material covered during lectures but often have a more applied focus and are designed to help develop skills of data collection and testing that are commonly used in the field of exercise physiology. Prerequisites: KINS majors only and a minimum grade of C in KINS 370/371. Corequisite: KINS 475.

KINS 487. Internship I

Credit 3(0-6)

This course serves as one out of two KINS internship capstone experiences that permit students to apply their academic training under the direction of certified fitness/wellness professionals and/or licensed clinical professionals. The application of academic theory gives the student experiences that will add to their personal and professional maturity. The internship is a requirement for all students in the KINS degree. The internship or practicum provides the student with the opportunity to ask pertinent questions, observe, and participate. The internship experience engages students in hands-on and real-world experiences, analytics, data collection, and skills needed to succeed in the field. Students must accumulate at least 120 hours by the end of the course. Prerequisites: KINS majors only, senior status and a minimum grade of C in KINS 389.

KINS 498. Internship II

Credit 3(0-6)

This course serves as the advanced internship experience out of two KINS internship capstone experiences that permit students to apply their academic training under the direction of certified fitness/wellness professionals and/or licensed clinical professionals. The application of academic theory gives the student experiences that will add to their personal and professional maturity. The internship is a requirement for all students in the KINS degree. The internship or practicum provides the student with the opportunity to ask pertinent questions, observe, and participate. The internship experience engages students in hands-on and real-world experiences, analytics, data collection, and skills needed to succeed in the field. Students must accumulate at least 120 hours by the end of the course. Prerequisites: KINS majors only and a minimum grade of C in KINS 487.

**COURSE DESCRIPTIONS FOR KINESIOLOGY
(Required Courses for Exercise Science Concentration)**

KINS 303. Nutrition for Health & Sport

Credit 3(3-0)

This course is designed to study the impact of nutrition on health, fitness, and sports performance. Emphasis will be on proper nutrient intake for performance, fluid replacement, exercise prescription for achieving weight management, and the purported mechanisms of action of common ergogenic aids in sport and fitness. Prerequisites: KINS majors only and a minimum grade of C in KINS 209 AND minimum grade of D in CHEM 104 or CHEM 106.

KINS 304. Electrocardiography

Credit 2(2-0)

This course involves development of electrocardiography (ECG/EKG) descriptive analysis skills and ECG interpretation in the context of clinical exercise physiology professional practice. Students will develop decision-making skills based upon clinical scenarios, ECG descriptive analysis, and interpretation. The course aims to develop exercise professionals that have the basic understanding of ECG and its relation to exercise testing and exercising people. Prerequisites: KINS majors only and a minimum grade of C in KINS 102, KINS 370/371. Corequisite: KINS 305.

KINS 305. Electrocardiography Lab

Credit 1(0-2)

This course teaches the preparation and interpretation of ECG in a clinical and exercise testing setting. ECG can be used for prognostic and diagnostic tools at times. ECG is a common test conducted by physicians periodically. Clients and patients ask exercise professionals for their opinion often in regards to ECG. Prerequisites: KINS majors only and a minimum grade of C in KINS 102, KINS 370/371. Corequisite: KINS 304.

KINS 306. Fitness Across the Life Span

Credit 2(2-0)

This course utilized the "Stimulus-Response" principle as a basis for the examination of the influence of age on adaptation to physical activity in general, and exercise in particular from childhood to the elderly. The course focuses on the adaptation to aerobic and anaerobic fitness, balance, flexibility, agility, proprioception, endurance, power, speed, coordination, and accuracy. In addition, this course examines key tissues, organs, and system affected according to age. Prerequisites: KINS majors only and a minimum grade of C in KINS 204/205, and KINS 208 or KINS 209.

KINS 401. Exercise Pharmacology

Credit 3(3-0)

This course awards knowledge of basic principles of pharmacology, including receptor mechanisms, drug distribution and metabolism, and pharmacokinetics. The course lays the foundation for the application of the interactions of drugs and biological systems as a basis for rational disease therapy. The course further more implements this knowledge to the science of exercising people. Prerequisites: KINS majors only and a minimum grade of C in KINS 102 and KINS 370/371.

KINS 406. Preparation for Certification Exam

Credit 1(1-0)

This course prepares students to sit for a certification exam corresponding to the major or a concentration within the major. This course surveys the domains, type of questions, division of materials between questions on the exam, and key points for success. Prerequisites: KINS-EXSC majors only and a minimum grade of C in KINS 301/302 and KINS 370/371.

KINS 408. Exercise Pathophysiology and Exercise**Credit 3(3-0)**

This course will address the pathological conditions encountered in clinical practice across the lifespan. Placing emphasis upon reasons and mechanisms that cause each pathology, as well as regulatory and compensatory mechanisms as they relate to commonly occurring diseases. In addition, the course will include knowledge on the ability to exercise and the effects of exercise on the symptoms acutely and chronically. Prerequisites: KINS majors only and a minimum grade of C in KINS 304/305, KINS 401, and 470/476.

COURSE DESCRIPTIONS FOR KINESIOLOGY**(Required Courses for Recreation & Sport Management Concentration)****KINS 270. Overview of Recreation and Sports Management****Credit 3(3-0)**

Introduces the system of public, nonprofit, and private sector agencies serving contemporary communities. Emphasizes delivery and management of services in recreation/leisure and sport. Addresses issues, trends, and careers in recreational sports settings and contexts.

KINS 372. Sport and Recreation Facilities Management**Credit 3(3-0)**

This course is designed to explore the concepts and theories of planning, design, and management of sport, recreation, and exercise facilities. In addition to the design and construction of specific sport and recreation facilities, approaches to standards and regional planning will be discussed. Problems and issues related to funding, maintenance, and use of sport and recreation facilities will be analyzed. The course will also include trends in facility design, construction, and maintenance.

KINS 373. Managerial Operations in Sport and Recreation**Credit 3(3-0)**

This course will combine theory and practical application to provide an overview of all facets of sport and recreation management. Topics include an application of organizational theory in the context of the sport and recreation industry, an analysis of the sport and recreation industry with special emphasis given to the manager's roles and functions, and in-depth analysis of planning, organizing, leading, and controlling as they apply to the sport and recreation manager.

KINS 374. Sport and Recreation Management**Credit 3(3-0)**

This course will combine theory and practical application to provide an overview of all facets of sport and recreation management. Topics include an application of organizational theory in the context of the sport and recreation industry, an analysis of the sport and recreation industry with special emphasis given to the manager's roles and functions, and in-depth analysis of planning, organizing, leading, and controlling as they apply to the sport and recreation manager.

KINS 473. Sport and Recreation Finance**Credit 3(3-0)**

This course provides an in depth exploration into the development and management of finances in a sport or recreation-related organization. Topics include: principles of budgeting, practical budgeting, economic principles, sources of revenue, fundraising methods, theories and methods of financial planning, computer program/Internet/spreadsheet utilization, economic impact methods of financing venues, and understanding financial statements.

COURSE DESCRIPTIONS FOR DIRECTED ELECTIVES IN KINESIOLOGY**KINS 200. Introduction to Health Education and Promotion****Credit 2(2-0)**

This course introduces the student to the discipline and profession of health education. Students will examine the concepts of health and wellness, the determinants of health behavior, national health status, the history of health education and health promotion. The student will recognize health education as an important foundation for population-based health care. The course connects between health education and health promotion and the role the kinesiologists have in contributing to a healthier population and community.

KINS 206. Genetics and Exercise**Credit 3(3-0)**

This course develops a basic understanding of the processes that lead from genetic information to protein formation, and their influence on the development of disease and physical performance. Students will gain a basic understanding of inheritance patterns of genetic traits and their influence on health in specific populations. Students will understand the role of the cell, genes, and proteins in health, sports, and disease. Prerequisites: KINS majors only and a minimum grade of C in KINS 209, and a minimum grade of D in CHEM 104 or CHEM 106.

KINS 211. Technological Applications in Kinesiology**Credit 3(3-0)**

This course provides an overview of a variety of technological programs, systems and devices and their influence on research and practice in the field of kinesiology. Topics include computer software, apps, navigation systems and wearable health/fitness appliances for tracking and monitoring performance in sport, exercise, and related activities.

KINS 255. Human Sexuality**Credit 3(3-0)**

This course examines the influences of sex and gender on the perception of health, fitness, wellness, and well-being. In addition, the courses examines the influence of sexual orientation on the perception of health, fitness, wellness, and well-being. The course further examines sex and gender as possible contributors to success or failure in being healthy, fit, and well.

KINS 270. Overview of Recreation and Sports Management**Credit 3(3-0)**

Introduces the system of public, nonprofit, and private sector agencies serving contemporary communities. Emphasizes delivery and management of services in recreation/leisure and sport. Addresses issues, trends, and careers in recreational sports settings and contexts. Prerequisite: KINS majors only.

- KINS 342. First Aid & Safety** **Credit 3(3-0)**
 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.
- KINS 409. Cardiopulmonary Rehabilitation** **Credit 3(3-0)**
 This course lay the theoretical background for the skills and knowledge utilized a cardiovascular and cardiorespiratory clinical/rehabilitation setting as practices according to the guidelines of The American College of Sports Medicine (ACSM). Prerequisites: KINS majors only and a minimum grade of C in KINS 304/305, 306, and 401. Corequisite: KINS 410.
- KINS 410. Cardiopulmonary Rehabilitation Lab** **Credit 1(0-1)**
 This course includes the implementation of core and key principles as well as clinical skills in cardiopulmonary rehabilitation as taught and discussed in KINS 409 “Cardiopulmonary Rehabilitation”. The course examines the implementation of concepts, designs, and cardiopulmonary rehabilitation programs that focuses on disease treatment and management, patient education, and lifestyle modification. Prerequisites: KINS majors only and a minimum grade of C in KINS 304/305, 306, and 401. Corequisite: KINS 409.
- KINS 474. Program Planning** **Credit 3(3-0)**
 The course examines theories and strategies used in the organization and delivery of leisure/recreation and sport programs and services. Students will learn about the total program planning process including: strategies used in the delivery of leisure/recreation/sport services, need identification and assessment, program design, program implementation strategies and program evaluation.
- KINS 475. Recreation and Sport Leadership** **Credit 3(3-0)**
 This course provides the knowledge, effective methods, and skills necessary for leadership in the recreation/sport industry. It assesses leadership styles, traits, and leadership theories and provides the opportunity for students to assess their own individual styles. The course addresses group dynamics, ethical leadership, decision making, problem solving, group management, communication and issues relating to change and innovation.
- KINS 494. Independent Research.** **Credit 3(3-0)**
 This course is an opportunity for students to participate in faculty member driven research projects or for students to design their own project under faculty member supervision. Research conceptual skills will include engaged learning, critical thinking, and self-reflection of the research question within the discipline. Students may work individually, but more often, students work in groups. Students will participate in any or all phases of the research including completion of background research, study design, collection of data, data analysis, and interpretation. Their participation may culminate into developing conference presentations or written publication(s). Prerequisites: KINS major, C or higher in KINS 469 and permission of instructor.

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. Prerequisite: 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)
- SSFM 226. Personal Approach to Health** **Credit 3(3-0)**
 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)
- SSFM 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: SSFM majors only. (S)
- SSFM 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: SSFM majors only. (F)
- SSFM 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. Prerequisites: SSFM 261 or BIOL 350 and SSFM majors only. (S)
- SSFM 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: SSFM 261 or BIOL 350 and SSFM 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 SSFM 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: SSFM 261 or BIOL 350 and SSFM 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: SSFM 261 or BIOL 350 and SSFM 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: SSFM 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. Prerequisites: Junior or Senior standing and SSFM 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 SSFM 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 SSFM 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. Prerequisites: SSFM majors only, and 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 SSFM program and provides professional experience to support academic preparation in the SSFM program. Prerequisite: SSFM 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: SSFM 201 and SSFM majors only. (S)
- SSF 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. Prerequisites: SSFM majors only. (F)
- SSF 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 SPORT SCIENCE AND FITNESS MANAGEMENT
 (Leisure Studies Option)**

- HPED 250. Information Technology for HPLS** **Credit 3(3-0)**
 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)

SSFM 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 Non-swimmers

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 110. Aerobic Training

Credit 1(0-2)

This course emphasizes the improvement of cardiovascular fitness through various forms of aerobic activity.**

HPED 113. Beginning Tennis

Credit 1(0-2)

This course is a study of the basic skills and knowledge of tennis.**

HPED 114. Beginning Golf

Credit 1(0-2)

This course is a study of the basic skills and knowledge of golf.**

HPED 116. Adapted Physical Activity

Credit 1(0-2)

This course includes special activities for those students whose physical examination shows that they are unable to participate in the regular physical education program.**

HPED 119. Fitness Walking

Credit 1(0-2)

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)

HPED 124. Dance Aerobics

Credit 1(0-2)

This course is designed to provide the student with beginning level knowledge and skill in dance/rhythmic aerobic fitness.** (F;S;SS)

HPED 125. Yoga/Pilates

Credit 1(0-2)

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)

HPED 126. Intermediate Basketball

Credit 1(0-2)

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)

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 21st 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 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 and SSFM majors only. (F;S;SS)

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 **Credit 3(3-0)**

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)

DIRECTORY FACULTY

Phoebe B. Ajibade	Associate Professor
B.S., Radford University; M.S., Old Dominion University; Ed.D., The George Washington University	
Avery Brown	Full-Time Lecturer
B.S., University of Alabama; M.S., University of North Carolina at Greensboro	
Marc Cook	Assistant Professor
B.S., M.S., Ph.D., University of Illinois-Champaign	
Teresa Dail	Associate Professor
B.S., Wake Forest University; M.A.T., University of North Carolina at Chapel Hill; Ph.D., University of North Carolina at Greensboro	
Gloria Elliott	Assistant Professor
B.S., Fayetteville State University; M.A., The University of Connecticut; Ph.D., The Ohio State University	
T.J. Exford	Assistant Professor
B.S., University of Alabama Birmingham; M.Ed., Alabama State University; Ph.D., Auburn University	
Tiffany Fuller	Associate Professor
B.S., M.S., North Carolina A&T State University; Ph.D., University of North Carolina at Greensboro	
R. Trent Larson	Associate Professor
B.S., M.S., Brigham Young University; Ph.D., University of New Mexico	
Minyong Lee	Assistant Professor
B.S., Chosun University; M.A., Ph.D., University of Connecticut	
Robert Lyons Jr.	Associate Professor and Chairperson
B.S., St. Mary's College of California; M.S., Grambling State University; Ph.D., University of New Mexico	
Diana Melton	Associate Professor
B.S., Springfield College; M.S., Ed.D., University of North Carolina at Greensboro	
Troy Purdom	Assistant Professor
B.S., California State University; M.A., California State University; Ph.D., University of New Mexico	
Daniel Webb	Associate Professor
B.S., Coppin State University; M.S., University of Wisconsin; Ph.D., The Ohio State University	
Portia T. Williams	Full-Time Lecturer
B.S., M.Ed., M.P.T., Florida A&M University; Ph.D., Auburn University	

Department of Psychology
George S. Robinson, Jr., Chairperson

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
Freshman Year: First Semester		Freshman Year: Second Semester	
PSYC 110 (<i>formerly PSYC 321</i>)	3	PSYC 150	3
PSYC 120 (<i>formerly PSYC 240</i>)	3	Scientific Reasoning I (with lab)	4
Social and Behavioral Sciences	3	SPCH 250	3
ENGL 100	3	ENGL 101	3
MATH 101E or MATH 101	3	MATH 102 or STAT 214	3
Semester Total	15	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
PSYC 221, 223, 225, 227 or 243	3	PSYC 250	3
Scientific Reasoning II (with lab)	4	PSYC 252	3
Foreign Language 1**	3	Foreign Language 2**	3
African American Culture / History	3	Global Awareness	3
Free Elective 1	3	Humanities / Fine Arts	3
Semester Total	16	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
PSYC 230	3	PSYC 331 or 333	3
PSYC 241, 245, 347, or 337	3	PSYC 361, 363, 365 or 367	3
PSYC 350	3	PSYC Elective (General #1)	3
PSYC 352	3	Free Elective 3	3
Free Elective 2	3	Free Elective 4	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
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
Semester Total	15	Semester Total	13

Total Credit Hours: 120

**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 223. Adult Development and Aging** **Credit 3(3-0)**
The purpose of this course is to provide an overview of the longest phase of the life cycle – adulthood. Throughout the course, we will separate the myths and stereotype about aging from factual theories and knowledge and emphasize both the problems and potentials that accompany the aging process. We will emphasize how life span development will influence students in their personal experiences of aging as well as those of family members and friends. Prerequisite: PSYC 101 or PSYC 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 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 student 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

Cheree Barber-Gravely	Part-Time Lecturer
B.A., North Carolina A&T State University, M.A., Virginia State University	
Amber Burgin	Part-Time Lecturer
B.A., M.S., North Carolina Central University; MDiv, Duke University	
Audrey Campbell	Part-Time Lecturer
B.A., University of San Francisco, M.A., Ph.D., Psychological Studies Institute	
Tonya C. Crockett	Part-Time Lecturer
B.A., M.S., North Carolina Central University	

Jennifer Dashiell-Shoffner	Part-Time Lecturer
B.A., North Carolina A&T State University; M.S., Radford University; Ph.D., North Carolina A&T State University	
Marvin Fields	Part-Time Lecturer
B.A., North Carolina A&T State University; M.S., Purdue Global University	
Phyllis Ford-Booker	Associate Professor and Associate Chairperson
B.S., M.S., Ph.D., Howard University	
Cassandra Germain	Assistant Professor
B.A., Hunter College; M.S., Ph.D., North Carolina State University	
Nicole Harrison-Obie	Part-Time Lecture
B.S., University of North Carolina at Greensboro; M.S., University of the Rockies	
Marvin Hall	Adjunct Assistant Professor
B.A., M.S., North Carolina A&T State University, Ed.D., Western Michigan University	
Tyronne James	Part-Time Lecture
B.A., M.S., North Carolina Central University	
Aloysius Jones	Part-Time Lecture
B.S., North Carolina State University; M.A., Shaw University, M.S., Walden University	
Alvin L. Keyes	Associate Professor
B.A., Wake Forest University; M.A., Ph.D., University of North Carolina at Greensboro	
Kimberly King-Bell	Assistant Professor
B.A., Southern Illinois University; M.S., Ph.D., Post-doctoral Fellow, Howard University	
Anna Lee	Associate Professor
B.A., Southern University; Ph.D., Howard University	
Antoniette Maldonado-Devincci	Assistant Professor
B.A., M.A., Ph.D., University of South Florida; Post-doctoral Fellow, University of North Carolina at Chapel Hill	
George S. Robinson, Jr.	Associate Professor and Chairperson
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	
Kalynda Smith	Assistant Professor
B.A., Truman State University; Ph.D., Howard University	
Joseph Stephens	Professor
B.A., Indiana University, Ph.D., Carnegie Mellon University; Post-doctoral Fellow, The Ohio State University	
Yvette Williams	Part-Time Lecture
B.A., Strayer University; M.S., Ph.D., Walden University	
Dennis Wilson	Part-Time Lecture
B.S., University of North Carolina at Charlotte; B.A., M.S., North Carolina Central University	
Steven Withrow	Part-Time Lecture
B.A., Wingate University; M.A., University of North Carolina at Greensboro	

Department of Social Work and Sociology
Arnold Barnes, Chairperson

GENERAL PROGRAM REQUIREMENTS

The admission of the students to the undergraduate degree program in the Department of Social Work and Sociology 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 must pass the Comprehensive Exam prior to graduation from the department, 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. NOTE: the Senior Seminar course can be repeated, if necessary. 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, and 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 in research, analysis, and communication 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 in order to positively impact socioeconomic inequalities and improve the quality of life. 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 are based on 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, Sociology and all Social Work courses. Formal admission to the BSW program is required before taking any upper division Social Work courses. Students must have a 2.6 GPA or better to be admitted to the BSW program and in order to continue they must maintain a

2.6 GPA or better. Social Work majors are required to successfully complete an internship in their senior year. Professional liability insurance is required before entering the Field.

Students interested in participating in the Child Welfare Education 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 (SOWK 133, SOWK 134, SOWK 310, SOWK 315), 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 Social Work and Sociology Bachelor of Social Work (BSW) Major Code: SOWK

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
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 ³	3	SOWK 134 ³	3
FRST 101 (SS)	1	PSYC 101 (SBS)	3
Semester Total Hours	14	Semester Total Hours	15
Sophomore Year: First Semester		Sophomore Year: Second Semester	
HIST 130, 207, 216 or 231 (GL)	3	ENGL 316, 331, 404, 412 or 434 ¹	3
Scientific Reasoning Elective (SR)	3	HIST 103, 106 or 107 (AA)	3
POLI 110, ECON 200 or FOLA 101 ²	3	POLI 215 or POLI 311; or ECON 201; or FOLA102 ²	3
SPCH 250 (HFA)	3	SOWK/SOSW Elective	3
SOWK 310 ³	3	SOWK 315 ³	3
Semester Total Hours	15	Semester Total Hours	15
Junior Year: First Semester		Junior Year: Second Semester	
ENGL 316, 331, 404, 412, or 434 ¹	3	SOCI 203, MATH 224 or ECON 305	3
SOWK 330 ⁴	3	PHIL 101, 104 or 266 (HFA)	3
PSYC 221 or 331	3	SOWK 285 ⁴	3
SOWK 230 ⁴	3	SOCI/SOWK Elective	3
SOWK/SOSW Elective	3	SOCI/SOWK Elective or Free Elective	3
Semester Total Hours	15	Semester Total Hours	15
Senior Year: First Semester		Senior Year: Second Semester	
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
Semester Total Hours	15	Semester Total Hours	16

Total Credit Hours: 120

¹Choose two from the five options.

²Must take correlating course in the same discipline.

³Denotes Core Social Work courses.

⁴Must 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 Social Work and Sociology
Bachelor of Science in Sociology
Major Code: SOCI**

Curriculum Guide

COURSE	CR	COURSE	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
SOCI 100 (SBS)	3	ENGL 101 (WC)	3
Scientific Reasoning (SR) ¹	4	Global Awareness (GL)	3
Math/Logic/Anal. Reasoning (MLAR) ²	3	Humanities and Fine Arts (HFA)	3
ENGL 100 (WC)	3	SOCI 101	3
FRST 101 (SS)	1	African American Culture/Hist. (AA)	3
Semester Total	14	Semester Total	15
Sophomore Year: First Semester		Sophomore Year: Second Semester	
SOCI 203	3	SOCI 204	3
Scientific Reasoning Elective (SR) ¹	3	SOCI 213	3
Free Elective	3	FOLA Elective	3
SOCI 201	3	Sociology Elective ³	3
Elective (MLAR) ²	3	SOCI 202	3
Semester Total	15	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
SOCI 310	3	SOCI 475	3
Sociology Elective	3	SOCI 306	3
Concentration ⁴	3	Free Elective	3
Concentration	3	Concentration	3
Sociology/Social Work Elective	3	Concentration	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
Sociology Elective	3	Sociology/Social Work Elective	3
Concentration	3	Concentration	3
Free Elective	3	SOCI 470	4
SOCI 499	1	Free Elective	3
SOCI 498	5	Sociology/Social Work Elective	3
Semester Total	15	Semester Total	16

Total Credit Hours: 120

¹Suggested Scientific Reasoning (SR) courses: BIOL 101 OR 102; CHEM 100, 104, ENVS 201; EES 234; PHYS 101 or 104.

²Suggested MLAR courses: MATH 101, HIST 277 or PHIL 102.

³Suggested Sociology Electives: SOCI 315 Political Sociology; SOCI 309 Symbolic Interaction; SOCI 311 Environmental Sociology; SOCI 308 Marriage & the Family; SOCI 406 Criminology; SOCI 224 Social Aspects of Human Sexuality; SOCI 412 Social Stratification; SOCI 472 Selected Issues in Sociology

⁴Eighteen hours in suggested fields are: Economics, History, Psychology, Political Science, Marketing, Business Administration, Biology and Social Work. The 18 hours must be passed with a grade of “C” or better.

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. Prerequisites: MATH 101 or MATH 111, and ENGL 100.

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. Sociology of Race and Ethnicity **Credit 3(3-0)**
This course will focus on the biopsychosocial aspects of race and ethnicity including variance of resources by race, historical events and their contribution to disparities in health and criminal justice, and future possibilities concerning race relations in the United States. Prerequisite: SOCI 100.

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 315: Political Sociology **Credit 3(3-0)**
This is an introductory course covering the major themes and debates in political sociology. It will examine the major perspectives and arguments comprising the field, including classical and contemporary readings. Among other things the course will cover various political phenomena ranging from the state, to the market, to civil society and will analyze how power is defined, attained and sustained in society and will examine political power as related to social realities such as democratic elections, class conflict, elite networks, power sharing, protest, and revolution. Prerequisite: Sophomore standing or higher.

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(5-0)**
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.

SOCI 499: Sociology Internship Seminar **Credit 1(1-0)**
This seminar is designed to supplement Sociology Internship 498 and gives students in-class guidance on implementing basic sociological skills and interventions as they work in the field. Students will examine their roles in complex organizations and explore the professional skills needed to transition from undergraduate coursework into either graduate coursework or career-intensive learning. Must be taken concurrently with SOCI 498.

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 20th & 21st 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 330. Social Work and Research Methods **Credit 3(3-0)**
This course provides students with a basis for understanding research methods and its association with social work and the scientific research process. It is the foundation for students' understanding of the process by which research informs social work practice and social work practice informs research. Prerequisites: SOWK 133, SOWK 134, SOWK 310, SOWK 315, MATH 101, and ENGL 100. This course is for social work majors only.

- SOWK 350. Introduction to International Social Work** **Credit 3(3-0)**
 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** **Credit 3(3-0)**
 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. Corequisite: 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. Prerequisite: SOWK 424. Corequisites: 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. Corequisites: 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. Corequisite: 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. Corequisite: 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 caseloads. 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 **Credit 3(3-0)**
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

Kendra Alexander	Assistant Professor
B.S., North Carolina A&T State University; M.S.W., M.P.A., University of North Carolina; Ph.D., Northwestern University	
Soonok An	Assistant Professor
B.A., M.A., Chungbuk National University; M.S.W., Ph.D., University of Georgia	
Arnold Barnes	Associate Professor and Chairperson
B.A., M.S.W., University of Maryland; Ph.D., Washington University (St. Louis, MO)	
Anderson Bean	Teaching Assistant Professor
B.A., M.A., University of North Carolina; Ph.D., George Mason University	
Grace Gowdy	Assistant Professor
B.A., University of North Florida; M.S.W., Florida State University; Ph.D., Boston University	
Carmen Monico	Associate Professor
B.S., University of Maryland; M.S.W., Ph.D., Virginia Commonwealth University	
Sharon Parker	Associate Professor
B.A., Greensboro College; M.S.W., University of Pittsburgh; Ph.D., University of North Carolina at Chapel Hill	
Maruka Rivers	Lecturer
B.S.W., University of North Carolina at Greensboro; M.S.W., Simmons College	
Mashooq Salehin	Associate Professor
B.S.S., Shahjalal University of Science & Technology; M.S.W., Southern Illinois University, Ph.D., University of Texas	
Linda Samuel	Associate Professor
B.S., South Carolina State University; M.S.W., University of South Carolina; Ph.D., Clark Atlanta University	
Jeffrey Shears	Professor
B.S.W., M.Ed., North Carolina Agricultural and Technical State University; Ph.D., University of Denver, Denver Colorado	
Stephanie Teixeira-Poit	Assistant Professor
B.A., Stonehill College; M.S., Ph.D., North Carolina State University	
Michelle Vance	Assistant Professor
B.S., Appalachian State University; M.S.W., University of North Carolina at Charlotte; Ph.D., University of Central Florida	
Jeannette Wade	Assistant Professor
B.A., Cleveland State University; M.A., Ph.D., University of Akron	
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	Teaching 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	Associate Professor
B.A., Cleveland State University; M.S.S.A., Case Western Reserve; Ph.D., University of North Carolina at Chapel Hill	
Lisa Workman	Associate Professor
B.A., University of Akron; M.S., Case Western Reserve University; Ph.D., Norfolk State University	

School of Nursing

Janice Collins-McNeil, Interim Director

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 (ABSNC 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. Included as part of the option for registered nurses (BSNC) is the North Carolina Piedmont Regionally Increasing Baccalaureate Nurses (RIBN) initiative. The RIBN initiative consists of four years of seamless Nursing education that leads to an associate degree from a North Carolina Community College and a bachelor's degree from N.C. A&T State University. Students are dually admitted to both institutions and take courses at N.C. A&T throughout their studies at the community college. Upon successful completion of the Associate degree and the National Council Licensure Examination (NCLEX-RN), students take courses in the BSNC curriculum to complete the Bachelors of Science degree inN.

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 "an institution where high-achieving scholars are engaged in transformative teaching and learning, civic outreach, interdisciplinary research and innovative solutions to global challenges." (Preeminence 2023). 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 (American Nurses Association Guide to Nursing's Social Policy Statement: Understanding the Profession from Social Contract to Social Covenant, 2015). 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:

- Critical thinking
- Communication
- Patient Centered Care/Culturally Appropriate Care
- Professional Identity
- Teamwork/Collaboration
- Safety and Quality
- Health Information Technology
- Health Promotion and Injury Prevention

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: Core Competencies for Professional Nursing Education American Association of Colleges of Nursing*, (2021), *Quality and Safety Education for Nurses (QSEN) Competencies (2021)*, *the American Nurses Association Nursing : Scope and Standards of Practice, 4th Edition (2021)*, 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. The School of Nursing is accredited by the Accreditation Commission for Education in Nursing, Inc., (ACEN) 3343 Peachtree Road, NE, Suite 1400, 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). 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 121-125 credit hours are required for graduation with a Bachelor of Science in Nursing (BSN) degree. A minimum of 31 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 Ceremonies, Student Recognition Ceremonies, Senior Pinning Ceremonies, 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.

II. 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 1010 (math and verbal)
 - Cumulative high school GPA of 3.0 or higher
 - Composite ACT: 20
- 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 required. Students must complete BIOL 100 (General Biology), CHEM 104 (Basic General, Organic and Biochem I) and 114 (LAB), CHEM 105 (Basic General, Organic and Biochem II) and 115 (LAB) and BIOL 350 (Human Anatomy and Physiology I) and BIOL 351 (Human Anatomy and Physiology II) with a minimum grade of "C" or higher **on the first attempt**. Chemistry I and II and Human Anatomy and Physiology I and II cannot be more than 5 years old for transfer purposes and currency of content.

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.**

Students seeking the Nursing major must also complete TEAS testing, earning at least the national mean and CNA I licensure. Students seeking admission to the Nursing major must meet all admission requirements for the entry option and the University. 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 eligible to apply to the upper division in the Traditional Entry Option. Admitted 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

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 COMPLETION (RN-BSN) ENTRY OPTION

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's of Science degree in Nursing. The program is designed for 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 120 semester hours of credit are required for graduation.

The North Carolina Comprehensive Articulation (CAA) Agreement indicates North Carolina community college students who complete the Associate in Arts (AA) or Associate in Science (AS) degree prior to transferring to a constituent University of North Carolina institution will have fulfilled the general education requirements. An Associate in Applied Science (AAS) degree is not covered under the CAA and courses will be evaluated on a course-by-course basis. Associate in Arts (AA) and Associate in Science (AS) degrees earned from out-of-state institutions are not covered under the CAA and will be evaluated on a course-by-course basis.

**School of Nursing
Bachelor of Science in Nursing
Major Code: NURS**

Traditional BSN Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	

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		13
Semester Total	15-16		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
Statistics Course	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	Semester Total	14
Semester Total	16		
Summer Session I		Summer Session II	
NURS 226	3	NURS 320	3
NURS 326	4	Semester Total	3
Semester Total	7		
Junior Year: First Semester		Junior Year: Second Semester	
NURS 355	7	NURS 455	6
NURS 361	3	NURS 418	4
NURS 368	4	NURS 420	4
Semester Total	14	Semester Total	14
Senior Year: First Semester		Senior Year: Second Semester	
NURS 412	4	NURS 457	4
NURS 461	4	NURS 458	3
NURS 464	4	NURS 365	3
NURS 467	3	NURS 415	3
Semester Total	15	Semester Total	13

Total Credit Hours: 124-125

*Students are allowed to choose classes 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.

Accelerated BSN Curriculum Guide

Course	CR
Spring Semester	
NURS 320	3
NURS 325	5
NURS 335	3
NURS 356	7
NURS 358	3
NURS 366	3
Semester Total	24
Summer (1st and 2nd Sessions)	
NURS 361	3
NURS 413	4
NURS 419	4
NURS 421	4
NURS 464	4

NURS 467	3
Semester Total	22
Fall Semester	
NURS 365	3
NURS 424	8
NURS 458	3
NURS 462	4
NURS 466	0
Semester Total	18
Prerequisite Courses	
*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
Total	31

Total Nursing Credit Hours: 64

*Cannot be older than five years at time of application.

For Accelerated BSN students whose first bachelor's degree was obtained from a regionally accredited college or university, all general education requirements for the second bachelor's degree are satisfied.

BSN Completion Curriculum Guide Full-Time

Course	CR	Course	CR
Junior Year: First Semester		Junior Year: Second Semester	
NURS 363	3	NURS 460	4
NURS 364	3	NURS 415	3
NURS 360	3	NURS 361	3
NURS 362	1	Semester Total	10
Semester Total	10		
Senior Year: First Semester (Summer)			
NURS 365	3		
NURS 464	4		
NURS 465	1		
NURS 467	3		
Semester Total	11		

Total Nursing Credit Hours: 31

Total Program Credit Hours: 121

A maximum of 90 transferrable credits is allowed. Transfer credits include 56 General Education credit hours and 34 proficiency credits hours (awarded for RNs upon successful completion of NURS 360). Students complete the remaining 31 credit hours while enrolled.

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. Prerequisite: MATH 101 or higher.
- NURS 226. Introduction to Professional Nursing** **Credit 3(3-0)**
 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. Prerequisite: Nursing majors only.
- 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

Credit 4(4-0-0)

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. Prerequisite: Nursing majors only.

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 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(1-3)

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.

HEALTH SERVICES MANAGEMENT PROGRAM

OBJECTIVES

The objectives of the Health Services Management program are to:

1. provide the highest quality of instruction that will result in employment at the baccalaureate level, or entrance into graduate school.
2. help students develop analytical, critical thinking and problem solving skills in all areas of health services management.
3. enhance written and oral presentation skills.
4. develop research and data analytics skills.
5. enhance interpersonal skills that will enable students to excel in health systems, healthcare leadership and management.
6. enhance students' understanding, and application, of the intersections involving healthcare, economics, ethics, management, and policy in a health services management career.
7. enhance the awareness of sound policy and information management that lends itself to equitable healthcare services in the community.

DEGREE OFFERED

Healthcare Services Management – Bachelor of Science

DEPARTMENTAL REQUIREMENTS

Health Services Management major – The major in health services management must complete 120 semester hours of University courses. A minimum grade of “C” must be achieved in ALL health services management courses. Thus, health services management courses with a “C-” grade or less, must be repeated in order to count for graduation.

CAREER OPPORTUNITIES

The Bachelor of Science in Health Services Management builds upon the great tradition of North Carolina A&T State University of producing outstanding graduates who assume roles in premier organizations nationally and internationally. Thus, successful

completion of this program qualifies graduates to assume employment as practice and program managers, patient service managers, managing directors, healthcare representatives (medical device or pharmaceutical sales), health operations managers, medical/business office managers, medical coders, and entry-level management positions in a variety of other health-related organizations.

School of Nursing
Bachelor of Science in Health Services Management
Major Code: HSM

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENGL 101	3
FRST 101	1	Humanities and Fine Arts	3
BIOL 100	4	CHEM	3
MATH 111	3	PSYC 101	3
HSM 100	3	Global Awareness	3
Elective	1	Semester Total	15
Semester Total	15		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
BIOL 350	4	BIOL 351	4
ECON 200*	3	HSM 231	3
African-American Culture & History	3	HSM 211	3
MATH 224	3	HSM 222	3
HSM 210	3	MGMT 201	3
Semester Total	16	Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
ECON 331	3	HSM 304	3
HSM 331	3	HSM 322	3
HSM 301	3	HSM 323	3
HSM 310	3	HSM 321	3
Elective	3	Elective	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
HSM 402	3	HSM 431	3
HSM 422	3	HSM 498	4
HSM 421	3	Elective	3
HSM 413	3	Elective	3
Elective	3	Semester Total	13
Semester Total	15		

MAJOR PROGRAM REQUIREMENTS

Students must earn a grade of "C" or better in all HSM courses.

COURSE DESCRIPTIONS IN HEALTH SERVICES MANAGEMENT

HSM 100. Introduction to Health Services Management

Credit 3(3-0)

This course provides students with introductory knowledge for overall critical and analytic thought regarding foundational concepts related to the U.S. Healthcare System, consumption of health care, and management of health services. Students will be introduced to the field of healthcare management. (F;S;SS)

- HSM 210. US Healthcare Systems** **Credit 3(3-0)**
 This course provides an overview of how public health shapes the U.S. system and the services offered and received. Topics to be covered include current national policy (including U.S. health reform initiatives); organization of systems; professional roles and accreditation; and, legal and regulatory issues, including licensure requirements. (F;S;SS)
- HSM 211. Law and Ethics in Healthcare** **Credit 3(3-0)**
 This course examines health law, ethics, bioethical issues, and federal/state regulations facing the industry. Students will engage in critical analyses of ethical, legal, regulatory, and social justice considerations in healthcare and their impact on their role as healthcare decision-makers and moral agents. (F;S;SS)
- HSM 222. Intro to Healthcare Technology & Information Systems** **Credit 3(3-0)**
 This course examines the design, application, operation, and future of clinical systems within various healthcare settings. Students will understand the use of information technology and systems to support organizational strategy and decision-making and evaluate the impact technology and information systems have on healthcare cost and quality. (F;S;SS)
- HSM 231. Medical & Healthcare Terminology & Diagnostic Classifications** **Credit 3(3-0)**
 This course provides a systematic approach to learning complex medical and healthcare terminology. Students will learn how to apply medical terminology to the International Classification of Diseases (ICD-10) and other classification coding systems. Prerequisite: BIOL 350. (F;S;SS)
- HSM 301. Financial Management in Healthcare** **Credit 3(3-0)**
 This course examines the application of financial management concepts within healthcare organizations. Students will understand the U.S. reimbursement system and financial statements, including balance sheets, profit and loss, and cash flow statements used to make strategic healthcare decisions regarding resource allocation and revenue cycles. Prerequisite: Grade of C or better in ECON 200. (F;S;SS)
- HSM 304. Research in Healthcare** **Credit 3(3-0)**
 This introductory course provides students with the understanding of fundamental principles of health research methodologies and designs relevant to health services research. Research methodologies such as observational studies, randomized controlled trials, qualitative studies, and mixed method approaches to research will be examined and applied to a health care context. Prerequisite: MATH 224. (F;S;SS)
- HSM 310. Human Resources in Healthcare** **Credit 3(3-0)**
 This course offers an introductory overview of human resource management functions, including the processes or systems that are designed to recruit, select, train, develop, motivate, and retain a productive workforce with an emphasis on their applications within organizations. Prerequisite: MGMT 201. (F;S;SS)
- HSM 321. Leadership and Organizational Behavior in Healthcare** **Credit 3(3-0)**
 This course introduces behavioral concepts of concern to managers in modern organizations. Students will develop skills needed to select appropriate leadership styles, effective managerial practices, lead teams, and manage projects within a variety of contexts, to increase organizational effectiveness and health outcomes. Prerequisite: MGMT 201. (F;S;SS)
- HSM 322. Health information Management** **Credit 3(3-0)**
 This course focuses on the use, integration and management of appropriate data systems to improve efficiency and quality in the health care delivery system. Students will be exposed to complex data systems and their integration to improve healthcare efficiency and effectiveness. This course includes simulation and practice lab experiences. Prerequisite: HSM 222. (F;S;SS)
- HSM 323. Healthcare Operations Management** **Credit 3(3-0)**
 This course focuses on operations management, with its three sub-areas of healthcare management, information systems, and quality control. Students will learn operational management models and practices. They will learn how information systems are key to operational effectiveness and sound decision-making concerning productivity and quality, creating goods, and delivering quality healthcare services. Prerequisite: HSM 222. (F;S;SS)
- HSM 331. Populations and Population Health** **Credit 3(3-0)**
 This course focuses on societal, economic, cultural, and global factors that affect population health and well-being in contemporary U.S. society. The course will use descriptive and inferential statistics to explore healthcare inequalities. The epidemiological profile of disenfranchised populations will be examined utilizing the integration of study design, public health surveillance, methods of control, prevention, and evaluation. Prerequisite: MATH 224. (F;S;SS)
- HSM 402. Healthcare Quality and Safety Management** **Credit 3(3-0)**
 This course uses analytical methods of monitoring and evaluating quality and safety improvement initiatives and strategies in healthcare. Safety and risk management models will be examined and evaluated, and strategies designed to minimize loss and claims. (F;S;SS)
- HSM 413. Strategic Management in Healthcare** **Credit 3(3-0)**
 This course focuses on long-term planning of organizations to provide future direction in a competitive market. Students will be provided with an overview and applications of strategic planning theories, methods, organizational culture and group processes in settings. Marketing as a component of the strategic management of healthcare settings will also be explored.
- HSM 421. Healthcare Policy and Politics** **Credit 3(3-0)**
 This is a seminar course that will address current health services delivery concerns from policy perspectives, including such topics as Medicaid, Medicare, SCHIP, and Reimbursements programs. The effects of health policy on the social determinants of health will be examined. (F;S;SS)

HSM 422. Health Data Analytics**Credit 3(3-0)**

The focus of this course is to transform data into meaningful information through analysis, interpretation, and reporting in the healthcare field. Students will understand the basic principles, techniques and applications related to the analysis, synthesis, interpretation, and utilization of data to guide decision-making and test interventions in healthcare. Prerequisites: HSM 323 and MATH 224. (F;S;SS)

HSM 431. Healthcare Coordination Management**Credit 3(3-0)**

This course will build upon students' knowledge of populations and population health, disease processes, the use of analytics for decision-making, and theories of behavioral change to design, implement and evaluate a care coordination model and its management. Prerequisite: Senior Standing. (F;S;SS)

HSM 498. Internship in Healthcare Management**Credit 4(1-3)**

This capstone course for the health care management major is a 15-week internship experience. Students will work in a management capacity in a healthcare organization and will be evaluated on competencies essential to the healthcare management role. Students will be exposed to career opportunities in the field. Prerequisite: Final Semester of Degree Program. (F;S;SS)

DIRECTORY OF FACULTY

*Shakenna Bass	Instructor
B.S.N., University of North Carolina at Charlotte; M.S.N., University of North Carolina at Chapel Hill	
*Sandra Blackstock	Instructor
B.S.N., North Carolina A&T State University, M.S.N.; University of North Carolina at Greensboro; Ph.D., University of North Carolina at Greensboro	
Bobbie Brown	Instructor
B.S.N., North Carolina College at Durham; M.S.N., University of Mississippi; Ph.D., University of Tennessee-Knoxville	
*Jakeema Bryant-McLaughlin	Clinical Instructor
B.S.N., Winston Salem State University; M.S.N., Capella University	
Janice Collins-McNeil	Associate Professor and Interim Director
B.S.N., Winston Salem State University; M.S.N. University North Carolina Charlotte; Ph.D., University of Tennessee Health Science Center	
Amelia Davis	Clinical Assistant Professor
B.S.N., M.S.N., Alcorn State University; Ph.D., William Carey University	
*Kyle Duncan	Instructor
B.S.N., M.S.N., University of North Carolina at Greensboro	
*Elysa Graham	Instructor
B.S.N., M.S.N., D.N.P., Troy University	
Bonnie Fields	Clinical Assistant Professor
B.S.N., University of North Carolina at Chapel Hill; M.S.N., University of Pennsylvania; M.B.A., Ph.D., University of Pennsylvania	
Yvonne Ford	Assistant Professor
B.S.N., Barton College; M.H.S., M.S.N., Duke University; Ph.D., University of North Carolina Greensboro	
Evelyn Hoover	Assistant Professor
B.S.N., M.S., University of Maryland; Ph.D., Binghamton University; RN Helene Fuld School of Nursing of Provident Hospital, Inc.	
*Lavicia Jeter	Clinical Instructor
B.S.N., North Carolina A&T State University; M.S.N., University of North Carolina at Greensboro	
Kashima Jones	Clinical Assistant Professor
B.S.N., North Carolina A&T State University; M.S.N., Indiana Wesleyan University	
*Debra Mack	Clinical Instructor
B.S.N., North Carolina A&T State University; M.S.N., University of Phoenix	
*Alisa Montgomery	Instructor
A.D.N., Piedmont Community College; B.S.N., University of North Carolina at Greensboro; M.S.N., East Carolina University	
Cynthia Shores	Clinical Instructor
B.S.N., University of North Carolina at Charlotte; M.S.N., Ph.D., University of North Carolina at Greensboro	
Smriti Shrestha	Lecturer
B.S., M.A., Tribhuvan University, M.S. Kansas State University	
*Mary Sinacore	Clinical Instructor
B.S.N., University at Buffalo; M.S.N., Saint Louis University	
*Clarissa Staten	Clinical Instructor
B.S.N., North Carolina A&T State University; M.H.A., Pfeiffer University	
*Kameka Totten	Clinical Instructor
B.S.N., University of North Carolina at Greensboro; D.N.P., Old Dominion University	
Mary Uzochukwu	Lecturer
A.S.S., Southeast Community College; B.S., M.S., North Carolina A&T State University; Ph.D., Walden University	

***Adrienne White** **Instructor**
 A.A.S., Guilford Technical Community College; B.S.N., M.S.N., University of North Carolina at Wilmington
***LaKasha White** **Instructor**
 B.S.N., M.S.N.; Winston-Salem State University; D.N.P., University of North Carolina at Chapel Hill
William Whitsett **Clinical Instructor**
 B.S.N., North Carolina A&T State University; M.S.N., Walden University
***Wanda Williamson** **Instructor**
 B.S.N., North Carolina A&T State University; M.S.N., University of North Carolina at Greensboro; D.N.P., University of Alabama
***Darrick Woods** **Instructor**
 A.A.S., Piedmont Community College; B.A., University of North Carolina at Chapel Hill; M.S.N., University of Phoenix

COLLEGE OF SCIENCE AND TECHNOLOGY

<https://www.ncat.edu/cost/index.php>

Abdellah Ahmidouch, Dean
Vincent Childress, Associate Dean

The College of Science and Technology combined departments formerly located in the School of Technology and the College of Arts and Sciences. The new college is increasing 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, computer graphics technology, and automotive engineering 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) and Accreditation Board for Engineering and Technology (ABET). The following programs are also accredited by ABET, applied engineering technology, automotive engineering technology, electronics technology, environmental health and safety and geomatics. The chemistry program is certified by American Chemical Society (ACS).

DEGREES OFFERED

Applied Engineering Technology – Bachelor of Science
Atmospheric Sciences – Bachelor of Science
Automotive Engineering Technology – Bachelor of Science
Biology – Bachelor of Science
Chemistry – Bachelor of Science
Computer Graphics Technology – Bachelor of Science
Construction Management – Bachelor of Science
Electronics Technology – Bachelor of Science
Environmental Health and Safety – Bachelor of Science
Geomatics – Bachelor of Science
Information Technology – Bachelor of Science
Mathematics – 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, computer graphics technology, and automotive engineering technology, and advanced classification by submitting their credentials to the University Admissions Office. The College 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.

Department of Applied Engineering Technology

Aixi Zhou, Chairperson

OBJECTIVE

The Department of Applied Engineering Technology provides applied engineering education opportunities to student whose interests and aptitudes align with applications of engineering and technology. We offer two B.S. degrees: Applied Engineering Technology (AET) and Automotive Engineering Technology (AUTO). The Applied Engineering Technology program prepares students to work productively in a broad range of engineering and technical issues in industrial design, manufacturing, operation, and service. The Automotive Engineering Technology program prepares students with specialized skills for a successful career in design, manufacturing, marketing, operation, and maintenance in automotive industries and associated suppliers. The term “automotive” refers to land, sea, air, or space mobility.

Graduates of the Applied Engineering Technology degree programs contribute to society as productive professionals and engaged citizens by:

- Delivering services and products by applying technical knowledge, problem-solving techniques, hands-on skills, and modern tools in established and emerging areas of engineering technology;
- Communicating effectively in technical and non-technical environments;
- Working effectively in teams and assuming leadership roles while modeling ethical, respectful and professional behavior;
- Recognizing the impact of engineering technology solutions in a societal and global context;
- Pursuing continuous professional development and lifelong learning.

VISION

The vision of the Department of Applied Engineering Technology is to be a preeminent learner-centered community to prepare graduates as future technology innovators and industry leaders.

MISSION

The Department of Applied Engineering Technology prepares students for success in transforming society through innovation and technology leadership. We advance knowledge through applied research and create innovative and responsible solutions to global challenges.

TARGET AUDIENCE

Our engineering technology curricula focus on applied science and engineering as well as hands-on learning activities or projects. The level of Mathematics in our engineering technology programs is not as in-depth as traditional engineering programs. However, we emphasize on Statistics and their industrial applications. Chemistry and Physics are offered as algebra-based science courses. Most major courses are also algebra-based. Students in our Department learn from faculty who are actively engaged with industry. The Department has strong connections to industry partners to provide certificate training programs and internship opportunities. Our programs are designed to serve the diverse needs of people who are interested in pursuing careers in engineering and technology enterprises, academic institutions, and government agencies.

- Individuals recently graduated from high schools and want to embark on a career in engineering and technology positions.
- Individuals recently graduated from community colleges and want to advance their degree level to prepare for a career in engineering and 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

Automotive Engineering 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 Automotive Engineering Technology specialization courses, which include 27 credit hours of departmental core courses. A minimum grade of “C” must be earned in all departmental courses.

Graduates of technical institutes and community colleges who have earned the Associate Degree in engineering or 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 56 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

Our BS Degree in Applied Engineering Technology is accredited by the Engineering Technology Accreditation Commission of ABET, <https://www.abet.org>. Both of our BS degree programs are accredited by the Association of Technology, Management, and Applied Engineering (ATMAE).

CAREER OPPORTUNITIES

Our engineering technology degree programs enable students to apply basic engineering principles, technical and management skills to secure application-oriented technical and management positions. Specifically, the programs are designed to prepare our

students for various engineering support and management functions for research, design, production, operation, and application to specific engineering specialties. Graduates of our BS degree programs are very successful in securing employment in industry and government. Positions typically include enterprise managers, design engineers, production supervisors, manufacturing engineers, automation engineers, quality/control engineers, logistics engineer, automotive engineers, automotive managers, motorsports marketing, NASCAR related areas, etc. Our graduates are highly sought-after and working for 3D Systems, 3M, Amazon, AT&T, BAE Systems, Bank of America, Cargill, Caterpillar, Collins Aerospace, Cummins, Eaton Corp, Gilbarco Veeder-Root, Goodyear, HAECO, John Deere, Lockheed Martin, Lowe's, Mannington, Milliken, PepsiCo, Pratt & Whitney, Toyota, Volvo Group, Xerox, and many others.

**Department of Applied Engineering Technology
Bachelor of Science in Applied Engineering Technology
Major Code: AET**

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
FRST 101	1	AET 191	3
ENGL 100	3	ENGL 101	3
MATH 110	4	MATH 131	4
CGT121	3	EHS 101	3
AET 121	3	AA Elective	3
Semester Total	14	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
PHYS 225	3	PHYS 226	3
PHYS 235	1	PHYS 236	1
CHEM 106	3	Humanities and Fine Arts Elective	3
CHEM 116	1	CST 112	3
CGT 124	3	AET 232	3
AET212	1	MGMT 110	3
Social and Behavioral Sciences Elective	3	Semester Total	16
Semester Total	15		
Junior Year: First Semester		Junior Year: Second Semester	
ACCT 210	3	AET 273	3
Global Awareness Elective	3	AET 276	3
AET 270	3	AET 293	3
MATH224	3	AET 312	1
Open Elective	3	AET 395	3
Semester Total	15	AET Tech Elective	3
		Semester Total	16
Senior Year: First Semester		Senior Year: Second Semester	
AET 441	3	AET 445	3
AET 470	2	AET 480	2
AET 482	3	AET 484	3
AET 483	3	AET Tech Elective	3
AET Tech Elective	3	Open Elec	3
Semester Total	14	Semester Total	14

Total Credit Hours: 120

**Department of Applied Engineering Technology
Bachelor of Science in Automotive Engineering Technology
Major Code: AUTO**

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
FRST 101	1	AET 191	3
ENGL 100	3	ENGL 101	3
MATH 110	4	MATH 131	4
CGT 121	3	AET 151	3
AET 121	3	AA Elective	3
Semester Total	14	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
PHYS 225	3	MGMT 110	3
PHYS 235	1	PHYS 226	3
CHEM 106	3	PHYS 236	1
CHEM 116	1	CST 112	3
CGT 124	3	AET 252	3
AET -212	1	Humanities and Fine Arts Elective	3
Social and Behavioral Sciences Elective	3	Semester Total	16
Semester Total	15		
Junior Year: First Semester		Junior Year: Second Semester	
ACCT 210	3	AET 375	3
Global Awareness Elective	3	AET 293	3
AET 355	3	AET 312	1
MATH 224	3	AET 392	3
AET 270	3	AET 395	3
Semester Total	15	AET Technical Elective	3
		Semester Total	16
Senior Year: First Semester		Senior Year: Second Semester	
Open Elective	3	Open Elective	3
AET 455	3	AET 456	3
AET 470	2	AET 480	2
AET 492	3	AET Tech Elective	3
AET 493	3	Open Elective	3
Semester Total	14	Semester Total	14

Total Credit Hours: 120

COURSE DESCRIPTIONS IN APPLIED ENGINEERING TECHNOLOGY

AET 100. Engineering Technology Orientation

Credit 1(1-0)

This course introduces students to resources and skills that will help them to be successful in their studies and future careers. Learning topics include information about engineering technology, academic success resources, personal skills, professional development, engineering design, technology innovation, teamwork, leadership, ethical and social responsibilities, oral and written communication skills. (F;S)

AET 121. Computer Applications

Credit 3(3-0)

This course introduces the use of computer applications required for engineering technology professionals. Topics include modern office software, engineering computer applications, as well as using computers for numerical calculation, data analysis, visualization, and technical problem solving. (F;S)

AET 151. Introduction to Automotive Technology

Credit 3(3-0)

This course provides an introduction to the automotive industry. Topics include automotive history, career opportunities, vehicle subsystems, automotive design and construction, operation and diagnosis, service and repair, safety practices, equipment and tools, and professional responsibilities. (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. Engineering Technology Seminar **Credit 1(1-2)** This course introduces students to current and emerging issues in engineering technology. Leaders and experts in engineering technology cover a wide range of topics in engineering development and technology innovation. Topics change each time the course is offered. This course is repeatable for up to three times for additional credit. Prerequisite: Sophomore Standing. (F)

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 212. Applied Engineering Laboratory **Credit 1(1-0)**
This course provides hands-on learning activities through applied engineering experiments and projects. Topics include industrial metrology, properties and behavior of solids and fluids, product prototype, and others. Prerequisites: AET 121. (F;S)

AET 225. Sustainable Engineering Technology **Credit 3(3-0)**
This course introduces the principles and practices in sustainable engineering technology. Topics include sustainable engineering, renewable energy resources, sustainability and conservation issues, and integrating sustainability in product design and manufacturing processes. Prerequisite: Sophomore Standing. 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: Sophomore Standing. (F;S;SS)

AET 252 Engine Systems **Credit 3(3-0)**
This course is a study of automotive power plants, including internal combustion engines, hybrid systems, and electric motors for automotive applications, including system design, analysis, and optimization. Prerequisites: AET 151. (F;S)

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 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. CNC Machining **Credit 3(3-0)**
This course explores the technical and operational aspects of computer numerical control (CNC) machines in modern manufacturing. Some of the topics include components and configurations of CNC machines, control and position modes of CNC machines, tooling and advanced features in modern CNC machines, CNC shop floor activities, programming of CNC machines for basic machining processes, and integration of CAD/CAM software with CNC machining. The course includes appropriate laboratory and project activities. Prerequisite: AET 191. (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. Programmable Logic Controller **Credit 3(3-0)**
This course introduces the basics of programmable logic controllers (PLCs). Topics include the components, functions, operation, methods of PLC programming, timers and counters, and applications of PLCs. Prerequisite: CST 112. (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 the concept of lean manufacturing and how lean manufacturing can facilitate continuous improvement in quality and productivity. Topics include lean culture, lean leadership, history and philosophy of lean manufacturing, lean strategies, lead time, quality control, continuous improvement, lean transformation, and lean assessment. Prerequisite: MATH 224. (F;S)
- AET 312 Advanced Engineering Laboratory** **Credit 1 (1-0)**
 Students perform application-focused activities and projects via advanced methods or techniques in engineering experiments. Topics include but are not limited to advanced metrology techniques, advanced experiments on engineering components or systems, sustainable engineering technologies, and advanced product prototype techniques. Prerequisites: AET 212. (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 355. Automotive Powertrain** **Credit 3(3-0)**
 This course provides a study of the functions and operations of the automotive power train components. Emphasis is on the selection, maintenance, and adjustment of clusters, differentials, transmissions, brakes, and steering components. Prerequisites: AET 151. (F;S)
- AET 361. Nondestructive Testing** **Credit 3(3-0)**
 This course presents a wide spectrum of industrial Nondestructive Testing (NDT) methods. Students will learn the following topics for various NDT methods: physical principles, testing procedures, application areas, equipment, data analysis and interpretation, 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 375. Advanced Vehicle Technologies** **Credit 3(3-0)**
 This course focuses on the latest developments in the automotive field, such as electric, hybrid, and fuel cell technologies, and autonomous vehicles. Topics include electric, hybrid, and fuel cell control systems; energy storage systems; fuel cell technology; and autonomous vehicle technologies. Prerequisite: AET 151. (F;S)
- AET 377. Electronics Manufacturing** **Credit 3(3-0)**
 This course covers the basics in design, fabrication, and testing of electronic components and assemblies. Topics include materials in electronics manufacturing, integrated circuit formation processes, electronic assembly processes, product testing, and quality control. Prerequisite: Junior Standing. (F;S)
- AET 392. Applied Statics** **Credit 3(3-0)**
 This course is a study of objects and structures in equilibrium. Topics include scalars and vectors, forces and moments, free-body diagrams, objects and structures in equilibrium, centroids and centers of mass, virtual work and potential energy. Testing engineering materials for measuring mechanical properties will be experienced. Prerequisite: MATH 131.(F;S)
- AET 395. Quality Control** **Credit 3(3-0)**
 This course introduces a practical approach to quality control in industrial applications. Topics include total quality management, basic concepts of statistics and probability, statistical process control and its applications, and continuous quality improvement. Prerequisite: MATH 224. (F;S)
- AET 397. Internship** **Credit 3(3-2)**
 This internship course provides a structured and supervised experiential learning opportunity through professional work experience within an organization. The internship is supervised academically by a faculty member and professionally by an

internship supervisor. This course can be repeated one time for additional credits. Prerequisites: Sophomore Standing. (F;S;SS)

AET 398. Cooperative Training

Credit 3(3-2)

This course provides structured practical training and experiential learning for students who are approved for cooperative (co-op) training. Students must complete any university co-op requirements. The student will be evaluated on reports from the co-op sponsor. This course can be repeated one time for additional credits. Prerequisites: Sophomore 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: MATH 224. (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 441. Industrial Robotics

Credit 3(3-0)

This course explores the general and technical aspects of industrial robots, providing a comprehensive overview of robotic systems and the subsystems that compose them. Some of the topics include development history of industrial robots, safety issues and maintenance of robots, manipulator configurations and work envelopes, sensors and actuators (electrical, hydraulic and pneumatic) used in industrial robots, control and programming of robots, and integration of robots into modern manufacturing. The course includes appropriate laboratory and project activities. Prerequisite: AET 293. (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 452. Automotive Management

Credit 3(3-0)

This course familiarizes students with automotive transportation logistics and fleet maintenance operations. Topics include transportation systems technology, fleet maintenance organizations, maintenance concepts, and safety. Prerequisites: AET 151. (F;S)

AET 455. Automotive Electrical Systems

Credit 3(3-0)

This course provides a fundamental understanding at the electrical and electronic systems of automobiles. Students learn the components and circuits of the electrical system (e.g., lighting, the battery and starter system) and electronic systems (e.g., engine electronics, function of components electronic control). Prerequisites: AET 151. (F;S)

AET 456. Vehicle Dynamics

Credit 3(3-0)

Students will learn the 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 vehicle dynamic performance. Different types of suspension and dampers to compare their influence on transferring the vehicle loads and limitation on the vehicle performance. Prerequisites: PHYS 225. (F;S)

AET 470. Capstone Project I

Credit 2(2-0)

First of a two-semester capstone course sequence in which students work in teams and implement a senior-level design project that demonstrates abilities in applying both technical and non-technical skills in solving engineering problems. Prerequisite: Senior standing.

- 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 480. Capstone Project II** **Credit 2(2-0)**
 Second of a two-semester capstone course sequence in which students work in teams and implement a senior-level design project that demonstrates abilities in applying both technical and non-technical skills in solving engineering problems. The design developed in the first semester is implemented and evaluated in the second semester. Prerequisite: AET 470. (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: AET 276. (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. Applied Mechanics of Materials** **Credit 3(3-0)**
 This course introduces the mechanical behavior of materials under loading. Topics include stress, strain, strength, stiffness, and the relationship between external loads and material deformation. Testing engineering materials for measuring mechanical behavior will be experienced. Prerequisite: AET 392. (F;S)
- AET 493. Applied Dynamics** **Credit 3(3-0)**
 This course introduces the principles of engineering dynamics. Topics include kinematics of particle in motion, force-mass acceleration, work-energy, impulse momentum, and kinematics of rigid bodies. Prerequisite: AET 392. 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)**

DIRECTORY OF FACULTY

Yi Cai	Assistant Professor
B.Eng, South China University of Technology; M.Phil., University of Hong Kong; Ph.D., North Carolina State University	
Phillip L. Davis	Lecturer/Lab Manager
B.S., M.S., University of North Carolina at Charlotte	
Andy Ham	Associate Professor
B.S, Kyonggi University; M.S., University of Texas Austin; Ph.D., Arizona State University	
James Kribs	Assistant Professor
B.S., M.S., Ph.D., North Carolina State University	
Xiaochuan Lu	Associate Professor
B.S., Hefei University of Technology; M.S., Shanghai University; Ph.D., Tennessee Technological University	
Donald Ray West	Teaching Assistant Professor
B.S., M.S., Ph.D., North Carolina State University; M.B.A., Strayer University	
Aixi Zhou	Professor and Chairperson
B.S., Shenyang Aerospace University; M.S., Lanzhou University of Technology; Ph.D., Virginia Polytechnic Institute and State University	

Department of Biology
 Checo J. Rorie, Interim 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, pharmacy, 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).
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, neuroscience, 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, a computer lab, and an auditorium, including classrooms 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
- Genetic Susceptibility of Alzheimer's Disease in African Americans
- Taxonomy & Distribution of Freshwater Algae
- Demographics of Rare Plant Populations
- Cancer Biology, Brain Tumorigenesis, Breast Cancer
- Scholarship of Teaching and Learning
- Phosphorylation-dependent Signaling
- Tissue regeneration in connective tissue
- Apoptosis and Cell Signaling
- Civic Engagement through Service Learning and Discipline-Based Education Research
- Ecophysiology and Photosynthetic Electron Transport
- Stress Physiology
- Complex Disease and Nutrition
- Microbiology
- Computational Biology
- Genomics of *Haemophilus ducrey*
- Fluorescent Biosensor Development & Live Cell Imaging
- 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 496
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 ¹	4	MATH 131	4
Semester Total	16	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
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 ²	3
Humanities & Fine Arts Elective ²	3	Global Awareness ²	3
Semester Total	17	Semester Total	17
Junior Year: First Semester		Junior Year: Second Semester	
BIOL 301	4	BIOL 305	4
PHYS 225	3	BIOL 325	3
PHYS 235	1	CHEM 451	3
Ethics Elective ⁴	3	PHYS 226	3
Knowledge of African-American Culture and History ²	3	PHYS 236	1
		HPED 1xx ⁵	1
Semester Total	14	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
BIOL 410	3	BIOL 496	3
BIOL Elective ⁶	3	BIOL Elective ⁶	3
BIOL Elective ⁶	3	Free Elective ³	3
Free Elective ³	3	Free Elective ³	3
Semester Total	12	Semester Total	13

Total Credit Hours: 120¹Students not eligible to enroll in MATH 110 must complete prerequisite(s).²See 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.³Any course taught by the university; free electives must total 10 or more credit hours.⁴Student must take one of the following courses: BIOL 468, PHIL 316, PHIL 317, or PHIL 320.⁵Any 100 level Physical Education "Activity Class".⁶Biology 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
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 ¹	4	MATH 131	4
Semester Total	16	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
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
Semester Total	15	PHYS 236	1
		Semester Total	18
Junior Year: First Semester		Junior Year: Second Semester	
BIOL 301	4	BIOL 305	4
BIOL 304	3	BIOL 325	3
CHEM 451	3	Global Awareness ²	3
Social & Behavioral Sci. Elective ²	3	Ethics Elective ⁴	3
Free Elective ³	3	Semester Total	13
Semester Total	16		
Senior Year: First Semester		Senior Year: Second Semester	
BIOL 410	3	BIOL 496	3
BIOL 350	4	BIOL 351	4
Knowledge of African-American Culture and History ²	3	BIOL Elective ⁵	3
Free Elective ³	3	Humanities & Fine Arts Elective ²	3
Semester Total	13	Semester Total	13

Total Credit Hours: 120¹Students not eligible to enroll in MATH 110 must complete prerequisite(s).²See 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.³Any course taught by the university; free electives must total 6 or more credit hours.⁴Student must take one of the following courses: BIOL 468, PHIL 316, PHIL 317, or PHIL 320.⁵Biology 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
Freshman Year: First Semester		Freshman Year: Second Semester	
BIOL 101	4	BIOL 102	4
BIOL 105	1	CHEM 107	3
CHEM 106	3	CHEM 117	1
CHEM 116	1	EDPR 110	2
EDPR 102	2	ENGL 101	3
ENGL 100	3	MATH 110	4
Semester Total	14	Semester Total	17
Sophomore Year: First Semester		Sophomore Year: Second Semester	
BIOL 221	4	BIOL 200	3
BIOL 210	3	BIOL 366 (formerly BIOL 466)	3
CHEM 221	3	MATH 224	3
CHEM 223	1	Social & Behavioral Sciences ¹	3
SPED 250	3	EDPR 210	2
EDPR 215	2	EDPR 310	2
Semester Total	16	Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
BIOL 301 (formerly BIOL 401)	4	BIOL 305 (formerly BIOL 405)	4
EDPR 410	2	BIOL 325 (formerly BIOL 425)	3
EDPR 455	3	EDPR 420	3
PHYS 225	3	SPED 448	3
PHYS 235	1	Humanities & Fine Arts ¹	3
Know. of AA Culture and History ¹	3	Semester Total	16
Semester Total	16		
Senior Year: First Semester		Senior Year: Second Semester	
BIOL 410	3	EDPR 498	12
BIOL 496	3	Semester Total	12
EDPR 487 (formerly CUIN 535)	3		
Global Awareness ¹	3		
Free Elective ²	3		
Semester Total	13		

Total Credit Hours: 120

¹See 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.

²Free elective encompasses any course offered at the university.

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 I**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. Prerequisite: CHEM 103 or CHEM 106. (F;S;SS)

BIOL 102. Concepts of Biology II**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 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. (F;S)

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 4(3-2)**
 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 342. Current Topics in Biology** **Credit 3(3-0)**
 This course will explore, in depth, a comparatively narrow subject which may be topical or of special interest. Emphasis is placed on emerging and cutting edge ideas. Because the topics change each time the course is offered, this course may be repeated once for additional credit. For the same reason, a failing grade cannot be replaced by retaking the course. Prerequisites: BIOL 102 and CHEM 107 or permission of the instructor. (F;S;SS)
- BIOL 350. Human Anatomy and Physiology I (formerly 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. (F;S;SS)
- BIOL 351. Human Anatomy and Physiology II (formerly 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. (F;S;SS)
- 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. Bioethics and Responsible Conduct in Science** **Credit 3(3-0)**
 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 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 625. Health Disparities** **Credit 3(3-0)**
 The course will focus on health disparities: human diseases and conditions that affect various populations differentially-either through incidence, morbidity, or mortality. Students will discuss underlying disease mechanisms based on primary scientific literature, lectures, case studies, and guest speakers. Students will discuss health care challenges from diverse viewpoints. This course will also address the effect of socioeconomic, structural inequalities, policy, and other factors affecting population health from a variety of multidisciplinary perspectives. Health literacy and evidence-based practices for reducing health disparities will be addressed. Prerequisite: BIOL 301, BIOL 325, BIOL 366.
- 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. (F;S)
- BIOL 685. Special Topics in Biology** **Credit 3(3-0)**
 This course offers advanced students exposure to a selected topic in biology not covered in other courses. Prerequisites: BIOL 301, 305, and 366 or permission of instructor. (F;S;SS)
- BIOL 730. Evolutionary Medicine** **Credit 3(3-0)**
 This course focuses on the application of evolutionary principles to both biomedical research and clinical practice. Students will read and discuss the established principles of evolutionary medicine along with new material as it arises from the primary literature. The pedagogy of this course requires students to think critically about the origin, maintenance, and approaches to curing disease in humans. Prerequisites: BIOL 301, 325, 366 or permission of instructor. (F;S;SS)

DIRECTORY OF FACULTY

Kelsie M. Bernot	Associate 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
Roy Coomans..... **Associate Professor and Associate Chairperson**
 B.S., Eckerd College; Ph.D., University of North Carolina at Chapel Hill
Megan Doldron..... **Adjunct Professor**
 B.A., Hollins University; M.S., North Carolina A&T State University
Akamu Jude Ewunkem..... **Adjunct Professor**
 B.S., M.S., University of Buea, Cameroon; M.S., Ph.D., North Carolina A&T State University
Michelle Farrell..... **Adjunct Professor**
 B.S., M.S., North Carolina A&T State University
Joseph L. Graves, Jr...... **Professor**
 A.B., Oberlin College; M.S. University of Lowell; Ph.D., Wayne State 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..... **Associate Professor**
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Patrick Martin..... **Associate Professor**
Interim Director, Center for Outreach in Alzheimer's, Aging and Community Health (COACH)
 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
Heather Newman..... **Adjunct Professor**
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Shaquinta Platt..... **Adjunct Lecturer**
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 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
Raymond Samuel..... **Professor**
 B.S., Massachusetts Institute of Technology; M.S., M.D./Ph.D., Yeshiva University/Albert Einstein College of Medicine
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Simone M. Smith..... **Assistant Professor**
 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
Pameeka Smith-Pearson..... **Teaching Assistant Professor**
 B.S., University of Georgia; Ph.D., Wake Forest University
Misty Thomas..... **Assistant Professor**
 B.S., College Universitaire de St. Boniface; PhD., University of Manitoba, Postdoctoral, National Institutes of Environmental Health Sciences
Martha Paige Wagner..... **Adjunct Professor**
 B.S., Salem College; M.S., Arizona State University
Jenora D. Waterman..... **Associate Professor**
 B.S., Bennett College for Women; M.S., North Carolina A&T State University; Ph.D., North Carolina State University
Angela M. White..... **Teaching Assistant Professor and Assistant Dean of Student Success (Science and Technology)**
 B.S., University of North Carolina at Chapel Hill; M.S., North Carolina A&T State University; Ph.D., North Carolina State University
C. Dinitra White..... **Associate Professor**
 B.S., Johnson C. Smith University; Ph.D., Wayne State University, Postdoctoral, University of North Carolina at Chapel Hill

Department of Built Environment
 Alesia Ferguson, Interim 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, and estimating and scheduling 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. They will be prepared to work in the areas of traditional boundary surveying, processing and data collection from traditional geomatics equipment including sUAS, and the areas of remote sensing, photogrammetry and geographic information systems.

DEGREES OFFERED

Construction Management – Bachelor of Science
Environmental Health and Safety – Bachelor of Science
Geomatics – Bachelor of Science

MINORS OFFERED

Construction Management
Geomatics

UNDERGRADUATE CERTIFICATE OFFERED

Occupational Health and Safety

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). The degree programs in Construction Management, Environmental Health and Safety and Geomatics are all accredited by the Applied and Natural Science Accreditation Commission of ABET.

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
Freshman Year: First Semester		Freshman Year: Second Semester	

ENGL 100	3	ENGL 101	3
MATH 111	4	MATH 112	4
CM 100	3	CM 150	3
CM 190	3	Global Awareness	3
FRST 101	1	African American Culture	3
Semester Total	14	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
CM 160	3	CM 210	3
CM 214	2	CM 215	2
CM 224	1	CM 216	3
CM 320	3	CHEM 100	3
Humanities and Fine Arts Elective*	3	CHEM 110	1
PHYS 225	3	Technical Elective**	1
PHYS 235	1	Semester Total	16
Semester Total	16		
Sophomore Year: Summer I			
CM 200	1		
Semester Total	1		
Junior Year: First Semester		Junior Year: Second Semester	
CM 233	3	CM 318	3
CM 256	3	CM 394	3
CM 331	3	CM 412	2
ACCT 210	3	ECON 200 or 201	3
MGMT 201	3	MGMT 343	3
Semester Total	15	Semester Total	15
Junior Year: Summer I			
CM 301	1		
Semester Total	1		
Senior Year: First Semester		Senior Year: Second Semester	
CM 400	2	CM 401	3
CM 438	3	CM 448	3
CM 450	3	CM 460	3
CM 496	3	Technical Elective**	3
MGMT 303	3	Semester Total	13
Semester Total	14		

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 the program level.**

**Department of Built Environment
Bachelor of Science in Geomatics
Major Code: GEOM**

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	

ENGL 100	3	ENGL 101	3
MATH 131	4	PHYS 225	3
CM 100	3	PHYS 235	1
GEOM 107	3	MATH 132	4
Social / Behavioral Science Elective*	3	African American Culture	3
FRST 101	1	Semester Total	14
Semester Total	17		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
Humanities / Fine Arts Elective*	3	GEOM 271	3
PHYS 226	3	GEOM 205	4
PHYS 236	1	ECT 101	3
CM 214	2	Global Awareness*	3
CM 224	1	Technical Elective**	3
GEOM 310	3	Semester Total	16
Semester Total	13		
Junior Year: First Semester		Junior Year: Second Semester	
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
Semester Total	15	Semester Total	17
Senior Year: First Semester		Senior Year: Second Semester	
GEOM 496	1	GEOM 499	4
GEOM 470	3	GEOM 400	1
GEOM 460	3	Technical Elective**	3
GEOM 471	1	GEOM 465	3
GEOM 420	3	Free Elective	3
Technical Elective**	3	Semester Total	14
Semester Total	14		

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 (AA) and 3 hours of Global Awareness (GL). 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 (Management)
Major Code: EHS

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENGL 101	3
MATH 111 (MLAR)	4	EHS 101	3
CHEM 106/116 (SR)	4	MATH 112 (MLAR)	4
FRST 101 (SS)	1	CHEM 107/117 (SR)	4
Global Awareness (GA) Elective*	3	Knowledge of African American Culture and History (AA) Elective* (M) (SR)	3
Semester Total	15	Semester Total	17
Sophomore Year: First Semester		Sophomore Year: Second Semester	
Social/Behavioral Science		PHYS 226/236 (SR)	4

Elective* (SBS)	3	MGMT 201	3
PHYS 225/235 (SR)	4	EHS 212	3
EHS 220	3	EHS 214	3
EHS 211	3	SPCH 250 (HFA)	3
BIOL 100	4	Semester Total	16
Semester Total	17		
Junior Year: First Semester		Junior Year: Second Semester	
Technical Elective**	4	MGMT 303	3
HPED 342	3	ECON 206	3
EHS 311	3	EHS 394	3
EHS 313	4	WMI 417	2
PSYC 273	3	CM 320	3
Semester Total	17	Semester Total	14
Senior Year: First Semester		Senior Year: Second Semester	
EHS 433	3	EHS 415	3
EHS 469	3	EHS 432	3
WMI 419	3	EHS 436	3
EHS 457	3	EHS 498	3
Semester Total	12	Semester Total	12

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 (Science)
Major Code: EHS**

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
ENGL 100	3	ENGL 101 (WC)	3
MATH 111 (MLAR)	4	EHS 101	3
CHEM 106/116 (SR)	4	MATH 112 (MLAR)	4
FRST 101 (SS)	1	CHEM 107/117 (SR)	4
Global Awareness (GA) Elective*	3	BIOL 100 (S) (SR)	4
Semester Total	15	Semester Total	18
Sophomore Year: First Semester		Sophomore Year: Second Semester	
Social/Behavioral Science		PHYS 226/236 (SR)	4
Elective* (SBS)	3	ENVS 210	3
PHYS 225/235 (SR)	4	EHS 212	3
EHS 220	3	Knowledge of African American	
Technical elective**	4	Culture and History (AA)	
EHS 211	3	Elective* (S)	3
Semester Total	17	SPCH 250 (HFA)	3
		Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
Technical Elective** (S)	3	MGMT 303	3
WMI 417	2	ECON 206	3
EHS 311	3	EHS 394	3
EHS 313	4	EHS 315	3

PSYC 273	3	CM 320	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
EHS 433	3	EHS 415	3
EHS 469	3	EHS 432	3
EHS 498	3	EHS 436	3
EHS 457	3	Technical Elective**	3
Semester Total	12	Semester Total	12

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

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 190. (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). (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. Prerequisites: CM 215 or CM 216 and CM 320. (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. (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 160. (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 160. (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. Co-requisite: CM 214; Prerequisite: 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 104, or MATH 110, or 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. Prerequisite: CM 160. (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. Prerequisites: CM 233 and CM 256. (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: CM 150. (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. Prerequisites: CM 215 and CM 216. (F;S;S)

CM 400. Senior Seminar Credit 1(2-0)

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 318 and 394. (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. Prerequisites: Senior standing, CM 400 and CM 438. (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. Prerequisites: CM 216 and PHYS 225/235. (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 318 and CM 394. (F;S;S)

CM 448. Foundations and Soil 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. Prerequisite: 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 438. (F;S;S)

CM 460. Principles 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. Prerequisite: CM 438. (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: MATH 104, or MATH 110, or MATH 11, and ACCT 210. (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 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 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 107. Introduction to UAVs **Credit 3(3-0)**

Students will be introduced to the fundamental components of small unmanned aerial systems (sUAS). Students will study the developmental history of US systems in the United States, UAS operations within the National Airspace System and existing and proposed Federal Aviation Administration regulations, State and Local regulations, and UAS safety. (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 4(4-0)**

This course examines coordinate geometry relationships as they apply to roadway and boundary/subdivision work. 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. Integration of data collector processes will be incorporated. Prerequisite: CM 214 or permission of instructor. (F;S;SS)

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. Prerequisite: 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. (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. Prerequisite: 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. Prerequisite: Junior standing. (F;S;S)

GEOM 307. Automated Surveying and Mapping

Credit 3(3-0)

The course covers the procedures necessary for field to finish Geomatics projects. Topics include the use of advanced CAD software for calculations and design of roadways, utilities, topographics and boundary surveys. Prerequisite: GEOM 205. Corequisite: GEOM 317. (F;S;S)

GEOM 310. Geographic Information Systems in Geomatics

Credit 3(3-0)

This course will introduce Geographic Information System (GIS) concepts and applications. Topics covered include major GIS components, nature of geographic information, data models, geographic data input, raster and vector data manipulation and data storage, spatial analytic and modeling techniques. Through use of software students will gain first-hand experience in data input, data management, data analyses, and presentation in a geographical information system. A term project will be designed to demonstrate the application and use of GIS in real world problem solving such as agriculture, health, political sciences, engineering, technology, and other disciplines. (F;S;SS)

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 photogrammetry. Topics covered include mathematical, geometric and optical foundations of photogrammetry, airborne cameras and topographic parameters, image measurements, vertical photographs, stereoscopic vision and stereo-observation equipment and methods, and aerial surveys planning. Prerequisite: CM 214 or permission of instructor; MATH 101. (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 for design of residential, commercial and industrial subdivision and the rules governing land development will be examined including the analysis of soils, topography, road geometry, utility design, environmental impact, aesthetic and economic principles in land development and planning. The permitting process at the 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. Prerequisite: GEOM 307. Corequisite: GEOM 367. (F;S;SS)

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. Prerequisite: 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 analytical and digital photogrammetry, analytical camera calibration, and image processing methods. Other topics include bundle block adjustment, aerial triangulation corrections and mosaicing, advanced image acquisition systems, quality control, network design, digital elevation models and the creation of orthophotography. Prerequisites: GEOM 320, GEOM 341. (F;S;SS)

GEOM 460. Satellite Positioning Systems **Credit 3(3-0)**
This course covers precise point positioning as it applies to surveying using the Global Network Satellite System (GNSS). Types of GNSS equipment, their uses and limitations will be discussed. Mission planning and network design for GNSS surveys will be covered as well as baseline processing, network adjustments and data management. Real time kinematic (RTK) GNSS will be applied to topographic, boundary and construction surveys. Prerequisites: GEOM 360 and GEOM 341. (F;S;SS)

GEOM 465. Applied UAV Processing **Credit 3(3-0)**
This course will introduce to the fundamental components of small unmanned aerial vehicle systems (UAVs) and how they function together to produce high resolution, spatially accurate planimetric maps and 3D models of terrain. These components include GNSS, inertial systems, lidar and on-board sensors. The primary focus will be on application of these technologies and the processing and analysis of the data. Prerequisites: GEOM 320 and GEOM 107 (F;S;SS)

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)

EHS 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)

EHS 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)

EHS 211. Environmental Risk Assessment **Credit 3(3-0)**
Risk assessment involves estimating the risks to human or ecosystems from chemicals, harmful microorganisms, radiation, technology, or any other factor that can influence health and well-being. The course will focus on quantifying the risks to human

health of exposure to chemicals and pathogenic microorganisms. In this course, we aim to explore all of the major components of risk assessment, learning how to make the critical calculations but also exploring the underlying assumptions and considering the implications for policy and public health. Prerequisite: CHEM 106. (F;S;SS)

EHS 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. Corequisite: Prerequisite: EHS 101. (F;S;S)

EHS 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 106 or equivalent, and EHS 101. (F;S;S)

EHS 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. Prerequisite: EHS 101. (F;S;S)

EHS 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)

EHS 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: EHS 214. (F;S;S)

EHS 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 106 or equivalent. (F;S;S)

EHS 313. Industrial Hygiene **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 225 and 235 or equivalent, CHEM 106 or equivalent, BIOL 100. (F;S;S)

EHS 315. Environmental and Occupational Toxicology **Credit 3(3-0)**

This course is structured for those students desiring a basic awareness of the principles and practices of toxicology and how these are applied. The course will focus on the study of mechanisms, pathology, and disease development resulting from exposure to biological and chemical agents in environmental and occupational settings. Prerequisite: BIOL 100. (F;S;SS)

EHS 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: EHS 212 and PHYS 226. (F;S;SS)

EHS 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: EHS 101. (F;S;S)

EHS 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. Prerequisite: EHS 212 or consent of the instructor. (F;S;S)

EHS 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: EHS 101. (F;S;S)

EHS 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. Prerequisite: EHS 210 or consent of the instruction. (F;S;S)

- EHS 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. Prerequisite: EHS 313. Senior or Graduate Standing. (F;S;S)
- EHS 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 273 or equivalent. (F;S;S)
- EHS 436. Environmental Wastewater Treatment** **Credit 3(3-0)**
 Environmental Wastewater Treatment provides fundamental knowledge to students about wastewater and its treatment. Students learn how wastewater is collected, treated, and discarded from residential, industrial and commercial sources. An in depth historical background of waste water treatment and the effects of wastewater in the environment are explored. The differences between municipal and industrial wastewater and the treatment of these types of waste are provided. The process of wastewater decontamination by microbiological processes, sedimentation and sludge treatment are examined, and the differences between the processes and results are thoroughly explained. Prerequisites: CHEM 106/116. (F;S;SS)
- EHS 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)
- EHS 457. Environmental and Occupational Epidemiology** **Credit 3(3-0)**
 This course is structured for those students desiring a basic understanding of the principles and practices of epidemiology and how these are applied. Students will gain experience reading, evaluating, and interpreting epidemiologic studies on the health impact of workplace and environmental exposures. Prerequisite: EHS 101. (F;S;SS)
- EHS 469. Environmental Management** **Credit 3(3-0)**
 This course covers the scientific principles of environmental issues and environmental management practices, with attention to the health of both humans and the ecosystem. Fundamental and emerging topics including energy and climate change, toxic substances in the environment, air and water pollution, water use and management, aquatic ecosystems, biodiversity, solid waste management, and regulatory strategies for risk assessment and environmental management will be discussed. This course will investigate the complex relationships between economic, social and environmental systems and learn how local actions can have global effects. Prerequisite: EHS 101. (F;S;SS)
- EHS 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)
- EHS 498. Industrial Experience** **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. Prerequisites: EHS 313, EHS 394 and Senior standing. (F;S;S)
- EHS 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: EHS 405. (F;S;S)
- EHS 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

- Leila Hashemi Beni** **Assistant Professor**
 B.S., University of Isfahan; M.S., University of Tehran; Ph.D., Laval University
- Christian Bock-Hyeng** **Assistant Professor**
 B.S., M.S., Ph.D., Russian Peoples' Friendship University
- Dongyang Deng** **Assistant Professor**
 B.S., China University of Mining and Technology; Ph.D., West Virginia University
- Alesia Ferguson** **Associate Professor and Chairperson**
 B.S., Florida International University; M.S., Stanford University; M.P.H., University of Arkansas Medical Sciences; Ph.D. Stanford University

Peggy A. Fersner	Geomatics Coordinator
B.S., Virginia Polytechnic Institute and State University; M Engr., Clemson University	
Jerry W. Nave	Assistant Professor
B.S., M.S., Ed.D., East Tennessee State University	
Emmanuel Obeng-Gyasi	Assistant Professor
B.A., MPH., Ph.D., Indiana University Bloomington	
Andrea Ofori-Boadu	Associate Professor
B.S., University of Science and Technology, Ghana, M.S., North Carolina A&T State University, Ph.D., Indiana State University	
Robert B. Pyle	Part-Time faculty
B.A., M.A., Trenton State College; Ph.D., University of Pittsburgh	
Musibau A. Shofoluwe	Professor
B.S., North Carolina A&T State University; M.S., Pittsburg State University; D.IT University of Northern Iowa	
Benjamin Uwakweh	Professor
B.S., University of Portland; M.S., The Ohio State University; Ph.D., University of Michigan Ann Arbor	

Department of Chemistry
Zerihun Assefa, Chairperson

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, pharmacy, dental, and other health related professional schools;
3. to prepare majors for careers as professional chemists in manufacturing and service industries
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.;
10. to contribute to the extension of basic knowledge in chemistry and related sciences through applied and basic research, educational experimentation, publications, etc.; and
11. to offer for graduate students learning experiences and research leading to a PhD. Degree in the Applied Chemistry concentration in the AST program.

DEGREES OFFERED

Chemistry – Bachelor of Science

Chemistry (Secondary Education) – Bachelor of Science

GENERAL ADMISSION REQUIREMENTS

For Fall 2019, 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 biological or life science, one unit in a physical science, and one unit in Chemistry. One unit should have a laboratory component.
- 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.

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 career opportunities for chemists in industry education, and government. 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.). Graduates also pursue their careers in medicine, dentistry, and other health related professions.

In industry, the chemistry graduate with a B.S. degree may be employed in manufacturing-plant management, research and quality control, product development, technical sales, marketing, etc. B.S. level chemists work in research at federal, state, municipal, and university laboratories.

Department of Chemistry
Bachelor of Science in Chemistry (Biochemistry and Biomedical Sciences)
Major Code: CHEM

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
CHEM 180	3	CHEM 181	3
CHEM 108	1	CHEM 191	1
CHEM 190	1	MATH 131	4
ENGL 100	3	ENGL 101	3
African American ¹	3	Humanities / Fine Arts ³	3
MATH 110	4	HPED ²	1
HPED ²	1	Semester Total	15
Semester Total	16		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
CHEM 208	1	CHEM 281	3
CHEM 280	3	CHEM 291	2
CHEM 290 /CHEM 223	1	MATH Elective ⁶	4
MATH 132	4	PHYS 241	3
Global Awareness ⁴	3	PHYS 251	1
Social and Behavioral Sciences ⁵	3	Semester Total	13
Semester Total	15		
Junior Year: First Semester		Junior Year: Second Semester	
CHEM 308	1	CHEM 451	3
CHEM 231	3	CHEM452	2
CHEM 232	2	CHEM 431	3
PHYS 242	3	CHEM 432	2
PHYS 252	1	CHEM 391	2
BIOL 101	4	Free Elective	3
CHEM 390	2	Semester Total	15
Semester Total	16		
Senior Year: First Semester		Senior Year: Second Semester	

CHEM 408	1	CHEM 411	3
CHEM 490	2	CHEM 412	2
CHEM 441	3	Free Elective	4
CHEM 443	1	CHEM 497 (capstone)	3
CHEM 453	3	CHEM 442	3
Free Elective	4	CHEM 444	1
Semester Total	14	Semester Total	16

Total Credit Hours: 120

¹Select 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).

²SSFM 226 may be substituted for the two courses in Physical Education.

³Select 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.

⁴Select one of the following: HIST 130, HIST 206, HIST 207, HIST 216, HIST 231, MGMT 221, PHIL 103, PHIL 201.

⁵Select 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 206, HIST 207, HIST 216, HIST 231, JOMC 240, POLI 110, PSYC 101, SOCI 100, SOCI 200, SSFM 226.

⁶Select MATH 231, 341, or MATH 224.

MAJOR PROGRAM REQUIREMENTS

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

CHEM 108	CHEM 391
CHEM 180	CHEM 408
CHEM 181	CHEM 411
CHEM 190	CHEM 412
CHEM 191	CHEM 431
CHEM 208	CHEM 432
CHEM 231	CHEM 441
CHEM 232	CHEM 442
CHEM 280	CHEM 443
CHEM 281	CHEM 444
CHEM 290	CHEM 451
CHEM 291	CHEM 452
CHEM 308	CHEM 453

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 180	3	CHEM 181	3
CHEM 108	1	CHEM 191	1
CHEM 190	1	MATH 131	4
ENGL 100	3	ENGL 101	3
African American ¹	3	Humanities / Fine Arts ³	3
MATH 110	4	HPED ²	1
HPED ²	1	Semester Total	15
Semester Total	16		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
CHEM 208	1	CHEM 222	3
CHEM 221	3	CHEM 291	2
CHEM 290 / CHEM 223	1	MATH Elective ⁶	4
MATH 132	4	PHYS 241	3
Global Awareness ⁴	3	PHYS 251	1
Social / Behavioral Sciences ⁵	3	Semester Total	13
Semester Total	15		
Junior Year: First Semester		Junior Year: Second Semester	
CHEM 308	1	CHEM 451	3
CHEM 231	3	CHEM 452	2
CHEM 232	2	CHEM 431	3
PHYS 242	3	CHEM 432	2
PHYS 252	1	CHEM 391	2
BIOL 101	4	Free Elective	3
CHEM 390	2	Semester Total	15
Semester Total	16		
Senior Year: First Semester		Senior Year: Second Semester	
CHEM 408	1	CHEM 412	2
CHEM 490	2	Free Electives	4
CHEM 441	3	CHEM 497 (capstone)	3
CHEM 443	1	CHEM 411	3
Advanced CHEM Elective ⁷	3	CHEM 442	3
Free Elective	4	CHEM 444	1
Semester Total	14	Semester Total	16

Total Credit Hours: 120

¹Select 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).

²SSFM 226 may be substituted for the two courses in Physical Education.

³Select 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.

⁴Select one of the following: HIST 130, HIST 206, HIST 207, HIST 216, HIST 231, MGMT 221, PHIL 103, PHIL 201.

⁵Select 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 206, HIST 130, HIST 207, HIST 216, HIST 231, JOMC 240, POLI 110, PSYC 101, SOCI 100, SOCI 200, SSFM 226.

⁶Select MATH 231 or 341 or MATH 224.

MAJOR PROGRAM REQUIREMENTS

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

CHEM 108	CHEM 408
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CHEM 180	CHEM 411
CHEM 181	CHEM 412
CHEM 190	CHEM 431
CHEM 191	CHEM 432
CHEM 208	CHEM 441
CHEM 280	CHEM 442
CHEM 281	CHEM 443
CHEM 231	CHEM 444
CHEM 232	CHEM 451
CHEM 290	CHEM 452
CHEM 291	CHEM 490
CHEM 308	CHEM 497 (capstone)
CHEM 390	Advanced CHEM Elective

Department of Chemistry
Bachelor of Science in Secondary Chemistry (Chemistry)
Major Code: CHEM
Concentration Code: PCSE

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
CHEM 180	3	CHEM 181	3
CHEM 108	1	CHEM 191	1
CHEM 190	1	ENGL 101	3
ENGL 100	3	African American ²	3
MATH 131 ¹	4	EDPR 110	2
EDPR 102	2	BIOL 101	4
Semester Total	14	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
CHEM 280	3	CHEM 281	3
CHEM 290	1	CHEM 231	3
MATH 132	4	CHEM 232	2
PHYS 241	3	Global Awareness ³	3
PHYS 251	1	EDPR 210	2
SPED 250	3	EDPR 310	2
EDPR 215	2	Semester Total	15
Semester Total	17		
Junior Year: First Semester		Junior Year: Second Semester	
CHEM 441	3	CHEM 411	3
CHEM 443	1	CHEM 451	3
BIOL Elective	4	CHEM 452	2
EDPR 410	2	Humanities / Fine Arts ⁴	3
EDPR 455	3	SPED 448	3
Free Elective	2	EDPR 420	3
Semester Total	15	Semester Total	17
Senior Year: First Semester		Senior Year: Second Semester	

CHEM 431	3	EDPR 498	12
CHEM 432	2	Semester Total	12
Social / Behavioral Science ⁵	3		
EDPR 487	3		
Free Elective	3		
Semester Total	14		

Total Credit Hours: 120

¹Student not eligible to be placed in MATH 131 must complete MATH 110 prior to enrolling in MATH 131.

²Select 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).

³Select one of the following: HIST 130, HIST 206, HIST 207, HIST 216, HIST 231, MGMT 221, PHIL 103, PHIL 201.

⁴Select 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.

⁵Select 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 206, 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 108	CHEM 451
CHEM 180	CHEM 452
CHEM 181	EDPR 102
CHEM 190	EDPR 110
CHEM 191	EDPR 210
CHEM 280	EDPR 215
CHEM 281	EDPR 310
CHEM 290	EDPR 410
CHEM 231	EDPR 420
CHEM 232	EDPR 448
CHEM 411	EDPR 455
CHEM 431	EDPR 487
CHEM 432	EDPR 498
CHEM 441	SPED 250
CHEM 443	

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. Basic General, Organic and Biochemistry I *** **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. Prerequisites: SAT MATH score of 490 or SAT Subject MATH Level II score of 470 or ACT MATH score of 19 or CHEM 103 with a grade of C or better. Corequisite: CHEM 114. (F;S;SS)
- CHEM 105. Basic General, Organic, and Biochemistry II** **Credit 3(3-0)**
 This course provides a survey of basic facts and principles of organic and biochemistry. Topics include the structure, properties, and reactivity of some of the major types of organic functional groups. Other topics include carbohydrates, lipids, proteins, enzymes, and nucleic acids. This is a blended inverted course that meets face-to-face and has an internet component. Prerequisite: Grade of C in CHEM 104 or equivalent course. Corequisite: CHEM 115. Pre-Nursing Major. (F;S)
- 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 103. 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 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 115. General Chemistry V Laboratory** **Credit 1(0-3)**
 A study of organic reactions and substances and their relation to life processes. Prerequisite: CHEM 114. Corequisite: CHEM 105. (F;S)
- 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 180. Advanced General Chemistry I*** **Credit 3(3-0)**
 This is a course which emphasizes basic principles, in-depth 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. Corequisite: CHEM 190. (F;S)
- CHEM 181. Advanced General Chemistry II*** **Credit 3(3-0)**
 This course is a continuation of CHEM 180. It includes the in depth principles of chemical thermodynamics related to physical properties of liquids and solids, and spontaneity of reactions; principles of chemical kinetics; and principles of chemical equilibrium and its applications in acids-bases, coordination chemistry and electrochemistry Prerequisite: CHEM 180 or CHEM 106 Corequisite CHEM 191. (F;S)
- CHEM 190. Introduction to Chemical Research I (Lab)** **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 180 or CHEM 106. (F;S)
- CHEM 191. Introduction to Chemical Research II (Lab)*** **Credit 1(0-3)**
 This course is the second course in a traditional one-year advanced general chemistry program and includes the study of kinetics, solution equilibria, solubility equilibria, hydrolysis, electrochemistry coordination compounds, thermodynamics and qualitative analysis. A brief introduction to organic chemistry and quantitative analysis is also included. Laboratory work correlates with lecture and stresses the identification of common cations and anions by semi-micro methods. Prerequisite: CHEM 190 or CHEM 116. Corequisite CHEM 181. (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 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 1(0-3)**
 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 non-chemistry 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 280. Organic Chemistry I, Majors*** **Credit 3(3-0)**
 A study of aliphatic and aromatic hydrocarbons and their simple derivatives in terms of (a) structure, bonding, etc.; (b) general syntheses and reactions; and (c) a logical modern rationale for fundamental phenomena as supported by reactivity orders, orientation effects, stereo-chemistry, and relative rates. Prerequisite: CHEM 181 or CHEM 107; Corequisite CHEM 290. (F;S)
- CHEM 281. Organic Chemistry II, Majors*** **Credit 3(3-0)**
 A continuation of CHEM 280 with various functional groups such as the carboxyl, amino, etc., and including such polymers and polyfunctional natural products as carbohydrates and peptides. Prerequisite: CHEM 280 or CHEM 221 Corequisite CHEM 291. (F;S)
- CHEM 290. Res Methods in Organic Chemistry 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. Res Methods in Organic Chemistry 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 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 412. (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. Corequisite: 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 631. Electroanalytical Chemistry**
 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. Instrumentation of the Modern Scientist** **Credit 3(3-0)**
 This course is designed to provide students the theory and hands-on experience necessary for working in industry, academia, research or a post-secondary setting. Students will gain practical experience and increase their aptitude in three scientific areas; 1) Knowledge of the background, fundamental theory, and practical application of a broad range of instrumentation, 2) oral and written scientific communication, and 3) data collection and analysis. Prerequisite: CHEM 431 or equivalent. (F)
- CHEM 642. Techniques in X-ray Crystallography** **Credit 2(1-3)**
 In this course methods needed for basic understanding of the scattering of X-rays and diffraction patterns will be discussed. Fundamental information regarding crystal systems and space group identification will also be discussed. Practical hands on laboratory experiment involving crystal growth techniques, selection for diffraction analysis and data collection will also be given. Open to chemistry majors. Prerequisite: CHEM 107 and Math 132 (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 Biochemistry 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
- Bishnu Bastakoti**.....**Assistant Professor**
 B.S., M.S., Tribhuvan University, Nepal; Ph.D., Saga University
- 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**.....**Teaching Associate Professor**
 B.S., Teacher's University, Tehran; M.S., Shiraz University, Shiraz; Ph.D., Indiana University
- Robert Ferguson**.....**Associate Professor**
 B.A. Biology, San Jose State University; M.S., Ph.D., Purdue University

Marion Franks	Associate Professor and Associate Chairperson
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; M.S., University of Southern Mississippi; 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.; Ph.D., The City University of New York	
Tanya Malloy	Teaching Assistant Professor
B.S., North Carolina A&T State University; Ph.D., Wake Forest University	
Aleksandrs Prokofjevs	Assistant Professor
B.S., University of Latvia, Riga, Latvia; Ph.D, University of Michigan, Ann Arbor	
Ginger P. Redd	Teaching Associate 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	
Bo Wang	Assistant Professor
B.S., Shandong University; M.S., Ph.D., Miami University	

Department of Computer Systems Technology
Qing-An Zeng, Interim 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 a 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), and the Accreditation Board for Engineering and Technology (ABET).

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, Truist (formerly BB&T), International Paper, Marathon Petroleum Company, Allstate, Accenture, , State Employees

Credit Union, and numerous public agencies.

**Department of Computer Systems Technology
Bachelor of Science in Electronics Technology
Major Code: ELTE**

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
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 ¹	3	MATH 131	4
Semester Total	17	Semester Total	15
Sophomore Year: First Semester		Sophomore Year: Second Semester	
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 ²	3	Social & Behavioral Science ³	3
Semester Total	17	Semester Total	14
Junior Year: First Semester		Junior Year: Second Semester	
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	Semester Total	14
Semester Total	15		
Senior Year: First Semester		Senior Year: Second Semester	
CST 496 (formerly ECT 103)	1	CST 499 (formerly ITT 598)	3
CST 498 (formerly ECT 598)	3	Technical Elective ⁴	3
Technical Elective ⁴	3	Technical Elective ⁴	3
Free Elective ⁵	3	Free Elective ⁵	3
MGMT Elective ⁶	3	MGMT Elective ⁶	3
Semester Total	13	Semester Total	15

Total Credit Hours: 120

¹General Education Elective – Global Awareness.

²General Education Elective – African American Studies.

³General Education Elective – Social & Behavioral Science.

⁴Technical Elective – Any CST course that is not required.

⁵Free Elective – Any course at or above the 100 level.

⁶MGMT 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

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
CST 120 (<i>formerly ECT 120</i>)	3	CST 112 (<i>formerly ECT 211</i>)	3
CST 130 (<i>formerly ITT 420</i>)	3	CST 122	1
ENGL 100	3	CST 140 (<i>formerly ECT 201</i>)	3
FRST 101	1	CST 150	1
MATH 110	4	ENGL 101	3
Global Awareness ¹	3	MATH 131	4
Semester Total	17	Semester Total	15
Sophomore Year: First Semester		Sophomore Year: Second Semester	
CST 231 (<i>formerly ECT 231</i>)	3	CST 225 (<i>formerly ITT 325</i>)	3
CST 240 (<i>formerly ITT 240</i>)	3	CST 235	1
MGMT 110 (<i>formerly MGMT 220</i>)	3	CST 285 (<i>formerly ITT 185</i>)	3
Social & Behavioral Sciences ²	3	SPCH 250	3
Scientific Reasoning with Lab ³	4	Scientific Reasoning ³	3
Semester Total	16	African American Studies ⁴	3
		Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
CST 325	3	CST 300 (<i>formerly ITT 300</i>)	3
CST 329 (<i>formerly ITT 329</i>)	3	CST 315 (<i>formerly ITT 315</i>)	3
CST 339	1	CST 317 (<i>formerly ITT 317</i>)	3
MATH 224	3	CST 430 (<i>formerly ITT 430</i>)	3
Technical Elective ⁵	3	Technical Elective ⁵	3
Semester Total	13	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	

CST 460 (formerly ECT 460)	3	CST 499 (formerly ITT 598)	3
CST 496	1	MGMT Elective ⁶	3
CST 498 (formerly ECT 598)	3	Technical Elective ⁵	3
MGMT Elective ⁶	3	Technical Elective ⁵	3
Free Elective ⁷	3	Free Elective ⁷	3
Semester Total	13	Semester Total	15

Total Credit Hours: 120

¹General Education Elective – Global Awareness.

²General Education Elective – Social & Behavioral Sciences.

³General Education Elective – Scientific Reasoning Elective w/ wo lab.

⁴General Education Elective – African American Studies.

⁵Technical Electives – Any CST course that is not required.

⁶MGMT Elective – Any MGMT course.

⁷Free 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, Kirchhoff's Law, network theorems, and practical DC circuit applications. Corequisite: CST 112. (F;S;SS)

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. Repeatable. (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

William Bowen **Adjunct Instructor**
 B.S., M.S., 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	Teaching Assistant Professor
B.S., Shaw University; M.S., Ph.D., North Carolina A&T State University	
Karreem Hogan	Adjunct Instructor
B.S., M.S., North Carolina A&T State University	
Clay Gloster, Jr.	Professor and Dean of The Graduate College
B.S., M.S., North Carolina A&T State University; Ph.D., North Carolina State University	
Shrikant Jadhav	Adjunct Instructor
B.S., University of Pune; M.S., Ph.D., North Carolina A&T State University	
Anthony Joyner	Adjunct Instructor
B.S., M.S., North Carolina A&T State University	
Catina Lynch	Adjunct Instructor
B.S., M.S., North Carolina A&T State University	
Nnenna Martin	Adjunct Instructor
B.S., University of Venda; M.S., North West University; M.S., University of North Carolina Greensboro	
Cynetha McNeill-Campbell	Adjunct Instructor
B.S., M.S., North Carolina A&T State University	
Kathryn Moland	Adjunct Instructor
B.S., Florida A&M University; M.S., Southern University; Ph.D., Nova Southern University	
Mariama Sidibe	Adjunct Instructor
B.S., Mohamed V Souissi University; M.S., Ph.D., North Carolina A&T State University	
Radhika Radhakrishnan	Adjunct Instructor
B.S., University of Calicut; M.S., King's College London; Ph.D., North Carolina A&T State University	
Hossein Sarrafzadeh	Professor and Director of the Center of Excellence in Cybersecurity Research
B.S., Oklahoma State University; M.S., Orta Dogu Technical University; Ph.D., The University of Wollongong	
Evelyn Sowell-Boone	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	
Zhauohui Wang	Assistant Professor
B.S., Shandong University; M.S., University of Science & Technology of China; M.S., University of Toledo; M.S., Ph.D., University of Arizona	
Qing-An Zeng	Associate Professor and Interim Chairperson
B.S., Chengdu University of Information Technology; M.S., Ph.D., Shizuoka University	

Department of Graphic Design Technology
Devang P. Mehta, Interim Chairperson

OBJECTIVES

The Department of Graphic Design Technology motivates and prepares men and women with the skills, knowledge and dispositions to pursue and excel in lifelong learning and career opportunities where technologies are used to design, develop and disseminate effective, accurate and precise messages and information in a variety of design contexts and genres. The Department of Graphic Design Technology provides quality, competency-based instruction to develop the critical competencies in the sciences, communications, mathematics, and technical specialties essential to securing careers in related industrial, business and government sectors.

DEGREES OFFERED

Computer Graphics Technology – Bachelor of Science
Graphic Communication Systems – Bachelor of Science (No longer accepting students in this degree program.)

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. Students transferring from community college or technical institutes with advanced classifications may be admitted to undergraduate programs offered by the Department of Graphic Design Technology by submitting credentials to the University Admissions Office for individual assessment. The maximum allowable number of credit/semester hours transferable from an Associate Degree technical programs is 64. 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 courses (i.e., GCS). Students must maintain a cumulative 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 Computer Graphics Technology program option have a variety of career options in freelance design, management, production, design, and sales. A range of opportunities is available in graphic design, media design, design drafting, advertising, publishing, packaging design, web design, video game design, animation, digital photography, and geographic information systems.

Department of Graphic Design Technology Bachelor of Science in Computer Graphic Technology Major Code: CGT (Technical Design)

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
MATH 110	4	MATH 131	4
ENGL 100	3	ENGL 101	3
CGT 121	3	CGT 103	3
GCT 101	3	CGT 124	3
FRST 101	3	HIST (*AA)	3
HPED/SSFM Elective	1	Semester Total	16
Semester Total	15		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
CGT 230	3	CGT 224	3
CGT 281	3	CGT 282	3
PHYS 225	3	CGT 211	3
PHYS 235	1	CHEM 106	3
CGT 212	3	CHEM 116	1
Humanities or Fine Arts Elective	3	Global Awareness Elective (*GL)	3
Semester Total	16	Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
CGT 398	3	CGT 382	3
CGT 326	3	CGT 346	3
CGT 324	3	CGT 329	3
CGT 320	3	PSYC 273	3
PSYC 101	3	Free Elective	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
CGT 446	3	CGT 442	3
CGT 422	3	CGT 441	3
CGT 461	3	GCT 429	3
GCT 423	3	Free Elective	3
Free Elective	3	Semester Total	12
Semester Total	15		

Total Credit Hours: 120

*Select from the official list at: <https://www.ncat.edu/provost/general-education-resources/gec-list.php>

MAJOR PROGRAM REQUIREMENTS

*Students must earn a grade of "C" or better in all required CGT major courses
The following CGT/GCS/TECH are exempt from "C" or better (passing grade required for credit)
CGT (formerly TECH) 101& 103, CGT (formerly CGS) 211 & 212*

CGT 121	CGT 346
CGT 124	CGT 382
CGT 224	CGT 398
CGT 230	CGT 422
CGT 281	CGT 423
CGT 282	CGT 429
CGT 320	CGT 441
CGT 324	CGT 442
CGT 326	CGT 446
CGT 329	CGT 461

**Department of Graphic Design Technology
Bachelor of Science in Computer Graphic Technology
Major Code: CGT (User Experience)**

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
MATH 110 (*MLAR)	4	MATH 131 (*MLAR)	4
ENGL 100 (*WC)	3	ENGL 101 (*WC)	3
CGT 121	3	CGT 103	3
GCT 101	3	CGT 124	3
FRST 101	3	HIST (*AA)	3
HPED/SSFM (Elective)	1	Semester Total	16
Semester Total	15		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
CGT 230	3	CGT 224	3
CGT 281	3	CGT 282	3
PHYS 225 (*SR)	3	CGT 211	3
PHYS 235 (*SR)	1	CHEM 106 (*SR)	3
CGT 212	3	CHEM 116 (*SR)	1
Humanities or Fine Arts (Elective)	3	Global Awareness Elective (*GL)	3
Semester Total	16	Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
CGT 398	3	CGT 382	3
CGT 326	3	CGT 346	3
CGT 324	3	CGT 329	3
CGT 320	3	PSYC 273 (*SB)	3
PSYC 101 (*SB)	3	Free Elective	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	

CGT 410	3	CGT 442	3
CGT 426	3	CGT 441	3
CGT 461	3	GCT 430	3
GCT 423	3	Free Elective	3
Free Elective	3	Semester Total	12
Semester Total	15		

Total Credit Hours: 120

*Select from the official list at: <https://www.ncat.edu/provost/general-education-resources/gec-list.php>

MAJOR PROGRAM REQUIREMENTS

Students must earn a grade of "C" or better in all required CGT major courses

The following CGT/GCS/TECH are exempt from "C" or better (passing grade required for credit)

CGT (formerly TECH) 101& 103, CGT (formerly CGS) 211 & 212

CGT 121	CGT 383
CGT 124	CGT 386
CGT 224	CGT 398
CGT 230	CGT 410
CGT 281	CGT 423
CGT 282	CGT 426
CGT 326	CGT 430
CGT 380	CGT 441
CGT 381	CGT 442
CGT 382	CGT 461

General Education & Elective Requirements

Recommended Courses

Mathematics: *Mathematical, Logical, and Analytical Reasoning (*MLAR)* - MATH 110, MATH 131

English: *Written Communication (*WC)* - ENGL 100, ENGL 101

College Success: *Student Success (*SS)* - FRST 101

History: *African American History & Culture (*AA)* - HIST 102, 106, 107

Science: *Scientific Reasoning (*SR)* - PHYS 225, PHYS 235 | CHEM 106, CHEM 116

Humanities and Fine Arts: *Humanities & Fine Arts (*HFA)* - SPCH 250

Global Awareness: *Global Studies (*GL)* - MGMT 221, PHIL 201

Social & Behavioral Science: *Social Behavioral Science (*SBS)* - PSYC 101, PSYC 273

Health & Physical Ed or Sports Science & Fitness Management - HPED or SSFM. See university course catalog for list of HPED and SSFM courses

Free Electives: Choose any 3 courses (must be 3 credit hours)

Department of Graphic Design Technology
Bachelor of Science in Graphic Communication Systems
Major Code: GCS

Curriculum Guide

Course	CR	Course	CR
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Freshman Year: First Semester		Freshman Year: Second Semester	
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	Semester Total	16
Semester Total	15		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
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
Semester Total	16	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
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
Semester Total	16	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
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	Semester Total	12
Semester Total	15		

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
Graphic Design Track	
<u>Junior Year, Second Semester</u> GCS 346 and GCS 343	<u>Senior Year, First Semester</u> GCS 446 and GCS 421
Design Drafting Track	
<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

CGT 101. Introduction to Technology

Credit 3(3-0)

This course provides students with an understanding of the Computer Graphics Technology major, its career pathways, guides students in beginning their career readiness development, and helps them understand the influence and interaction of technology and society in a global context. (F)

CGT 103. Design Technology

Credit 3(2-2)

This course introduces students to design tools for use in engineering graphics and user experience. The course develops the student's ability to choose the correct tool for the problem that needs solving. (S)

CGT 121. Design Fundamentals

Credit 3(3-0)

This course teaches principles of design across a variety of design across a variety of disciplines and media, appropriate for engineering graphics and user experience. Basic design techniques are taught. The design process is taught as a problem-solving process, and manipulation and representation of data is included. (F)

CGT 124. Design Applications

Credit 3(3-0)

This course helps students learn appropriate applications of design principles for engineering graphics, including data representation, and user experience. Prerequisite: CGT 121. (S)

CGT 211. Evolution and Social Implications Technology

Credit 3(3-0)

This course is the study of technology systems. An investigation of past, present, and future interactions of technology and society will take place in a global context. The potential of future change influenced by technological change and application is addressed through technological assessment and research. (S)

CGT 212. Technical Communications

Credit 3(3-0)

This course teaches students how to conduct research and write for the technical and design workplaces. Workplace speaking skills are developed, and the course begins to prepare the student's career readiness through interviewing and writing for the job application process. (F)

CGT 224. Modeling

Credit 3(3-0)

This course addresses manipulation and analysis of data associated with the fabrication and functionality of product subassemblies, assemblies, and other objects related to engineering graphics and user experience. Students will integrate modeling principles to graphically communicate information about these objects. Emphasis will be placed on the application and interpretation of dimensioning and tolerancing information. Prerequisite: CGT 124. (S)

CGT 230. Photography for TDUX

Credit 3(3-0)

This course addresses manipulation and analysis of data associated with the fabrication and functionality of product subassemblies, assemblies, and other objects related to engineering graphics and user experience. Students will integrate modeling principles to graphically communicate information about these objects. Emphasis will be placed on the application and interpretation of dimensioning and tolerancing information. Prerequisite: CGT 124. (F)

- CGT 281. Graphic Design I for TDUX** **Credit 3(3-0)**
 This course helps students develop skill in the application of graphic design and user experience. Students begin their portfolios. (F)
- CGT 282. Graphic Design II for TDUX** **Credit 3(3-0)**
 This course helps students develop skill in the application of illustration, image editing, layout, typography, and color management in more depth to engineering design and user experience. Prerequisite: CGT 281. (S)
- CGT 320. Architectural Design** **Credit 3(2-2)**
 This course addresses basic design principles and construction processes relevant to architectural and civil structures. Site development, operational and structural systems, 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: CGT 124. (F)
- CGT 324. Product Design** **Credit 3(2-2)**
 This course will require the student to demonstrate design skills in the mechanical and manufacturing environments. The study of human factors is included. 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: CGT 224. (F)
- CGT 326. Animation** **Credit 3(2-2)**
 This course focuses on the creation and manipulation of computer-generated objects. Topics include the creation of 3D models, assignment of materials, camera and lights, rendering, and animation. The elements and principles of design will be applied.
- CGT 329. Special Problems I** **Credit 3(3-2)**
 This course provides a setting which students pursue research and apply their engineering graphics design skills to solve problems in an area of interest to the student. Students will begin to build deeper understanding and capabilities in the area of interest. Prerequisites: CGT 320, CGT 324. (S)
- CGT 346. Package Design** **Credit 3(3-2)**
 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: CGT 282. (S)
- CGT 380. User Experience Game Design I** **Credit 3(2-2)**
 This course helps students develop their user experience expertise in the context of game design. In addition to straightforward game design and animation, students learn about heat mapping, human to computer interaction, user intuition, ease of use, motivation, and purpose in the highly interactive game environment. Prerequisite: CGT 282. (F)
- CGT 381. User Experience Web Design I** **Credit 3(2-2)**
 This course helps students develop their user experience in the context of web design. In addition to straightforward web design, students learn about heat mapping, human to computer interaction, user intuition, ease of use, motivation, and purpose. Prerequisite: CGT 282. (F)
- CGT 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 engineering graphics. Students will get hands-on experience in video graphics. Emphasis will be placed on using these tools for problem solving and communication. (S)
- CGT 383. User Experience Game Design II** **Credit 3(2-2)**
 This course is a continuation of CGT 380, providing more depth and synthesis and integration of three dimensional animation. It helps students further apply their user experience expertise in animation, human to computer interaction, user intuition, ease of use, motivation, and purpose in the highly interactive game environment. Prerequisite: CGT 380. (S)
- CGT 386. User Experience Web Design II** **Credit 3(2-2)**
 This course is a continuation of CGT 381. It helps students apply their user experience expertise in the context of more sophisticated web designs. Prerequisite: CGT 381. (S)
- CGT 398. Professional Practices in Design** **Credit 3(3-0)**
 This course further develops students' career readiness with a more in-depth understanding of workplace behaviors and norms, supervision and accountability, performance improvement and evaluation, and research on the job market and salaries and benefits. Students will also focus on the job application process, including resume writing, interview preparation, development of speaking and writing skills, research about target employers, and preparation for career fairs. Students have the option of securing an off-campus internship or developing an advanced career readiness research project. Prerequisite: CGT 101. (F)
- CGT 410. User Experience & Interface Design I** **Credit 3(2-2)**
 This course helps students apply their user experience knowledge and skills in the development of designs that are optimized for human factors and applications of psychology to create digital products that are easy to use and look good. Students differentiate between visual forms and structural architecture. Students will do storyboarding, wire framing, functionality and prototype testing. This course includes designs for both visual and physical media such as kiosks and points of purchase structures. Understanding how users think and act is a major focus of this course, including the development of value propositions and data input and response preferences. Prerequisites: CGT 386, CGT 383. (F)

- CGT 422. Advanced Modeling** **Credit 3(2-2)**
 This course is a continuation of CGT 224. It provides more student development in the construction of assemblies and their realistic representation. Prerequisite: CGT 224. **(F)**
- CGT 423. Design Technology Project Management I** **Credit 3(2-2)**
 This course encourages group development and application of design principles, advanced design drafting and user experience, and related digital tools integrated into design projects of advanced complexity. The design projects provide the context for the project management content. Emphasis is also on development of problem solving, design group management, and building strong concepts that communicate persuasively and effectively. Management of design processes is covered. Prerequisite: CGT 386 or CGT 329. **(F)**
- CGT 426. Advanced Animation** **Credit 3(2-2)**
 This course is a continuation of CGT 326. It provides the resources and experiences needed for students to develop more sophisticated animation. Prerequisite: CGT 326. **(F)**
- CGT 429. Special Problems II** **Credit 3(2-2)**
 This course is a continuation of CGT 329. It provides a setting in which students pursue research and apply their engineering graphics design skills to solve complex, real-life problems in an area of interest to the students. Students emerge with a deeper, more complete understanding in the area of interest. Prerequisite: CGT 329. **(S)**
- CGT 430. User Experience & Interface Design II** **Credit 3(2-2)**
 This course is a continuation of CGT 410, providing more depth and synthesis. It helps students further apply their knowledge and skills in user experience to the development of designs that are optimized for human factors and applications of psychology to create digital products that are easy to use and look good. Prerequisite: CGT 410. **(S)**
- CGT 441. Design Technology Project Management II** **Credit 3(3-0)**
 This course encourages further group development and application of design principles, advanced design drafting and user experience, and related digital tools integrated into design projects of advanced complexity. More emphasis is placed on development of problem solving, design group management, and building strong concepts that communicate persuasively and effectively. Management of design processes is more deeply covered. Prerequisite: CGT 423. **(S)**
- CGT 442. Design Technology Entrepreneurship** **Credit 3(3-0)**
 The course will acquaint the student with project-based entrepreneurship and management skills related to various areas of a design company. Concepts will be learned through practical applications. **(S)**
- CGT 446. Display and Structure Design** **Credit 3(2-2)**
 This course provides the students 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 package design competency. The principles and elements of design are applied. Quality control techniques, color management and press requirements are emphasized. Prerequisite: CGT 346. **(F)**
- CGT 461. Senior Capstone Portfolio** **Credit 3(2-2)**
 This course is dedicated to the demonstration and the assessment of the mastery of skills, knowledge and attitudes through portfolio completion and project work near the successful completion of the program of study. The portfolio as a career readiness tool is emphasized. Prerequisite: CGT 386 or CGT 329. **(F;S)**
- 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 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 proto-types, 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 and Representation** **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 proto-types, 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**
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

Yu-Tung Kuo **Assistant Professor**
B.Eng., National Taiwan Normal University; M.S., National Chiao Tung University; Ph.D., Purdue University

Devang P. Mehta **Associate Professor and Interim Chairperson**
B.S., University of Bombay; M.A., DIT, University of Northern Iowa

Department of Mathematics and Statistics
Guoqing Tang, Chairperson

OBJECTIVES

The objectives of the Mathematics and Statistics 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;
4. to provide courses which ensure acquisition of basic mathematical skills and concepts for all students at the university;
5. to encourage wide ranging professional growth and research by faculty;
6. 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 and Data Science) – 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 63 hours in mathematics 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. The 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, 6 hours in statistics, 8 hours in physics 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 and Data Science)

The B.S. Degree Program in Mathematics (Statistics and Data Science) is designed to provide students with statistical and data analytical tools and conceptual foundations in quantitative reasoning to extract information intelligently from data. The statistics and data science concentration is recommended for those interested in collecting, analyzing and interpreting data analytically, as well as effectively communicating and presenting the results relying on data. Statistics and data science 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 and Data Science major must complete a minimum of 120 semester hours of University courses. These include 40 hours in mathematics, 33 hours in statistics & data science, and 8 hours in physics. 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 data science 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 concentration 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 39 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 123, MATH 140, MATH 231, MATH 224, MATH 240, MATH 211, MATH 341, MATH 340, MATH 351, MATH 365, MATH 370, MATH 377, MATH 411, MATH 432, STAT 240, STAT 324, STAT 327, STAT 328, STAT 333, STAT 334, STAT 337, STAT 425 and STAT 428.
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.

All minor applications must be approved by the Department of Mathematics and Statistics.

MINOR IN MATHEMATICS EDUCATION

The minor in Mathematics Education consists of satisfaction of prerequisites and successful completion with a grade of “C” or better in at least 33 credit hours of course work to help qualify the minor candidate in mathematics education for a secondary school teaching license. The prerequisite and 32-33 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 (26 credit hours): Students in the mathematics education minor program are required to complete the following MATH and EDPR courses: MATH 132, MATH 205, MATH 206, EDPR 410, EDPR 420, EDPR 487, EDPR 498.
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 341, or MATH 351.

All minor applications must be approved by the Department of Mathematics and Statistics.

CERTIFICATE IN DATA SCIENCE AND ANALYTICS

A student seeking the Undergraduate Certificate in Data Science and Analytics must complete a minimum of 15 credit hour course work in data science and analytics related undergraduate courses, including

1. Two DSA core courses (6 credit hours): i) STAT 324, and ii) MATH 365 or COMP 365;
2. Two DSA electives (6 credit hours) from STAT, BIOL, COMP, CST, ISEN, BUAN, or PHYS courses; and
3. A DSA infused capstone project (3 credit hours, or up to 6 credit hours for those who are required to take a two-semester capstone or senior project course sequence to complete their capstone/senior projects).

Department of Mathematics and Statistics Bachelor of Science in Mathematics Major Code: MATH

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
MATH 131 (MLAR)	4	MATH 132 (MLAR)	4
MATH 105	1	Foreign Language ¹ /Elective	3
ENGL 100 (WC)	3	ENGL 101 (WC)	3
Foreign Language ¹ /Elective	3	MATH 140 ³	3
Global Awareness ² (GA)	3	MATH 106	1
FRST 101 (SS)	1	African Amer. Culture and History ⁴ (AA)	3
Semester Total	15	Semester Total	17
Sophomore Year: First Semester		Sophomore Year: Second Semester	
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 and Behavioral Sciences ⁵ (SBS)	3
PHYS 251 (SR)	1	MATH 224	3
MATH 215	1	Semester Total	14
Semester Total	15		

Junior Year: First Semester		Junior Year: Second Semester	
MATH 341	3	MATH 351	3
MATH 320	3	MATH 340 or MATH 365	3
MATH 377	3	MATH 378	3
Ethical Reasoning Elective ⁶	3	Science Elective ⁷	4
HPED	2	Elective	3
Semester Total	14	Semester Total	16
Senior Year: First Semester		Senior Year: Second Semester	
MATH 411	3	MATH 412	3
Math Elective ⁸	3	Math Elective ⁸	3
Science Elective ⁷	4	MATH 496	3
Electives	4	Electives	6
Semester Total	14	Semester Total	15

Total Credit Hours: 120

¹Two courses: FREN 101, FREN 102; or GERM 101, GERM 102; or SPAN 101, SPAN 102; or RUSS 101, RUSS 102; taken in sequence.

²One course from: HIST 130, 206, 207, 216 or 231, or MGMT 221, or PHIL 103 or 201.

³For 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 MATH 140 and MATH 240 should be taken prior to MATH 340/365. See the Mathematics Student Handbook for a sample program guide.

⁴One course from: ENGL 211 or 212, or HIST 103, 106 or 107, or LIBS 202, or MUSI 220.

⁵One course from: ECON 200 or 201, FCS 135, 181 or 260, or FIN 279, or HIST 103, 104, 105, 106, 107, 130, 206, 207, or 216, JOMC 240, POLI 110, PSYC 101, or SOCI 100 or 200, or SSFM 226.

⁶One course from: PHIL 104, 201, 263, 315, 316, 317, or 320

⁷8 hours from: CHEM 100, 110 and BIOL 100; or CHEM 106,116 and CHEM 107, 117; CHEM 106,116 and BIOL 101.

⁸6 hours from: MATH 123, 242, 310, 323, 330, 432, STAT 240, 305, 324, 327, 328, 333, 334, 337, 425, 426, 428

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 341
MATH 131	MATH 340/365
MATH 132	MATH 351
MATH 140	MATH 377
MATH 211	MATH 378
MATH 215	MATH 411
MATH 224	MATH 412
MATH 231	MATH 496
MATH 240	MATH Electives (2)

Department of Mathematics and Statistics
 Bachelor of Science in Mathematics (Mathematics Secondary Education)
 Major Code: MATH
 Concentration Code: MSCE

Curriculum Guide

Course	CR	Course	CR
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 ¹ (GA)	3	African Amer. Culture & History ² (AA)	3
EDPR 102	2	EDPR 110	2
Semester Total	14	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
MATH 231	4	MATH 211	4
SPED 250	3	MATH 242	3
MATH 240	3	EDPR 210	2
EDPR 215	2	EDPR 250	2
PSYC 101 (SBS)	3	MATH 224	3
Semester Total	15	MATH 205	1
Junior Year: First Semester		Junior Year: Second Semester	
MATH 377	3	MATH 330 or MATH 340	3
MATH 351	3	MATH 320	3
SPCH 250 (HFA)	3	ELED 420	3
EDPR 455	3	SPED 448	3
EDPR 410	2	PHYS 225 (SR)	3
MATH 206	1	PHYS 235 (SR)	1
Semester Total	15	Semester Total	16
Senior Year: First Semester		Senior Year: Second Semester	
MATH 411	3	EDPR 498	12
Science Elective ³ (SR)	4	Semester Total	12
EDPR 487	3		
Electives	7		
Semester Total	17		

Total Credit Hours: 120

¹One course from: HIST 130, 206, 207, 216 or 231, or PHIL 103 or 201, or MGMT 221.

²One course from: ENGL 211 or 212, or HIST 103, 206 or 207, or LIBS 202, or MUSI 220.

³One 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
MATH 224	

Department of Mathematics and Statistics
Bachelor of Science in Mathematics (Applied Mathematics)
Major Code: MATH
Concentration Code: AMTH

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
MATH 131 (MLAR)	4	MATH 132 (MLAR)	4
MATH 105	1	Foreign Language ¹ Elective	3
ENGL 100 (WC)	3	ENGL 101 (WC)	3
Foreign Language ¹ Elective	3	MATH 140 ³	3
Global Awareness ² (GA)	3	MATH 106	1
FRST 101 (SS)	1	African Amer. Culture and History ⁴ (AA)	3
Semester Total	15	Semester Total	17
Sophomore Year: First Semester		Sophomore Year: Second Semester	
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 and Behavioral Sciences ⁵ (SBS)	3
PHYS 251 (SR)	1	MATH 224	3
MATH 215	1	Semester Total	14
Semester Total	15		
Junior Year: First Semester		Junior Year: Second Semester	
MATH 320	3	MATH 341	3
MATH 351	3	MATH 340 or MATH 365	3
MATH 377	3	Applications Area Electives ⁶	3
Applications Area Electives ⁶	3	STAT 324	3
Ethical Reasoning Elective ⁷	3	Elective	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
MATH 432	3	MATH 496	3
Applications Area Electives ⁶	3	Applications Area Electives ⁶	3
Applications Area Electives ⁶	3	Electives	8
Electives	6	Semester Total	14
Semester Total	15		

Total Credit Hours: 120

¹ Two courses of FREN 101, FREN 102; or GERM 101, GERM 102; or SPAN 101, SPAN 102; or RUSS 101, RUSS102 taken in sequence. ² One course from: HIST 130, 206, 207, 216 or 231, or MGMT 221, or PHIL 103 or 201.

³ For students starting in Math 103, Math 104, or Math 110, the programming courses should be replaced with electives in the first year. Then MATH 140 and MATH 240 should be taken prior to MATH 340/365. See the Mathematics Student Handbook for a sample program guide.

⁴ One course from: ENGL 211 or 212, or HIST 103, 106 or 107, or LIBS 202, or MUSI 220.

⁵ One course from: ECON 200 or 201, FCS 135, 181 or 260, FIN 279, HIST 103, 104, 105, 106, 107, 206, 207, 216 or 231, JOMC 240, POLI 110, PSYC 101, SOCI 100 or 200, SSFM 226.

⁶ 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.
⁷One course from: PHIL 104, 201, 263, 315, 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 140	MATH 377
MATH 211	MATH 432
MATH 215	MATH 496
MATH 224	STAT 324
MATH 231	Applications Area Electives (5)
MATH 240	

**Department of Mathematics and Statistics
 Bachelor of Science in Mathematics (Statistics & Data Science)
 Major Code: MATH
 Concentration Code: STAT**

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
MATH 131 (MLAR)	4	MATH 132 (MLAR)	4
MATH 105	1	MATH 140 ³	3
ENGL 100 (WC)	3	ENGL 101 (WC)	3
Social and Behavioral Sciences ¹ (SBS)	3	MATH 123	3
Global Awareness ² (GA)	3	MATH 106	1
FRST 101 (SS)	1	African American Hist. and Culture ⁴ (AA)	3
Semester Total	15	Semester Total	17
Sophomore Year: First Semester		Sophomore Year: Second Semester	
MATH 231	4	MATH 211	4
STAT 240	3	PHYS 242 (SR)	3
MATH 224	3	PHYS 252 (SR)	1
PHYS 241 (SR)	3	STAT 324	3
PHYS 251 (SR)	1	SPCH 250 (HFA)	3
MATH 215	1	Semester Total	14
Semester Total	15		
Junior Year: First Semester		Junior Year: Second Semester	
MATH 377	3	STAT 334	3
MATH 351	3	MATH 341	3
MATH 365	3	STAT 328	3
STAT 327	3	STAT 337	3

STAT 333	3	Foreign Language ⁵ Elective	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
Ethical Reasoning Elective ⁶	3	MATH 496	3
STAT 428	3	STAT 425	3
MATH 320	3	Electives	8
Foreign Language ⁵ Elective	3	Semester Total	14
Elective	3		
Semester Total	15		

Total Credit Hours: 120

¹One course from: ECON 200 or 201, FCS 135, 181 or 260, or FIN 279, or HIST 103, 104, 105, 106, 107, 130, 206, 207, or 216, or JOMC 240, or POLI 100, or PSYC 101, or SOCI 100 or 200, or SSFA 226.

²One course from: HIST 130, 206, 207, 216 or 231, or MGMT 221, or PHIL 103 or 201.

³One course from: ENGL 211 or 212, or HIST 103, 206 or 207, or LIBS 202, or MUSI 220.

⁴Two courses of FREN 101, FREN 102; or GERM 101, GERM 102; or SPAN 101, SPAN 102 or RUSS 101, RUSS 102 taken in sequence.

⁵One course from: PHIL 104, 201, 263, 315, 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 365
MATH 106	MATH 377
MATH 123	MATH 496
MATH 131	STAT 240
MATH 132	STAT 324
MATH 140	STAT 327
MATH 211	STAT 328
MATH 215	STAT 333
MATH 224	STAT 334
MATH 231	STAT 337
MATH 320	STAT 425
MATH 341	STAT 428
MATH 351	

COURSE DESCRIPTIONS IN MATHEMATICS

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. (F;S;SS)

MATH 101E. Fundamentals of Algebra and Trigonometry I with Pre-College Math Enhancements

Credit 3(3-0)

This is an enhanced MATH 101 course designed for students not meeting MATH 101 course prerequisites. The course topics include numbers and their properties, polynomials, rational expressions, rational exponents, radicals, equations and inequalities in one variable, relations and functions. The course will meet three hours per week for course content lecturing and two additional hours per week for faculty-led supplemental instruction. Prerequisite: An SAT Math score less than 480, or ACT Math score less than 18, or Math Department Algebra Placement Test score less than 15. (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: "C" or better grade in MATH 101 or MATH 101E. (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 101E. (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 107. Mathematical Literacy and Exploration** **Credit 3(3-0)**
 This course presents a survey of topics that apply to mathematics in personal life in order to provide general mathematical literacy and skepticism. Topics include personal mathematics, growth rates, statistical literacy, basic probability, as well as understanding and describing data numerically and visually. The course is intended for non-STEM (science, technology, engineering and mathematics) majors. The course may be taken before, after, or concurrently with MATH 108. (F;S;SS)
- MATH 108. Mathematics in Society** **Credit 3(3-0)**
 This course focuses on applications of mathematics relevant to groups of people in society. Mathematical topics are covered from an application driven perspective. Concepts include voting theory, finance, apportionment, task scheduling, and cryptography. The course is intended for non-STEM (science, technology, engineering and mathematics) majors and may be taken before, after, or concurrently with MATH 107. (F;S;SS)
- 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 ACT Math score 21-23 or a Math Department Algebra Test score at least 20 or a Math Department Pre-calculus 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 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 for Decision Making** **Credit 3(3-0)**
 This course covers mathematical concepts for the effective formulation and solution of application problems in business, finance, management, and the social and life sciences. Topics include descriptive data analysis, inferential statistics, bivariate regression and correlation, linear equations and matrix operations, and differentiation and its application to max-min problems.. Prerequisite: MATH 104, 110, or 111. (F;S;SS)
- 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 104 or MATH 110 or MATH 111 or MATH 131. (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 ACT Math score at least 24 or a Math Department Pre-calculus 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 140. Fundamentals of Scientific Programming in Python** **Credit 3(2-2)**
 This course introduces scientific programming in Python and selected principles in mathematics. Topics include numerical and symbolic operations, working with different data structures, importing and exporting data, and printing and plotting results. Students will apply learned techniques by writing programs to solve problems in applied mathematics and various related disciplines. (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 student's 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 graphical and numerical summaries of data, basic rules of probability, introduction of discrete and continuous random variables, sampling variability, and the fundamentals of estimation and hypothesis testing by means and proportions. Prerequisite: MATH 104 or MATH 110 or MATH 111 or MATH 131. (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. Prerequisites: MATH 132 and 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 Data Science** **Credit 3(3-0)**
 This course will cover the essential elements of data science: data collection and management, manipulating and visualizing data, utilizing basic ideas of statistical inference and machine learning. Students will gain hands-on experience using the Python or R programming environment, and through empirical data science case studies and class projects. Prerequisite: STAT 214 or MATH 224. (F;S;SS)
- 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 and 341; Corequisites: MATH 432 and 351. (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. Prerequisite: A "C" or better grade in MATH 211 and MATH 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. Prerequisites: MATH 231 and MATH 341. (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. Introduction to Statistical Reasoning** **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 data-informed judgments and decisions. Students will learn to understand graphical and numerical presentations of data, and to understand the concept of sampling. The methods and concepts studied will be presented in the context of the real-world problems, with the aim of making the student statistically literate. Prerequisite: MATH 101 or MATH 103. **(F;S;SS)**
- STAT 240. Data Exploration and Visualization** **Credit 3(3-0)**
 This course introduces fundamental principles and methods of exploring data and creating visualization to obtain insights from data. The course topics include data preparation and preprocessing, exploratory data analysis, and effective visualization for diverse types of data. The course is intensively based on programming tools such as R, Python, and/or Tableau. Prerequisite: MATH 140. **(F;S;SS)**
- STAT 305. Introduction to Biostatistics** **Credit 3(3-0)**
 This course introduces fundamental concepts and methods to provide reliable evidence in biology, medicine and public health. Course topics include exploratory data analysis, probability concepts and applications, principles of statistical inference, sample size and power calculation, contingency tables, nonparametric statistics, regression and correlation, ANOVA, and person-time data analysis. Prerequisite: MATH 224 or consent of instructor. **(F;S;SS)**
- STAT 324. Statistical Methods for Data Analysis** **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 and multiple linear regression, and the Analysis of Variance. Students will be introduced to computing and graphics using statistical software. Prerequisite: MATH 224. **(F;S;SS)**
- STAT 327. Regression Analysis** **Credit 3(3-0)**
 The course introduces principles and methods of linear regression models and generalized linear models that are used to solve data science problems. Linear models cover simple and multiple linear regression, including least squares estimation, inference, model building and variable selection. Generalized linear models cover logistic regression, Poisson regression, survival analysis and maximum likelihood estimation. The course utilizes statistical programming language such as R, SAS, and/or Python. Prerequisite: STAT 324 or permission of instructor. **(F;S;SS)**
- STAT 328. Statistical Machine Learning I** **Credit 3(3-0)**
 This course introduces fundamental knowledge in statistical machine learning methods such as regression, resampling, classification and clustering. Students will learn and assess various machine learning methods. This course also focuses on statistical programming and data analysis for real applications. Prerequisite: STAT 324. **(F;S)**
- STAT 333. Probability Theory with Applications (formerly STAT 423)** **Credit 3(3-0)**
 This course begins with an introduction to sample spaces and probability, including combinatorics. It covers continuous and discrete random variables, univariate and multivariate, with related topics such as marginal and conditional distributions, expectations, and moment generating functions. Special distributions and the central limit theorem are also covered. Prerequisite: STAT 324 and MATH 231. **(F;S)**
- STAT 334. Statistical Inference (formerly STAT 424)** **Credit 3(3-0)**
 This course covers the properties of estimators computed from sample data and the methods of estimation, such as maximum likelihood, method of moments, and confidence intervals. The principles of hypothesis testing are considered including likelihood ratio and the power of a test. Prerequisite: STAT 333. **(F;S)**
- STAT 337. Experimental Design and Sampling** **Credit 3(3-0)**
 This course introduces students to concepts and techniques of experimental design and survey sampling. The experimental design part will cover the concepts of experimental units, randomization, treatments, and blocking, and various standard experimental designs such as A-B testing, completely randomized designs, randomized complete block designs, and factorial and fractional factorial designs. Survey sampling topics will include simple random sampling, stratified sampling, cluster sampling, two- and multi-stage sampling, sampling weights, and survey errors. Students will learn to implement these techniques and analyze data from designed experiments and sample surveys using the statistical software R. Prerequisite: STAT 324.
- STAT 425. Computational Statistics** **Credit 3(3-0)**
 This course introduces students to various computationally intensive statistical techniques. Topics will include numerical optimization for statistical inference (gradient-based optimization, the Expectation-Minimization (EM) algorithm, and Fisher scoring), random number generation, resampling methods such as the bootstrap, permutation and randomization tests, cross-validation, Markov Chain Monte Carlo techniques (Gibbs sampling and Metropolis-Hastings algorithm), and nonparametric curve

fitting. Students will learn to apply these techniques to solve data science problems using the statistical software R. Prerequisite: STAT 328 or STAT 324. (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 333. (F;S)

STAT 428. Statistical Machine Learning II

Credit 3(3-0)

This course covers mathematical, statistical, and computational approaches in statistical learning techniques including deep learning methods. Topics include dimension reduction, regularization, neural network algorithms, and parallel computing. Student will learn a wide range of applications in science, business, and medicine using contemporary programming tools. Prerequisite: STAT 328. (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 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

Shea D. Burns **Associate Professor**

B.S., North Carolina A&T State University; M.S., Ph.D., Howard University

Mingxiang Chen **Professor**

B.S., M.S., Huazhong Normal University; Ph.D., Georgia Institute of Technology

Dominic P. Clemence **Professor**

B.S., North Carolina A&T State University; M.S., Ph.D., Virginia Polytechnic Institute and State University

Kathy M. Cousins-Cooper **Professor**

B.S., Virginia Polytechnic Institute and State University; M.S., North Carolina A&T State University; Ph.D., University of South Florida

Ahmad A. Deeb **Teaching Assistant Professor**

B.S., Yarmouk University; M.S., Ohio University; Ph.D., Kent State University

Zachary Denton	Associate Professor
B.S., Middle Tennessee State University; M.S., Ph.D., University of Louisiana at Lafayette	
Kossi D. Edoh	Professor
B.S., Cape Coast University; M.S., Ph.D., Simon Fraser University	
Tamer M. Elbayoumi	Assistant Professor
B.S., M.S., Mansoura University; Ph.D., Western Michigan University	
Christian R. Felton	Lecturer
B.S., Tuskegee University; M.S., North Carolina A&T State University	
Gregory Gibson	Associate Professor
B.A., State University of New York/College at Geneseo; M.S., Ph.D., North Carolina State University	
Seong-Tae Kim	Associate Professor
B.A., Hanyang University; M.A., Korea University; M.S., Ph.D., North Carolina State University	
Alexandra Kurepa	Professor
B.S., M.S., University of Zagreb; Ph.D., University of North Texas	
Liping Liu	Associate Professor
B.S., Huazhong University of Science and Technology; Ph.D., University of Alberta	
Nicholas Luke	Associate Professor and Student Success Coordinator
B.S., North Carolina A&T State University; M.S., Ph.D., North Carolina State University	
Sayed Mostafa	Assistant Professor
B.S., Cairo University; M.S., Ph.D., Oklahoma State University	
Katrina Nelson	Teaching Associate Professor
B.S., M.S., North Carolina A&T State University; Ph.D., North Carolina State University	
Choongseok Park	Associate Professor
B.S., Yonsei University; Ph.D., Ohio State University	
Yevgeniy A. Rastigeyev	Professor
M.S., Moscow Institute of Physics and Technology; M.S., Ph.D., University of Notre Dame	
Thomas C. Redd	Associate Professor and Associate Chairperson
B.S., Fort Valley State University; M.S., University of Oklahoma; M.S., Ph.D., Brown University	
Mauricio A. Rivas	Teaching Assistant Professor
B.S., M.S., Sam Houston State University; Ph.D., University of Houston	
John P. Roop	Associate Professor
B.S., Roanoke College; M.S., Ph.D., Clemson University	
Guoqing Tang	Professor and Chairperson
B.S., Anhui University; M.S., Nanjing University of Science and Technology; Ph.D., Rutgers University	
Barbara Tankersley	Associate Professor
B.S., Paine College; M.S., North Carolina A&T State University; M.S., Ph.D., Howard University	
Gregory N. Terkper	Lecturer
B.S., University of Cape Coast; M.S., North Carolina A&T State University	
Paramanathan Varatharajah	Associate Professor
B.S., University of Jaffna; M.S., Ph.D., University of Arizona	
John P. Ward	Assistant Professor
B.S., University of Georgia; Ph.D., Texas A&M University	
Alisha Williams	Senior Lecturer
B.S., M.S., North Carolina A&T State University	
Ling Xu	Assistant Professor
B.S., Xiamen University; M.S., Ph.D., University of New Mexico	
Yongli Zhang	Associate Professor
B.S., University of Science and Technology of China; M.S., The Ohio State University; Ph.D., University of Minnesota	

Department of Physics
Richard Hammond, 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 (Biological 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 REQUIRED COURSES

Common Courses for All Concentrations

- 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 |
|----------|----------|----------|
- 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 – 19 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 and math 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 120 semester hours of University courses. A minimum grade of “C-” must be achieved in all atmospheric sciences and meteorology, physics, and math 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.

Additional Course Requirements – Physics

Physics – PHYS 100, 101, 375, 401, 416, 422, 450, 485, 492

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 – PHYS 100, 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 (Biological Physics)

Physics – PHYS 100, 433, 434, Physics Elective (9 hours) numbered 300 or above

Biology – BIOL 101, 102, 221

Biomedical Engineering – BMEN 220, 325

Concentration Electives (15 credit hours) – to be determined by the student’s interest and approved by an advisor.

Free Electives – 3 credit hours

Additional Course Requirements – Physics (Secondary Education)

Physics – PHYS 100, 101, 110, 111, 375, 492 (2)

Chemistry – CHEM 107, 117

Other Sciences – ASME 151

Science Elective – (3 hours) – This must be a science elective other than a Physics course

Curriculum and Instruction – CUIN 101, 102, 110, 210, 225, 410, 420, 435, 470, 498

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, 231, 251, 252, 422, 433, 434, 492, 496

ASME Electives (9 credit hours) – Courses must be chosen from ASME 211, 275, 285, 420, 423, 430, 440, 463, 470, 480, 481, 491

Physics required – PHYS 100, 241, 242, 251, 252, 305, 345, 400, 411, 450

Physics Elective – (6 credit hours) – Course must be chosen from PHYS 4xx: 412, 415, 420, 430, 440, 447, or 475

Math – MATH 131, 132, 224, 231

Chemistry – CHEM 106, 116

Technical Electives – 6 credit hours that must be in Mathematics, Science, or Engineering

Required General Education non-math and non-science courses – 19 credit hours

Free Electives – (9 credit 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, Colorado State University, Howard University, University of Washington, Appalachian State University, University of Alaska, Cornell University, Princeton University, University of California – Davis, and Desert Research Institute. 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), Argonne National Laboratory (ANL), Pacific Northwest National Laboratory (PNNL) and Thomas Jefferson National Accelerator Facility (JLab), National Center For Atmospheric Research (NCAR), NOAA Earth Systems Research Lab (ESRL), and NOAA Severe Storm Laboratory (NSSL). More than half of our physics majors participate in summer research at other institutions. International Collaborations include Botswana International University of Science and Technology, Addis Ababa University, National Taiwan University, National Central University (Taiwan), and Yonsei University (Korea).

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, Atmospheric physics/chemistry lab that houses a smog chamber for studies of aerosol photochemical aging. 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: Climate and weather modeling, experimental atmospheric chemistry research focused on measuring optical and chemical properties of biomass burning aerosols and other forms of aerosols using laser spectroscopic methods, field studies in air quality. This research is supported by a grant from the National Science Foundation.
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. Biological and Soft Matter Physics: Experimental and theoretical research into developing sperm as an active matter model system and use it to study the phase separation in active matter, and sperm motility under the influence of different physical environment such as fluid flow and fluid rheology. This program supported by the National Science Foundation and National Institutes of Health.

6. 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.
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. Physics graduates 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.

Department of Physics Bachelor of Science in Physics Major Code: PHYS

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	Humanities and Fine Arts (HFA) ¹	3
Afr. Amer. History & Culture (AA) ¹	3	FRST 101	1
Semester Total	16	Semester Total	15
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
CHEM 106	3	Social/Behavioral Sciences (SBS) ¹	3
CHEM 116	1	Semester Total	15
Semester Total	15		
Junior Year: First Semester		Junior Year: Second Semester	
PHYS 400	3	PHYS 416	3
PHYS 415	3	PHYS 375	2
PHYS 420	3	PHYS 422	3
MATH 350	3	Global Awareness (GL) ¹	3
ENGL 331		Science Elective	3
Semester Total	15	Semester Total	14
Senior Year: First Semester		Senior Year: Second Semester	
PHYS 430	3	PHYS 3xx ² Elective	3
PHYS 450	3	PHYS 3xx ² Elective	3
PHYS 475	2	Science Elective	3
PHYS 494 ³	3	Free Elective ⁴	3
PHYS 492	1	Free Elective ⁴	3
Free Elective ⁴	3	Semester Total	15
Semester Total	15		

Total Credit Hours: 120

¹Courses may only satisfy ONE general education requirement GL, AA, SBS, or HFA (e.g. LIBS 202 can satisfy HFA or AA, but not both).

²Physics electives (6 hours) numbered 300 or above.

³PHYS 494 – capstone course

⁴Free electives (9 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 and MATH courses.

Department of Physics
 Bachelor of Science in Physics (Secondary Education)
 Major Code: PHYS
 Concentration Code: PPSE

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
FRST 101	1	EDPR 110	2
PHYS 110	2	African-Am. Hist. and Culture (AA) ¹	3
PHYS 111	1	MATH 132	4
MATH 131	4	PHYS 241	3
PHYS 100	1	PHYS 251	1
ENGL 100	3	ENGL 101	3
EDPR 102	2	Semester Total	16
Semester Total	14		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
PHYS 242	3	PHYS 305	3
PHYS 252	1	PHYS 306	3
MATH 231	4	Social/Behavioral Sciences (SBS) ¹	3
SPED 250	3	Humanities/Fine Arts (HFA) ¹	3
EDPR 215	2	EDPR 310	2
Global Awareness (GL) ¹	3	EDPR 210	2
Semester Total	16	Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
PHYS 400	3	PHYS 375	2
PHYS 415	3	SPED 448	3
EDPR 455	3	Free Elective ²	3
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
EDPR 410	2	EDPR 420	3
Semester Total	15	Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
PHYS 420 or PHYS 450	3	EDPR 498	12
PHYS 430	3	Semester Total	12
Free Elective ²	3		
Free Elective ²	3		
EDPR 487	3		
PHYS 492	1		
Semester Total	16		

Total Credit Hours: 120

¹General education courses may only satisfy ONE requirement AA, GL, HFA, or SBS (e.g. LIBS 202 can satisfy AA or HFA, but not both).

²Free electives (9 hours) – It is suggested that at least 6 of these hours be FOLA courses and 3 hours be in HIST 220.

MAJOR PROGRAM REQUIREMENTS

Students must earn a C- or better in PHYS, MATH and EDPR courses.

Department of Physics
Bachelor of Science in Physics (Engineering Physics)
Major Code: PHYS
Concentration Code: ENGP

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	Humanities / Fine Arts (HFA) ¹	3
Afr. Amer. History & Culture (AA) ¹	3	FRST 101	1
Semester Total	16	Semester Total	15
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
Social/Behavioral Sciences (SBS) ¹	3	Global Awareness (GL) ¹	3
Semester Total	14	Semester Total	15
Junior Year: First Semester		Junior Year: Second Semester	
PHYS 400	3	PHYS 416 or PHYS 422	3
PHYS 415	3	PHYS 375	2
PHYS 420	3	PHYS 3xx ²	3
Engineering Elective ⁴	3	Engineering Elective ⁴	3
ENGL 331	3	Engineering Elective ⁴	3
Semester Total	15	Free Elective ⁵	1
		Semester Total	15
Senior Year: First Semester		Senior Year: Second Semester	
PHYS 494 ³	3	PHYS 3xx ² Elective	3
PHYS 430	3	Engineering Elective ⁴	3
PHYS 475	2	Engineering Elective ⁴	3
PHYS 492	1	Engineering Elective ⁴	3
Engineering Elective ⁴	3	Free Elective ⁴	3
Engineering Elective ⁴	3	Semester Total	15
Semester Total	15		

Total Credit Hours: 120

¹Courses may only satisfy ONE general education requirement GL, AA, SBS, or HFA (e.g. LIBS 202 can satisfy HFA or AA, but not both).

²Physics electives (6 hours) numbered 300 or above.

³PHYS 494 – capstone course.

⁴Students under guidance of a faculty advisor can choose any discipline in Engineering (24 hours)

⁵Free electives (4 hours)

MAJOR PROGRAM REQUIREMENTS

Students must earn a C- or better in PHYS and MATH courses.

Department of Physics
 Bachelor of Science in Physics (Biological Physics)
 Major Code: PHYS
 Concentration Code:

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
FRST 101	1	CHEM 107	3
CHEM 106	3	CHEM 117	1
CHEM 116	1	MATH 132	4
MATH 131	4	ENGL 101	3
ENGL 100	3	BIOL 101	4
Afr. Amer. History & Culture (AA) ¹	3	PHYS 100	1
Semester Total	15	Semester Total	16
Sophomore Year: First Semester		Sophomore Year: Second Semester	
PHYS 241	3	PHYS 242	3
PHYS 251	1	PHYS 252	1
MATH 231	4	BIOL 102	3
BMEN 220	3	BMEN 3253	3
GEEN 161	2	Social/Behavioral Sciences (SBS) ¹	3
Humanities / Fine Arts (HFA) ¹	3	Semester Total	13
Semester Total	16		
Junior Year: First Semester		Junior Year: Second Semester	
BIOL 221	4	PHYS 375	2
PHYS 433	3	PHYS 345	3
PHYS 3xx ²	3	PHYS 305	3
ENGL 331	3	PHYS 306	3
Concentration Elective ⁴	3	Global Awareness (GL) ¹	3
Semester Total	16	Semester Total	14
Senior Year: First Semester		Senior Year: Second Semester	
PHYS 494 ⁵	3	Concentration Elective ⁴	3
PHYS 430	3	Concentration Elective ⁴	3
PHYS 475	2	Disciplinary Elective ²	3
PHYS 492	1	PHYS 3xx ²	3
Concentration Elective ⁴	3	Free Elective ⁶	3
Concentration Elective ⁴	3	Semester Total	15
Semester Total	15		

Total Credit Hours: 120

¹Courses may only satisfy ONE general education requirement GL, AA, SBS, or HFA (e.g. LIBS 202 can satisfy HFA or AA, but not both).

²Physics electives (6 credit hours) numbered 300 or above.

³PHYS 494 – capstone course.

⁴Concentration Electives – (15 credit hours) Students under guidance of a faculty adviser can choose courses from physics, biology, chemistry, or bioengineering.

⁵Free electives (3 credit hours)

MAJOR PROGRAM REQUIREMENTS

Students must earn a C- or better in PHYS and MATH courses.

Department of Physics
 Bachelor of Science in Physics (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	Humanities and Fine Arts (HFA) ¹	3
Afr. Amer. History & Culture (AA) ¹	3	FRST 101	1
Semester Total	16	Semester Total	15
Sophomore Year: First Semester		Sophomore Year: Second Semester	
PHYS 242	3	PHYS 305	3
PHYS 252	1	PHYS 306	3
MATH 231	4	PHYS 345	3
CHEM 106	3	MATH 3xx ³	3
CHEM 116	1	Global Awareness (GL) ¹	3
Social/Behavioral Sciences (SBS) ¹	3	Semester Total	15
Semester Total	15		
Junior Year: First Semester		Junior Year: Second Semester	
PHYS 400	3	PHYS 375	2
PHYS 415	3	PHYS 3xx ⁴	3
PHYS 420	3	Disciplinary Elective ²	3
PHYS 450	3	Disciplinary Elective ²	3
ENGL 331	3	Disciplinary Elective ²	3
Semester Total	15	Semester Total	14
Senior Year: First Semester		Senior Year: Second Semester	
PHYS 494 ⁵	3	Disciplinary Elective ²	3
PHYS 430	3	Disciplinary Elective ²	3
PHYS 475	2	Disciplinary Elective ²	3
PHYS 492	1	Free Elective ⁶	3
Disciplinary Elective ²	3	Free Elective ⁶	3
Disciplinary Elective ²	3	Semester Total	15
Semester Total	15		

Total Credit Hours: 120

¹Courses may only satisfy ONE general education requirement GL, AA, SBS, or HFA (e.g. LIBS 202 can satisfy HFA or AA, but not both).

²Disciplinary Electives (24 credit hours) to be determined by the student's interest and approved by an instructor.

³Mathematics elective (3 hours) numbered 300 or above.

⁴Physics electives (3 hours) numbered 300 or above.

⁵PHYS 494 – capstone course.

⁶Free electives (6 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 and MATH courses.

**Department of Physics
Bachelor of Science in Atmospheric Sciences and Meteorology
Major Code: ATSM**

Curriculum Guide

Course	CR	Course	CR
Freshman Year: First Semester		Freshman Year: Second Semester	
FRST 101	1	ENGL 101	3
ENGL 100	3	ASME 151	3
Afr. Amer. History & Culture (AA) ¹	3	MATH 132	4
MATH 131	4	PHYS 100	1
CHEM 106	3	Humanities / Fine Arts (HFA) ¹	3
CHEM 116	1	Semester Total	14
Semester Total	15		
Sophomore Year: First Semester		Sophomore Year: Second Semester	
ASME 251	3	Global Awareness (GL) ¹	3
ASME 252	1	MATH 224	3
Social/Behavioral Sciences (SBS) ¹	3	ASME 231	3
MATH 231	4	PHYS 305	3
PHYS 241	3	PHYS 242	3
PHYS 251	1	PHYS 252	1
Semester Total	15	Semester Total	16
Junior Year: First Semester		Junior Year: Second Semester	
PHYS 345	3	ASME 422	4
ASME 433	3	ASME 434	3
ENGL 331	3	PHYS Elective ³	3
PHYS 411	3	Technical Elective ⁴	3
PHYS 400	3	ASME Elective ²⁻¹	3
Semester Total	15	Semester Total	16
Senior Year: First Semester		Senior Year: Second Semester	
ASME 492	1	ASME 496 ⁵	6
ASME Elective ²⁻²	3	ASME 492	1
PHYS 450	3	ASME Elective ²⁻³	3
Technical Elective ⁴	3	Free Elective	3
PHYS Elective ³	3	Semester Total	13
Free Elective	3		
Semester Total	16		

Total Credit Hours: 120

¹Courses may only satisfy ONE general education requirement GL, AA, SBS, or HFA (e.g. LIBS 202 can satisfy HFA or AA, but not both).

²⁻¹ASME Elective: Course must be chosen from ASME 211, 275, 285.

²⁻²ASME Elective: Course must be chosen from ASME 420, 423, 430, or 440.

²⁻³ASME Elective: Course must be chosen from ASME 463, 470, 480, 481, or 491.

³Physics Elective: Course must be chosen from PHYS 412, 415, 420, 430, 440, 447, or 475.

⁴Technical Electives: Courses must be in Mathematics, Science or Engineering.

⁵ASME 496 - capstone course.

Free electives (6 credit hours).

MAJOR PROGRAM REQUIREMENTS

Students must earn a C- or better in ASME, PHYS and MATH 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)

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)

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 200. Introductory Physics**Credit 2(2-0)**

A non-laboratory course involving the study of mechanics, heat, electricity, wave motion, and atomic and nuclear phenomena. Recommended for students with poor high school preparation in physics who should prepare for College Physics or General Physics. (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;SS)

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 mechanics and thermodynamics. The topics covered include units, physical quantities, and vectors; kinematics and dynamics of translational motion; applications of Newton's laws; work and energy; momentum, impulse, and collisions; kinematics and dynamics of rotational motion; equilibrium and elasticity; gravitation; periodic motion; fluid mechanics; temperature and heat; kinetic theory and thermal properties of matter, and thermodynamic systems & processes. Corequisite: PHYS 235. Prerequisites: 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. Corequisite: PHYS 225. (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. Prerequisites: PHYS 241, 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 which 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: MATH 132, PHYS 242 or 226. (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(1-3)**
 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 which along with PHYS 401 includes particle dynamics, conservation laws, vibrational motion, central field motion, rigid body dynamics, Hamilton's principle and Lagrange's equation, and Hamilton's equations. Prerequisites: MATH 231, PHYS 242, PHYS 305. (F)
- PHYS 401. Physical Mechanics II** **Credit 3(3-0)**
 This course is a continuation of Physics 400 and continues coverage of particle dynamics, conservation laws, vibrational motion, central field motion, rigid body dynamics, Hamilton's principle and Lagrange's equation, and Hamilton's equation. 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 is an intermediate course in electromagnetism which along with PHYS 416 includes the study of electric fields and potentials, electric current and magnetic fields, solutions to Maxwell's equations, plane waves, polarization, propagation in media, wave guides and resonant cavities, refraction, and dispersion. Prerequisites: MATH 132, MATH 231, PHYS 242, 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 305/PHYS 306. (F;S)
- PHYS 422. Quantum Physics II** **Credit 3(3-0)**
 This course is a continuation of Physics 420. Topics include: angular momentum, basic properties and eigenvalues of angular momentum operator, addition of angular momentum, the two-particle problem and the hydrogen atom, hydrogenic wave functions, elements of matrix mechanics, spin wave functions, basis and representations, energy representations, angular momentum matrices, Pauli spin matrices, magnetic moment of an electron, addition of spins, time-independent perturbation theory, fine structure of hydrogen atom, Zeeman effect, time dependent perturbation theory, two-level system, emission and absorption of radiation, spontaneous emission, the variational principle 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 433. Physical Techniques in Biology** **Credit 3(3-0)**
 This course discusses using physical tools to investigate biological systems. The first major topic is microscopy and imaging, covering optical microscopy, fluorescence microscopy and different fluorescence techniques (including fluorescence resonance energy transfer and super high-resolution fluorescence microscopy). The second major topic is micro/nanofabrication and micro/nanofluidics, covering lithography and lab-on-a-chip applications. Other methods discussed include protein crystallography and atomic force microscopy. Prerequisite: PHYS 242. (F;S)
- PHYS 434. Biological Physics** **Credit 3(3-1)**
 This course focuses on applying quantitative analyses on biological questions, and through these analyses, showing how biological systems evolve to navigate the noisy environment, as well as how fundamental physics can be used to understand biological phenomena. Subjects include chemotaxis and rheotaxis, evolutionary game theory, population dynamics and bifurcation theory, and the emergence of collective dynamics. Prerequisites: PHYS 242, CHEM 107, MATH 231. (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, field exercises, 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(3-0)**

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 **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 242, 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 and PHYS 415. (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 492. Physics Seminar (formerly PHYS 510) **Credit (1-0)**

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. This course can be repeated for up to a total of 2 credit hours. Prerequisite: Junior standing. (DEMAND)

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. This course can be repeated for up to a maximum total of 6 credit hours. Prerequisite: Consent of instructor. (F;S;SS)

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. Prerequisite: Consent of instructor. (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 234. Weather and Climate Studies**Credit 3(3-0)**

This course provides an opportunity for students to develop skills in the principles and processes of scientific inquiry through application of the scientific method to analyze phenomena, issues, and problems related to meteorology and climatology along with their societal impact. (F;S;SS)

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,SS)

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,SS)

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 (4-0)**

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(4-0)**

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 Dean of the College of Science and Technology**

B.S., Mohammed V. University; M.S., Joseph Fourier Grenoble I University; Ph.D., University of Geneva

Solomon Bililign **Professor**

B.S., M.S., Addis Ababa University; Ph.D., University of Iowa

Ashot Gasparian **Professor**

B.S., Ph.D., Yerevan Physics Institute

Richard Hammond **Professor and Chairperson**

B.S., New Jersey Institute of Technology; M.S., Ph.D., Rensselaer Polytechnic Institute

Floyd J. James **Associate Professor**

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

Ademe Mekonnen **Associate Professor**

B.S., Addis Ababa University; M.S., University of Reading; Ph.D., University of Albany

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
Vijay Singh..... **Assistant Professor**
 B.Sc., St Stephens College, Delhi University; M.Sc., Indian University of Technology, Kanpur; Ph.D., Emory University
Chih-Kuan Tung **Assistant Professor**
 B.S., National Taiwan University, Taipei; Ph.D., Princeton University
Jing Zhang **Professor**
 B.S., M.S., Nanjing University, Nanjing; Ph.D., Peking University, Beijing

CENTER FOR ACADEMIC EXCELLENCE

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

Regina Williams Davis, Interim Vice Provost for Student Success and
Director for the Center for Academic Excellence

OBJECTIVES

The objectives of The Center for Academic Excellence are to:

- Serve as the university's academic advising support unit that fosters academic success through developmental, prescriptive, and proactive advising
- Provide academic support services for tutoring, supplemental instruction, enhanced mathematics courses and instructors for the College Success Course.
- Collaborate with academic and student affairs departments promoting a cohesive network of support services aimed to increase student academic achievement.
- Develop and implement strategies designed to increase student retention and persistence rates.
- Increase the retention and graduation of students admitted to the university;
- Assist students in their transition to the university;
- Prepare undeclared students for their prospective majors;
- Provide students on academic probation a support network that will assist them in obtaining good academic standing.

COURSES WITH DESCRIPTION

FRST 101. College Success

Credit 1

This course is a one credit-hour course that empowers students to effectively transition to meeting the demands of higher education, to acquire technical skills and study skills for maximum academic achievement, and to develop an efficient pathway for reaching professional and personal goals. Through in-class discussions, activities, and assignments students will be oriented to campus resources, learn academic policies and procedures and create a clear educational pathway.

MATH 101E. Fundamentals of College Algebra & Trig I with Precollege Algebra Enhancements

Credit 3

This course advances students into introductory college-level mathematics. The course links co-requisite courses, the Intermediate Mathematics and core level one Fundamentals of Algebra & Trigonometry, for college-level credit in one semester. Structured academic support enhances the course. Elementary properties of real numbers, basic algebra through solving of quadratic equations by various means, numbers and their properties, polynomials, rational expressions, rational exponents, radicals, equations and inequalities in one variable, relations and functions are studied.

Prerequisite: Old SAT MATH scores between 400 and 440, or Redesigned SAT MATH scores below 480; or SAT Subject MATH Level II scores between 440 and 470; or ACT MATH scores of 17; or Math Department-developed Algebra placement test scores below 15. (F;S;SS)

SCS 099. Strategies for Academic Success

Credit 0

This course will equip the probationary student with essential competencies for academic success by maximizing the students' potential to become independent thinkers and successful learners. The topics will focus on time management, utilization of university resources, developing quality study practices, balancing academic and social activities, adjusting to the university environment, and taking personal responsibility for their academic success.

DIRECTORY

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

Madeline Brown, B.A., Andrews University; M.A., Kean 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

Tanisha Dennis, B.S., M.S., North Carolina A&T State University

Andrea Fernandez, B.A., M.A., North Carolina A&T State University; Ph.D., University of North Carolina at Greensboro

Elizabeth Goodwin, B.A., University of North Carolina at Chapel Hill; M.S., Miami 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

Carliss Jacobs, B.A., Hampton University; M.S., North Carolina A&T State University

Renisha Jones, 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.Ed., 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; 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

DEPARTMENT OF AEROSPACE STUDIES

<https://www.ncat.edu/provost/academic-affairs/rotc/air-force/index.php>

Lt Col Mark D. Whisler, Professor

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) and the United States Space Force (USSF). 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 potentially commissioning into the USAF or USSF. The four-year program can be modified for students up until the beginning of the fall semester of a student's sophomore year. This program is open to all students and does NOT require a commission into the military.

The AFROTC Program begins with the General Military Course (GMC). As freshmen, students attend a weekly one-hour class and two-hour Leadership Laboratory in addition to two one-hour physical training sessions. The freshman course, "Heritage and Values of the United States Air Force", is a survey course designed to introduce students to the United States Air Force and provides an overview of the basic characteristics, missions, and organization of the Air Force. The sophomore course, "Team and Leadership Fundamentals", provides a fundamental understanding of both leadership and team building. The lessons and course flow are designed to prepare students for field training and leadership positions in the detachment. The purpose is to instill a leadership mindset and to motivate sophomore students to transition from AFROTC cadet to AFROTC officer candidate. Students who compete favorably for the award of Professional Officer Corps (POC) status will attend a two-week summer Field 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 course, "Leading People and Effective Communication," utilizes student's field training experience to take a more in-depth look at leadership. Special emphasis is placed on enhancing communication skills, and why that is important as a leader. Students have an opportunity to try out these leadership and management techniques in a supervised environment as juniors and seniors. The senior course, "National Security", is designed for college seniors and gives them the foundation to understand their role as military officers and how they are directly tied to our National Security Strategy. It is an overview of the complex social and political issues facing the military profession and requires a measure of sophistication commensurate with the senior college level. Included throughout the four years is a "Communication Skills Plan" consisting of mandatory briefings and leadership centered exercises which aim to develop officers and leaders with effective thinking, writing, and speaking skills. Finally, "Leadership Laboratory" puts the knowledge obtained and skills developed in the classroom into practical application.

When one successfully completes the AFROTC Program and receives a degree, they (depending on their contractual status in the program) are then commissioned as a Second Lieutenant and serves a minimum of four years in the USAF or USSF. Everyone enters the Air Force in a specific career field, usually correlating to their field of their undergraduate degree program, but is always subject to the needs of the Air Force or Space Force. There are many exciting career fields for active duty officers including Engineering, Medical/ Nursing, Legal, Intelligence and Logistics, and Aviation.

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 Air Force ROTC website at <https://www.afrotc.com/>.

PROGRAM COMPLETION 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, Guilford Technical Community College, or Embry Riddle Aeronautical University - Greensboro.
- 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
- Must complete summer Field Training
- Must have 3 academic years remaining (undergraduate, graduate, or combination)
- Must maintain a 2.0 GPA 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 pursuing cadets will receive two ROTC uniforms and Physical Training wear at no cost to the student after completing certain requirements (e.g., meeting Air Force height/weight standards, passing the Air Force Physical Fitness Test, and 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, laboratory 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 AEROSPACE STUDIES LEADERSHIP

The minor in Aerospace Studies 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 USAF and USSF. Finally, to earn the Aerospace Studies Leadership minor, students must earn a grade of “C” or better and attend 80% of the lecture/classes listed below.

- AERO 221 (1 hours)
- AERO 222 (1 hour)
- 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)

GENERAL MILITARY COURSE

AERO 121. Heritage and Values of the United States Air Force 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. Heritage and Values of the United States Air Force 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 early morning physical training, 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 early morning physical training, 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. Team and Leadership Fundamentals I **Credit 1(1-0)**
This course is designed to lay the foundation for teams and leadership. The topics include skills that will allow cadets to improve their leadership on a personal level and within a team. Topics include personal leadership style and traits, as well as, tools needed to be an effective leader. **(F)**

AERO 222. Team and Leadership Fundamentals II **Credit 1(1-0)**
This course is a continuation of AERO 221 and further leadership with an emphasis on team dynamics, human relations and assessments. The completion of this course series will prepare cadets for their field training experience where they will be able to put the concepts learned into practice. The purpose is to instill a leadership mindset and to motivate sophomore students to transition from AFROTC cadet to AFROTC officer candidate. **(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 Field Training. In addition, one hour of early morning physical training, 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 Field Training. In addition, one hour of early morning physical training, 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 Field Training. In addition, one hour of early morning physical training, 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 Field 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 Field Training. In addition, one hour of early morning physical training, 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 Field Training. Pass/Fail evaluation only, no letter grade will be given. (S)

PROFESSIONAL OFFICER COURSE

AERO 321. Leading People and Effective Communication 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. Leading People and Effective Communication 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 early morning physical training, 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 early morning physical training, 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 early morning physical training, 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 early morning physical training, 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 AEROSPACE STUDIES

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>
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AERO 321	3	AERO 322	3
AERO 331	$\frac{1}{4}$	AERO 332	$\frac{1}{4}$
		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	$\frac{1}{4}$

DIRECTORY OF FACULTY

Lt Col Mark D. Whisler.....**Professor**
 B.S., Montana State University Bozeman; M.A., Trident at American Intercontinental University; M.A., Air University

Lt Col Frank Sha..... **Assistant Professor**
 B.S., California Polytechnic Institute University; M.S., Air Force Institute of Technology; M.S., Oklahoma State University

Capt Geoffrey Adams **Assistant Professor**
 B.S., Texas Christian University

DEPARTMENT OF MILITARY SCIENCE AND LEADERSHIP (MISC)

<http://www.ncat.edu/divisions/academic-affairs/rotc/army/index.html>

LTC Linda Wynn, Professor

OBJECTIVE

The objective of the Army Reserve Officers' Training Corps (ROTC) is to recruit, educate, train and commission leaders of character to serve as Commissioned Officers in the Total Army. 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 and/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, Guilford Technical Community College, 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) 334-7552.

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
- Commissioned as a 2nd Lieutenant in the United States Army (Active, Reserve, or National Guard)
- Minor in Military Leadership

GENERAL PROGRAM REQUIREMENTS

The ROTC program is divided into a basic and advance course. The Basic Course is normally taken during the freshman and sophomore years, and the Advance Course is taken during the junior and senior years. The admission of students to the ROTC program is based upon general admission requirements of the University as they pertain to a full-time student.

Basic Course: The basic course consist of two distinct components, the classroom introduction to the Army and foundations of Agile and Adaptive Leadership of the Military Science and Leadership (MSL) 1 year, and the experiential examination of leadership, decision-making, and Army doctrine and team development of the MSL 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.

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 Advanced Camp the summer following completion of their MS 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.

DEPARTMENT REQUIREMENTS

The program of instruction for Army ROTC include a four-year program (*Progression Entry*) and a two-year program (*Lateral Entry*). The four-year program consists of a two-year basic course, a two-year advanced course, and Advanced Camp. The two-year program encompasses a Basic Camp, a two-year advanced course and Advanced Camp.

- (1) *Progression entry:* Progression entry is when a student enrolls into and completes the Basic Course (MS 101 through MS 202). Cadets who complete MS I and MS II, and meet all other eligibility requirements, are eligible to enroll and contract into the Advanced Course.
- (2) *Lateral Entry Option.* These are the following methods of Lateral Entry into the Advanced Course: (1) Alternate Entry Option (AEO); (2) Placement Credit; (3) Accelerated Cadet Commissioning Training (ACCT); (4) Alignment Option Program (AOP). *Note: The PMS will use discretion to determine proper placement of non-progression students into the Advanced Course.*
 - a. *Alternate Entry Option (AEO).* The AEO allows greater flexibility in recruiting quality students into the Advanced Course as non-scholarship Cadets. The Brigade Commander must approve candidates for the AEO. Cadets sign a contract to attend Basic Camp after the MS III year and Advanced Camp after the MS IV year. Cadets must be fully qualified and academically aligned as a full-time student with two academic years of study projected for graduation in order to use the AEO. This option is not available to scholarship Cadets. Cadet progression using this option is MS III, Basic Camp, MS IV, Advanced Camp, commissioning. Cadets entering under the AEO are not authorized to accelerate

the advanced course or to attend Basic Camp and Advanced Camp within the same summer; this is non-waiverable. 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.

- b. *Placement Credit.* The PMS can grant placement credit in accordance with Table 5-1 of AR 145-1 for equivalent training. Each case is judged individually so that the best interests of both the Cadet and the service can be achieved.
 1. Placement credit up to MS II may be given to Soldiers who have completed basic training.
 2. Attendance at a service academy or successful completion of sister service senior ROTC training qualifies for Placement Credit. One year of attendance at a service academy or sister service ROTC training may be substituted for MS I; two years may be substituted for MS I & II.
 3. Placement credit for MS I may be granted to Cadets that have completed at least two years of Junior ROTC (JROTC). The PMS may grant Placement Credit for MS II for a Cadet completing three or four years of JROTC training.
- c. *Accelerated Cadet Commissioning Training (ACCT) Program.* ACCT is for students that demonstrate exceptional skills as Scholars/Athletes/Leaders (SAL) and have missed the Basic Camp registration window or the SROTC program is unable to obtain an Basic Camp allocation for the student. ACCT Cadets are required to complete an early train-up period of critical tasks in Appendix B which must be mastered prior to integration into the Cadet battalion. SALs who are academically aligned may contract at the beginning of the MS III year after completing the ACCT training program. Cadet progression using this option is ACCT training program, MS III, Advanced Camp, MS IV, commissioning. Waiver requests for acceleration of the Advanced Course for ACCT Cadets is discouraged since they are already missing two years of a four year program.
- d. *Alignment Option Program (AOP) for Engineer and Nurse Cadets.* Engineer and Nurse Cadets in the AOP program must meet all PME requirements to include successfully completing Advanced Camp in order to commission. Four year progression Cadets in this category may receive approval to accelerate the Basic Course their first year, take MS III their second year and attend Advanced Camp before the start of their junior year. Attendance of a Nurse Summer Training Program (NSTP) following Advanced Camp is strongly recommended, but can only be accomplished if Advanced Camp follows the MS II or MS III year.
- e. *AOP II for Nurse Cadets.* Nurse Cadets in the AOP II program must meet all PME requirements to include successfully completing Advanced Camp in order to commission. Four year progression Nurse Cadets may take MS 101 and 102 during their freshman (MS I) year, take MS 301 and 302 during their sophomore (MS II) year, attend Advanced Camp, during the summer between their sophomore and junior year, take MS 201 and 202 during their junior (MS III) year, attend NSTP during the summer between their junior and senior year, and take MS 401 and 402 during their senior (MS IV) year.

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, Cyber, 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, Medical Service Corps, Veterinarian Corps, Dentistry Corps, Chaplain Corps, and the Judge Advocate Corps.

FINANCIAL AID

A subsistence fee of \$420.00 per month is paid to contracted 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.

COURSE DESCRIPTIONS IN MILITARY SCIENCE AND LEADERSHIP

MSL 101. Introduction to the Army

Credit 1

MSL 101 focuses on introduction to the Army and critical thinking. It introduces Cadets to the Army and the Profession of Arms. Students will examine the Army Profession and what it means to be a professional in the U.S. Army. The overall focus is on developing basic knowledge and comprehension of the Army Leadership Requirements Model while gaining a complete understanding of the Reserve Officers' Training Corps (ROTC) program, its purpose in the Army, and its advantages for the student. Cadets also learn how resiliency and fitness supports their development as an Army leader. Includes a weekly lab facilitated by MSL III Cadets and supervised by Cadre. (F)

MSL 102. Foundations of Agile and Adaptive Leadership

Credit 1

MSL 102 introduces Cadets to the personal challenges and competencies that are critical for effective leadership. Cadets learn how the personal development of life skills such as critical thinking, time management, goal setting, and communication. Cadets learn the basics of the communications process and the importance for leader's to develop the essential skills to effectively communicate in the Army. Cadets will begin learning the basics of squad level tactics that will be reinforced during a weekly lab facilitated by MSL III Cadets and supervised by Cadre. (S)

MSL 105/107. Leadership Laboratory*

Credit 1

Leadership Lab 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. Leadership Lab is a progressive leading experience designed to produce effective and efficient Second Lieutenants for the United States Army. MSL 105 (F) MSL 107 (S)

MSL 201. Leadership and Decision Making

Credit 2

MSL 201 focuses on leadership and decision making. The course adds depth to the Cadets understanding of the Adaptability Army Learning Area. The outcomes are demonstrated through Critical and Creative Thinking and the ability to apply Troop Leading Procedures (TLP) to apply Innovative Solutions to Problems. The Army Profession is also stressed through leadership forums and a leadership self-assessment. Students are then required to apply their knowledge outside the classroom in a hands-on performance-oriented environment during a weekly lab facilitated by MSL III Cadets and supervised by Cadre. (F)

MSL 202. Army Doctrine and Team Development

Credit 2

MSL 202 focuses on Army doctrine and team development. The course begins the journey to understand and demonstrate competencies as they relate to Army doctrine. Army Values, Teamwork, and Warrior Ethos and their relationship to the Law of Land Warfare and philosophy of military service are also stressed. The ability to lead and follow is also covered through Team Building exercises at squad level. Students are then required to apply their knowledge outside the classroom in a hands-on performance-oriented environment during a weekly lab facilitated by MSL III Cadets and supervised by cadre. (S)

MSL 205/207. Leadership Laboratory*

Credit 1

Leadership Lab 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. Leadership Lab is a progressive leading experience designed to produce effective and efficient Second Lieutenants for the United States Army. MSL 205 (F); MSL 207 (S)

MSL 206. Basic Camp - Cadet Initial Entry Training (CIET) (Internship)

Credit 4

The Leaders Training Course (LTC) 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 MSL III 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)

MSL 301. Training Management and the Warfighting Functions

Credit 3

MSL 301 focuses on training management and the warfighting functions. It is an academically challenging course where you will study, practice, and apply the fundamentals of Training Management and how the Army operates through the Warfighting functions. At the conclusion of this course, you will be capable of planning, preparing, and executing training for a squad conducting small unit tactics. Includes a lab per week using peer facilitation overseen by MSL IVs, supervised by ROTC Cadre. (F)

MSL 302. Applied Leadership in Small Unit Operations

Credit 3

MSL 302 focuses on applied leadership in small unit operations. It is an academically challenging course where you will study, practice, and apply the fundamentals of direct level leadership and small unit tactics at the platoon level. At the conclusion of this course, you will be capable of planning, coordinating, navigating, motivating and leading a platoon in the execution of a mission. Includes a lab per week using peer facilitation overseen by MSL IVs, supervised by ROTC Cadre. Successful completion of this course will help prepare you for the Cadet Summer Training Advance Camp, which you will attend in the summer at Fort Knox, KY. (S)

MSL 305/307. Leadership Laboratory*

Credit 1

Leadership Lab 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. MSL 305 (F); MSL 307 (S)

MSL 306. Advanced Camp - Cadet Summer Training (CST) (Internship)

Credit 4

Normally taken the summer following the MSL III 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)

MSL 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.

MSL 401. The Army Officer

Credit 3

MSL 401 Focuses on development of the Army Officer. It is an academically challenging course where you will develop knowledge, skills, and abilities to plan, resource, and assess training at the small unit level. You will also learn about Army programs that support counseling subordinates and evaluating performance, values and ethics, career planning, and legal responsibilities. At the conclusion of this course, you will be familiar with how to plan, prepare, execute, and continuously assess the conduct of training at the company or field grade officer level. Includes a lab per week overseeing MSL III lesson facilitation and supervised by ROTC Cadre. (F)

MSL 402. Company Grade Leadership

Credit 3

MSL 402 is an academically challenging course where you will develop knowledge, skills, and abilities required of junior officers

pertaining to the Army in Unified Land Operations and Company Grade Officer roles and responsibilities. This course includes reading assignments, homework assignments, small group assignments, briefings, case studies, practical exercises, a mid-term exam, and an Oral Practicum as the final exam. The Oral Practicum explores your knowledge of how you will be prepared for the 20 Army Warfighting Challenges (AWFC) covered throughout the ROTC Advanced Course. Successful completion of this course will assist in preparing you for your BOLC B course and is a mandatory requirement for commissioning. Includes a lab per week overseeing MSL III lesson facilitation and supervised by ROTC Cadre. (S)

MSL 405/407. Leadership Laboratory* **Credit 1**

Leadership Lab 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. MSL 405 (F); MSL 407 (S)

MSL 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)

MSL 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.

MSL 495. MS V + (Internship) **Credit 3**

This course is primarily an independent study course which focuses on leader and self-development in preparation for assuming duties as a second lieutenant. This course will also leverage the knowledge and experience gained as a cadet to help develop the ROTC program for future Cadets and alumni. Cadet must demonstrate the ability to effectively communicate with both written and oral communication, maintain a high level of personal physical fitness and score at or above established standards on the APFT, demonstrate leadership abilities and teamwork during the Fall FTX and stay well informed concerning major world and national news/current events, especially in areas where vital, strategic U.S. national security interests are involved. MSV Cadets are expected to participate in labs, physical training and the Field Training Exercises. (F)

* Denotes subject that must be taken every semester.

+ Optional training on a selected basis.

(F) Fall

(S) Spring

DIRECTORY OF FACULTY

Alexander Lee, CPT, LG	Assistant Professor
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Nicholas K. Murphy, 1LT, EN	Assistant Professor
B.S., College of Saint Scholastica	
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B.S., North Carolina Agricultural & Technical State University	
Amber D. Williams, CPT, LG	Assistant Professor
B.S., South Carolina State University	
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B.S., St. Pauls College; M.S., Florida Institute of Technology	
Luke A. Yox, CPT, IN	Assistant Professor
B.S., McDaniel College	

WASTE MANAGEMENT INSTITUTE

<https://www.ncat.edu/provost/academic-affairs/wmi/index.php>

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 Undergraduate and Graduate Certificate Programs. WMI works with academic departments to tailor environmental related courses to follow an interdisciplinary waste management certificate curriculum. 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. Students must be cleared to graduate in order to receive WMI certificates.

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. The course incorporates **systems** and design thinking, current literature, research, and the consulting activities in environmental industry. 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-endeavors. The seminar incorporates **systems** and design thinking, 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. The course incorporates **systems** and design thinking, current literature, research, and the consulting activities in environmental industry. 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. The course incorporates **systems** and design thinking, current literature, research, and the consulting activities in environmental industry. 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. The course incorporates **systems** and design thinking, current literature, research, and the consulting activities in environmental industry. 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. The course incorporates **systems** and design thinking, current literature, research, and the consulting activities in environmental industry. Senior standing and consent of instructor.

Note that courses do not include prerequisites and must be approved by Academic Advisors and the Director of the Interdisciplinary Waste Management Institute.

(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. Students must be cleared to graduate in order to receive advanced WMI certificates.

Web address: <https://www.ncat.edu/provost/academic-affairs/wmi/index.php> 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.

THE GRADUATE COLLEGE

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

Clay Gloster, Jr, Vice Provost and Dean
Matthew McCullough, Associate Dean
A. Ayanna Boyd-Williams, 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 other programs of a professional or occupational nature which 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, Willie Deese 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

- Applied Science and Technology (PhD)
 - Applied Physics
 - Applied Chemistry
 - Atmospheric, Environmental and Energy Science
 - Bioscience
 - Data Science and Analytics
 - Information Technology
 - STEM Education
 - Technology Management
- Computational Data Science and Engineering (PhD)
- Computer Science (PhD)
- Electrical Engineering (PhD)
- Industrial and Systems Engineering (PhD)
- Leadership Studies* (PhD)
- Mechanical Engineering (PhD)
- Nanoengineering (PhD)
- Rehabilitation Counseling and Rehabilitation Counselor Education (PhD)
- Social Work - Joint with UNCG (PhD)

Masters Degrees

- Accountancy (MACC)
- Adult Education (M.S.)
- Agricultural and Environmental Systems (M.S.) with concentrations in:
 - Agribusiness & Food Industry Management
 - Integrated Animal Health Systems
 - Natural Resources and Environmental Systems
- Agricultural Education* (M.S.) with concentrations in:
 - Professional Licensure
 - Professional Service
- Applied Mathematics (M.S.)

- Bioengineering (M.S.)
- Biology (M.S.) concentration in:
 - Professional Science Masters (P.S.M) in Industrial Biosciences
- Business Administration (MBA) with concentrations in:
 - Accounting
 - General*
 - Human Resource Management*
 - Supply Chain Systems*
- Chemical Engineering (M.S.)
- Chemistry (M.S.) with a concentration in:
 - Professional Science Masters (P.S.M) in Applied Chemistry and Chemical Science
- Civil Engineering (M.S.) with a concentration in:
 - Systems Engineering
- Computer Science (M.S.)
- Data Science and Engineering (M.S.) with a concentration in:
 - Systems Engineering
- Electrical Engineering (M.S.)
- Elementary Education (MAEd)
- English and African American Literature (M.A.)
- Food and Nutritional Science (M.S.)
- Industrial and Systems Engineering (M.S.) with a concentration in:
 - Systems Engineering
- Information Technology* (M.S.)
- MAT Master of Arts in Teaching with concentrations in:
 - Biology Education*
 - Business Education*
 - Chemistry Education*
 - Child Development: Early Education & Family Studies (Birth-Kindergarten)
 - Elementary Education*
 - English Education*
 - Family and Consumer Sciences Education*
 - Health and Physical Education
 - History Education
 - Math Education
 - Special Education
 - Technology Education*
- Mechanical Engineering (M.S.) with a concentration in:
 - Systems Engineering
- Mental Health Counseling (M.S.) with concentrations in:
 - Clinical
 - Rehabilitation
- Nanoengineering (M.S.)
- Physics (M.S.)
- Reading Education (MAEd)
- School Administration (MSA)
- School Counseling (M.S.)
- Social Work (MSW) - Joint with UNCG
- Technology Management* (MS) concentration in:
- Professional Science Masters (P.S.M) in Construction Science and Management

Post Baccalaureate Certificate Programs

- Advanced Certificate in Family and Consumer Sciences* (CERT)
- Advanced Waste Management (CERT) – add-on
- Cybersecurity* (CERT)
- Data Analytics* (CERT)
- Data-Driven Modeling and Analysis of Complex Systems (CERT)
- Human Lactation (CERT)
- Interdisciplinary Environmental Certificate Program* (CERT) with concentrations in:
 - Environmental Engineering

- Environmental Sciences
- Environmental Justice
- Environmental Health and Safety
- International Agricultural Development and Engagement (CERT)
- Marriage and Family Counseling (CERT) – add-on
- Rehabilitation Counseling and Behavioral Addiction (CERT) – add-on
- Rehabilitation Psychology and Behavioral Medicine (CERT) – add-on
- Vocational Evaluation and Work Adjustment (CERT) – add-on

Post Masters Certificate Programs

- School Administration (CERT)

Non-degree Seeking Graduate Studies

- Post-Baccalaureate Studies (Non-degree)

*Available both on-campus and online

For more information on admission requirements, financial assistance, and program curricula, refer to the [Graduate College catalog](#) available online.

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