2010 – 2012 UNDERGRADUATE BULLETIN OF

NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

August 2010

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

This Bulletin is also available on the world wide web at
www.ncat.edu/bulletin/

Undergraduate Bulletin

of

NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

GREENSBORO, NORTH CAROLINA

UNDERGRADUATE PROGRAMS
2010 – 2012

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Fall 2010 Calendar

August 11	Wednesday	Faculty Institute – Faculty Report
August 12	Thursday	Graduate Research and Teaching Assistant Training Residence halls open for new students (open 9am-3pm) for those who attended June 2010 new student orientation
August 13	Friday	Graduate Student Orientation Residence halls open for all other new students (open 9am-3pm)
August 14	Saturday	Continuing students report to Residence Halls (open 9am-3pm)
August 14-15	Saturday-Sunday	Welcome Program for New Students and Transfer Students
August 16	Monday	Classes begin Late Registration begins ($50 late fee)
August 20	Friday	Last day to register for courses Last day to drop and receive financial credit Last day to receive book allowance
August 27	Friday	Last day to add courses Last Day to Switch Course Sections
September 3	Friday	Last day to apply for graduation (undergraduate and graduate)
September 6	Monday	University Holiday – Labor Day
September 20	Monday	Deadline to remove Incomplete(s) received Spring/Summer 2010
September 27	Monday	Deadline to Apply for Certificate Programs
October 7	Thursday*	Fall Convocation (classes suspended 10am – 12pm)
October 9	Saturday *	Homecoming
October 11-15	Monday-Friday	Final Comprehensive Exam Week (Graduate Students)
October 18-19	Monday-Tuesday*	FALL BREAK
October 21	Thursday	Undergraduate Mid-term grades due
October 21	Thursday	Last day to defend thesis/dissertation
October 22	Friday	Defended and approved thesis/dissertation due in Graduate School Office
October 29	Friday	Last day to withdraw from a course without a grade evaluation
November 2	Monday	Advisement & registration for spring/summer 2011
November 5	Friday	Last day to withdraw from the university without grade evaluation
November 22	Monday	Approved printed thesis/dissertation copies for binding due in Graduate School Office
November 24-26	Wednesday-Friday	Thanksgiving Holiday
December 3	Friday	Classes end
December 4	Saturday	Reading day
December 6-10	Monday-Friday	Final Exam Week
December 10	Friday	Waste Management Institute Certificate Ceremony
December 11	Saturday	Commencement
		Residence Halls close for non-graduating students at 12 noon Residence Halls close for graduating seniors by 5 pm

*These dates are tied to Homecoming, which has not yet been determined.

NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY
2010 – 2012 UNIVERSITY ACADEMIC CALENDAR

Spring 2011 Calendar

January 3	Monday	Faculty Institute – Faculty Report
January 3	Monday	Residence halls open for new students (open 9am-3pm)
January 4	Tuesday	Residence halls open for continuing students (open 9am-3pm)
January 3-4	Monday-Tuesday	Welcome Program for New Students and Transfer Students
January 6	Thursday	Classes begin
		Late Registration begins ($50 late fee)
January 12	Wednesday	Last day to register for courses (includes tuition waivers)
		Last day to drop and receive financial credit
		Last day to receive book allowance
January 20	Thursday	Last day to add courses
		Last day to switch course sections
January 17	Monday	University Holiday – Martin Luther King, Jr.
January 26	Wednesday	Last day to apply for graduation (undergraduate and graduate)
January 28	Friday	Ronald E. McNair Memorial Day
February 9	Wednesday	Deadline to remove incomplete(s) received fall 2010
February 21	Monday	Deadline to apply for certificate programs
Feb. 28-Mar. 4	Monday-Friday	Final Comprehensive Exam Week (Graduate Students)
March 7-11	Monday-Friday	Spring Break
March 15	Tuesday	Undergraduate Mid-Term Grades due
March 17	Thursday	Honor's Convocation (Classes suspended from 3–5pm)
March 18	Friday	Last day to defend thesis/dissertation
March 21	Monday	Defended and approved thesis/dissertation due in Graduate School office
March 25	Friday	Last day to withdraw from a course without a grade evaluation
April 4	Monday	Advisement & registration for fall 2011
April 1	Friday	Last day to withdraw from the university without grade evaluation
April 22	Friday	University Holiday – Good Friday
April 25	Monday	Approved printed thesis/dissertation copies for binding due in Graduate School Office
April 29	Friday	Classes end
April 30	Saturday	Reading day
May 2-6	Monday-Friday	Final Exam Week
May 6	Friday	Waste Management Institute Certificate Ceremony
May 7	Saturday	Commencement
		Residence Halls close for non-graduating students at 12 noon
		Residence Halls close for graduating seniors by 5pm

NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY
2010 – 2012 UNIVERSITY ACADEMIC CALENDAR

FALL SEMESTER 2011

COMING SOON!

NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY
2010 – 2012 UNIVERSITY ACADEMIC CALENDAR

SPRING SEMESTER 2012

COMING SOON!

GENERAL INFORMATION

North Carolina Agricultural and Technical State University

http://www.ncat.edu

HISTORICAL STATEMENT

North Carolina Agricultural and Technical State University is a learner-centered community that develops and preserves intellectual capital through interdisciplinary research, discovery, engagement and operational excellence. The university's rich history dates back over 118 years. N.C. A&T was established as the A. and M. College for the "Colored Race" by an act of the General Assembly of North Carolina ratified March 9, 1891. It was in the fall of 1890, when the North Carolina General Assembly enacted a second Morrill Act that mandated a separate college for the colored race. (The College operated in Raleigh as an annex to Shaw University during the years 1890-1891, 1891-1892, and 1892-1893). A group of Greensboro citizens banned together to make a permanent home for the institution. Members such as Dr. DeWitt, a black dentist, C. Benbow and Charles H. Moore donated 14 acres of land for the site and an additional $11,000 in cash that aided in construction of the buildings. This amount was supplemented by an appropriation of $2,500 from the General Assembly. The plan was approved on March 9, 1891, and the first building was completed in 1893: the Agricultural and Mechanical College for the Colored Race (now North Carolina A&T State University) had found its new home.

In 1915 state legislators changed the college's name to The Agricultural and Technical College of North Carolina, and in 1967 elevated its status to university. N.C. A&T became a constituent university of The University of North Carolina in 1972.

Since its inception, A&T has maintained a tradition of excellence in education. Under the leadership of Dr. Harold L. Martin Sr., the university's current Chancellor, A&T continues to thrive as it sustains its rich legacy.

N.C. A&T is a public, land-grant, institution located in Greensboro, N.C., on 200 beautiful acres. It is classified by the Carnegie Foundation for the Advancement of Teaching as a doctoral-granting research university (high research activity). There is also a 600-acre university farm. Its enrollment is more than 10,000 students and its workforce includes 2,170 employees.

The university offers 117 undergraduate degree programs, more than 58 master's degree programs, and Ph.D. programs in mechanical, electrical and industrial engineering; energy and environmental systems; and leadership studies. The academic programs are offered through the School of Agriculture and Environmental Sciences, College of Arts and Sciences, School of Business and Economics, School of Education, School of Technology, College of Engineering, School of Nursing, Joint School of Nanoscience and Nanoengineering; and School of Graduate Studies.

A&T's outstanding student body is the primary strength of the university. Students are carefully selected from thousands of applicants annually. Once enrolled, they are taught and mentored by excellent faculty, the majority of whom have earned doctoral and other degrees from some of the nation's most prestigious graduate and professional schools.

A&T graduates the largest number of African-American engineers at the undergraduate, masters, and doctoral levels and psychology undergraduates in the nation. Through its nationally accredited AACSB School of Business and Economics, the institution is among the largest producers of African American certified public accountants. True to its heritage, North Carolina A&T is home to the largest agricultural school among HBCUs and the second largest producer of minority agricultural graduates. The institution was recently awarded a prestigious National Science Foundation's Engineering Research Center (ERC) grant for biomedical engineering and nano-bio applications research.

The University has advanced to the forefront in the area of research. For the fiscal year 2008-09, A&T has generated over $57.7 million in sponsored programs and more than $6 million in appropriations for agricultural research and cooperative extension. It also generates contracts with major international companies, foundations, and federal agencies to secure funding to enhance academic programs and to provide student scholarships.

A&T is proud of its 40,000 alumni of record who occupy leadership positions across the country and around the world. These alumni spread the Aggie tradition throughout the nation, continuing to strive for excellence and to make their mark in society. Among its well known successful alumni are the Rev. Jesse Jackson Sr., civil rights activist; U.S. Congressman Edolphus Towns (D-NY); retired Maj. Gen. Charles D. Bussey; retired Brig. Gen. Clara Adams–Ender; Ralph Shelton, founder of Southeast Fuels; Dr. Joe Dudley, Sr., founder of Dudley Products, Inc.; Alvin Attles, vice president of Golden State Warriors; former District Court Judge Lawrence McSwain; U.S. Congressman Jesse Jackson Jr. (D-ILL); former North Carolina Supreme Court Chief Justice Henry E. Frye; The Greensboro/A&T Four, Jibreel Khazan, Joseph McNeil, Franklin McCain and the late David Richmond; North Carolina legislator Alma Adams; Elvin Bethea, 2003 Pro Football Hall of Famer; Janice Bryant-Howroyd, founder and CEO of ACT 1 Group; Willie Deese, president, Merck Manufacturing Division; Donna Scott James, managing director, Lardon Associates LLC; Dmitri Stockton, president and CEO of GE Consumer Finance for Central and Eastern Europe; and the late astronaut Dr. Ronald E. McNair.

Twelve presidents/chancellors have served the university since its founding: Dr. John O. Crosby (1892-1896), Dr. James B. Dudley (1896-1925), Dr. Ferdinand D. Bluford (1925-1955), Dr. Warmoth T. Gibbs (1956-1960), Dr. Samuel DeWitt Proctor (1960-1964), Dr. Lewis C. Dowdy (1964-1980), Dr. Cleon Thompson Jr. (1980-1981, interim), Dr.

Edward B. Fort (1981-1999), Dr. James C. Renick (1999- 2006), Dr. Lloyd V. Hackley (2006-2007, interim), Dr. Stanley Battle (2007- 2009) and Dr. Harold L. Martin Sr. (2009 – Present).

VISION STATEMENT OF THE UNIVERSITY

North Carolina Agricultural and Technical State University is a learner-centered community that develops and preserves intellectual capital through interdisciplinary learning, discovery, engagement, and operational excellence.

MISSION OF THE UNIVERSITY

North Carolina Agricultural and Technical State University is a public, high research activity, 1890 land-grant university committed to exemplary teaching and learning, scholarly and creative research, and effective engagement and public service. The University offers degrees at the baccalaureate, master's and doctoral levels and has a commitment to excellence in a comprehensive range of academic disciplines. Our unique legacy and educational philosophy provide students with a broad range of experiences that foster transformation and leadership for a dynamic and global society.

POLICY GOVERNING PROGRAMS AND COURSE OFFERINGS

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

NONDISCRIMINATION POLICY AND INTEGRATION STATEMENT

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

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

THE UNIVERSITY OF NORTH CAROLINA

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

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

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

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

In 1971, the General Assembly passed legislation bringing into the University of North Carolina the state's ten remaining public senior institutions, each of which had until then been legally separate: Appalachian State University, East Carolina University, Elizabeth City State University, Fayetteville State University, North Carolina Agricultural and Technical State University, North Carolina Central University, the North Carolina School of the Arts, Pembroke State University, 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 1996, Pembroke State University was renamed The University of North Carolina at Pembroke through 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 16 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 NC School of the Arts has two additional ex-officio members.) 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
Hannah D. Gage, Chair

Brent D. Barringer
John M. Blackburn
Peaches Gunter Blank
R. Steve Bowden
Laura W. Buffaloe
Frank Daniels, Jr.
William Daughtridge, Jr.
Walter C. Davenport
John W. Davis, III
James M. Deal, Jr.
Phillip R. Dixon
Dudley E. Flood
Paul Fulton
Ann B. Goodnight
Clarice C. Goodyear
Peter D. Hans
Charles A. Hayes
James E. Holshouser, Jr.
Adelaide Daniels Key
G. Leroy Lail
Ronald C. Leatherwood
Cheryl R. Locklear
Franklin E. McCain
Charles H. Mercer, Jr.
Fred G. Mills
Burley B. Mitchell, Jr.
Marshall B. Pitts, Jr.
Irvin A. Roseman
Estelle 'Bunny' Sanders
Priscilla P. Taylor
J. Bradley Wilson
David W. Young

T. Greg Doucette, *Ex Officio Member*

THE UNIVERSITY OF NORTH CAROLINA
OFFICERS OF ADMINISTRATION

(Sixteen Constituent Institutions)

ERSKINE B. BOWLES
President
JEFFREY R. DAVIES
Chief of Staff
ALAN R. MABE
Senior Vice President for Academic Affairs
BART CORGNATI
Secretary of the University
STEVEN LEATH
Vice President for Research
JOHN LEYDON
Vice President for Information Resources and Chief Information Officer
ERNIE MURPHREY
Vice President for Finance
LAURA B. LUGER
Vice President and General Counsel
LAURIE CHAREST
(Interim) Vice President for Human Resources

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

Stanley Allen
Spener Broadhurst
Pamela McCorkle Buncum
Karen J. Collins
Charles C. Cornelio
Willie Deese
Emerson Fullwood
Janice Bryant Howroyd
Albert S. Lineberry, Jr.
Bertram Walls
Faye Williams
Patricia Miller Zollar

Ex Officio Member

President, Student Government Association

OFFICERS OF ADMINISTRATION

Cabinet

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

LINDA ADAMS
B.S., M.S., M.P.H., Dr.Ph.
Provost and Vice Chancellor for Academic Affairs

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

MARK KIEL
B.S., M.B.A, Ph.D.
V*ice Chancellor for University Advancement*

BARBARA ELLIS
B.S., M.B.A.
Vice Chancellor for Information Technology/CIO (Interim)

CELESTINE NTUEN
B.S., M.S., Ph.D.
Interim Vice Chancellor for Research & Economic Development

MELODY C. PIERCE
B.S., M.S., Ed.S., Ph.D.
Vice Chancellor for Student Affairs

LINDA R. McABEE
B.A.
Vice Chancellor for Human Resources

DEBORAH J. CALLAWAY
B.S., M.Ed., Ed.D.
Special Assistant to the Chancellor

CHARLES WALDRUP
B.S., J.D., M.A., Ph.D.
General Counsel (Interim)

WHEELER BROWN
B.S.
Interim Director of Athletics

Academic Affairs

LINDA ADAMS
B.S., M.S., M.P.H., Dr.Ph.
Provost and Vice Chancellor for Academic Affairs

LORI HUNTER
B.S.E.E., Ed.M., Ph.D.
Interim Associate Vice Chancellor for Academic Affairs / Enrollment Management

WANDA LESTER
B.S., Ph.D.
(Interim) Associate Vice Chancellor for Academic Affairs

LEA E. WILLIAMS
B.A., M.S., M.A., Ed.D.
Associate Vice Chancellor for Institutional Research, Assessment and Planning

ERIC CHEEK
B.S., B.S., M.E., Ph.D.
Assistant Vice Chancellor and Director for Summer Sessions and Outreach DONALD MCDOWELL
B.S., M.S., Ph.D.
Interim Dean, School of Agriculture and Environmental Sciences

DAVID ALDRIDGE
B.S., M.A., Ph.D.
Interim Dean, College of Arts and Sciences

QUIESTER CRAIG
B.A., M.B.A., Ph.D.
Dean, School of Business and Economics

DOROTHY LEFLORE
B.S., M.S., Ph.D.
Interim Dean, School of Education

WINSER ALEXANDER
B.S., M.S., Ph.D.
Interim Dean, College of Engineering

PATRICIA CHAMINGS
RN, B.S.N, M.N., Ph.D.
Interim Dean, School of Nursing

BENJAMIN UWAKWEH
B.S., M.S., Ph.D.
Dean, School of Technology

DORIS MITCHELL
B.S., M.S.L.S.
Interim Dean, Library Services

TRACEY D. FORD
B.S., M.S., Ed.D.
Director, Center for Academic Excellence

GODFREY UZOCHUKWU
B.S., M.S., Ph.D.
Director, Waste Management Institute

SCOTT SIMKINS
B.A., Ph.D.
Director, Academy for Teaching and Learning

RAY DAVIS
B.S., M.A., Ph.D.
Interim Director, Honors Program

MINNIE BATTLE MAYES
B.A., M.A.
Director, Office of International Programs

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

LESTER LUGO
A.S., B.H.S.A., M.S.
University Registrar

SHARON NEAL
B.A., M.A.
Director, EPA Administration

ROBERT PAYNE, JR.
B.S., M.S.
Professor, Aerospace Studies

ERIC HANDY
B.S., M.M.S.
Professor, Military Science

Student Affairs

MELODY C. PIERCE
B.S., M.S., Ed.S., Ph.D.
Vice Chancellor for Student Affairs

EARL HILTON
B.S., M.P.A., J.D.
Executive Director, Budget and Planning

JOYCE EDWARDS
B.S., M.S.
Executive Director, Career Services and Experiential Learning

RYAN MALTESE
B.A., J.D.
Executive Director, University Events Center

LINDA WILSON
B.S., M.S., R.N.
Executive Director, Student Health Services

BEVERLY WALLACE
B.S., M.S.
Director, Upward Bound Math and Science

LEONARD JONES
B.S., M.S.
Executive Director, Housing and Residence Life

CARL BAKER
A.S., B.S., M.S.
Executive Director for Memorial Student Union

JOYCE E. BROWN
B.S., M.S., Ph.D.
Executive Director, TRIO Programs, Director, Ronald E. McNair Program

LORETHA GRAVES
B.S., M.S.
Director, International Students and Scholars

KIM SOWELL
B.S.
Interim Vice Chancellor, Student Affairs-Enrollment Management & Auxiliary Services

E. PEGGY OLIPHANT
B.S., M.S.
Director, Veteran and Disability Support Services

JUDY RASHID
B.S., M.S., Ed.D.
Dean of Students

DENISE IVERSON-PAYNE
B.S., M.Ed.
Assistant Vice Chancellor for Student Development

VIVIAN BARNETTE
B.S., M.S., Ph.D., HSP-P
Executive Director, Counseling Services

DONNA BLUE
B.S., M.S.
Director, Student Conduct

MARIA PALMER
B.S., M.Ed., Ed.D
Director, Multicultural Student Center

Business and Finance

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

AKUA J. MATHERSON
B.S.
Assistant Vice Chancellor for Budget and Planning

P. SCOTT HUMMEL
A.B., M.A.T., M.B.A, C.P.A.
Assistant Vice Chancellor for Business and Finance/ Comptroller

HELEN R. BUCK
B.S., M.S., C.P.A.
Director, Accounting

ERIC WILLIAMS
B.A.
Director, Contracts and Grants

TED A. LITTLE,
B.S.
Director, Purchasing

ANGELA PETERSON
B.A
Director, Auxiliary Services

ANGELA DUBOSE
B.S.
Treasurer

GLENN NEWELL
B.S., M.A.
Chief of Police and Public Safety

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

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

University Advancement

MARK KIEL
B.S., M.B.A., Ph.D., CPA
Vice Chancellor for Development and University Relations

TIMOTHY MINOR
B.A.
Associate Vice Chancellor for Development

MABLE SCOTT
B.S., M.S.
Special Assistant to the Vice Chancellor for Crisis Communications

PATRICIA MITCHELL
B.A.
Senior Director of Development Advancement Services, Annual Giving, Prospect Research, Stewardship

LEONORA BRYANT
B.A., M.S.
Director, Alumni Affairs

DIANNA VASS
B.S., M.S., PhD.
Development Officer, College of Engineering

MARTINA CHAVIS

ANN BEAMON
B.A., M.B.A.
Development Officer, College of Arts & Sciences

STEPHONE WHITE
B.S.
Development Officer, School of Technology

NETTIE ROWLAND
B.A., M.S.
Director, Media Relations

SANDRA BROWN
B.A., M.A.
Director, Publications

PHILLIP McALPIN
B.A.
Development Officer, Athletics

DIANE BROWN
B.A., M.B.A.
Development Officer, College of Engineering

B.A.
Development Officer, Corporate and Foundation Relations

Information Technology [DoIT]

BARBARA ELLIS
B.S., M.B.A.
Vice Chancellor for Information Technology/CIO (Interim)

Research and Economic Development

CELESTINE A. NTUEN
B.S., M.S., Ph.D.
Interim Vice Chancellor for Research &Economic Development

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

LOCATION

North Carolina Agricultural and Technical State University is located in the city of Greensboro, North Carolina. This city is 300 miles south of Washington, D.C. and 349 miles north of Atlanta. It is readily accessible by air, bus and automobile.

The city offers a variety of cultural activities and recreational facilities. These include athletic events, concerts, bowling, boating, fishing, tennis, golf and other popular forms of recreation.

The University is located near major shopping centers, churches, theaters and medical facilities. The heavy concentration provides, manufacturing plants, service industries, governmental agencies and shopping centers provides an opportunity for many students who desire part-time employment while attending the University.

FACILITIES

The main campus of the University is located on land holdings in excess of 220 acres. The University farm, located east of the Greensboro City limits, includes approximately 600 acres of land and modern farm buildings. The current replacement value of the University facilities and infrastructure is roughly $1 billion.

University Buildings

Bluford Library
Coltrane Hall (NC Agricultural Extension Service)
Dudley Building – Reed & Taylor Art Galleries
Garrett House
Memorial Student Union
Moore (Charles) Gymnasium
Richard B. Harrison Auditorium
The Oaks (Faculty Club)

Classroom and Laboratory Buildings

Band Center
BC Webb Hall – Animal Science
Benbow Hall – Family & Consumer Sciences
Campbell Hall – ROTC Headquarters
Carver Hall – School of Agriculture
Cherry Hall – College of Engineering
Corbett Annex (New Fitness Center)
Corbett Sports Center
Craig Hall
Crosby Hall – College of Arts and Sciences
Frazier Hall – Music and Fine Arts
General Classroom Building A
Gibbs Hall – Social Sciences & School of Graduate Studies

Residence Halls

Barbee Hall
Blair (Ezell) Hall
Cooper Hall
Curtis Hall
Holland Hall
McCain (Franklin) Hall
McNeil (Joseph) Hall
Morrison Hall
Morrow Hall
Richmond (David) Hall
Vanstory Hall
Aggie Suites E&F (Foundation/University asset)
Aggie Terrace (Foundation/University asset)
Pride Hall (Foundation/University asset)

Service Buildings

1020 Wendover Avenue
Brown Hall – University Bookstore, Ticket Office, and Mail Center
Clyde DeHuguley – Facilities
Dowdy Building
Facilities Annex (1640 Sullivan Street)
Murphy Hall – Student Services
Music Annex

Graham Hall – College of Engineering
Hines Hall – University Studies
Marteena Hall – Physics, Mathematics and Physical Science
McNair (Ronald) Hall – College of Engineering
Merrick Hall – School of Business & Economics
New Education Facility
New Science Building – College of Arts & Sci.
Noble Hall – School of Nursing
Paul Robeson Theatre
Price Hall – School of Technology
Price Hall Annex
Procto Hall – School of Education
Reid Greenhouses – Plant Science
Smith Hall – School of Technology
Sockwell Hall – Biological Engineering

Research Facilities

Edward B. Fort Interdisciplinary Research Center (IRC)
Gateway University Research Park
Sebastian Health Center
T.E. Neal Heating Plant
Ward Hall – Police and Parking Services
Williams Cafeteria

Other Facilities

Aggie Shelter
Aggie Stadium
Alumni-Foundation Event Center
Athletic Field – including nine practice fields for football, 400 meter track, softball field
Barnes Hall – Biology
Bryan Fitness & Wellness Center
Charles H. Moore – Agricultural Research Center
Environmental Studies Lab-Farm
GEAR-UP House
Motorsports Center – Aggie Racing
Strickland Fieldhouse – Athletic Offices
Swine Research Center Farm
Yanceyville Street Center

COLLEGES, SCHOOLS AND DIVISIONS OF NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

North Carolina Agricultural and Technical State University includes the following colleges, schools and divisions: The School of Agriculture and Environmental Sciences, The College of Arts and Sciences, The School of Business and Economics, The School of Education, The School of Technology, The College of Engineering, The School of Nursing, The Graduate School, and the Division of Continuing Education and Summer School.

ACCREDITATION AND INSTITUTIONAL MEMBERSHIPS

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

A listing of programs and their accrediting agencies follows:

American Chemical Society Certification Program – American Chemical Society
Business and Accounting programs – AACSB International – Association to Advance Collegiate Schools of Business
Child Development, Early Education and Family Studies – National Council for Accreditation of Teacher Education
Computer Science – Computing Accreditation Commission, Accreditation Board for Engineering and Technology
Construction Management – American Council for Construction Education, and National Association of Industrial Technology
Didactic Program in Dietetics – Commission on Accreditation for Dietetics Education, American Dietetic Association
Engineering: Architectural, Biological, Chemical, Civil, Electrical, Industrial and Systems, and Mechanical Engineering programs – Engineering Accreditation Commission, Accreditation Board for Engineering and Technology
Family and Consumer Sciences – American Association of Family and Consumer Sciences
Human Development and Services – Council on Accreditation for Counseling and Related Educational Programs, and Council on Rehabilitation Education
Industrial Technology – National Association of Industrial Technology
Journalism and Mass Communication – Accrediting Council on Education in Journalism and Mass Communication
Landscape Architecture – American Society of Landscape Architects
Media Program – Association of Educational Communications and Technology
Music – National Association of Schools of Music
School of Nursing – National League for Nursing Accrediting Commission
Social Work – Council on Social Work Education
Teacher education programs – National Council for Accreditation of Teacher Education, and North Carolina State Department of Public Instruction
Theater Arts Program in Acting – 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
Accrediting Council on Education in Journalism and Mass Communication
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 Dietetics Association
American Library Association
American Personnel and Guidance Association
American Public Welfare Association
American Society for Engineering Education
American Society of Landscape Architects
American Society of Mechanical Engineers
Association of Educational Communications and Technology
Associated Schools of Construction
Association to Advance Collegiate Schools of Business International
Association of American Colleges
Association of College Unions International
Association of Collegiate Deans and Registrars
Association of Collegiate Schools of Architecture
College Language Association
Conference of Southern Graduate Schools
Council on Accreditation for Counseling and Related Educational Programs
Council of Graduate Schools
Council of Historically Black Graduate Schools
Council on International Education Exchange
Council on Rehabilitation Education
Council on Social Work Education
National Association of Business Teacher Education
National Association of College and University Business Officers
National Association of College and University Food Service
National Association of Industrial Technology, International Association of Technology Education
National Association of Schools of Music
National Association of Schools of Theatre
National Association of State Universities and Land Grant Colleges
National Association of Student Personnel Administrators
National Commission on Accrediting
National Consortium for Graduate Degrees for Minorities in Engineering and Science
National Council for Accreditation of Teacher Education
National Institutional Teacher Placement Association
National League for Nursing
North Carolina Association of Colleges and Universities
North Carolina League of Nursing
North Carolina Library Association
North Carolina State Department of Public Instruction
Southeastern Library Association
Southern Association of Schools and Colleges, Commission on Colleges
Southern Regional Education Board Council on Collegiate Education for Nursing
Southern Universities Research Association
University of North Carolina Exchange Program
University of North Carolina Graduate Council

THE OFFICE OF INTERNATIONAL PROGRAMS (OIP)

The Office of International Programs (OIP) is charged with institutionalizing the university wide globalization initiative. To fulfill this mission the OIP provides resources for students, faculty and staff to increase their level of international awareness and understanding through study abroad, student and faculty exchange, and global perspectives enrichment programs (i.e., workshops, lectures, cultural events, etc.).

Study Abroad, Exchange Programs, and International Internships: The Office of International Programs administers North Carolina A&T's study abroad, exchange programs and international internships, which provide students the possibility of spending a summer, semester or year at an overseas university. Short-term experience abroad programs are administered by various academic departments and information about these can be obtained at the OIP. Any student in good academic standing may apply to study abroad.

Global Studies Certificate Program (GSCP): The Office of International Programs administers this undergraduate interdisciplinary program designed to provide all students the opportunity to better prepare to live and work in a global society. The Global Studies Certificate can be earned while fulfilling the academic requirements for an A&T degree in any discipline. In addition to completing general University and major degree requirements, students must complete a minimum of 16 semester hours outlined as follows: GSCP 200 Introduction to Global Studies, three (3) credit hours; GSCP elective courses, six (6) credit hours (foreign language courses must be intermediate or advanced to qualify for credit); Experience Abroad (study or internship), six (6) credit hours; and the GSCP 500 Capstone Seminar course, one or three (1 or 3) credit hours.

For additional information about these programs, please contact Mrs. Minnie Battle Mayes, Director, Office of International Programs, Room A-16, CH Moore Building, Greensboro, NC 27411, (336) 334-7104.

THE HONORS PROGRAM

The 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 stimulates them to reach their full potential and become future leaders. Every aspect of the program provides special opportunities for qualified students to grow intellectually through contact with a community of Honors students and supportive faculty scholars. No matter what a student's future plans, those who participate in the Honors Program will find that it gives them a competitive edge, preparing them for success in the nation's best graduate schools and in their future careers. Through Honors, students can get the best education the University has to offer.

Admission to and Retention in the Honors Program

Entering freshmen are invited to join the Honors Program if they have earned a cumulative weighted high school GPA of 3.7 and SAT scores (verbal and math only) totaling 1,050 or above. All public high school Valedictorians and Salutatorians as well as graduates of the North Carolina School of Science and Math are automatically eligible to join if they score at least 1,000 on the SAT and have a cumulative high school GPA of 3.0. Students with 1,200 or above on the SAT are automatically eligible for the Program as long as they compile a cumulative high school GPA of 3.0. Incoming freshmen who are selected for the North Carolina Teaching Fellows Program are also automatically eligible to join Honors. All students awarded the Lewis and Elizabeth Dowdy Scholars Program are required to participate in the Honors Program during their freshman year.

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 12 credit hours of classes. To remain in the Honors Program, students must maintain a cumulative GPA of 3.5.

Program Description

Benefits: Members of the Honors Program receive numerous benefits as rewards for taking on the challenges of Honors education. For instance, they are eligible to live in Joseph McNeil Hall, the all-Honors residence hall, which helps Honors provide a community of student scholars with a place where it is easy to make friends and work together in study groups. Some Honors classes and workshops are held right in the building.

Except for the first semester at A&T, Honors students register before all other students, avoiding the possibility of being frozen out of a class because it is already full. Honors loans out over 200 laptops to members who do not have a computer of their own. The 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, Singapore, Malaysia, France, and Italy. These study-tours have enabled students to better understand and appreciate cultural differences within the global communities. The Program also sponsors leadership development workshops to help members develop skills they will need after graduation and offers test preparation classes for students getting ready to take exams for admission to graduate or professional school.

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

Students who join Honors as incoming freshmen have the opportunity, but are not required, to complete a four year, forty-two (42) semester hour, program of classes distributed as follows: eighteen (18) hours of University Studies Courses

taken for Honors credit, six credit hours of low enrollment Honors Seminars, and eighteen (18) credit hours of Honors courses in the student's major. Students who complete this four-year Honors experience receive special recognition at graduation and on their college transcript.

For various reasons, students may not be able to, or want to, participate in the Honors Program throughout their entire academic career. Accordingly, there are two tracks within the Honors Program that students can choose from if they participate in Honors for only a portion of their academic career. These tracks are:

Track #1: General Honors

The twenty-four (24) credit hour General Honors Program requires eighteen (18) hours of University Studies classes taken for Honors credit and six hours of Honors Seminars.

Track #2: Honors in the Major

The Honors Program in the Major requires eighteen hours of Honors classes in the student's major or related courses, and six hours of Honors Seminars.

Students who complete either of the Honors tracks are given special recognition at graduation and on their college transcripts.

Students must earn a minimum grade of "B" in any course taken for Honors credit for it to count towards completing any portion of the Honors Program.

For more information, contact: The Honors Program, 310 Gibbs Hall, North Carolina Agricultural and Technical State University, Greensboro, North Carolina 27411. The Director can be reached by phone at (336) 285-2030. The URL for the Honors Program website is http://www.ncat.edu/~honors.

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 124 semester hours and a maximum of 128 semester hours, excluding deficiency courses and remedial work for the bachelor's degree. Semester hour requirements beyond 128 must be approved by the Board of Governors.

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

School of Agriculture and Environmental Sciences

Degree	Program Title	Concentrations
BS	Agricultural Economics	
	Agricultural Economics	(Agribusiness)
	Agricultural Education	(Ag Professional Service)
	Agricultural Education	(Secondary Education)
	Agricultural Science, Natural Resources	(Environmental Horticulture)
	Agricultural Science, Natural Resources	(Soil Science)
	Animal Science	
	Animal Science	(Animal Industry)
	Biological Engineering	(Bioprocess Engineering)
	Biological Engineering	(Natural Resources Engineering)
	Child Development: Early Ed. & Family Studies	(B-K)(Teaching)
	Child Development	
	Earth and Environmental Sciences	
	Family and Consumer Science Education	
	Food and Nutritional Sciences	(Dietetics)
	Food and Nutritional Sciences	(Food Science)
	Family and Consumer Science	(Fashion Merch & Design)
	Laboratory Animal Science	
	Landscape Architecture	
MS	Agricultural Economics	
	Agricultural Education	(Professional Licensure)
	Agricultural Education	(Professional Service)
	Animal Health Science	
	Food and Nutritional Sciences	
	Plant, Soil and Environmental Science	
MAT	Family and Consumer Sciences	

College of Arts and Sciences

Degree	Program Title	Concentrations
BA	English	
	English	(Technical Writing)
	English	(African-American Literature)
	English	(Creative Writing)
	History	
	Liberal Studies	(International Studies)
	Liberal Studies	(African-American Studies)
	Liberal Studies	(Cultural Change & Social Development)
	Liberal Studies	(Dance)
	Liberal Studies	(Business)
	Liberal Studies	(Interdisciplinary)
	Liberal Studies	(Pre-Law)
	Liberal Studies	(Race, Class, & Culture)
	Liberal Studies	(Women's Studies)
	Music	(General)
	Music	(Performance)
	Political Science	
	Psychology	
	Romance Languages and Literatures, French	
	Romance Languages and Literatures, Spanish	
	Sociology	
	Speech	(Speech Communication Studies)
	Speech	(Speech Language Pathology & Audiology)
	Visual Arts, Design	
BFA	Professional Theatre	
BS	Applied Mathematics	
	Atmospheric Sciences and Meteorology	
	Biology	
	Chemistry	
	Criminal Justice	
	Journalism and Mass Communication	(Broadcast Production)
	Journalism and Mass Communication	(Electronic Media & Journalism)
	Journalism and Mass Communication	(Media Management)
	Journalism and Mass Communication	(Print Journalism)
	Journalism and Mass Communication	(Public Relations)
	Mathematics	
	Physics	
	Physics	(Engineering Physics)
	Physics	(Environmental Geophysics)
	Physics	(Interdisciplinary Physics)
	Physics	(Space Science)
	Romance Languages and Literatures, French Secondary Education	
	Romance Languages and Literatures, Spanish Secondary Education	
	Secondary Education	(Art Education)
	Secondary Education	(Biology Education)
	Secondary Education	(Chemistry Education)
	Secondary Education	(English Education)
	Secondary Education	(History Education)
	Secondary Education	(Mathematics Education)
	Secondary Education	(Music Education)
	Secondary Education	(Physics Education)
BSW	Social Work	
MA	English and African American Literature	
MAT	Teaching	(Biology Education)
	Teaching	(Chemistry Education)
MS	Applied Mathematics	
	Biology	

	Chemistry	
	English Education	
	History Education	
	Mathematics Education	
	Physics	
MSW	Social Work	(Jt. with UNC-G)

School of Business and Economics

Degree	Program Title	Concentrations
BS	Accounting	
	Business Administration	
	Business Education	(Information Technology)
	Business Education	(Voc. Bus. Ed.)
	Business Education	(Voc. Bus. Ed.-Data Pro.)
	Economics	
	Finance	
	Management	
	Management	(Management Information Systems)
	Management	(Entrepreneurship)
	Marketing	
	Marketing	(Sales)
	Supply Chain Management	
MAT	Teaching	(Business Education)
MSM	Management	(Human Resources Management)
	Management	(Management Information Systems)
	Management	(Transportation & Supply Chain Management)

School of Education

Degree	Program Title	Concentrations
BS	Elementary Education	
	Sport Science and Fitness Management	
MAED	Elementary Education, General	
	Reading Education	
MAT	Teaching	(Elementary Education)
	Teaching	(Special Education)
	Teaching	(Physical Education)
MS	Adult Education	
	Counselor Education	
	Health and Physical Education	
	Human Resources	(Agency Counseling)
	Human Resources	(Rehabilitation Counseling)
	Instructional Technology	(Computers)
	Instructional Technology	(Business and Industry)
	Instructional Technolgoy	(Media Coordinator)
MSA	School Administration	

College of Engineering

Degree	Program Title	Concentrations
BS	Architectural Engineering	
	Biological Engineering	
	Chemical Engineering	
	Civil Engineering	
	Computer Engineering	
	Computer Science	
	Electrical Engineering	
	Geomatics	
	Industrial Engineering	
	Interdisciplinary General Engineering	
	Mechanical Engineering	
MS	Chemical Engineering	
	Civil Engineering	
	Computational Science and Engineering	

	Computer Science	
	Electrical Engineering	
	Industrial Engineering	
	Mechanical Engineering	
Ph.D.	Electrical Engineering	
	Industrial Engineering	
	Mechanical Engineering	
	Computational Science & Engineering	

Interdisciplinary

Degree	**Program Title**	**Concentrations**
BA	Liberal Studies	(Business)
	Liberal Studies	(Interdisciplinary)
	Liberal Studies	(Pre-Law)
	Liberal Studies	(Women's Studies)
MS	Computational Science & Engineering	
Ph.D.	Energy & Environmental Studies	
	Leadership Studies	
	Computational Science & Engineering	

School of Nursing

Degree	**Program Title**	**Concentrations**
BSN	Nursing	

School of Technology

Degree	**Program Title**	**Concentrations**
BS	Construction Management	
	Electronics Technology	
	Electronics Technology	(Computational Technology)
	Electronics Technology	(Information Technology)
	Graphic Communication Systems	(Computer Aided Drafting and Design)
	Graphic Communication Systems	(Integrated Internet Technologies)
	Graphic Communication Systems	(Printing and Publishing)
	Manufacturing Systems	
	Manufacturing Systems	(Motorsports)
	Manufacturing Systems	(Industrial Management)
	Occupational Safety and Health	
	Technology Education	(Technology Education, Teaching)
	Technology Education	(Trade and Industrial Education, Teaching)
	Technology Education	(Training and Development for Industry)
MAT	Teaching	(Technology Education)
MS	Information Technology	
	Technology Education	(Technology Education, Teaching)
	Technology Education	(Trade and Industrial Education, Teaching)
	Technology Education	(Training and Development for Industry)
	Technology Education	(Workforce Development Director)
MSIT	Industrial Technology	(Environ. and Occupational Safety & Health)
	Industrial Technology	(Electronics and Computer Tech)
	Industrial Technology	(Information Technology)
	Industrial Technology	(Construction Management)
	Industrial Technology	(Graphic Communication Systems)
	Industrial Technology	(Manufacturing Systems)
	Industrial Technology	(Occupational Safety and Health)

FERDINAND DOUGLASS BLUFORD LIBRARY

F.D. Bluford Library is the intellectual heart of the campus, providing a place for interaction, collaboration, study and reflection. The library offers a dynamic learning environment that supports the research and educational efforts of its faculty, staff, and students. The physical facility offers wireless access throughout four levels, individual study spaces, group and collaboration rooms, and public computers. The library maintains a balanced collection of circulating print and non-print materials, with an ever growing collection of electronic resources available for local and remote access or for download to mobile devices. Special collections in Archives and Black Studies are also available. A Learning Resources Center, located on the lower level of Bluford Library, offers print and non-print instructional materials which support the

curricula and disciplines represented in the Teacher Education Program of the University. Bluford Library continues as an officially designated partial depository for United States Government and North Carolina publications.

A highly qualified staff, a solid collection of print and non-print resources, electronic indexes and full-text databases, and ample individual and group study facilities provide an atmosphere that encourages discovery and engagement.

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

EDUCATIONAL SUPPORT CENTERS

The University's educational support centers include: the Center for Academic Excellence, Academic Enrichment Program (ACE), Learning Resource Laboratory, University Writing Center, Administrative Information Systems, Computing and Information Technology, Computer Assisted Learning Laboratory, Academic Tutorial Program, Tutorial/Study Center, Learning Assistance Center (Nursing), Writing Laboratory, Teacher Education Center, Learning Assistance Center (Chemistry), Student Athlete Tutorial Program, Disability Support Services, and Counseling Services.

OFFICE OF SUMMER SESSIONS AND OUTREACH

The Office of Summer Sessions and Outreach provides the opportunity to take advantage of a wide range of summer learning experiences in condensed formats that support educational, career and personal enrichment goals. These activities are designed to reach the total community with courses, workshops and programs that are offered to populations of all ages from children to the retiree. The standards of academic achievement and the quality of work required are maintained at the same level as during the regular terms.

The Office has the responsibility for planning, coordinating and administering the University's Summer Sessions and Outreach activities. These programs have been designed to help optimize student progress and to enhance the University's four-year graduation rates by providing degree-related course work for undergraduate and graduate students. Most courses are conveniently taught in five weeks allowing time for work and travel during the summer months.

The summer programs feature several convenient sessions of varying lengths: two five-week sessions, one two-week presession, one two-week intersession and one ten-week dual session which runs from the beginning of the first session through the end of the second session. Students are permitted to enroll in a maximum of seven credits each five-week session or seven credits in the dual session. Students can take one three-credit hour course during the presession and/or the intersession. There are several short courses and workshops that are scheduled within the two five-week sessions. These programs support the attainment of educational goals for undergraduate and graduate degree candidates at the university or elsewhere and the meeting of licensure requirements for teachers and other professional personnel.

The Outreach effort seeks to provide a broad base of support, through collaborative initiatives with the various units on the campus, for pre-college activities for youth that support learning, discovery and engagement in the greater university community. The Office partners with public and private organizations in and around the Greensboro area in order to support teacher training and promote interdisciplinary learning experiences at all levels.

OFFICE OF CONTINUING STUDIES AND PROFESSIONAL DEVELOPMENT

The Office of Continuing Studies and Professional Development (OCSPD) offers certificate programs, courses, workshops and seminars for the working adult. The purpose of OCSPD is to extend the resources of the university to the community in accessible formats, and to assist in making the university a recognized expert resource for high tech, cutting edge information, professional development, and training. OCSPD is the major unit of the university providing outreach to the community-at-large. In collaboration with the academic departments, schools and colleges of the university, OCSPD offers professional development programming through industry partnerships, high tech training seminars, short courses and workshops, and conferences.

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

THE CENTER FOR DISTANCE LEARNING

The Center for Distance Learning (CDL), in close cooperation with the academic departments, enables students to access degree programs and courses of the University at convenient sites and times. Courses are offered at a distance through online and extension programs. More than 3000 people are currently taking classes via Web-based and on-site instruction. Students and faculty members can interact via online group discussion sessions, email, interactive video classrooms, streamed videos, and on-site instruction.

Currently, more than 575 courses are offered online and through extension programs from all colleges and schools of the University. There are five undergraduate and four graduate online degree programs offered. The degree programs include: 1) Agricultural Education (B.S.), 2) Business Education (B.S.), 3) Electronics Technology (B.S.), 4) Occupational Safety & Health (B.S.), 5) Technology Education (B.S.) 6) Agricultural Education (M.S.), 7) Information Technology (M.S.) 8) Instructional Technology (M.S.), and 9) Technology Education (M.S.). Additionally, there is an online consortium degree program with Indiana State University in Technology Management (Ph.D.).

There is one graduate degree program available through extension programs: School Administration (M.S. – Winston-Salem, NC). Furthermore, there are four licensure programs in Business Education, Elementary Education, Technology Education, and Vocational Industrial Education.

CDL plans to increase the number of academic degree programs offered using state-of-the-art instructional delivery systems. These systems will continue to address the educational and professional development needs of the University students, faculty, and other stakeholders with a focus on relevance, quality, and utility.

THE DIVISION OF INFORMATION TECHNOLOGY (DoIT)

The Division of Information Technology (DoIT) is a service unit of the University that provides, coordinates and manages the entire information technology infrastructure for the University. These services include computer acquisition, help desk support, management of all instructional and research campus labs, administrative information systems, networking, telecommunications, web development and support. Our goal as a division is to remain consistent with and in support of the mission and vision of North Carolina Agricultural and Technical State University.

The following areas report directly to the office of the Vice Chancellor & CIO for DoIT.

Teaching and Learning with Technology

This department is responsible for matters pertaining to IT budgets, purchasing, eLearning, , and special projects. The following units report to this office: Budgeting, , Project Management, Training & Development, Telecommunications Administrative Services and Instructional Design Development and Support which offer Blackboard and eLearning services.

Applications

The responsibility of this department is to provide the leadership, strategic planning and oversight for the administrative applications, Banner (ERP) systems, ancillary applications and database administration for the university. The following units report to this office: Enterprise Resource Planning (ERP), Database Management and Web Services.

Network and Communications

This department is responsible for providing state-of-the-art network technologies for NC A&T State University. Services include a high-speed fiber-based infrastructure to ensure reliable voice, data, video and multimedia connections; development and sustaining of IP access network services for the university's administration, faculty and students. The services will be available for on-campus and remote site locations for the university and expanding within UNC collaborative efforts with other campuses, for equipment, enterprise application and support. The following units report to this office: Data Network Services Telecommunication Network Services, Video Network and Wireless Services.

IT Security Compliance and Policies

This department assists the campus community with identifying, evaluating and mitigating IT security risks. By having a perspective of the University's business needs, strategic security solutions can be implemented to promote the confidentiality, integrity and availability of the University's IT resources. It also engages the campus community in security education and audit end user compliance in order to ensure sufficient controls are in place relevant to University policies, business continuity, as well as federal and state legislation regarding information technology.

Support Services

This area provides the day-to-day management and support of the academic, administrative and auxiliary campus computing systems. It is also responsible for matters pertaining to procurement. The following units report to this office: Aggie Technical Support (ATS), *formerly Aggie Help Desk*, Student Technology Services (STS) and Procurement & Asset Management.

Systems and Data Center Operations

This department provides resources for the University in analyzing and testing advanced systems and future operational needs (solutions) to determine if they are stable, secure and deliverable on the promised functionality. It also participates in the design and planning of IT landscape including hardware, software and enterprise applications. Work includes technology evaluation, testing and development of guidelines for implementation; investigation of software and hardware management solutions, determining the best tools for optimizing operations, wireless, high performance computing (research) and other emerging technologies for the university. The following areas report to this office: Data Center Operations, Unix Server Development and Windows Server Development.

CENTER FOR ACADEMIC EXCELLENCE

The Center for Academic Excellence (CAE) is a full service learning support unit designed to assist all university students in reaching high levels of academic success. The CAE mission is to empower students for academic, career, and personal success. The primary goal of CAE is to increase the retention of all freshmen, sophomores and student athletes by providing quality academic support programs. To that end, CAE provides a wide array of academic support programs and services such as: intrusive academic advising; supplemental instruction; tutoring in high failure courses; instruction in developmental math and reading, University Studies--UNST 100 and Strategies for Academic Success--SCS 099; academic skills workshops; peer mentoring; and a retention initiative for African American males.

WASTE MANAGEMENT INSTITUTE

The Interdisciplinary Waste Management Institute (WMI) coordinates the waste management efforts of the University. The goal of the Waste Management Institute is to help raise public consciousness of environmental security and waste management issues. Waste Management activities are conducted through faculty members and facilities of the participating departments. The Waste Management Institute administers an undergraduate and graduate certificate programs. The Waste Management Certificate highlights the training of A&T students in environmental security and waste management issues.

THE DIVISION OF UNIVERSITY ADVANCEMENT

The Division of University Advancement encompasses the program areas of Development, University Relations, Alumni Affairs, Advancement Services, the University Foundation and other administrative functions related to overall institutional advancement and marketing. In addition, the office aids in conducting the affairs of the North Carolina A&T University Foundation, Inc., which has been established to assist in soliciting gifts, grants and contributions from public and private sources for such worthy purposes as student scholarships, faculty development, library resources, specialized equipment and cultural and public service programs. The mission of the Division of University Advancement is to support the university through the enhancement and management of private resources by expanding opportunities for engagement, increasing the division's resources, strengthening the university's brand and improving communications. The Advancement office is located in Suite 400 of the Dowdy Administration Building. The Office of Alumni Affairs and the NC A&T University Foundation are located in the Alumni-Foundation Event Center at 200 N. Benbow Street. The University Relations department is located in the Garret House on Nocho Street next to Murphy Hall.

DIVISION OF RESEARCH AND ECONOMIC DEVELOPMENT

The Division of Research & Economic Development administers and manages research and sponsored programs as well as technology transfer and commercialization for the University. Headed by the Vice Chancellor for Research & Economic Development, the division is made up of the Vice Chancellor's management team, the Office of Sponsored Programs, the Office of Technology Transfer and Outreach, the Office of Compliance and the Office of Research Services. The Division coordinates interdisciplinary funding opportunities among the University's colleges and schools and assists in transforming research into marketable economic opportunities.

AUXILIARY SERVICES

The Office of Auxiliary Services is responsible for administering, planning, and directing the University auxiliaries, including the Aggie C-Store, Aggie OneCard Center, Food Services, Mail Center, Ticket Operations, University Bookstore, and Vending Services. This office also supervises and serves as Business Manager for the Athletics Department, Housing, Health Services, Student Union, and Police and Public Safety.

Each auxiliary relates directly to the objectives of the University. Its significant contributions to the realization of University objectives are measured directly by the quality of services rendered. Such functions provide needed services and also allow the University to benefit from these services without substantial cost.

UNIVERSITY BOOKSTORE

Located on the corner of Laurel and Bluford Streets in Brown Hall, the University Bookstore offers a wide variety of services to the university community. The newest addition to its offerings is the ability to place orders online. Place your order today at www.ncatbookstore.com! Freshmen desiring to have their books ready at the beginning of each semester should use the bookstore's Textbook Pre-Pack Service offered during orientation. A variety of computer hardware and software supplies are available from Dell and Apple at educational prices. The Bookstore offers snacks, school supplies, clothing, cards, notebooks, and calculators! Other services include expanded store hours to satisfy the Aggie in you during home football games, a photocopying machine, fax services and free notary service. For added convenience, a Wachovia teller machine is located in the same building. For more information on the Bookstore's offerings, please call 336-334-7593 or visit our website at www.ncatbookstore.com.

AGGIE C-STORE

The Aggie C-Store is a full-service convenience store located in the Memorial Student Union. Students can use their Aggie OneCard to purchase a wide variety of perishable/non-perishable products, which are sold within this unit. Such products include drinks, milk, can goods, medicine, etc. The Aggie C-Store is open Monday through Thursday from 9:00 a.m. to 8:00 p.m. Its convenient operating hours on Friday are 9:00 am to 6:00 pm and on Saturday from 10:00 am to 8:00 pm.

AGGIE ONECARD

The Aggie OneCard Center is located in room 215 of the Memorial Student Union. Currently, the University's patrons and visitors can make purchases at various campus locations. Students, Faculty, and Staff are able to open a debit plan on their Aggie OneCard account by depositing money. The debit plan can then be used to make purchases at vending machines, laundry machines, the University Bookstore, the Tickets Office, the Bluford Library, Health Services, and to

purchase meals at Williams Cafeteria, Boss Webster, Aggie Sit-In, Café-A-La-Carte and Freshens. Laundry facilities in the residence halls allow card usage and so do vending machines in many academic buildings and residence halls. This card also operates as an "access key" for specific buildings in Aggieland. Currently, all residence halls and some student labs are equipped with door access readers. To obtain access privileges in any of these facilities, please contact the ITT Help Desk or the Aggie OneCard Office.

If your card is lost or stolen, please report it to the Aggie OneCard Center immediately at 336-334-7114 during office hours and to Campus Police after hours 336-334-7675. This is for your protection and it will prevent others from using your card fraudulently. The Aggie OneCard Center is open Monday through Friday from 8:00 am to 5:00 pm. If you need to contact the Aggie OneCard Center after 5:00 pm or on weekends, you should call the University Police Dispatch Office at 336-334-7675. If your card is lost/stolen/damaged, there will be a $20 replacement fee, which will have to be paid at the OneCard Center.

FOOD SERVICE

The University seeks to provide dining for students at the most reasonable rate possible. Therefore, the University operates dining services on a contractual basis providing students with a healthy variety of nutritious foods on campus.

Students assigned to University Housing accommodations are required to participate in the dining program. The dining program allows a student to choose a meal plan based on the number of meals per week (any 7, 14, 19 meals per week or the declining balance) or the Aggie Dining Dollars ($100, $200, $300, $400). Each meal plan comes with complimentary flex dollars. Students living off-campus are welcome to participate in the dining program.

Dining at NC A&T State University offers students more of a variety with seven different retail locations and a main dining facility.

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 also place ticket orders online. Normal operating hours are Monday through Friday 9:00 am until 6:00 pm; hours may vary depending on seasonal and other events. The telephone number to reach the Ticket Office is 336-334-7749 or fax your 6 information to 336-334-7382. Call or come by for all your University ticketing needs!

MAIL CENTER

The University Mail Center is located on the lower lever of Brown Hall on Laurel Street and serves only as a postal station. Postage stamps are sold but services such as the purchase of postal money orders or cashing checks are not rendered. The Mail Center offers centralized mailboxes for students assigned to residence halls. Mail is placed directly into mailboxes assigned to each resident. An annual refundable key deposit of ten dollars ($10.00) is required. The Mail Center window is open weekdays from 8:00 am to 5:00 pm and on Saturday from 9:00 am to 1:00 pm. The window service hours on weekdays (to receive special mail and packages, etc.) will be from 10:00 am to 5:00 pm and on Saturday from 10:00 am to 1:00 pm. The Mail Center also offers express mailing via the U.S. Postal Service, Federal Express (Fedex) and United Parcel Services (UPS).

STUDENT LIFE

DIVISION OF STUDENT AFFAIRS

http://www.ncat.edu/~studev/

The Division of Student Affairs shoulders the major responsibility for Student Life and Student Services. The Vice Chancellor for Student Affairs is the Chief Administrative Officer. The Division of Student Affairs is organized to provide services that complement the academic program and contribute to the intellectual, social, moral, cultural, 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 and schools 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 Union Advisory Board, the Counsel of Presidents, the Residence Hall Association, the Panhellic 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 that are within the following units: (1) Counseling Services, (2) Career Services, (3) Student Government Association, (4) Student Activities and Publications, (5) Health Services, (6) Intramural Sports, (7) Veteran and Disability Support Services, (8) Student Support Services, (9) Housing & Residence Life, (10) Memorial Student Union, (11) International Student and Scholars Affairs, (12) Upward Bound Program Math and Science, (13) Student Development (Student Leadership & Organizations, Civic and Service Education, First Year Experience and Parent Programs), (14) Multicultural Student Affairs, (15) Ronald E. McNair Program, and (16) Judicial Affairs and (17) University Event Center. Some of the specific services are described as follows:

COUNSELING SERVICES

http://www.ncat.edu/~counsel

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. Our services are designed to help students understand themselves better, create and maintain healthy relationships, improve their 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, 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, private, and confidential.

The following services are available through the Counseling Services:

1. Personal counseling in individual and group sessions
2. Academic and career/vocational counseling and assessments.
3. Outreach counseling programs and activities, Life Skills and Personal Growth Programs
4. Graduate student internship training laboratory for psychology, social work, and counseling.
5. Individual test administration and interpretation covering the areas of intelligence, aptitude, personality, interest, and achievement, as well as other areas required by special needs.
6. College Level Examination Program (CLEP) for course credit by examination, National League of Nursing (NLN), Psychological Assessments for Learning Disabilities (LD) and Attention-Deficit / Hyperactivity Disorder (ADHD), and Department Screening Assessments.
7. Information is provided for: Praxis Teachers' Examination, Graduate Management Admissions Test (GMAT), Graduate Record Exam (GRE), and Medical College Admissions Test (MCAT).
8. Exit interviews for students withdrawing from the University for psychological or medical reasons.
9. Official University Excuses
10. Referrals (University and Community Resources).

HEALTH SERVICES

http://www.ncat.edu/~health

A Director of Health Services manages the Sebastian Health Center. Medical services are available to all students in the student health center if they have paid the 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 University Physicians are in attendance in the Health Center daily (hours for routine treatment are posted) — and "On 24 hour call" for any emergency situations.
2. **Nursing Services:** Registered nurses, under the direction of the Nurse Supervisor, are in attendance daily to evaluate and treat students' health needs and answer any questions pertaining to health problems and other concerns.
3. **Laboratory Services:** A Certified Medical Technologist is on duty daily, Monday – Friday to perform various laboratory tests as ordered by the physician to diagnose a variety of medical problems.

4. **Medical Records:** The Medical Records Director is responsible for maintaining a physically secure and confidential file of all student health records in the Health Center. Additionally, the North Carolina State Immunization Law stipulates required vaccines must be on file in the medical records department of the Health Center prior to registration.
5. **Pharmacy Services:** A registered pharmacist is available Monday-Friday to dispense medication and provide patient teaching about all prescriptions filled.
6. **Health Education Services:** Prevention education is available through the health educator on a variety of health conditions. The Health Educator is available Monday-Friday to assist students with any health issues or concerns.
7. **Student Health Insurance:** The Student Health Insurance Plan works in partnership with the University health fee to provide quality health care at a reasonable cost to the students. The Student Insurance Plan is based on a Primary Care Provider. Primary care is given by the Student Health Center (Sebastian).

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

Policy on Alcohol Use

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.

A. It is unlawful for any person to aid or abet an underage person in the purchase or attempted purchase of alcoholic beverages. *General Statute 18B-302(c).*
B. It is unlawful for any person knowingly to 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 POLICIES 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 on University 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 drink alcoholic beverages will be held accountable for their behavior. Irresponsible drinking will not be accepted as an excuse for irresponsible behavior. Such behavior will result in judicial action and/or notification to parent or guardian.

UNIVERSITY DRUG POLICY

North Carolina Agricultural and Technical State University strives to provide an educational environment that enhances and supports the intellectual process. The academic communities, including students, faculty and staff have the collective responsibility to ensure that this environment is conducive to healthy intellectual growth. The 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, they are also subject to the laws of the State and of the nation. This policy has been developed in accord with *The University of North Carolina Policy on Illegal Drugs,* adopted by the Board of Governors January 15, 1988. It establishes the framework for programs designed to educate the campus community on the harmful effects of illegal substances and to assist afflicted persons in their efforts to become rehabilitated. It also provides guidance for punishing violators.

ZERO TOLERANCE FOR DRUGS POLICY

1. Any student who is charged, <u>as a first offense</u>, with the use and/or is in possession of marijuana (or any other illegal drug) on campus will <u>immediately</u> lose campus housing privileges and will be required to appear before a campus judicial board.
2. A second offense will result in <u>immediate</u> suspension from the University.
3. Felony possession of marijuana (or any other illegal drug) will result in <u>immediate suspension</u> from the University.
4. Any student convicted of possession or sale of a controlled substance under federal or state law will lose eligibility for Student Financial Aid assistance.

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 AND ALCOHOL EDUCATION POLICY

Preamble:

The basic mission of North Carolina Agricultural and Technical State University is to provide an educational environment that enhances and supports the intellectual process. The academic community, including students, faculty and staff has the collective responsibility to ensure that this environment is conducive to healthy intellectual growth. The illegal use of harmful and addictive chemical substances and the abuse of alcohol pose a threat to the educational environment. Thus, this Drug and Alcohol Education Policy is being applied to assist members of the University community in their understanding of the harmful effects of illegal drugs and alcohol abuse; of the incompatibility of illegal drugs and the abuse of alcohol with the educational mission of the University; and of the consequences of the use, possession or sale of such illegal drugs and the abuse of alcohol, including the violation of applicable laws.

Objectives:

I. To develop an educational program that increases the University community's knowledge and competency to make informed decisions relative to the use and abuse of controlled substances and alcohol; and

II. To increase those skills and attributes required taking corrective action conducive to the health and well being of potential drug and alcohol abusers.

Program Components:

There are five (5) components to this policy:

I. Education
II. Health Risks
III. Rehabilitation
IV. Sanctions
V. Dissemination and Review

I. Education

It is the intent of the Drug and Alcohol Education Policy of North Carolina Agricultural and Technical State University to insure that all members of the University community (i.e. students, faculty, administrators and other employees) are aware that the use, sale and/or possession of illegal drugs and the abuse of alcohol are incompatible with the goals of the University. Moreover, each person should be aware that the use, sale or possession of illegal drugs and the abuse of alcohol are, as more specifically set forth later in this policy, subject to specific sanctions and penalties.

All members of the University family are reminded that in addition to being subject to University regulations and sanctions regarding illegal drugs and the abuse of alcohol, they are also subject to the laws of the state and of the nation. Each individual is also reminded that it is not a violation of "double jeopardy" to be subject to the terms of this policy as well as the provisions of the North Carolina General Statutes. For a listing of relevant state criminal statutes, please see Appendix A. Further questions may be directed to the Office of the University Attorney or the Office of Student Affairs.

Each member of the University community is asked to pay particular attention to the full consequences of the sanctions specified in this policy as well as the consequences of the North Carolina criminal law referenced above. Certain violations may jeopardize an individual's future as it relates to continued University enrollment or future employment possibilities, depending on individual circumstances.

Further, it is a policy of the University that the educational, legal and medical aspects of this issue be emphasized on an annual basis through the provision of programs and activities in the following areas:

(a) Annual Drug and Alcohol Education Week - Workshops and seminars on drug abuse led by former drug addicts and community agencies such as MADD, SADD, and the Sycamore Center;
(b) Drug and Alcohol Awareness Fair - Exhibits featuring drug and alcohol related paraphernalia;
(c) Media presentations on the University radio station, WNAA, emphasizing the most current programs with drug and alcohol education messages;
(d) "Home for the Holidays, Don't Drink and Drive"; Drug and Alcohol Abuse Prevention Campaign;
(e) Publication of brochure on drug education;
(f) Continuous monthly outreach programs in each residence hall.

(g) Counseling Services provides drug education groups, two-four times weekly. Students are drug tested by an outside private agency for a small fee.

Although directed primarily to the student population, the above noted educational programs shall also open to participation by all categories of University employees.

Additionally, the Human Resources Staff Development Office is the designated University department responsible for the planning and implementation of drug and alcohol education programs geared toward the special needs of the faculty and staff. Among the programs to be implemented by the Human Resources Staff Development Office are lunchtime seminars jointly conducted by the Sycamore Center, the Greensboro Police Department and the Guilford County Mental Health Department.

II. Health Risks

Health risks, associated with the use of illicit drugs and the abuse of alcohol, are wide ranging and varied depending on the specific substance involved and individual abuse pattern. These risks include, but are not limited to:

1. Physical changes which alter bodily functions such as severely increased or decreased cardiac output; shallow to irregular respiration; and damage to other major organs, such as kidney, liver and brain;
2. Emotional and psychological changes including paranoia, depression, hostility, anxiety, mood swings and instability;
3. Additional health risks could include such illnesses as AIDS HIV infection, sexually transmitted diseases, severe weight loss, cancer, cirrhosis, hepatitis, short-term memory loss, seizures, and deformities to unborn children;
4. Physical and psychological dependency (addiction); and
5. Death from overdose or continuous use.

While these health risks are broad in range, persons consuming illicit drugs and alcohol will exemplify some, if not all, of the above symptoms. See Appendix A for a list of a few specific drugs and their corresponding health risks.

III. Rehabilitation

The University recognizes that rehabilitation is an integral part of an effective drug and alcohol policy. Consistent with its commitment in the areas of education and sanctions, it is the University's intent to provide an opportunity for rehabilitation to all members of the University family. This commitment is evidenced through access to existing University resources and is furthered by referrals to community agencies.

Students:

The University Counseling Center and the Student Health Center are available to provide medical and psychological assessments of students with drug/alcohol dependency and drug/alcohol abuse problems. Based on the outcome of this assessment, treatment can be provided by either or both of these centers. If, however, the scope of the problem is beyond the capability of these Centers, affected students will be referred to community agencies, such as the Guilford County Mental Health Center and Greenpoint. The cost of such services shall be the individual's responsibility.

Employees:

Referrals to local community agencies will be made available to include the Guilford County Mental Health Center, Greenpoint and private physicians. The cost of such services will be the individual's responsibility. The services of the University's Counseling and Health Centers are not normally utilized by faculty and staff members except in emergency situations.

IV. Sanctions

A. Illegal Drugs/Prohibited Conduct

All members of the University community have the responsibility for being knowledgeable about and in compliance with the provisions of North Carolina law as it relates to the use, possession or sale of illegal drugs as set forth in Article 5, Chapter 90 of the North Carolina General Statutes. Any violations of this law by members of the university family subjects the individual to prosecution both by University disciplinary proceedings and by civil authorities. It is not a violation of "double jeopardy" to be prosecuted by both of these authorities. The University will initiate its own disciplinary proceedings against a student, faculty member, administrator or other employee when the alleged conduct is deemed to affect the interests of the University.

Penalties will be imposed by the University in compliance with procedural safeguards applicable to disciplinary actions against students (see the *Student Handbook*), faculty members (see the *Faculty Handbook*), administrators (see the Board of Governors Policies Concerning Senior Administrative Officers as well as the EPA Non-Teaching Personnel Policies) and SPA employees (see *State Personnel Commission Policies*).

The penalties imposed for such violations range from written warnings with probationary status to expulsion from enrollment and discharges from employment. However, minimum penalties that apply for each violation are listed in Appendix A. For additional information, direct questions to the Office of the University Attorney or the Office of the Vice Chancellor for Student Affairs. It should be noted that where the relevant sanction dictates a minimum of one semester suspension from employment, the regulations of the State Personnel Commission (as pertaining to SPA employees) do not

permit suspension from employment of this duration. Thus, such sanction as applied to SPA employees dictates the termination of employment.

B. Alcohol/Prohibited Conduct

1. Employees:

   While the sale, possession, or consumption of alcoholic beverages is not illegal under state or federal law, it is, hereby, the policy of North Carolina Agricultural and Technical State University that the consumption of alcohol sufficient to interfere with or prohibit the otherwise normal execution of job responsibilities is improper and subjects the employee to appropriate disciplinary procedures. It is also the policy of North Carolina Agricultural and Technical State University that alcoholic beverages not sold on campus. Employees violating the above noted policies are subject to appropriate disciplinary procedures, which range from warning and probation to dismissal consistent with the individual circumstances.

   Similarly, employees are reminded that, under N.C. law, it is illegal to sell or give malt beverages, unfortified wine, fortified wine, spirituous liquor or mixed beverages to anyone less than 21 years old. It is also illegal to aid and abet any person less than 21 years old in the purchase or possession of the alcoholic beverages noted above. Employees found violating these state laws are subject to legal sanction as well as the appropriate disciplinary procedures.

2. Students:

   Students are reminded of the following University regulations and state laws regarding alcoholic beverages as contained in the Student Handbook:

   1. Students are liable for violation of State Law GS 18B-302 while on University premises: 18B-302 Sale to or Purchase by Underage Persons
      a. Sale – It shall be unlawful for any person to:
         I. Sell or give malt beverages or unfortified wine to anyone less than 21 years old; or
         II. Sell or give fortified wine, spirituous liquor, or mixed beverages to anyone less than 21 years old.
      b. Purchase or Possession - It shall be unlawful for:
         I. A person less than 21 years old to purchase, to attempt to purchase, or to possess malt beverages or unfortified wine; or
         II. A person less than 2l years old to purchase, to attempt to purchase, or possess fortified wine, spirituous liquor, or mixed beverages.
      c. Aider and Abettor
         I. By Underage Person - Any person under the lawful age to purchase and who aids or abets another in violation of subsection (a) or (b) of this section shall be guilty of a misdemeanor punishable by a fine of up to five hundred dollars ($500.00) or imprisonment for not more than six months, or both, at the discretion of the court.
         II. By Person over Lawful Age - Any person who is over the lawful age to purchase and who aids or abets another in violation of subsection (a) or (b) of this section shall be guilty of a misdemeanor punishable by a fine of up to two thousand dollars ($2,000) or imprisonment for not more than two years, or both, at the discretion of the court.

   1. Students are responsible for conforming to state laws pertaining to:
      a. Transportation of alcoholic beverages
      b. Consumption of alcoholic beverages in public places
      c. Consumption of alcoholic beverages by students under the legal age
      d. Abuses of alcoholic beverages
   2. There will be no consumption of alcoholic beverages in a motor vehicle while on University property or on University streets.
   3. Personal consumption of alcoholic beverages is restricted to students' rooms in residence halls, if they are of legal drinking age.
   4. The possession or consumption of alcoholic beverages shall not be permitted in public places, such as lounges, game rooms, study rooms, kitchens, laundries or patios.
   5. There will be no public display of alcoholic beverages.
   6. The University discourages the drinking of alcoholic beverages, and other abuses of alcoholic beverages. Being under the influence of alcohol is considered a breach of conduct, and students who violate these standards are subject to disciplinary action.

Violations of the above regulations and laws could subject students to criminal prosecution as well as campus-based charges.

C. Suspension Pending Final Disposition

The University reserves the right through the Chancellor or his designee to suspend a student, faculty member, administrator and other employee between the time of the initiation of charges and the hearing to be held. Such decision will be made based on whether the person's continued presence within the University community will constitute a clear

and immediate danger or disruption to the University. In such circumstances the hearing will be held as promptly as possible.

V. Dissemination

A copy of the Drug and Alcohol Education Policy will be distributed on an annual basis to each employee and student of the University. The distribution to all enrolled students will occur as a part of the registration process. The University Personnel Office will administer the distribution to University employees.

The Chancellor of the University shall insure on a biennial basis that this policy is reviewed for purposes of assessing its effectiveness, consistency of application of sanctions and to determine the necessity for modification. This review shall be conducted by October 15 of every other year, beginning in 1992.

Conclusion

North Carolina Agricultural and Technical State University recognizes that the use of illegal drugs and the abuse of alcohol are a national problem and that sustained efforts must be made to educate the University family regarding the consequences associated with drug and alcohol abuse. The primary emphasis in this policy has therefore been on providing drug and alcohol abuse counseling and rehabilitation services through the various programs and activities outlined above.

Past experience suggests that most members of the University family are law abiding and will use this policy as a guide for their future behaviors and as a mechanism to influence their peers and colleagues in a positive direction. However, those who choose to violate any portions of this policy will pay the penalty for non-compliance. The main thrust of this policy has been to achieve a balance between its educational and punitive components.

The effective implementation of this policy rests on its wide dissemination to all members of the University family. This will be accomplished by the dissemination procedure previously outlined and through its publication in the *Faculty Handbook*, *Student Handbook* and *University Catalogue*. All affected individuals can be assured that applicable professional standards of confidentiality will be maintained at all times.

FOOD SERVICES

Aggie Dining provides an exciting and innovative dining services program for the entire North Carolina A&T State University community. You will find great food, honest values and a comfortable atmosphere in which to enjoy it all. You have a variety of restaurants to choose from, all conveniently located within walking distance of on-campus housing, labs, classrooms and many off-campus apartments. The University provides food services for students at a reasonable cost. Students who live in the residence halls are required to purchase a meal plan; several options are available (minimum 10/week). Students who live off campus may also purchase meals or a meal plan.

DEPARTMENT OF HOUSING AND RESIDENCE LIFE

http://www.ncat.edu/~housing/

Administering to the physical environmental needs of thirteen (13) residential facilities, Housing and Residence Life strives to achieve comfortable, clean and safe living and learning environments for over 3,800 residential students. The campus living experience is more than a room to sleep – it is being a part of a dynamic campus community. Housing and Residence Life works diligently to address and meet residential student needs through caring and student-focused processes. The Department's support of student success is operationalized through in-hall programming and academic tutoring opportunities, mentoring relationships, along with the establishment of living/learning communities that foster critical thinking, problem-solving, and community and civic responsibility perspectives and understanding.

MEMORIAL STUDENT UNION

http://www.ncat.edu/~union

The Memorial Union functions as the "Community Center" for the University and its constituency by providing a variety of services and activities. The "Union" building encompasses over 60,000 square feet of space and serves as the headquarters for the Student Government Association, the Student Union Advisory Board, Campus Ministries/A&T Fellowship Gospel Choir, Aggie Escort Shuttle Service, The Yearbook Office, computer lab, , University Events Center, Aggie OneCard, Honda Campus All-Stars and the Commuter Student Center. Additionally, the Memorial Student Union offers room accommodations for small group meetings or large banquet activities, lounge areas, self-service vending, the "Aggie Sit-In" food court, a game room (Aggie Underground), convenience store, and the Information Center.

A primary goal of the Memorial Student Union is to promote an involved community through its various services, facilities, and programs. The Union's location in the heart of the north campus provides a co-curricular community for students, faculty members, alumni, and guests served by the university. The programming and recreational activities of the Student Union Advisory Board have a unique focus on the cultural and social development of the student community.

STUDENT DEVELOPMENT

http://www.ncat/edu/~studev/

The purpose of the Office of Student Development (OSD) is to promote an environment at North Carolina A&T that provides for the overall growth and development of students. OSD is charged with the implementation of orientation and

transitional programs for students and their families. Through social, cultural, leadership, educational and service experiences, students are encouraged to form a community that includes those from every academic division and program, and to become active participants in university life.

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

OSD promotes purposeful involvement of students by:

- Fostering an atmosphere in which students share ideas freely and work collaboratively.
- Providing a safe and inclusive environment.
- Offering opportunities to develop leadership skills.
- Supporting the growth of student organizations.
- To provide opportunities for students to interface with city, state and national government officials.
- To promote student organizations as viable resources for the University and Greensboro Communities.

Leadership Development

As a compliment to the established mission of the Division of Student Affairs, this unit promotes leadership experiences and processes by which individuals and organizations are empowered to work together synergistically toward a common goal or vision that will create change, transform institutions and thus improve their quality of life.

The primary goals of the unit include:

- Providing opportunities for students to explore and address issues that affect them and their environments through Social consciousness, Leadership effectiveness, Academic awareness, as well as Membership Development.
- 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.
- Creating a support mechanism, central location for resources and information, and development opportunities for the various constituent groups and programs associated with leadership, such as the Council of President, Organization Advisors, Leadership 101 series, and the Aggie Leadership Certification Program.
- As an integral component of the Office of Student Development, fostering 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 and Service Education (CASE)

To further the mission of North Carolina Agricultural and Technical State University, The Office of Student Development, through the Civic and Service Education Program (CASE) has dedicated itself to promote a just and humane society through community service and civic engagement. The program is to promote service-learning as an integral aspect of education and to foster university engagement with the larger community. To provide and promote quality service-learning that fosters student learning and development toward outcomes including Civic engagement, collaborative leadership and appreciation of diversity. The program will foster authentic partnerships that support and enhance the University's mission as an engaged citizen in the greater community. To promote the Institutionalization and sustainability of service-learning as an integral aspect of education and provide a variety of forms of service-learning at North Carolina Agricultural and Technical State University.

The general goal of the Civic and Service Education (CASE) Program is to integrate the pedagogy of service learning into North Carolina Agricultural and Technical State University's fundamental courses of University Studies by developing an infrastructure on the foundation of existing interdisciplinary initiatives in community development. This will facilitate the institutionalization of service-learning at North Carolina Agricultural and Technical State University and augment the University's role in meeting community-defined need through university-community partnerships.

First Year Experience (FYE)

This unit is designed to help first year or transfer students become acclimated to collegiate life here at North Carolina Agricultural and Technical State University. Our mission is to provide programs to maximize the student's potential to achieve academic success and to adjust to the individual and interpersonal challenges presented by collegiate life.

STUDENT ORGANIZATIONS AND ACTIVITIES

http://www.ncat/edu/~studev/

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

The Council of Presidents (COP) of North Carolina A&T State University serves as the governing body of student organizations. The Office of Student Development issues Registration Kits to organization leaders at the meeting of the Council of Presidents, on the first Tuesday after classes begin in the fall of each year. After student organization leaders have registered their organizations, they are then eligible to use all campus facilities at no cost to the organization.

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

Approximately one hundred fifty (150) organizations are registered and approved on the campus. Categorically, the organizations include, National Honor Societies, Departmental Clubs, Gospel Choir, Social Clubs, Student Military Organizations, Fraternities, Sororities, Hometown Clubs, Residence Councils, the Student Union Advisory Board, Class Organizations and Drama Societies. Other University sponsored organizations include the University Choir, University Band and the Student Government Association.

Descriptions and membership requirements for all University recognized and registered organizations are printed in the *Student Organizations Handbook*. The Office of Student Development publishes a listing of student organizations, their purposes, objectives, chief officers, and advisors annually. This document is available upon request, the office is located in Murphy Hall Room, Suite 104. The phone number is 336-334-7792 or by e-mail at osd@ncat.edu.

AGGIE PRIDE COMPACT

Achieving **G**reat **G**oals **I**n **E**verything – **P**roducing **R**enowned **I**ndividuals **D**edicated **T**o **E**xcellence

The essence of ***Aggie Pride*** is manifested in standards depicting what it truly means to be a responsible member of The North Carolina Agricultural and Technical State University Family. These standards provide the impetus and inspiration, which motivate students, faculty, staff, administrators, and trustees alike in their perpetual commitment to excellence. North Carolina Agricultural and Technical State University has a unique legacy of nurturing individual students to realize their fullest potential.

North Carolina Agricultural and Technical State University is a learner-centered community that develops and preserves intellectual capital through interdisciplinary learning, discovery, engagement, and operational excellence. As members of the university community, all stakeholders share a pervasive sense of trust, pride, and allegiance in ensuring the preeminent status of North Carolina Agricultural and Technical State University in a global society. The following standards define the essence of ***Aggie Pride***:

Aggie Pride is consistently communicating and behaving in a manner that displays integrity, honesty, sound character, and virtuous ethics. **(Values)**

Aggie Pride is expecting and achieving success and setting high standards in all personal and professional ventures. **(Achievement)**

Aggie Pride is taking a personal stand to positively affect the continuous growth, development and enhancement of the University at large. **(Commitment)**

Aggie Pride is accepting and demonstrating a steadfast commitment to learning by taking responsibility through personal and professional development. **(Self-determination)**

Aggie Pride is striving to significantly influence the development of individuals of all ages within and beyond our community to become lifelong learners. **(Lifelong Learning)**

Aggie Pride is exhibiting a positive and willing attitude to unselfishly serve and to pledge ones talents and gifts for the betterment of North Carolina Agricultural and Technical State University and the larger world community. **(Service)**

Aggie Pride is contributing to the establishment and maintenance of a safe, clean, and aesthetically appealing campus with a favorable ecosystem. **(Building Community)**

Aggie Pride is exhibiting a relentless desire and commitment to treat all individuals with a high level of appreciation and respect and to expect the same in return. **(Respect)**

Aggie Pride is effectively representing the University by utilizing personal knowledge, skills, and resources. **(Confidence)**

Aggie Pride builds on the past, maintains the present, and accepts the challenges of the future while providing our personal financial resources to preserve our legacy and ensure our future. **(Legacy)**

Therefore, as a member of the North Carolina Agricultural and Technical State University family, I unconditionally accept the obligation entrusted to me to live my life according to the standards set forth in this Compact. By my words and actions, I commit to ***Aggie Pride*** and the pursuit of excellence for myself and for my university.

STUDENT CONDUCT

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

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

Sanctions 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, Cashier, Financial Aid, Graduate School, Registrar, Residence Life and University Police will be notified in writing. 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 arrest for trespassing if found on University property. **A student who is suspended or expelled from the University for disciplinary reasons is not eligible for a refund and forfeits any funds previously paid.**

A student who loses campus- housing privileges for disciplinary reasons and has concerns about the financial ramifications of such should contact the Office of Housing and Residence Life for guidelines and shall be governed by those guidelines.

Scheduled university judicial hearings will be held in absentia if the student fails to present him/herself at the scheduled hearing. The administrative hearing body will convene and make a decision based on the evidence at the hearing.

Furthermore, in the case of a student's failure to appear for a hearing, the evidence against the student will be considered and a decision will be based on that evidence.

Should a sanction result from a student's failure to present himself or herself for adjudication of a charge, the offices of Admissions, Cashier, Financial Aid, Graduate School, Registrar, Residence Life and University Police will be notified in writing and the student's transcript will not be released to persons outside the University until the student answers to the charge.

Any one of the following sanctions or their combinations may be imposed:

1. **Expulsion** permanently severs the relationship of the student with the University. With recommendation of a hearing panel, it will be imposed and can only be rescinded by the Chancellor. This penalty will likely prevent a student's admission to any other institution of higher education.
2. **Indefinite suspension** severs the relationship of the student with the University with no date established for the student to return. A date at which time the student may request reinstatement can be established or may be contingent on a student fulfilling one or more stipulations (e.g. resolution of criminal matters pending in the courts, psychological evaluation).
3. **Interim suspension** calls for the immediate removal of a student from the University when there is reasonable cause to believe that the alleged misconduct is of such a serious nature that his or her continued presence at the University is potentially dangerous to the health and safety of the University community, its property or its educational mission. (In cases of violations of the Student Conduct Regulations, to invoke interim suspension, the Vice Chancellor for Student Affairs or his/her designee will conduct a preliminary investigation and hearing with the student - if possible. In cases of Academic Dishonesty, the Provost/Vice Chancellor for Academic Affairs or his/her designee will conduct such an investigation. At the time, the student will be informed of the charges and given the opportunity to explain the circumstances.)
4. **Suspension** severs the relationship of the student with the University for a finite period, the terminal date of which coincides with the official ending of an academic semester or summer session.
5. **Disciplinary Probation** is a period of close scrutiny of a student by the University during which his or 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 furthur infraction 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 obtain membership in any student group or organization; or may not be eligible for certain employment positions or participation in other campus programs.
6. **Warning** is an official reprimand, which by formal written communication, gives official notice to a student 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 files of the Division of Student Affairs or in the case of Academic Dishonesty, the Vice Chancellor for Academic Affairs and will be available as evidence of relevant past behavior to hearing panels.
7. In addition to the above, any one or a combination of the following may be recommended by a judicial hearing board and/or imposed by the Vice Chancellor for Student Affairs or Dean of Students in Student Conduct Regulations 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 conviction of any other violation of the **Student Conduct Regulations** will result in suspension
   e) Prohibited from participating in organized groups or activities
   f) Counseling
   g) Conflict Management Training

The penalties listed above are examples only and do not limit the discretion of judicial officers.

Students placed on suspension or expulsion are placed in the UNC Statewide Database, per state requirements.

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 data base. 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 AFFAIRS

http://www.ncat.edu/~ovdss/

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

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

The Office of Veterans Affairs located in Suite 01, Murphy Hall is established to assist veterans and veteran dependents with enrollment and adjustment to college life. Upon enrolling at the University, the veteran or eligible person should report to the Office of Veterans Affairs so that verification of enrollment can be sent to the Veterans Administration. If a Certificate of Eligibility has not been issued, the veterans or the eligible person should see the University Certifying Official.

The Office also provides counseling and tutorial services as necessary.

DISABILITY SUPPORT SERVICES

http://www.ncat.edu/~ovdss/

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

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

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

OFFICE OF CAREER SERVICES

http://www.careerserv.ncat.edu

The primary mission of the Office of Career Services (OCS) is to provide centralized, comprehensive and progressive interdisciplinary programs, services and resources to prepare A&T students for the achievement of successful personal and professional career development to meet the needs of a global society. Continuous career development assistance is also available to alumni of the University. Individuals who are formally enrolled in a degree-granting program at North Carolina Agricultural and Technical State University or who are A&T graduates are eligible to use the facilities, programs and services of the Office of Career Services. These services include the following:

Student Employment Programs

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

Any undergraduate or graduate student enrolled in a degree-granting program at North Carolina A&T State University (NC A&T) can participate. Participants must establish and maintain at least a 2.0 overall grade point average. Freshmen must complete their first academic year prior to the first work assignment and transfer students must complete one semester.

Students must be registered with the Office of Career Services (OCS).

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

While on work assignment, students are considered in good standing with the University; however, they may not be enrolled in courses unless they are applying for academic credit. Participants are expected to work two to three times before they graduate and at least one work period should be scheduled other than a summer session. Students who co-op during the fall or spring semester are assessed a $30 administrative fee by the University, which is due and payable during the semester of work. In addition, students desiring academic credit for assignments must register through their respective academic departments and pay the required tuition. Please contact the Assistant Director of Career Services for Experiential Learning with inquiries and questions.

Part-time employment opportunities are posted as received in the Office of Career Services and on the OCS website. These jobs provide local and regional opportunities for students who are interested in supplemental income during the school year. Students are responsible for making the appropriate contacts and following through with prospective employers.

Summer internships Summer **internships** offer students the opportunity to gain work experience in industry and government. These positions are offered during the summer and are highly competitive. For companies that do not actively interview during the recruiting season, applications and announcements are available in the Office and online. Opportunities are also available for participation in The Institute of Government and the North Carolina State Government Internship Program. INROADS actively recruits at the University. Interested students must meet the criteria and qualifications established by INROADS and the sponsoring employers.

Permanent Career Options

On-campus Recruitment is available to degree-seeking students and alumni of North Carolina Agricultural and Technical State University. Opportunities are available in the local, state, national and international arenas. North Carolina Agricultural and Technical State University observes October 1 though November 30 as the official on-campus recruiting period for the fall semester. During the spring semester, interviews can be scheduled between late January and mid-April. There is no recruiting during the months of May through September nor during the month of December. The Office of Career Services on-campus interview information is available online. Students/Alumni must be registered with the Office of Career Services in order to interview.

Alumni are eligible to participate to use the facilities of the Office but must register online. The present graduating class has priority on all interview schedules.

AggieLink, the OCS job listing service, exposes students and alumni to thousands of job opportunities available nationwide. Job listings are available online.

Awareness Programs/Career Fairs

In addition to the recruitment function, the Office of Career Services is actively involved in exposing A&T students to career opportunities and professionals in various career fields. This is accomplished through annual career awareness programs, workshops and information sessions. The annual programs include the following:

Career Awareness Fair is held in September to give students an opportunity to network with more than 200 companies/agencies about full-time, co-op and summer internship opportunities and learn what skill sets are in demand.

Health Career Fair provides an opportunity for students to increase their awareness of the types and availability of careers in the health care field.

Graduate & Professional School Day is usually held in the fall semester and allows students to broaden their knowledge of postgraduate programs and learn about application information, scholarship and financial assistance offered at various graduate, law and medical schools. This career day is attended by graduate and professional schools from across the United States.

Spring Career Fair, held during the spring semester, is open to all majors and enables students to talk with employers about full-time, co-op and summer opportunities.

Education/Arts & Sciences Expo (EASE) is held during the spring semester and is specifically designed to assist education and arts and sciences majors.

Additional Services

The Office of Career Services hosts *workshops, seminars, counseling sessions, classroom presentations, and information sessions* on a regular basis. The centralized, comprehensive and progressive programs, services and resources provided by the Office are tailored to be a gateway for the enhancement of the skills necessary to keep the A&T Aggie competitive in the work-place. All students are encouraged to register with the OCS and actively take advantage of the services offered. OCS is available 24/7 to students, employers, faculty, and online information for parents either by visiting Suite 101 Murphy Hall or online at www.careerserv.ncat.edu. The website contains links, which includes information on summer internships and co-ops, *What Can I Do With My Major?*, on-campus interviewing and information sessions. The Office brings over 700 employers to campus and provides more than 15,000 position announcements yearly.

MULTICULTURAL STUDENT CENTER

http://www.ncat.edu/~multicultural

The Multicultural Student Center (MSC) is an integral part of the University. Located in 204 Murphy Hall, the Office provides programs and services that support the academic mission of the University by enhancing the educational, personal, cultural and social development of our diverse student population. The MSC exists to promote understanding and appreciation of diversity on our campus. From it's Latina director, Dr. Maria Teresa Palmer, to its multiethnic student advisory council, it helps students of all ethnicities and diverse backgrounds to come together, learn from each other and enrich our whole community. Among the student organizations housed at the MSC are the *Society of Hispanic Professional Engineers (SHPE), Acceptance Without Exception Gay-Straight Alliance*, and the new *Aggie Soccer Club*.

The Multicultural Student Center offers leadership opportunities, social and service activities, often in cooperation with other campus organizations. Numerous programs and services are available at the MSC to address the academic, cultural and personal needs of our diverse population and to ensure that each student in the NC A&T community receives the best education possible. Supporting the Multicultural Student Center is one way in which the University has dedicated itself to building bridges of knowledge, cooperation and understanding between persons of all sexual orientations and differing religious, ethnic and social backgrounds. The Center is open from 8am – 5pm daily and is staffed by the Director and the Center Manager.

INTERNATIONAL STUDENTS AND SCHOLARS OFFICE (ISSO)

http://www.ncat.edu~isso

The International Students and Scholars Office (ISSO) provides services and programs for international (foreign-born) students and scholars. The office staff provides assistance with pre-arrival preparation, arrival/adjustment assistance, the admission process, housing, insurance, and immigration matters. Orientation and advisement are provided to assist students with their adjustment to the University and community. In cooperation with various departments and organizations, the office provides activities that enhance cultural, social and personal development. Programs and activities are open to all international students and scholars with an interest in the goals and student learning outcomes of the ISSO as well as the University's actions towards developing an internationalized campus. Domestic students, all faculty and staff are also invited to participate in the broad programs and experiences.

Students and scholars are also encouraged to promote multicultural understanding by participating in a variety of activities in the Greensboro community.

Approximately one hundred fifty international students attend the University representing over 35 countries in the following regions: Africa, Asia, Caribbean/West Indies, Central America, Europe, India, the Middle East, North America, and South America.

All international (foreign-born) students are required to verify the immigration/residency status to the International Students and Scholars Office before registering at the University and notify the Office immediately of any change in their immigration status and address.

North Carolina Agricultural and Technical State University is authorized under Federal law to enroll nonimmigrant students. All F-1 non-immigrants are required to obtain an I-20 [Certificate of Eligibility for Non-immigrant Student Status for Academic and Language Students] from this institution prior to enrollment. (I-20's issued by another institution are not valid for attendance at A&T). The requirements for an I-20 include acceptance to the University, a TOEFL score of 550 or above; a financial guarantee (letter of support, bank statement and verification of salary from sponsor's employer). Proof of valid immigration status is required if the applicant is currently residing in the United States. Individuals seeking J-1 status should contact the ISSO Director for current immigration regulations and University procedures. Possession of a social security card does not necessarily mean a student is eligible to work off-campus.

Immigrants must provide the International Students and Scholars Office with a copy of the Permanent Resident Card. U.S. Naturalized Citizens should submit the Naturalization Certificate and/or a copy of the U.S. Passport. All other applicants should provide the documents necessary to verify current immigration status. Information received helps the Office with statistical reports on the international student population, maintaining a cultural resource base and international student advising.

All non-immigrants (F-1/J-1) students and scholars are required to attend the International Student Orientation held during the registration period. The immigration law requires F-1 non-immigrants to complete their registration with the International Students and Scholars Office within 15 days after classes begin.

All non-immigrants are responsible for maintaining legal immigration status. Non-immigrant students in F-1 visa status are required by USCIS regulations to enroll full-time, except for the summer terms. Full-time enrollment is defined as enrollment every semester in a minimum of 12 credit hours. F-1 non-immigrants are not eligible to work off-campus without approval from the USCIS. F-2 and H-4 non-immigrants are not eligible to work.

The legal regulations governing non-immigrant students are complex. The Director of the International Students and Scholars Office is available to explain these regulations in detail and strongly urge non-immigrants to seek advice about their legal immigration status.

It is **mandatory** for F and J students to purchase and maintain the University's comprehensive health and accident insurance coverage which includes repatriation and medical evacuation. This policy also has specific levels of coverage to ensure that it adequately meets requirements to provide for medical costs in the U.S. The ISSO automatically authorizes the Treasurer's Office to bill for the cost of University insurance for non-immigrant students (new and continuing) at the beginning of each semester. Non-immigrant students and Exchange Visitors are also responsible to purchase and maintain similar coverage for each dependent present with them inside the U.S. Government sponsored students should discuss the insurance issue with and ISSO advisor. The advisor will make the final decision regarding the policy provided by the government and determine if it is acceptable. Exchange Visitors in professor, researcher, scholar, etc. categories must purchase and maintain coverage requirements for insurance set forth by the Department of State. Exchange Visitor dependent coverage is also required.

F and J visa holders are considered as non-residents and are assessed non-resident (out-of-state) tuition and fees.

The office is located in Murphy Hall, Room 208, at the corner of Nocho Street and S.G. Thomas Drive. The telephone number is (336) 334-7551; the fax number is (336) 256-2421. The ISSO is staffed with Director, Student Services Manager and an administrative secretary/receptionist. Admissions Application packets for international students are available in the Office of Undergraduate Admissions and on line at www.ncat.edu.

THE RONALD E. MCNAIR POST-BACCALAUREATE ACHIEVEMENT PROGRAM

www.ncat.edu/~remcnair/

The Ronald E. McNair Post-Baccalaureate Achievement Program prepares academically talented low-income/first generation college students and students from groups underrepresented in graduate education, who are enrolled in North Carolina A&T State University and Bennett College for Women, to pursue graduate study leading to the doctoral degree. McNair student participants are from underrepresented segments of society and have demonstrated strong academic potential. Two-thirds of the student participants must meet the criteria of low-income/first generation and one-third must come from groups underrepresented in graduate education. Funded by the US Department of Education and named after Magna Cum Laude Graduate, Ronald E. McNair, the program identifies twenty-eight (28) students annually, in the sophomore to senior year with at least a 3.00 grade point average, for program participation.

The McNair Program provides quality services and instruction to enable academically talented students to successfully enroll in a graduate course of study that leads to the attainment of the Ph.D. and a career in the academy. To ensure student success, all McNair Scholars participate in the following program components:

1. Skill building workshops/seminars designed to expand student learning abilities; establish academic goals; and enhance personal, social, intellectual, and career development.
2. A research methodology class that introduces students to research concepts and techniques used in conducting major research studies.
3. A Summer Research Institute where a maximum of twelve (12) scholars from the academic year component work with a faculty mentor to conduct a graduate level research study and ultimately make a formal presentation of the research findings.
4. Assistance with graduate school application process, including selecting an institution, obtaining financial assistance, preparing for graduate entrance examinations, writing a personal statement and submitting applications.

THE STUDENT SUPPORT SERVICES PROGRAM

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

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

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

THE UNIVERSITY EVENT CENTER

The University Events Center serves as the center through which all on-campus activities will be scheduled and executed. The Center services students, student organizations, faculty, staff administrators and university divisions and offices as well as the outside community in assisting with the events include lectures, receptions, performances, press conferences, concerts, speakers, conferences athletic events and any other activities that are scheduled.

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

For more information on the University Events Center or to schedule an event, please call 336-256-2058.

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 $12,668 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 also accepted in person or by going to 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 $45 NON-REFUNDABLE APPLICATION FEE IS REQUIRED
OF ALL APPLICANTS.

HOUSING DEPOSIT

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

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

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

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

Charge Category – UNDERGRADUATE DAY STUDENT (Student Living Off Campus). **Payment** – Each Semester. **Residence Status** – **In-State** – $2,555.00. **Out-of-State** – $7,276.00. GRADUATE DAY STUDENT (Student Living Off Campus). **Payment** – Each Semester. **Residence Status** – **In-State** – $2,698.50 **Out-of-State** – $7,491.00. **Charge Category** – UNDERGRADUATE BOARDING ONLY STUDENT (Student Living Off Campus but taking meals on campus). **Payment** – Each Semester. **Residence Status** – **In-State** – $3,855.00. **Out-of-State** – $8,576.00. GRADUATE BOARDING ONLY STUDENT (Student Living Off Campus but taking meals on campus). **Payment** – Each Semester. **Residence Status** – **In-State** – $3,998.50. **Out-of-State** – $8,791.00. **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** – $5,569.50. **Out-of-State** – $10,290.50. GRADUATE STUDENT **Residence Status** – **In-State** – $5,713.00. **Out-of-State** – $10,505.50

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 $10 is required and is refundable when the key is returned at the end of the enrollment period or upon withdrawal from campus housing. This $10 mailbox key deposit is included in the fee schedule for lodging students.

REGULAR SESSION CHARGES FOR PART-TIME STUDENTS

NORTH CAROLINA STUDENT RATES

UNDERGRADUATE STUDENTS

No. of Hrs.	Tuition	Other Required Fees	Total
1-5	$327.62	$194.25	$521.87
6-8	$655.25	$952.00	$1,607.25
9-11	$982.88	$1,244.50	$2,227.38
12 or more	$1,310.50	$1,244.50	$2,555.00

GRADUATE STUDENTS

No. of Hrs.	Tuition	Other Required Fees	Total
1-2	$363.50	$132.87	$496.37
3-5	$727.00	$217.75	$944.75
6-7	$1,090.50	$649.63	$1,740.13
8	$1,090.50	$1,244.50	$2,335.00
9 or more	$1,454.00	$1,244.50	$2,698.50

OUT-OF-STATE STUDENT RATES

UNDERGRADUATE STUDENTS

No. of Hrs.	Tuition	Other Required Fees	Total
1-5	$1,507.87	$194.25	$1,702.12
6-8	$2,015.75	$952.00	$3,967.75
9-11	$4,523.63	$1,244.50	$5,768.13
12 or more	$6,031.50	$1,244.50	$7,276.00

GRADUATE STUDENTS

No. of Hrs.	Tuition	Other Required Fees	Total
1-2	$1,561.62	$132.87	$1,694.49
3-5	$3,123.25	$217.75	$3,341.00
6-7	$4,684.88	$649.63	$5,334.51
8	$4,684.88	$1,244.50	$5,929.38
9 or more	$6,246.50	$1,244.50	$7,491.00

(Boarding and Lodging Per Semester) – $2,979.50

INCIDENTAL FEES, DEPOSITS, AND CHARGES

Accident Insurance (Optional)	$ 55.00	Motor Vehicle Registration - Regular Student	$ 227.00
Application Fee (Non-Refundable) No	45.00	Practice Teaching, Practicum Internship	100.00
Credit on Account	35.00	Regalia Fee - Graduate	80.00& 148.00
Bowling Course Fee	11.00	Regalia Fee - Undergraduate	58.00
Chemistry Laboratory Breakage Fee	7.00	ROTC Uniform Deposit	25.00
Breakage Deposit	10.00	Air Force (Refundable)	25.00
Cooperative Education Adm. Fee	30.00	ROTC Uniform Deposit-Army (Refundable)	10.00
Graduation Fee – Undergraduate	60.00	Room Application Fee	150.00
Graduation Fee – Graduate	60.00	Parking Fee Violations	25.00
Identification Card Replacement Fee	25.00	Transcript Fee	4.00
Key Replacement Fee	10.00	USAID Sponsored Student Adm. Fee	
Late Registration Fee	50.00	Per Semester	200.00
Master's Thesis Binding Fee	32.00	Visiting Auditor Course Fee	25.00
Motor Vehicle Registration -		Orientation Fee – New Freshmen & New Transfer	140.00
Evening Student	114.00	Mail Box Key Deposit (Refundable)	10.00

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.

AUDIT OF COURSES

Course auditing is available to any student upon payment of all applicable fees. Full-time students may audit courses without additional charges. Students auditing courses are not required to participate in class discussion, prepare assignments, or take examinations. COURSE AUDITING IS WITHOUT CREDIT.

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 2010-2011 academic year for an in-state graduate student registered for thesis only is $516.50. The charge for an out-of-state graduate student is $2,912.75.

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:

Calendar days completed in the period of enrollment 25 days
Total calendar days in the period of enrollment 117 days = 21.4% 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.

SUMMER SCHOOL CHARGES PER CREDIT HOUR
IN-STATE UNDERGRADUATE

No. of Credit	Tuition	Other Required Fees	Total
1	$85.00	$46.08	$131.08
2	$170.00	$67.16	$237.16
3	$255.00	$88.24	$343.24
4	$340.00	$109.32	$449.32
5	$425.00	$130.40	$555.40
6	$510.00	$151.48	$661.48

7	$595.00	$172.56	$767.56
8	$680.00	$193.64	$873.64
9 or more	$765.00	$214.72	$979.72

OUT-OF-STATE UNDERGRADUATE

No. of Credit	Tuition	Other Required Fees	Total
1	$445.00	$46.08	$491.08
2	$890.00	$67.16	$957.16
3	$1,335.00	$88.24	$1,423.24
4	$1,780.00	$109.32	$1,889.32
5	$2,225.00	$130.40	$2,355.40
6	$2,670.00	$151.48	$2,821.48
7	$3,115.00	$172.56	$3,287.56
8	$3,560.00	$193.64	$3,753.64
9 or more	$4,005.00	$214.72	$4,219.72

IN-STATE GRADUATE

No. of Credit Hrs.	Tuition	Other Required Fees	Total
1	$126.00	$46.08	$172.08
2	$252.00	$67.16	$319.16
3	$378.00	$88.24	$466.24
4	$504.00	$109.32	$613.32
5	$630.00	$130.40	$760.40
6	$756.00	$151.48	$907.48
7	$882.00	$172.56	$1,054.56
8	$1,008.00	$193.64	$1,201.64
9 or more	$1,134.00	$214.72	$1,348.72

OUT-OF-STATE GRADUATE

No. of Credit Hrs.	Tuition	Other Required Fees	Total
1	$499.00	$46.08	$545.08
2	$998.00	$67.16	$1,065.16
3	$1,497.00	$88.24	$1,585.24
4	$1,996.00	$109.32	$2,105.32
5	$2,495.00	$130.40	$2,625.40
6	$2,994.00	$151.48	$3,145.48
7	$3,493.00	$172.56	$3,665.56
8	$3,992.00	$193.64	$4,185.64
9 or more	$4,491.00	$214.72	$4,705.72
Boarding and Lodging - (Double Occupancy)		$773.00	

DETAIL OF FEES, DEPOSITS AND CHARGES

	Per Semester	Per Year
Required Fees - N.C. Student Tuition		
Tuition	$1.310.50	$ 2,621.00
Other Required Fees	1,244.50	2,489.00
Total - N.C. Day Student*	$2,555.00	$ 5,110.00
Boarding and Lodging		
Board and Lodging	$2,979.50	$ 5,959.00
Reserve for Construction and/or		
Renovation of Dormitories	$ 35.00	$ 70.00
Mail Box Key (Refundable)	10.00	10.00
Total Boarding and Lodging	$3,024.50	$ 6,039.00
Total N.C. Boarding and Lodging Student	$5,579.50	$11,998.00
Out-of-State Student Tuition	$6,031.50	$12,063.00
Other Required Fees	$1,244.50	$ 2,489.00
Total Out-of-State Student*	$7,276.00	$14,552.00
Boarding and Lodging	$3,024.50	$ 6,039.00
Total Out-of-State Boarding and Lodging	$10,300.50	$20,591.00

*In-state graduate students should add $143.50.00 to the per semester totals and $287.00.00 to the per year totals. Out-of-state graduate students should add $215.00 to the per semester totals and $430.00 to the per year totals.

STUDENT FINANCIAL AID

http://www.ncat.edu/~finaid/

The Office of Student Financial Aid makes every effort to assure that no qualified student will be denied the opportunity to attend because of a lack of funds. Financial aid is funds awarded to assist students in covering their educational expenses. Financial aid is awarded 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.

The amount of the contribution expected from parents is related to consideration of a family's net income, number of dependents, 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 at www.fafsa.ed.gov.

The University utilizes the "packaging concept" of 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)
Academic Competitiveness Grant (ACG)
National Science and Mathematics Access to Retain Talent Grant (National SMART)
Federal Work-Study Program
State Tuition Grant (Need Based)
Federal Perkins Loan
Campus Base 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 www.ncat.edu.

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 complete the following steps:

1. Submit the Free Application for Federal Student Aid to the Federal processor.
2. Submit copies of income information or other documents, if selected for verification or information is requested, to the Office of Student Financial Aid.

A student who completes the Free Application for Federal Student Aid will be considered for all financial assistance at the University for which he/she is eligible provided funding is available. The priority deadline is March 15th to have a processed FAFSA and all requested documents on file in the Office of Student Financial Aid Office to receive priority consideration for assistance. Students must re-apply each year; financial aid is not an automatic process. A separate application must be completed for summer sessions.

Entering Students. A student entering the University as a new student or continuing student should apply for financial aid immediately after January 1st of any academic year. An award will not be made until a student is 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 Student 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 Financial Aid Office. Information about graduate assistantships and fellowship may be obtained from the Graduate School Office or 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 better cumulative grade point average.

Information about Other Financial Aid Programs

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

1. *North Carolina Student Incentive Grant (NCSIG).* Grant funds available to North Carolina residents who are full-time undergraduate students and who have demonstrated substantial financial need. Students are encouraged to complete the Free Application for Federal Student Aid by March 15th.
2. *The University of North Carolina Need Base 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.
3. *North Carolina Education Lottery Scholarship (NCELS).* Grants funds available to North Carolina residents who enroll at least half-time as an undergaduate student. The award amount is between $100-$2,500 per year. Eligibily is based on data calculated from the FAFSA.
4. *Vocational Rehabilitation.* Grants may be provided to students who have a mental or physical disability that is an impediment to employment. The amount of the grant is based on financial need and the type of program in which the student is enrolled. North Carolina students should contact the Vocational Rehabilitation Office nearest the student's home or the North Carolina Division of Vocational Rehabilitation Services in Raleigh, NC.
5. *North Carolina Prospective Teachers' Scholarship-Loan.* This program provides scholarship loans to qualified students who are pursing a college degree to beome a public school teacher in the State of North Carolina. Applications may be completed on-line at www.cfnc.org. Additional information may be obtained at http://www.dpi.state.nc.us/scholarships.
6. *North Carolina Veterans' Scholarship.* A full scholarship for four academic years at a state-supported institution may be awarded to children of certain deceased or disabled veterans or children of veterans who were listed as POW/MIA. The veteran must have been a legal resident of North Carolina at the time of entry into the service or the child must have been born and resided in North Carolina. Interested students should contact the North Carolina Division of Veterans Affairs in Raleigh, NC.
7. *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.
8. *Nurse Scholars Program (NSP).* The Nurse Scholars Program is a competitive, merit-based scholarship/loan program available to North Carolina students entering the nursing profession. Students are selected based on academics, leadership potential and the desire to practice nursing on a full-time basis in North Carolina. Students may contact the Office of Student Financial Aid or School of Nursing at North Carolina Agricultural and Technical State University for additional information.
9. *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.
10. *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 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.
11. *Special Engineering Grants and Scholarships.* Students admitted as Engineering Majors are reviewed as part of the admissions process for eligibility for several scholarship programs. Criteria include a high school record of distinction. These programs are supported by the National Action Council for Minorities in Engineering, Inc. (NACME), R.J. Reynolds Company, and others. In addition, a variety of corporations support scholarship and Co-op programs, internships, and summer employment opportunities for engineering students who have attained outstanding scholastic records during their freshman or sophomore years and who have met other program-specific criteria.
12. *The North Carolina Teaching Fellows Scholarship Program.* The North Carolina Teaching Fellows Scholarship Program provides $6500 per year to selected outstanding North Carolina high school seniors. Applicants are chosen on the basis of high school grades, class standing, SAT scores, writing samples, community service, extracurricular activities, and references from teachers and members of the community. Recipients must be accepted for admission to the University. Applications are available from the North Carolina Teaching Fellows Program and high school counselors' offices. Additional information may be obtained at http://www.teachingfellows.org/prospectivestudents/.
13. *Ronald McNair Scholarships.* Ronald McNair Scholarships are offered to economically or financially disadvantaged students entering the fields of physics or engineering. High school seniors are invited to apply for these scholarships. Interested students should contact the Department of Physics or Engineering at North Carolina Agricultural and Technical State University.
14. *North Carolina Student Loan Program for Health, Science, and Mathematics.* Legal residents of North Carolina accepted as full-time students in an accredited baccalaureate or master's programs leading to a degree in specified health, science or mathematics-related fields. Recipients are selected according to their major, academic

capabilities and financial need. Maximum loans range from $3,000 to $6,500 a year depending on the degree level. The scholarship-loan is renewable.

15. *Sigmund Sternberger Scholarships.* Sigmund Sternberger scholarships are available to assist full-time undergraduate Guilford County students attending the University.
16. *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.
17. *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.
18. *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.
19. *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. 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 February 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 Student Financial Aid Office or any NC A&T State University Alumni Chapter.
20. *UNC Campus Scholarship.* The UNC Campus Scholarship is intended to provide assistance to a diverse group of students at NC 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. The total scholarship award under the program shall carry a maximum value not to exceed $3,000.
21. *Nurse Education Loan Program (NESLP).* The Nurse Education Loan Program was created to reduce the shortage of practicing nurses in North Carolina. The scholarship loan is based on the student's financial need and other factors such as academic performance. Additional information may be obtained from the School of Nursing or the Office of Student Financial Aid at North Carolina A&T State University.

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 institutional funds. The satisfactory academic progress applies to all terms regardless of whether financial aid was received. Satisfactory academic progress will be evaluated for all students (full or part-time) annually (at the end of each spring semester). Students re-admitted under the "five year rule" must also meet the Satisfactory Academic Progress standards to receive financial aid.

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

- Minimum Cumulative Grade Point Average (GPA)
- Minimum Completion Standard for Attempted Credit Hours
- Maximum Time Frame for Degree Completion

Undergraduate SAP Requirements

All undergraduate students must maintain the following minimum requirements to be in compliance with SAP:

Total Number of Attempted Hours	Minimum Cumulative GPA
1-12	1.60
13-24	1.75
25-36	1.90
37 or more	2.00

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 Hours Attempted
- 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).

To calculate 67%, multiply the total number of attempted hours by .67 (rounded 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 x .67 = 20) in order to ensure SAP for the year.

Maximum Time Frame

The number of credit hours a student attempts may not exceed 150% of the number of credit hours required for graduation in his or her program of study, as published in the University Bulletin. If the published number of hours required for graduation is 124, a student may not attempt more than 186 credit hours (124 x 1.5 = 186) 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.

Financial Aid Termination

Students who do not meet the Satisfactory Academic Progress standards are not eligible for further financial aid and this includes 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 will be eligible for available financial assistance. Students will be notified by Office of Student Financial Aid of their financial aid termination at the end of the spring semester through a letter to their permanent home mailing address and to their University e-mail account.

Students whose financial aid is terminated from financial aid must remove their academic deficiencies or have an appeal granted before their aid can be reinstated. Students who withdraw from a class or classes after the add/drop period, receives all “F’s” for the semester or a grade of “Incomplete” may affect their ability to earn the required credit hours.

Conditions for Reinstatement

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

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

To appeal for the reinstatement of financial aid eligibility, students should complete and submit the Satisfactory Academic Progress appeal form to the Office of Student Financial Aid. A letter from the student documenting 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 must accompany the Satisfactory Academic Progress appeal form.

Students will be notified, in writing of the appeal decision. If an appeal is approved, the student must sign a Satisfactory Academic Progress Action Plan with the Office of Student Financial Aid, which indicates the stipulation of the appeal. Students who are granted an appeal and do not meet the requirements indicated on the action plan are placed on financial aid suspension until satisfactory academic progress is achieved. The Financial Aid Appeals Committee only grants a student two appeal approvals.

ADMISSIONS

http://www.ncat.edu/admissions.html

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.

Office of Enrollment Management

The Office of Enrollment Management is highly conscientious in its commitment to provide quality support services to prospective and current students to ensure all experience a seamless recruitment, enrollment, and retention and graduation process at North Carolina Agricultural and Technical State University. The Office of Enrollment Management encompasses the Offices of Undergraduate Admissions, Student Financial Aid, Registrar, New Student Orientation and Aggie Pride Solution Center.

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

The application for admissions deadline is May 1 for the fall semester and the spring semester is November 1. All applications for admissions received after these deadline dates will be considered on a space available basis and we stress that all applicants honor these deadlines. Applications for admissions and a non-refundable application fee of $45.00 can be submitted electronically at http://www.ncat.edu/~admit/apply.html or via mail to the Office of Undergraduate Admissions.

Supporting Documentation

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

1. Official high school transcript sent from the institution directly to the Office of Undergraduate Admissions
2. Official transcripts, if applicable, from all previously attended college(s) sent from the institution directly to the Office of Undergraduate Admissions
3. Official results of the Scholastic Aptitude Test (SAT) or American College Test (ACT) sent directly from aforementioned testing agency. The University's CEEB code for the SAT report is 5003 and the code for the ACT report is 3060. Official scores listed on high school transcripts and student received reports may be utilized for admission consideration.
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 and submission of their Intent To Enroll form within ten days of receipt of their official acceptance letter. The Intent To Enroll form is at: http://www.ncat.edu/~admit/Intent_Enroll.html. 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 registration for each semester, all new freshmen must submit a final official high school transcript that indicates date of graduation, and all transfer students must submit all final official college transcript(s) to the Office of Undergraduate Admissions.

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

ADMISSIONS CRITERIA

Freshman Applicant

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

1. Evidence of academic achievement and promise with considerable facility in the use of the English language and with an understanding of the fundamental mathematical processes;
2. Complete record from an accredited secondary or preparatory school with graduation based on no fewer than 19 units; (See minimum undergraduate course requirements in next section.)
3. Satisfactory scores on the Scholastic Assessment Test or the American College Test; (Students may be exempt from these tests if they are at least twenty-four years (24) old at the point of matriculation to the University.)
4. Satisfactory class rank or grade point average.

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

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 not more than 18% and North Carolina A&T State University adheres to this policy. The College of Engineering is exempt from this policy. Therefore, academic achievement and SAT/ACT scores must be competitive.

Minimum Undergraduate Course Requirements

For admittance to all undergraduate programs all freshman applicants must possess the following minimum high school course requirements for admission:

1. English – 4 units
2. Science – 3 units: A biological science, a physical science and a science with a laboratory are required.
3. Social Sciences – 2 units: United States History is required as one of the social sciences.
4. 2 units of the same Foreign Language.
5. Mathematics – 4 units: Mathematical course units must include Algebra I, Geometry, Algebra II and one of the following Advanced Mathematics courses:
   - AP Calculus A/B
   - AP Calculus B/C
   - AP Statistics
   - Pre-Calculus (formerly Advanced Math)
   - Discrete Mathematics
   - Integrated Mathematics IV
   - Advanced Functions and Modeling
   - IB Mathematics Level II

The following course can be taken at the community college to fulfill this requirement also, 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 155 **AND** 155A (Statistical Analysis)
- MAT 165 **AND** MAT 165A (Finite Math)
- MAT 171, 171A (Pre-Calculus Algebra) **AND** MAT 172, 172A (Pre-Calculus Trigonometry)
- MAT 175 **AND** MAT 175A (Pre-Calculus)
- MAT 252 **AND** MAT 252A (Statistics II)
- MAT 271 **AND** MAT 271A (Calculus I)
- MAT 272 **AND** MAT 272A (Calculus II)

1. 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.
2. 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.

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 not presently on social or academic probation at the last or current school of attendance;

2. has not been suspended or dropped from another institution; and
3. has a cumulative grade point average of at least a 2.0 or higher on a 4.0 scale from the transferring institution and is eligible to return to that institution.

Applications from transfer students cannot be considered until all credentials are received from the high school and all other institutions previously attended. In order to be exempt from all new freshman requirements, transfer applicants who have attended another accredited college must have earned six (6) transferable semester hours in each of the following areas – College level English, foreign language, college level mathematics, natural science and social and behavioral science, for a minimum of thirty (30) semester hours of transferable course work . Transfer for programs in the College of Engineering requires a 2.5 GPA if transferring from a four year institution with an accredited engineering program or 3.0 GPA if transferring from other types of institutions.

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 were awarded the high school diploma prior to 1988 and/or at least twenty-four years (24) old prior to the beginning of classes
2. Applicants who have the associate of arts, the associate of science, or the associate of fine arts, the baccalaureate or any higher level degree.
3. Applicants who have completed a degree under an articulation agreement.
4. Applicants who have completed six (6) semester hours of degree creditable work in each of the following areas: English, Mathematics, the Natural Sciences, the Social and Behavioral Sciences, and Foreign Languages.

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 eighty (80) semester hours from a four year college and sixty-four (64) semester hours from a two year college.

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 graduate from a North Carolina community college with an **Associate in Arts (AA) or Associate in Science (AS)** or complete the 44-semester credit hours of general education core to automatically receive NC A&T general education transfer equivalency credits for all of the 44 semester hours. To obtain more information about the CAA visit: http://www.northcarolina.edu/aa/articulation/index.htm. NC Community College transfer students who graduate with an **Associate of Applied Science (AAS)** who satisfactory complete the degree program with a grade of "C" or better in all courses that are designated for college transfer will receive credit for those courses. Articulation of AAS degree programs will be handled on a bilateral articulation agreement rather than on a statewide basis. The link to the NC A&T Bilateral Agreement is: http://www.ncat.edu/~admit/transfer-course.html and the Office of Undergraduate Admissions utilizes this document to evaluate course-by-course and award transfer credit. 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.

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 form for admissions with 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 thirty (30) days before the beginning of the semester in which they plan to enroll or sooner. The credentials may include official high school transcripts, college transcript(s) and other appropriate documents to complete the applicant's application for admissions file.

Applicant Interview for Admissions

An applicant interview is not a requirement in the admissions process. Applicants with unusual circumstances are welcome to schedule an appointment with an Admissions Counselor or Director of Undergraduate Admissions to discuss their matter.

Campus Visits

The Office of Undergraduate Admissions hosts campus tours on Monday through Friday between the hours of 9:00 am to 3:00 pm. To make a reservation for a campus tour email our Campus Visit Coordinator at www.ncat.edu/~admit/direct.html or call (800) 443-8964.

New Student Orientation

It is mandatory that all newly admitted students attend a new student orientation session and this includes freshmen, transfer, and special, international students. Register for a new student orientation session at: http://www.ncat.edu/~freshman/. Before you register you must complete and submit an Intent To Enroll form to confirm you plan to attend the University at: http://www.ncat.edu/~admit/Intent_Enroll.html.

Permission to Take Courses Elsewhere

North Carolina Agricultural and Technical State University degree-seeking students who desire to take courses elsewhere are required to obtain approval from their school/college dean before registering at another institution. Course descriptions are needed in order for accurate evaluations to be done. Only the credit hours will transfer to North Carolina Agricultural and Technical State University and a minimum grade of "C" is required for a course to transfer. The University does not accept credit from proficiency examinations or grades of pass or fail. Upon receiving approval to take courses elsewhere from their school/college dean, degree-seeking students must complete and submit a Transient Study Form to the Office of Undergraduate Admissions. Transient Study Forms and Guidelines for off-campus study are available at: www.ncat.edu/~admit/transfercourse.html .

Regulations for Veterans and Children of Deceased and Disabled Veterans

Veterans and children of deceased and disabled veterans must meet regular admission requirements. 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.

Graduate Applicants

To obtain information for the Graduate School please contact their office at (336) 285-2366 and/or visit their website at: www.ncat.edu/~gradsch/.

RESIDENCE STATUS FOR TUITION PURPOSES

The basis for determining the appropriate tuition charge rests upon whether a student is a resident or a nonresident for tuition purposes. Each student must make a statement as to the length of his or her residence in North Carolina, with assessment by the institution of that statement to be conditioned by the following:

Residence. To qualify as a resident for tuition purposes, a person must become a legal resident and remain a legal resident for at least twelve months immediately prior to classification. Thus, there is a distinction between legal residence and residence for tuition purposes. Furthermore, twelve months legal residence means more than simple abode in North Carolina. In particular it means maintaining a domicile (permanent home of indefinite duration) as opposed to "maintaining a mere temporary residence or abode incident to enrollment in an institution of higher education." The burden of establishing facts which justify classification of a student as a resident entitled to in-state tuition rates is on the

applicant for such classification, who must show his or her entitlement by the preponderance (the greater part) of the residentiary information.

Initiative. Being classified a resident for tuition purposes is contingent on the student's seeking such status and providing all information that the institution may require in making the determination.

Parents' Domicile. If an individual, irrespective of age, has living parent(s) or court-appointed guardian of the person, the domicile of such parent(s) or guardian is, prima facie, the domicile of the individual; but this prima facie evidence of the individual's domicile may or may not be sustained by other information. Further, nondomiciliary status of parents is not deemed prima facie evidence of the applicant child's status if the applicant has lived (though not necessarily legally resided) in North Carolina for the five years preceding enrollment or re-registration.

Effect of Marriage. Marriage alone does not prevent a person from becoming or continuing to be a resident for tuition purposes, nor does marriage in any circumstance ensure that a person will become or continue to be a resident for tuition purposes. Marriage and the legal residence of one's spouse are, however, relevant information in determining residentiary intent. Furthermore, if both a husband and wife are legal residents of North Carolina and if one of them has been a legal resident longer than the other, then the longer duration may be claimed by either spouse in meeting the twelve-month requirement for in-state tuition status.

Military Personnel. A North Carolinian who serves outside the State in the armed forces does not lose North Carolina domicile simply by reason of such service. And students from the military may prove retention or establishment of residence by reference, as in other cases, to residentiary acts accompanied by residentiary intent.

In addition, a separate North Carolina statute (G.S. 116-143.3) affords tuition rate benefits to certain military personnel and their dependents, even though not qualifying for the in-state tuition rate by reason of twelve months legal residence in North Carolina. Members of the armed services who are currently on active duty may be charged a tuition rate lower than the out-of-state tuition rate. A dependent relative of a service member stationed in North Carolina is eligible to be charged the in-state tuition rate while the dependent relative is living in North Carolina with the service member and if the dependent relative has met any requirement of the Selective Service System applicable to the dependent relative. These tuition benefits may be enjoyed only if the applicable requirements for admission have been met; these benefits alone do not provide the basis for receiving those derivative benefits under the provisions of the residence classification statute reviewed elsewhere in this summary. Application for this benefit must be made prior to the beginning of the first enrolled term of each academic year for which the benefit is sought.

Grace Period. If a person (1) has been a bona fide legal resident of the required duration, (2) has consequently been classified a resident for tuition purposes, and (3) has subsequently lost North Carolina legal residence while enrolled at a public institution of higher education, that person may continue to enjoy the in-state tuition rate for a grace period of twelve months measured from the date on which North Carolina legal residence was lost. If the twelve months ends during an academic term for which the person is enrolled at a State institution of higher education, the grace period extends, in addition, to the end of that term. The fact of marriage to one who continues domiciled outside North Carolina does not by itself cause loss of legal residence marking the beginning of the grace period.

Minors. Minors (persons under 18 years of age) usually have the domicile of their parents, but certain special cases are recognized by the residence classification statute in determining residence for tuition purposes.

(a) If a minor's parents live apart, the minor's domicile is deemed to be North Carolina for the time period(s) that either parent, as a North Carolina legal resident, may claim and does claim the minor as a tax dependent, even if other law or judicial act assigns the minor's domicile outside North Carolina. A minor thus deemed to be a legal resident will not, upon achieving majority before enrolling at an institution of higher education, lose North Carolina legal residence if that person (1) upon becoming an adult "acts, to the extent that the person's degree of actual emancipation permits, in a manner consistent with bona fide legal residence in North Carolina" and (2) "begins enrollment at an institution of higher education not later than the Fall academic term following completion of education prerequisite to admission at such institution."

(b) If a minor has lived for five or more consecutive years with relatives (other than parents) who are domiciled in North Carolina and if the relatives have functioned during this time as if they were personal guardians, the minor will be deemed a resident for tuition purposes for an enrolled term commencing immediately after at least five years in which these circumstances have existed. If under this consideration a minor is deemed to be a resident for tuition purposes immediately prior to his or her eighteenth birthday, that person on achieving majority will be deemed a legal resident of North Carolina of at least twelve months' duration. This provision acts to confer in-state tuition status even in the face of other provisions of law to the contrary; however, a person deemed a resident of twelve months duration pursuant to this provision continues to be a legal resident of the State only so long as he or she does not abandon North Carolina domicile.

Lost but Regained Domicile. If a student ceases enrollment at or graduates from an institution of higher education while classified a resident for tuition purposes and then both abandons and reacquires North Carolina domicile within a twelve-month period, that person, if he or she continues to maintain the reacquired domicile into re-enrollment at an institution of higher education, may re-enroll at the in-state tuition rate without having to meet the usual twelve-month durational requirement. However, any one person may receive the benefit of the provision only once.

Change of Status. A student admitted to initial enrollment in an institution (or permitted to re-enroll following an absence from the institutional program which involved a formal withdrawal from enrollment) must be classified by the admitting institution either as a resident or as a nonresident for tuition purposes prior to actual enrollment. A residence status classification once assigned (and finalized pursuant to any appeal properly taken) may be changed thereafter (with corresponding change in billing rates) only at intervals corresponding with the established primary divisions of the academic year.

Transfer Students. When a student transfers from one North Carolina public institution of higher education to another, he or she is treated as a new student by the institution to which he or she is transferring and must be assigned an initial residence status classification for tuition purposes.

Aliens and Foreigners. Aliens lawfully admitted into the United States for permanent residence are subject to the same considerations as citizens in the determination of residentiary status for tuition purposes. Certain classes of both resident and nonresident aliens are subject to these same considerations, but certain classes are not. More complete information on the residence classification of aliens may be obtained from the Manual (referred to above) or from the Office of the Provost.

North Carolina Public School Teachers. Under separate statute (G.S. 116-143.5), certain North Carolina public school teachers (or other personnel paid on the teacher salary schedule) are eligible to be charged the in-state tuition rate for courses relevant to teacher certification or professional development, irrespective of their length of legal residence. To qualify, the applicant must be a legal resident of North Carolina and employed full-time by a North Carolina public school. Application for this benefit must be made prior to the beginning of each academic term for which the benefit is sought.

Tuition Waivers. A separate North Carolina statute (G.S.115B) provides tuition waiver for North Carolina residents who are at least age 65. The tuition waiver benefit also extends to certain family members of deceased or totally and permanently disabled emergency workers of North Carolina.

ACADEMIC INFORMATION AND REGULATIONS

http://www.ncat.edu/~registra/

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 registration. Advisors will make every attempt 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

A student entering the University from secondary school may obtain advanced placement and college credit on the basis of performance on the College Entrance Examination Board Advanced Placement examinations. A score of three (3) or higher on any CEEB advanced placement examination will entitle the student to credit for the comparable University course as determined by the Director of Admissions in consultation with the chairperson of the appropriate department.

AP EXAMINATION	SCORE REQUIRED	HOURS GRANTED	UNIVERSITY COURSES SATISFIED
Art History	3	3	Art 224
Biology	3	4	Biology 100
Calculus AB	3	4	Math 131
Calculus BC	3	4	Math 131,132
Chemistry*	4	3	Chemistry 106
Comparative Government & Politics	3	3	Political Science 310
Computer Science A	3	3	Computer Science 120
Computer Science AB	3	4	Computer Science 160
English Language & Composition	3	3	English 100, UNST 110
	4	6	English 100, 101, UNST 110
English Literature & Composition	3	3	English 100, UNST 110
	4	6	English 100, 101, UNST 110
European History	3	6	History 303, 304
French Literature	3	6	FOLA 300, 301
German Language	3	6	FOLA 102, 103
Latin/Virgil	3	6	Foreign Language Elective
Latin/Catallus, Horace	3	6	Foreign Language Elective

French Language	3	6	FOLA 100, 101
Environmental Science	3	3	EASC 201
Spanish Language	3	6	FOLA 104, 105
Macroeconomics	3	3	Economics 201
Microeconomics	3	3	Economics 200
Music Theory	3	6	Music 101, 102
Physics B*	3	6	Physics 225, 226
Physics C*	3	8	Physics 241, 242
Psychology	3	3	Psychology 320
Spanish Literature	3	6	FOLA 320, 321
Studio Art/Drawing	3	3	Art Elective
Studio Art/General	3	3	Art 100
U.S. Government & Politics	3	3	Political Science 200
United States History	3	6	History 204, 205

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

COLLEGE LEVEL EXAMINATION PROGRAM (CLEP)
GENERAL EXAMINATION

	Minimum Acceptable Score	Course(s) and Credits Awarded		
		Department	Course #	Credits
English Composition with Essay	50	English	100, 101	6
Mathematics	50	Math	101, 102	6
CLEP Subject Exam				
Accounting, Intro.	50	Accounting	221, 222	6
American Government	50	Poli. Science	200	3
American History I 1600-1877	50	History	204	3
American History II 1865-Present	50	History	205	3
American Literature	50	English	430, 431	6
Biology, General	50	Biology	100	4
Calculus, Intro.	50	Math	112	4
Chemistry, General	50	Chemistry	106, 107	8
College Algebra	50	Math	101	3
College Algebra-Trig.	50	Math	102	3
College Algebra-Trig.	50	Math	111	4
College French, Levels 1 & 2	50	FOLA	100, 101	6
College French, Levels 1 & 2	62	FOLA	100, 101 300, 301	12
College German, Level-1	50	FOLA	102, 103	6
College German, Level-2	62	FOLA	102, 103, 422, 423	12
College Spanish, Levels 1 & 2	50	FOLA	104, 105	6
College Spanish, Levels 1 & 2	66	FOLA	104, 105, 320, 321	12
Infor. Systems & Computer App.	50	Bus. Admin.	361	3
Econ. (Macro), Intro.	50	Economics	201	3
Econ (Micro), Intro.	50	Economics	200	3
Edu. Psycho.	50	Ed. Psycho. & Guid.	435	3
English Lit.	50	English	220, 221	6
Human Growth & Development	50	Home Econ.	311	3
Human Growth & Development	50	Psychology	324	3
Psychology, Intro.	50	Psychology	320	3
Sociology, Intro.	50	Soc. & Social Service	100	3

COURSES OF STUDY

A student should refer to the requirements of his/her respective department or school about his/her program of study and confer with his/her advisor whenever problems arise. The student is expected to follow the program outlined as

closely as possible. This is very important during the first two years when he or she is satisfying basic degree requirements and prerequisites for advanced work.

DECLARATION OF A MAJOR

A student is required to declare a major at or before completing 45 semester hours. Students will not be allowed to register for the next semester if a major is not declared.

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

Registration is time designated each semester to allow the student and his or her advisor to review the student's records and plan a course of study for the next semester.

The student should discuss academic problems with the advisor during this time. Registration helps to ensure that the courses requested on the registered schedule will be available to the student the following semester.

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 with 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.

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.

AUDITORS

Students who intend to register for a course for which they do not want to earn credit may register as an audit student by picking up the Audit Registration Form from the Office of the Registrar. He or she must register officially for the course and pay the University Cashier. Attendance, preparation, and participation in the classroom discussion and laboratory exercises shall be at the discretion of the instructor.

A student who audits courses is not required to take examinations and tests and he or she receives no credit. An auditor may not change his or her registration from audit to credit or from credit to audit after the end of the late registration period.

ACADEMIC COURSE LOAD

According to Administrative Memorandum – Number 345, all full-time undergraduate students are expected to comply with the Board's 1993 Plan to Improve Graduation Rates by enrolling in an average of at least 15 semester hours per term in order to graduate in four years. Since the majority of North Carolina Agricultural and Technical State University's academic programs require 128 semester hours, to complete degree program in 8 semesters, requires students to complete an average of 16 hours per semester or complete 32 semester hours in an academic year.

Undergraduate students enrolled in twelve (12) or more semester hours are designated as full-time students and must pay full tuition and fees. Full-time students usually carry from 15 to 18 semester hours. To enroll in more than 18 semester hours, students must get approval from the department head and the dean.

The maximum course load that students who are on academic probation may carry is 15 semester hours. The maximum course load for a student with a GPA less than 3.0 is 18 hours.

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.

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

A student who has received a failing grade in a required course at this University must repeat and pass the course unless the Dean of the College/School authorizes a substitute course. No single course may be repeated more than (2) two times. Course withdrawals do not count toward the attempts. A course completed with a grade of "C" or higher may not be repeated for a higher grade. Special authorization may be requested, as needed, from the Dean of the appropriate College/School to assist the student with completing requirements for graduation.

Dual course credit is not allowed. For example, only three (3) hours of credit are allowed for a three (3) hour course.

All grades earned by the student are a part of his/her official academic record and will appear on his/her transcript.

GENERAL EDUCATION REQUIREMENTS OF THE UNIVERSITY

The general education requirements of the university are satisfied by the University Studies program. Additional information about the University Studies program is found in the University Studies Program section of this Bulletin.

In order to graduate, every student beginning in the 2006-2007 academic year is required to complete a minimum of 37 credit hours of coursework, as specified below.

Freshman Year (Foundation Courses):

Incoming freshmen are required to complete 13 credit hours of University Studies (UNST) foundation-level courses during their first 32 credit hours of study at North Carolina A&T State University, including the following:

- UNST 100 – University Experience
- UNST 110 – Critical Writing
- UNST 120 – The Contemporary World
- UNST 130 – Analytical Reasoning
- UNST 140 – The African-American Experience: An Interdisciplinary Perspective

Sophomore/Junior Years (Theme-based Courses and Major-Specified Courses):

All students must complete:

- 12 credit hours of theme-based courses in a single thematic cluster, and
- 9 credit hours of major-specified courses that support University Studies learning objectives.

Theme-based courses are taken only after a student has completed all University Studies foundation-level courses and must be completed prior to beginning the senior capstone experience. Students choose a University Studies thematic cluster in consultation with their advisor or major department chair prior to completing University Studies foundation-level coursework. Students wishing to switch clusters must still complete 12 credit hours in a single thematic cluster unless otherwise approved by the Dean of University Studies. A listing of thematic clusters and eligible courses is included in the University Studies Program section of this Bulletin.

Senior Year (Capstone Experience):

During their senior year, all students must complete 3-6 credit hours of a senior capstone experience (typically specified by the student's major department).

Service/Experiential Learning Requirement:

In addition to the 37 credit hour requirement outlined above, all students are required to complete 50 hours of service/experiential learning prior to the senior capstone experience.

Mathematics and Freshman Proficiency:

All Freshman students are required to demonstrate proficiency in mathematics and English composition by their performance on proficiency examinations completed prior to the start of the first semester of coursework. Freshman students who do not meet Freshman proficiency competency requirements in English composition and/or mathematics must successfully complete UNST 103 (Basic Writing) and/or MATH 099 (Intermediate Mathematics) with a passing grade before being allowed to enroll in any University Studies Foundation courses.

COURSE CREDIT BY EXAMINATION

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

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

Grading System

Grades are assigned and recorded as follows:

Grade	Description	Quality Points
A	Excellent	4
B	Good	3
C	Average	2
D	Below Average, but passing	1
F	Failure	0
U	Unsatisfactory	0
I	Incomplete	
IP	In Progress	
CE	Credit by examination	
AP	Advanced Placement	
S	Satisfactory	
AU	Audit	
W	Withdrew	
P	Passing	

Standards of Academic Standing

Students are considered to be in good academic standing if they meet the following minimum cumulative grade point average (GPA) criteria:

Credit Hours Attempted at NC A&T SU plus Credit Hours Transferred	Minimum Grade Point Average
1 – 12	1.60
13 – 24	1.75
25 – 36	1.90
37 or more	2.00

The University, on the recommendation of a student's major academic area, 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

A student who earns a mid-term grade of D or F will be sent an **academic warning** notice from the Office of the Registrar. While being placed on **academic warning** does not become a part of the student's permanent record, the student is warned that failure to meet the minimum standards as defined above by the end of that semester may result in academic probation, suspension or dismissal.

ACADEMIC PROBATION

A student will be placed on academic probation when they fail to meet the cumulative grade point average listed above at the end of the academic semester.

Terms of Academic Probation:

A. Students placed on academic probation are required to enroll in and pass the Academic Skills Course (0 credit, graded Pass/Fail) conducted by the Center for Academic Excellence. Failure to participate in this course will result in immediate academic suspension.
B. Students on academic probation must earn a minimum 2.00 semester GPA each semester to be eligible to continue to enroll until good academic standing is restored.
C. In consultation with their academic advisors, students on academic probation must develop an academic plan of action for each semester they are on academic probation. The student, the academic advisor, the academic unit's

retention coordinator and the Office of Enrollment Management will receive copies of the academic plan of action for information purposes and for monitoring compliance.

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

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.

ACADEMIC SUSPENSION

A student will be placed on academic suspension for one semester if they fail to earn a 2.00 semester GPA each semester of the academic probationary period.

Students placed on academic suspension are denied permission to enroll for the next regular fall or spring semester, whichever comes first. Suspended students may enroll in the summer semester for a maximum of 7 credit hours per summer semester. After a one-semester suspension, students may apply for readmissions to the University. The student's academic department and college/school must approve the readmission. Students must be accepted into an academic department in order to be readmitted after academic suspension. During the readmission process, students may simultaneously seek and execute a change of major. Such a change of major and the student's readmission must be supported by the student's new academic department. Students are advised to begin the readmission process/change of major with their academic department and college/school prior to the University's posted application deadline. If readmitted, the student will return in an academic probation status, which will be maintained until the student achieves good academic standing. In consultation with their academic advisor, students on Academic Probation after Suspension must develop an academic plan of action for each semester they are on academic probation after suspension. The student, the academic advisor, the academic unit's retention coordinator and the Office of Enrollment Management will receive copies of the academic plan of action 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) by the appeals deadline in the academic calendar. Academic suspension appeals are considered where circumstances beyond a student's control 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 on the appeal in writing. If an appeal of academic suspension is approved, the student will return in an academic probation after suspension status, which will be maintained until the student achieves good academic standing.

Any student who is placed on academic suspension at the end of the spring semester may attend both sessions of summer school to remove academic deficiencies. However, if the suspended student does not raise his or her grade point average to the required minimum, the student will remain suspended.

An academically suspended student who has not been enrolled at North Carolina Agricultural and Technical State University for at least 5 years (10 consecutive fall and spring semesters) may be eligible for one readmission under the "Five Year Readmission Policy" described below.

ACADEMIC DISMISSAL

Academic dismissal will occur when a student returns after a one semester suspension, or a successful appeal after 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.

One year after an academic dismissal, a student may apply for readmission to the University. The student's academic department and college/school must approve the readmission. Students must be accepted into an academic department in order to be readmitted after academic dismissal. During the readmission process, students may simultaneously seek and execute a change of major. Such a change of major and the student's readmission must be supported by the student's new academic department. Students are advised to begin the readmission process/change of major with their academic department and college/school prior to the University's posted application deadline. If readmitted, the student will return in an academic probation status, which will be maintained until the student achieves good academic standing. In consultation with their academic advisor, students on Academic Probation after Dismissal must develop an academic plan of action for each semester they are on academic probation after dismissal. The student, the academic advisor, the academic unit's retention coordinator and the Office of Enrollment Management will receive copies of the academic plan of action for information purposes and for monitoring compliance.

An academically dismissed student who has not been enrolled at North Carolina Agricultural and Technical State University for at least 5 years (10 consecutive fall and spring semesters) may be eligible for one readmission under the "Five Year Readmission Policy" described below.

ACADEMIC DISMISSAL APPEALS

Any student who has been dismissed from the University must be out for a minimum of one semester before an appeal may be made to the **Committee on Admission and Academic Retention**. Appeals are to be addressed to the Committee on Admission and Academic Retention in care of the Office of the Vice Chancellor for Academic Affairs.

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 schools 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 or 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 for a grade of B; by 2 for a grade of C; 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:

100-399 – lower level courses primarily for freshmen and sophomores
400-599 – upper level courses primarily for juniors and seniors
600-699 – courses for undergraduate seniors and graduate students
700-799 – courses for graduate students and appropriate professional students' special programs
800-899 – courses for doctoral students
900-999 – courses for graduate students (999 continuation of thesis courses)

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

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

Classification	***Semester Hours Completed***
Freshman	0-29
Sophomore	30-59
Junior	60-89
Senior	90 or above

CHANGE OF GRADE

A request for a change of grade, for any reason, must be made within one year following the date the original grade was assigned by the faculty member.

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 SCHEDULE

A change in a student's schedule may be made with the consent of his or her advisor or department chairperson. However, if a student's schedule is changed after the designated period for adding and/or dropping courses, the consent of the school dean is required.

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.

CHANGING SCHOOLS / COLLEGES

Students may transfer from one school/college of the University to another with the written approval and acceptance of the Deans of the schools/colleges involved. The proper forms on which to apply for such a change are to be obtained from the Office of the Registrar and executed at least six weeks prior to the beginning of the semester in which the student plans to transfer. 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 transfering.

WITHDRAWAL FROM AN INDIVIDUAL COURSE

A student who wishes to withdraw from an individual course shall complete a Change of Schedule form, which may be obtained from the Office of the Registrar. The completed form is submitted to the Office of the Registrar.

Students who withdraw from a course or courses prior to the withdrawal deadline receive a grade of "W". Failure to officially withdraw will result in a student incurring the penalty of receiving an "F" in the course. Withdrawing from a course or courses may affect a student's financial aid. Students who received financial aid should check with the Office of Student Financial Aid prior to withdrawing.

WITHDRAWAL FROM THE UNIVERSITY

A student who wishes or is asked to leave the University at any time during the semester shall complete and file official withdrawal forms. These forms may be obtained from the Office of Counseling Services. They should be completed and submitted to the Office of the Registrar.

Students who withdraw from the University prior to the published deadline to withdraw from the University shall receive a "W" in all classes enrolled. Failure to execute and file these forms in a timely manner will result in a student incurring the penalty of receiving an "F" for each course in which he or she was enrolled during the semester in question. Students who withdraw from the University and received financial aid may have to repay all or part of their financial aid award. Students who received financial aid should check with the Office of Student Financial Aid prior to withdrawing from the University.

READMISSION OF FORMER STUDENTS

All students who voluntarily withdraw from the University, leave the University or are suspended or dismissed from the University, must complete a Readmission Application which is obtained from the Office of the Registrar or may be accessed on-line at www.ncat.edu. (Note: Go to Prospective Students and link to Registrar's Office.)

All students who voluntarily withdraw from the University, leave the University or, are suspended or dismissed from the University, must have their readmission approved by the respective academic department and its college/school. Readmitted students may not be readmitted as "undecided." During the readmissions process, students may simultaneously seek and execute a change of major. Such a change of major and the student's readmission must be supported by the student's new academic department. Students are advised to begin the readmission process/change of major with their academic department and college/school prior to the University's posted application deadline. If readmitted, a student who fails to meet the current criteria for good academic standing will be placed on academic probation status, which will be maintained until the student achieves good academic standing.

All readmitted students, in consultation with their academic advisor, must develop an academic plan of action for the first semester that they are readmitted. Students readmitted under academic probation must, in consultation with their academic advisor, develop an academic plan of action for the each semester that they are on academic probation. The student, the academic advisor, the academic unit's retention coordinator and the Office of Enrollment Management will receive copies of the academic plan of action for information purposes and for monitoring compliance.

Former students 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 student who has not been enrolled at North Carolina Agricultural and Technical State University for at least 5 years 10 consecutive fall and spring semesters) may be eligible for one readmission under the "Five Year Readmission Policy" described below.

FIVE YEAR READMISSION POLICY

Any previously enrolled undergraduate student who has not been enrolled at North Carolina Agricultural and Technical State University for at least five years (10 consecutive fall and spring semesters) may be eligible for one readmission under the "Five- Year Readmission Policy." To be eligible for this policy, the student must be eligible for

readmission under the policy "Readmission of Former Students" described above and must be capable of completing their degree requirements within a reasonable time.

Under the "Five-Year Readmission Policy", only previously taken courses in which a grade of "C" or better was earned will be counted toward graduation. The computation of the cumulative GPA for students who are readmitted under this policy will begin at the time enrollment is resumed after readmission. This policy will not, however, alter the student's original academic record. If readmitted under this policy, the student will return under an academic probation status and must maintain a cumulative GPA average of 2.00 or greater.

Students who choose to seek readmissions under this policy may be recognized as graduating with honors at Commencement if a minimum of 60 percent of the credit hours required for the degree program are earned at North Carolina Agricultural and Technical State University after readmission under this policy.

All students readmitted under this policy, in consultation with their academic advisor, must develop an academic plan of action for the first semester that they are readmitted. The student, the academic advisor, the academic unit's retention coordinator and the Office of Enrollment Management will receive copies of the academic plan of action for information purposes and for monitoring compliance.

The decision to seek readmission under the "Five-Year Readmission Policy" must be made by the student at the time they seek readmission to the University. Once made, that decision is irrevocable.

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. Along with the recording of the incomplete grade, the instructor must also file with the head of the 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

An incomplete grade must be removed within SIX WEEKS after the beginning of the next semester. If the student has not removed the incomplete within the time specified, the Incomplete is automatically changed to an "F." Developmental, thesis and research courses are exempted from the six week time limit.

SEMESTER EXAMINATIONS

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

DEAN'S LIST

To encourage academic excellence, the University publishes a Dean's List at the end of each semester. Regular undergraduate students whose semester grade point average is 3.00 or higher shall be eligible for the Dean's List. Students making the Dean's List must have completed a total of 12 or more semester hours.

CLASS ATTENDANCE POLICY

Class Attendance

The University is committed to the principle that regular and punctual class attendance is essential to the students' optimum scholastic achievement. An absence, excused or unexcused, does not relieve the student of any course requirement. ***Attendance is required and punctuality is expected!*** A student is responsible for all the work, including tests and written work, of all class meetings.

Instructor's Responsibility

1) Description of attendance requirements should be stated in the course syllabus and announced in class, particularly at the beginning of each term. If class attendance is to affect a student's course grade, then a statement to that effect must be a part of the course syllabus distributed to each student.
2) Instructors will keep attendance records in all classes. Each instructor has the right to prescribe procedures as to how and when attendance will be taken.

Student's Responsibility

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

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

POLICY ON MAKE -UP OF REQUIRED COURSE WORK

The administration, faculty and staff recognize that there are circumstances and events which require students to miss classes and any required course work which may be performed or due on the day of the absence. Also, they recognize that

required course work is needed to give each student an adequate performance evaluation. Therefore, whenever reasonable (and more specifically described below), students should be allowed to make up required work.

The following definitions will apply with respect to this policy:

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

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

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

GENERAL REQUIREMENTS FOR GRADUATION

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

1. Choose a specific curriculum leading to a degree in one of the schools/colleges and complete the requirements of this curriculum;
2. Complete a minimum of 124 semester hours excluding deficiency courses and remedial work for the Bachelor's degree;
3. Complete all of the general education requirements of the University for the Bachelor's degree, please see General Education Requirements of the University for a complete listing of the general education requirements;
4. Earn an average of two (2) grade points for every semester hour undertaken including hours passed or failed and not repeated. After completing the number of credit hours required for graduation, if the student is deficient in grade points, he or she must take additional courses that have been approved by his or her academic dean to secure these points. The student must also obtain an average of 2.0 or more in his or her major field;
5. Complete a minimum of three semesters as a full-time student in residence at the University. This requirement includes the two semesters prior to the period when the student completes his/her requirements for graduation. At least one half of the credits in the student's major field must be earned at the University. Exception to either of these provisions may be made upon the recommendation of the chairperson of the student's major department with the approval of the school/college dean. Transfer students must complete a minimum of 25% of the required degree coursework at North Carolina Agricultural and Technical State University to graduate from North Carolina Agricultural and Technical State University with that degree.
6. Clear all academic conditions by the end of the semester preceding graduation.
7. Pay all University bills and fees;
8. Submit an application for graduation to the Office of the Registrar prior to the established deadline, as published in the University Calendar.

GRADUATING WITH HONORS

Undergraduate candidates who complete all requirements for graduation in accordance with the following stipulations earn the following honors: (1) Those who maintain a general average within the range of 3.00 to 3.24 will receive CUM LAUDE, (2) those who maintain a general average within the range from 3.25 to 3.49 will receive MAGNA CUM LAUDE, and (3) those who maintain a general average within the range of 3.50 to 4.00 will receive SUMMA CUM LAUDE. All course hours attempted, excluding W (withdrawal grades), are included in the grade point average

computation for honors. For example, if a course was repeated, both grades are used in the grade point average computation.

For a transfer student a minimum of 60 percent of the credit hours required for a degree program must be earned at North Carolina Agricultural and Technical State University to be considered for honors. For example, if the program requires a total of 128 credit hours, 77 of those hours must be earned at North Carolina Agricultural and Technical State University. Publication of honors and scholarships is made at commencement.

COMMENCEMENT PARTICIPATION

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

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

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

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

EFFECTIVE BULLETIN FOR GRADUATION

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

SECOND BACCALAUREATE DEGREE

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

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

GRADES

Grades are available on-line at www.ncat.edu, AGGIE ACCESS as soon as grades are determined at the end of each semester.

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

ACCESS TO STUDENT RECORDS

1. The policy for the administration of student academic records is in accordance with the Family Educational Rights and Privacy Act of 1974 as amended.
2. Students have the right to inspect and review any and all official records, files, and data directly related to them.

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

CHANGE OF NAME AND ADDRESS

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

TRANSCRIPTS OF RECORDS

Students needing an official transcript should submit a completed Transcript Request Form to the Office of the Registrar at least one week before the official transcript is needed. Transcript requests are not processed for any student or alumnus with an obligation to the University such as unpaid fees, overdue loans, library books, audiovisual equipment, or whose admission records are not complete. The completed transcript request should contain the student's name (at the time they attended), student identification number, date of birth, the name and address of where the transcript is to be sent, and the student's signature. The cost is $4.00 per copy. 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 a policy of academic 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.

1. BINDING PROCEDURES FOR INSTRUCTORS

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

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

II. STUDENTS' RIGHT TO APPEAL

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

CONSORTIUM STUDY AGREEMENT

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

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

Key Points for NC A&T Students to Remember:

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

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

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

Directions for students taking consortium classes at the Host Institution.

1. Obtain a Consortium Form from the Office of the Registrar.
2. Obtain the signature of your academic chairperson on the consortium form.
3. ***The form should also contain the equivalent course number at NC A&T SU to be added to the students' schedule. Your form will not be signed without the equivalent course listed.***
4. Bring the completed form to the Office of the Registrar for the signature of the Registrar. (***Please Note: Your bill must be validated to receive the Registrar's signature***)

5. Take 3 copies (yellow, pink and golden) of the approved form to the Office of the Registrar at the host campus during their add drop period.
6. If you are unable to register for the course, you must notify the Office of the Registrar at NC A&T SU.
7. If you drop a consortium course, you must adhere to the host institutions drop/add policy. You must also notify the Office of the Registrar at NC A&T SU.

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

CELL PHONE POLICY

The use of cell phones inside the classroom during the classroom period is prohibited. Please be advised that 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.

SCHOOL OF AGRICULTURE AND ENVIRONMENTAL SCIENCES

http://www.ag.ncat.edu/

Donald R. McDowell, Interim Dean
Shirley Hymon-Parker, Associate Dean for Research
M. Ray McKinnie, Associate Dean for Cooperative Extension
Willie T. Ellis, Jr., Associate Dean for Administration

OBJECTIVES

The School of Agriculture and Environmental Sciences (SAES) 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 triumvirate. Thus, the School 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 School'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 School 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 School'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 School 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 School 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 th Center for Environmental Farming Systems in Goldsboro, NC, 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 School 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 School 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 School continually review curricula and programs. The School 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 School 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 School 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, family and consumer sciences education, and child development early education/family studies (B-K) must also meet the teaching requirements prescribed by the School of Education.

Curricula:

Departments in the School 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 School 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 School encourages involvement in co-curricular activities as a means of developing communication and leadership skills.

The Master of Science Degree is offered in agricultural economics, agricultural education, animal health science, food and nutrition, and plant and soil science. The Master of Art in Teaching is offered in family and consumer sciences. (For further details please consult the graduate school bulletin.)

ACCREDITATION

All of the programs in the School 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.

- The Didactic Program is approved by the Commission on Accreditation/Approval, for Dietetics Education of the American Dietetic Association, a specialized body recognized by the Commission on Recognition of Post Secondary Accreditation and the United States Department of Education.
- Family and Consumer Sciences Programs are accredited by the American Association of Family and Consumer Sciences.
- The Landscape Architecture Program is accredited by the American Society of Landscape Architecture Accreditation Board.
- The Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education and the North Carolina State Department of Public Instruction

CAREER OPPORTUNITIES

The School 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

http://www:ag.ncat.edu/agribusiness

Anthony Yeboah, 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 Economics and Agricultural Education. Students who pursue the Bachelor of Science in Agricultural Economics may concentrate in Agribusiness. 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 programs are to train students to understand and apply the educational concepts and analytical tools of economics and business in a systematic method 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 Economics and/or Education.

The Agricultural Education program is accredited by the National Council for Accreditation of Teacher Education and the North Carolina State Department of Public Instruction 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 a basic academic discipline to include 24-27 semester credit hours. The second major concentration requirement consists of a combination of specified technical classes in addition to classes taken from the general education and technical agriculture core as determined by the student's advisor. 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.

DEGREES OFFERED

Agricultural Economics – Bachelor of Science
Agricultural Economics (Agribusiness) – Bachelor of Science
Agricultural Education (Secondary Education) – Bachelor of Science
Agricultural Education (Agricultural Professional Service) – Bachelor of Science
Agricultural Education – Master of Science*
Agricultural Economics – Master of Science*
**See the Graduate School Bulletin*

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

GENERAL PROGRAM REQUIREMENTS

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

DEPARTMENTAL REQUIREMENTS

Undergraduate majors in Agricultural Economics and Agricultural Education must complete 127 semester hours of University courses. Students must earn an average grade of "C" in all Agricultural Education or Agricultural Economics courses in order to meet the major field requirements. Agricultural Economics majors must take a minimum requirement

of 37 semester hours in Agricultural and General Economics. Agricultural education majors must earn a minimum grade point average of 2.8 to be admitted to the teacher education program, in addition to other admission requirements.

As mandated by the North Carolina State Department of Public Instruction, all candidates for teacher licensure will need to show evidence of computer competency. A basic skills test will need to be passed. Additionally, students must produce an electronic portfolio showing advanced technology for teaching skills during their program of study. The University, through course work, will provide opportunities for students to produce materials necessary to fulfill the technology portfolio requirement.

TEACHER EDUCATION PROGRAM

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

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

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

1. To promote the agricultural education program in secondary schools; to meet the needs and interests of students and to satisfy employment demands;
2. To plan for effective public relations;
3. To plan for effective and comprehensive instruction;
4. To manage the classrooms and laboratories effectively;
5. To aid students in making career decisions;
6. To evaluate vocational agriculture programs and student progress;
7. To advise and manage the FFA as an integral part of instruction;
8. To extend learning experiences for students beyond the classroom through Supervised Occupational Experience Program;
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, agricultural economics 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 Economics or 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.

REQUIRED MAJOR COURSES FOR AGRICULTURAL ECONOMICS AND AGRIBUSINESS

AGEC 130	ECON 201	AGEC 432
AGEC 240	ECON 410	AGEC 434
AGEC 300	ECON 420	AGEC 436
AGEC 330	AGEC 405 or ECON 305	AGEC 575
AGEC 335	AGEC 406 or ECON 310	AGEC 632
ECON 200		

A grade of “C” must be earned in all of the above requirements and an average of “C” must be earned in all courses.

CURRICULUM GUIDE FOR AGRICULTURAL ECONOMICS

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 120	3
UNST 110	3	UNST 140	3

UNST 130	3	MATH 131 or 112	4
MATH 111	4	CHEM 100/110	4
BIOL 100	4	ENGL 101	3
	15		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Elective[1]	3	UNST Elective[1]	3
ECON 200	3	ECON 201	3
AGEC 300	3	AGEC 330	3
AGEC 240	3	FOLA[2]	3
FOLA[2]	3	ANSC 211	3
UNST Elective[1]	3	HPED 200	2
	18		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ANSC 451	3	ECON 420	3
ECON 410	3	AGEC 335	3
ECON 305 or AGEC 405	3	ECON 310 or AGEC 406	3
AGEC 434	3	SPCH 250	3
AGEC 432	3	UNST Elective[1]	3
NARS 110	3		15
	18		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Major Elective	3	AGED 438	3
AGEC 436	3	AGEC 632	3
Free Elective	3	AGEC 575	3
Major Elective*	6	AGEC 599 (Capstone)	3
	15		12

Total Credit Hours: 127

[1]UNST Cluster Theme Elective: Student must choose one cluster and take courses only in that cluster.

[2]FOLA 100 Elementary French I or FOLA 104 Elementary Spanish I, FOLA 101 Elementary French II or Elementary Spanish II

** Depending on area of interest, students will take 6 credit hours from the following groups of courses:*

1) Animal Sciences: ANSC 312, ANSC 411, ANSC 415 and ANSC 416

2) Nutritional Sciences: HEFS 135, HEFS 236, HEFS 246, HEFS 332 and HEFS 337

3) Environmental Sciences: EASC 201, EASC 616, EASC 622, EASC 625, EASC 699 and AGED 607

4) Environmental Horticulture: HORT 334, HORT 527, HORT 412, HORT 514, HORT 610, HORT 611 and HORT 620

CURRICULUM GUIDE FOR AGRICULTURAL ECONOMICS
(Agribusiness)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 120	3
UNST 110	3	UNST 140	3
UNST 130	3	MATH 131 or 112	4
MATH 111	4	CHEM 100/110	4
BIOL 100	4	ENGL 101	3
	15		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Elective[1]	3	UNST Elective[1]	3
ECON 200	3	ECON 201	3
UNST Elective[1]	3	AGEC 330	3
AGEC 300	3	ANSC 211 or ANSC 411	3
BUAD 220	3	AGEC 405 or ECON 305	3
AGEC 240	3	HPED 200	2
	18		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
AGEC 432	3	ACCT 222	3

AGEC 434	3	PSYC 320	3
ACCT 221	3	ECON 420	3
ECON 410	3	SPCH 250	3
AGEC 406 or ECON 310	3	NARS 110	3
ANSC 451	3	UNST Elective[1]	3
	18		18

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
AGEC 436	3	AGEC 599 (Capstone)	3
BUAD 453	3	AGEC 446	3
AGEC 442	3	AGEC 640	3
AGEC 444	3	AGEC 575	3
	12		12

Total Credit Hours: 127

[1]*UNST Cluster Theme Elective: Student must choose one cluster and take courses only in that cluster.*

COURSE DESCRIPTIONS IN AGRICULTURAL ECONOMICS/AGRIBUSINESS

Undergraduate

AGEC 130. Survey of the Food and Agribusiness 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 such as, showing the relationships of input supply, farm production, and product processing – distribution-marketing complex, and their role in meeting food and fiber needs of people; and identification of possibilities and requirements for training and services. **(F)**

AGEC 240. Introduction to Computers in Agribusiness **Credit 3(3-0)**

This course is designed to familiarize students with the growing role of computers as a management aid in agribusiness. Topics covered include: electronic spreadsheets, word processing, data base management, telecomputer communication, flow charting, etc. Emphasis will be placed on the application of software to agribusiness and agricultural economics analysis. **(F)**

AGEC 330. Introduction to Agricultural Economics **Credit 3(3-0)**

An application of the fundamental principles of economics to agricultural production, marketing, land tenure, leasing arrangements, and financing and related economic problems will be included in this course. **(S)**

AGEC 335. Economic Geography of World Food and Resources **Credit 3 (3-0)**

The objective of this course is to acquaint students from across the University and hopefully those outside the University with the economics and geography of the world's human and natural resources as they affect food and fiber production, resource use, and economic welfare around the world. Content is drawn from many disciplines that study the natural world and investigate forces that affect the availability of resources, the dynamics of populations, the behavior of people, and different nation's policies towards food, resource use, trade, and the environment. The overall theme of the course is on the hard decisions and trade-off necessary to meet growing needs with fixed resources in a stressed natural environment. **(S)**

AGEC 405. Statistical Methods in Agricultural Economics I **Credit 3(3-0)**

This course emphasizes statistical methods with special applications to agricultural problems. The statistical table, ratios, percentages, bar charts, line charts, and frequency distribution are used as analytical tools. **(DEMAND)**

AGEC 406. Statistical Methods in Agricultural Economics II **Credit 3(3-0)**

This course emphasizes statistical methods with special applications to agricultural problems. The time series analysis, sampling theory, analysis of variance, and simple correlation are used as analytical tools. This course is a continuation of AGEC 644. **(DEMAND)**

AGEC 432. Elements of Farm Management **Credit 3(3-0)**

Principles, which govern the effective organization and operation of the farm firm, will be covered. **(F)**

AGEC 434. Marketing Agricultural Products **Credit 3(3-0)**

This course emphasizes the principles and practices of marketing as applied to farm commodities. Form, place, time and possession utility, the ultimate consumer's market, the agricultural industries market, the middleman system, exchange market operation and future contracts, price determination, reducing marketing costs will be examined. Visits will be made to local markets. Prerequisite: AGEC 330. **(F)**

AGEC 436. Agricultural Prices **Credit 3(3-0)**

Information regarding agricultural price changes, index numbers, price determination, seasonal and cyclical price movements, storage problems, methods of controlling extreme price fluctuations, and government price policy will be covered. **(S)**

AGEC 438. Resource and Environmental Economics and Policy **Credit 3(3-0)**
Economic theory and concepts associated with natural resources – renewable resources (forests, fisheries and wildlife populations), and non-renewable resources (minerals and energy resources, soil); analytical treatment of the role of the environment in economic activity and methods for protecting and enhancing environmental quality; implications of market failures for public policy; design of environmental policy; theory of welfare measurement; measuring the benefits of environmental improvement. Determinants of the institutional environment such as property rights; conservation; private and public resource use problems; and patterns of natural resource use. The application of economic principles and quantitative methods to environmental and natural resource problems. **(S)**

AGEC 440. Resource Economics **Credit 3(3-0)**
This course provides analysis of economic problems of resources use and management; perception of and definition of problems in terms of allocation mechanism; and analysis of economic relationships over time and market externalities with emphasis on welfare implications. Prerequisite: ECON 300. **(S)**

AGEC 442. Futures and Options Markets
This course studies the behavior of future markets; how public agencies, businesses, others use those markets. Studies nature of various strategies involving options, commodity and future contracts. Price determination in options and futures markets examined. **(F)**

AGEC 444. Financial Management of Agribusiness Firms **Credit 3(3-0)**
This course involves understanding the principles and techniques of financial management of agribusiness firms. Topics include the evaluation of financial statements, the analysis of financial feasibility, the assessment of capital structure within agribusiness firms, the identification of sources and types of short-term, intermediate, and long-term capital, the examination of capital budgeting methods, theevaluation of policies affecting financial markets in agriculture, and the implementation of agribusiness case problems and simulation games. **(F)**

AGEC 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. **(S)**

AGEC 530. Economics of Food Distribution **Credit 3(3-0)**
This course covers the description of market structures and operations in the processing and wholesale and retail distribution of food and the effect of industrial organization and government regulations on the efficiency of the market and consumer demand for food. **(DEMAND)**

AGEC 575. Computer Applications in Agribusiness **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 and mainframe computers to make financial, economic and quantitative analyses of farm and agribusiness-related problems. Prerequisite: AGEC 330 or ECON 300. **(S)**

AGEC 599. 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. **(F;S;SS)**

Advanced Undergraduate and Graduate

AGEC 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; interelationships among U.S. and foreign agriculture and trade policies. **(S)**

AGEC 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. **(S)**

AGEC 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)**

AGEC 640. 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,

establsihing contractual agreements with other firms, and evaluating industrial organization within the agribusiness industry are presented. Students are expected to simulate the decision-making of the agribusiness manager/entrepreneur through the use of case studies, agribusiness projects, agribusiness research, and business plans. **(F)**

AGEC 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)**

AGEC 642. Seminar in Agricultural Economics **Credit 3(3-0)**

Discussion of reports and an appraisal of current literature on agricultural problems will take place. Prerequisite: Consent of the department chairperson. **(DEMAND)**

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

The principles of land evaluation, appraisal and taxation will be examined. 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 will also be covered. **(S)**

RURAL SOCIOLOGY

AGEC 300. Principles of Rural Sociology **Credit 3(3-0)**

Social systems, cultural patterns, and institutional arrangements of people in rural environments will be examined. An interpretation of the structure, functioning and change in rural social systems will also be covered. **(F)**

AGEC 301. Rural Social Problems **Credit 3(3-0)**

This course focuses on the problems and solutions of population dynamics, education, religion, health, land tenure, parity income, farm labor, mechanization, housing, poverty, and rural development as they affect the growth of the rural community. **(DEMAND)**

AGEC 303. Rural Family **Credit 3(3-0)**

The course examines the institutional nature of the rural family, its role in the community, including its relationship to educational, religious, welfare and other community organizations. **(DEMAND)**

AGEC 505. Rural Standards of Living **Credit 3(3-0)**

This course examines the consumption behavior in the main community groups of our rural society as well as the poverty threshold and the plight of the rural poor. **(DEMAND)**

AGEC 506. Special Problems in Rural Sociology **Credit (2 to 4 hrs)**

This course includes work on problems in the rural society under the guidance of a faculty member. **(DEMAND)**

REQUIRED MAJOR COURSES FOR AGRICULTURAL EDUCATION
(Secondary Education)

AGED 101	AGED 400	AGED 401
AGED 402	AGED 403	AGED 501
AGED 502	AGED 503	AGEC 300 or AGED 609

**Students in the secondary education track must meet all requirements for admission to the teacher education program.*

*** A grade of "C" must be earned in all of the above requirements or an average of "C" must be earned in all courses for the agricultural professional service track.*

CURRICULUM GUIDE FOR AGRICULTURAL EDUCATION
(Secondary Education)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
AGED 101	1	CUIN 101	1
MATH 101	3	MATH 101	3
UNST 110	3	UNST 140	3
Physical Education Elective	1	BIOL 101	4
UNST 120	3	NARS 110	3
UNST 130	3	CUIN 110	2
UNST 100	1		16
	15		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Elective	3	UNST Elective	3
UNST Elective	3	UNST Elective	3
ANSC 211 or LASC 162	3	ANSC 214	3
BIOE 114	3	CHEM 106 and 116	4
CUIN 210	2	CUIN 310	2

EASC 201	3	SPED 350	3
	17		18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
AGEC 300	3	AGED 402	3
AGED 401	3	AGED 403	3
CUIN 410	2	CUIN 520	2
Second Major Concentration	3	Second Major Concentration	3
HORT 334	3	Second Major Concentration	3
Free Elective	3	AGEC 330	3
	17		17

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
AGED 501	3	CUIN 660	9
Second Major Concentration	3	AGED 670	3
Second Major Concentration	3		12
AGED 503	3		
SLSC 338	4		
	16		

Total Credit Hours: 128

[1]*UNST Cluster Theme Elective: Student must choose one cluster and take courses only in that cluster.*

REQUIRED MAJOR COURSES FOR AGRICULTURAL EDUCATION
(Agricultural Professional Service)

AGED 101	AGED 400	AGED 401
AGED 402	AGED 403	AGED 501
AGED 503	AGED 504	AGED 607
AGED 608	AGEC 300 or AGED 609	

**Students in the secondary education track must meet all requirements for admission to the teacher education program.*
*** A grade of "C" must be earned in all of the above requirements or an average of "C" must be earned in all courses for the agricultural professional service track.*

CURRICULUM GUIDE FOR AGRICULTURAL EDUCATION
(Agricultural Professional Service)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
MATH 101	3	MATH 102	3
UNST 110	3	UNST 140	3
BIOL 100	4	CHEM 104 and 114	4
UNST 120	3	AGED 101	1
	14	HPED 200	2
			16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Elective	3	UNST Elective	3
UNST Elective	3	UNST Elective	3
PSYC 320	3	HORT 334	3
NARS 110	3	ANSC 211	3
AGEN 114	3	AGEC 300	3
	15	Second Major Concentration	3
			18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
AGED 400	3	AGED 402	3
AGED 401	3	AGED 403	3
SLSC 338	4	AGEC 330	3
MATH 224	3	Second Major Concentration	3
Second Major Concentration	3	Second Major Concentration	3

	16	AGED 607	3
			18

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Second Major Concentration	3	AGED 504 (Capstone)	6
Second Major Concentration	3	HORT 514	3
ENGL 331	3	Free Elective	3
AGED 501	3		12
AGED 503	3		
AGED 608	3		
	18		

Total Credit Hours: 127

[1]*UNST Cluster Theme Elective: Student must choose one cluster and take courses only in that cluster.*

SECOND MAJOR CONCENTRATIONS

AGRICULTURAL SCIENCE: ANSC 100 – 699, AGEC 100 – 699, JOMC 100 – 699, NARS 100 – 699, EASC 100 – 699, SLSC 100 – 699
ANIMAL SCIENCE: ANSC 100 – 699
AGRICULTURAL BUSINESS AND MARKETING: AGEC 100 – 699
AGRICULTURAL COMMUNICATIONS: JOMC 100 – 699
NATURAL AND ENVIRONMENTAL SCIENCES: NARS 100 – 699, EASC 100 – 699
PLANT AND SOIL SCIENCE: NARS 100 – 699, HORT 100 – 699, SLSC 100 – 699
RURAL SOCIOLOGY: SOCI 100 – 699

COURSE DESCRIPTIONS IN AGRICULTURAL EDUCATION

Undergraduate

AGED 101. Introduction to Agriscience Education **Credit 1(1-0)**
This course includes a study of the broad base of modern agriculture with emphasis on current trends and opportunities. **(F)**

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 400. Instructional Technology In Agriscience Education **Credit 3(3-0)**
This course will cover the utilization of multimedia instructional tools, and how their applications can enhance the learning process. **(F;S)**

AGED 401. Leadership Theory and Youth Program Management **Credit 3(3-0)**
Theories in leadership development will be analyzed, and the organization of youth groups in secondary schools, cooperative extension, and other community groups will be examined. **(F)**

AGED 402. History and Philosophy of Agriscience Education in the American Public School System **Credit 3(3-0)**
The historical and philosophical structure of agriculture in the American public school system will be analyzed. **(S)**

AGED 403. Adult Education in Agriscience and Extension Education **Credit 3(3-0)**
Principles and techniques for organizing educational programs for adults involved in the food and fiber system. **(F;S)**

AGED 501. Materials and Methods of Teaching Agricultural Education and Extension **Credit 3(3-0)**
This course covers the principles of teaching as applied to agriculture in secondary schools and cooperative extension. Preparing and using lesson plans and organizing teaching aids to meet educational and community needs will also be a part of this course. Prerequisites: AGED 400, 401, and 402; PSYC 320. **(F)**

AGED 502. Student-Teaching **Credit 12(12-0)**
Students will be required to spend a minimum of twelve weeks in an approved teaching center doing observation and directed student teaching. Prerequisite: AGED 501. **(F;S)**

AGED 503. Program Planning and Evaluation **Credit 3(3-0)**
This course covers the process of program building and evaluation in agricultural and extension education. Prerequisites: AGED 501 and 502. **(F;S)**

AGED 504. Internship in Extension, Government, or Agribusiness **Credit 6(6-0)**
Students will be required to spend a minimum of six weeks in an approved extension program, governmental agency, or agribusiness firm doing observation and directed professional work. **(F;S; SS)**

AGED 520. 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)

Advanced Undergraduate and Graduate

AGED 600. Youth Organization and Program Management **Credit 3(3-0)**
Principles, theories, and practices involved in organizing, conducting, supervising and managing youth organizations and programs will be examined. Emphasis will be on the analysis of youth organization and programs in vocational and extension education. **(SS)**

AGED 601. Adult Education in Vocational and Extension Education **Credit 3(3-0)**
This course is a study of the principles and problems of organizing and conducting programs for adults. Emphasis is given to the principles of conducting organized instruction in agricultural education, extension and related industries. **(F)**

AGED 607. Environmental Education **Credit 3(3-0)**
This course examines the principles and practices of understanding the environment and the interrelated complexities of the environment. The course will include a study of agricultural occupations related to the environment and materials that need to be developed for use by high school teachers of agriculture and other professional workers. **(S)**

AGED 608. Agricultural Extension Organization and Methods **Credit 3(3-0)**
The principles, objectives, organization, program development and methods in cooperative extension will be examined. **(F)**

AGED 609. Community Analysis and Rural Life **Credit 3(3-0)**
This course is the study of the educational processes, structure and function of rural society, and the role which diverse organizations, agencies, and institutions play in the education and adjustment of rural people to the demands of modern society. **(SS) (DEMAND)**

AGED 610. International Education in Agriculture **Credit 3(3-0)**
This course examines formal and informal agricultural education systems and related situations and processes which influence agricultural development in developing countries. Included are the nature and scope of the world food situation, the rationale and extent of U.S. involvement in development efforts, and the agencies and organizations involved and procedures they use. Educational programs that will enable families to improve their quality of life will be emphasized. **(DEMAND)**

AGED 611. Special Problems In Agricultural Education And Extension **Credit 1-6(1-6 repeatable)**
Special work in problems dealing with Agricultural Education and Extension will be examined. Students should be at the graduate level or be working on their lateral or provisional license in agricultural education. **(Enrollment by permission of department.)**

AGED 612 Field Studies In Agricultural Education **Credit 1-6(1-6 repeatable)**
Field Studies involved in Agricultural and Extension Education. (Enrollment by permission of department.)

DIRECTORY OF FACULTY

Kofi Adu-Nyako ..... **Adjunct Associate Professor**
B.S., University of Science and Technology; M.S., Cornell University; Ph.D., University of Florida

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

Marcus Comer ..... **Assistant Professor**
B.S., M.S., Tennessee State University, Ph.D., University of Missouri

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

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

Benjamin Gray ..... **Research Associate Professor**
B.S., M.S. North Carolina A&T State University, Ph.D., North Carolina State University

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

Daniel M. Lyons ..... **Cooperative Extension Faculty, Administration**
B.S., M.S., North Carolina A&T State University; Ed.D., Virginia Polytechnic Institute and State University

Donald R. McDowell ..... **Professor and Interim Dean**
B.S., Southern University A&M; M.S., Ph.D., University of Illinois

John O'Sullivan ..... **Cooperative Extension Faculty**
B.A., Stanford University; M.S., Auburn University; Ph.D., University of California at Los Angeles

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

Richard D. Robbins..... **Professor**
B.S., North Carolina A&T State University; M.S., Ph.D., North Carolina State University
Terrence Thomas ..... **Research Associate Professor**
B.S., University of West Indies; M.S., University of Wisconsin; Ph.D., Louisiana State University
Alton Thompson..... **Professor and Dean**
B.S., North Carolina Central University; M.S., Ph.D., Ohio State University
Chastity Warren English..... **Assistant Professor**
B.S., M.S., North Carolina A&T State University; Ph.D. Candidate, Virginia Polytechnic Institute and State University
Anthony K. Yeboah..... **Professor and Chairperson**
B.S., University of Science and Technology; M.S., Ph.D., Iowa State University
Osei-Agyeman Yeboah..... **Research Associate 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

www.ag.ncat.edu/academics/anisci/index.html

Ralph C. Noble, Chairperson

OBJECTIVES

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

DEGREE PROGRAMS

Animal Science – Bachelor of Science
Animal Science (Animal Industry) – Bachelor of Science
Laboratory Animal Science – Bachelor of Science
Animal Health Science – Master of Science*
**See the Graduate School Bulletin*

Interdisciplinary certificate programs in Biotechnology (18 credit hours) and Waste Management (18 to 20 credit hours), Global Studies (16 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.

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, 614 and LASC 363.

ADMISSION AND DEGREE PROGRAMS REQUIREMENTS

Admission of students to the undergraduate degree programs in the Department of Animal Sciences is based upon the general admission requirements of the University. The B.S. degree in Animal Science, the B.S. with a concentration in Animal Science (Animal Industry) and the B.S. degree in Laboratory Animal Science requires a minimum of 126 semester hours. It is a university requirement that students complete three hours of African /African American Studies, three hours of Global Studies, and six hours of humanities. 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.

REQUIRED MAJOR COURSES FOR ANIMAL SCIENCE

LASC 161	LASC 461	ANSC 413
LASC 162	ANSC 211	ANSC 416
LASC 261	ANSC 212	ANSC 451
LASC 459	ANSC 214	ANSC 665
LASC 460	ANSC 411	

CURRICULUM GUIDE FOR ANIMAL SCIENCE

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 110	3	ENGL 101	3
UNST 130	3	MATH 112	4
UNST 100 or LASC 161	1	ANSC 211	3
LASC 162	3	UNST 120	3
MATH 111	4	UNST 140	3
HPED 200	2		16
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 106/116	4	CHEM 107/117	4
BIOL 100 or 101	4	ENGL 200	3
UNST Elective[1]	3	LASC 261	3
ANSC 411	3	ANSC 212	3
ANSC 214	3	UNST Elective[1]	3
	17		16

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 221/223	5	CHEM 222/224	5
MATH 224	3	BIOL 220 or 221	4
LASC 459	4	ANSC 451	3
PHYS 225,235	4	UNST Elective[1]	3
	16	UNST Elective [1]	3
			18

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 251 / 252	3	LASC 461	3
PHYS 226 / 236	4	Major Elective[2]	3
LASC 460	3	ANSC 665	3
ANSC 413	2	ANSC 619 (Capstone)	3
	12	ANSC 416	3
			15

Total Credit Hours: 126

- *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*

[1]*UNST Cluster Theme Elective: Student must choose one cluster and take courses only in that cluster*

[2]*Major electives include (ANSC 217, 312, 415, 421, 555, 611, 614, 624, 641; LASC 363, 463, 569)*

REQUIRED MAJOR COURSES FOR ANIMAL SCIENCE (ANIMAL INDUSTRY)

LASC 161	ANSC 212	ANSC 416
LASC 162	ANSC 214	ANSC 421
LASC 363 or 463	ANSC 217	ANSC 451
LASC 569	ANSC 411	ANSC 555
ANSC 211	ANSC 413	

A GPA of at least 2.00 or better has to be maintained in the required courses.

CURRICULUM GUIDE FOR ANIMAL SCIENCE
(Animal Industry)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 110	3	ENGL 101	3
UNST 130	3	MATH 102	3
UNST 100 or LASC 161	1	ANSC 211	3
LASC 162	3	UNST 140	3
MATH 101	3	BIOL 100 or 101	4
UNST 120	3		16
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 106/116	4	CHEM 107/117	4
UNST Elective[1]	3	UNST Elective[1]	3
ACCT 203	2	ANSC 212	3
ANSC 214	3	ANSC 217	3
AGEC 240	3	BIOL 220 or 221	4
SPCH 250	3		17
	18		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ECON 201	3	AGEC 434	3
UNST Elective[1]	3	ANSC 416	3
ANSC 413	3	UNST Elective[1]	3
AGEC 330	3	ANSC 451	3
ANSC 411	3	ANSC 555	4
	15		16

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
AGEC 446	3	LASC 365	3
BUAD 422	3	AGEC 436	3
LASC 363 or 463	3	AGEC 440	3
Major Elective[2]	3	Major Elective[2]	3
LASC 569	1	ANSC 619	3
	13		15

Total Credit Hours: 126

- *The student in consultation with advisor should choose major and other electives*
- *Student may only choose 12 hours from one university cluster theme*
- *Special consideration to changes in the curriculum will be considered based upon Students career goals*
- *Business courses may range from BUAD 220 and/or 422*
- *Courses needed for a Certificate in Equine Management: ANSC 218, 219, 220, 313, 314, 641 and LASC 363.*

[1]*UNST Cluster Theme Elective: Student must choose one cluster and take courses only in that cluster*

[2]*Major electives include (ANSC 312, 415, 421, 555, 541; LASC 261)*

REQUIRED MAJOR COURSES FOR LABORATORY ANIMAL SCIENCE

LASC 161	LASC 460	LASC 636
LASC 162	LASC 461	LASC 653
LASC 261	LASC 462	ANSC 211
LASC 365	LASC 569	ANSC 212
LASC 459		

A grade of "C" must be earned in all of the above requirements or an average of "C" must be earned in all courses.

CURRICULUM GUIDE FOR LABORATORY ANIMAL SCIENCE
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 110	3	ENGL 101	3
UNST 130	3	MATH 111	4
HPED[2]	1	UNST 120	3
UNST 100 or LASC 161	1	ANSC 211	3

LASC 162	3	UNST 140	3
SPCH 250	3		16
	14		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 106/116	4	CHEM 107/117	4
BIOL 100 or 101	4	UNST Elective[1]	3
UNST Elective[1]	3	ANSC 212	3
LASC 261	3	MATH 224	3
ANSC 214	3	MATH 112	4
	17		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 221/223	5	CHEM 222/224	5
LASC 459	4	LASC 460	3
LASC 365	4	UNST Elective[1]	3
PHYS 225/235	4	PHYS 226/236	4
	17	UNST Elective[1]	3
			18

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 251/252	3	BIOL 221	4
BUAD 220	3	LASC 636 or ANSC 665 or 611	3
LASC 462	3	LASC 461 or ANSC 451	3
LASC 569	1	LASC 653	4
LASC 363 or 463 (Capstone)	3		14
	13		

Total Credit Hours: 126

- *Student may only choose 12 hours from one university cluster themes*
- *Special consideration to changes in the curriculum will be considered based upon Students career goals*
- *Business courses may range from BUAD 220 and/or 422*

[1]UNST Cluster Theme Elective: Student must choose one cluster and take courses only in that cluster

[2]Any 1 credit hour HPED course may be selected

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.

COURSE DESCRIPTIONS IN ANIMAL SCIENCE

ANSC 211. Animal and Laboratory Animal Sciences **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. Pre-requisites: 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 211. **(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 614. 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 211 and 214. **(F)**

ANSC 615. Selection of Meat and Meat Products **Credit 3(2-2)**
Identification, grading and cutting of meats. **(SS)**

ANSC 619. 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 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: ANSC 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 opportunitites. 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 taining 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 211. **(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 macroenvironments that result in disease. Prerequisite: ANSC 451. **(S)**

LABORATORY ANIMAL SCIENCE

LASC 161. Orientation I **Credit l(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 363. Internship I **Credit 1-6(0-2 to 12)**
Preparation and field experiences with activities in Laboratory Animal Sciences, Animal Industry and Animal Sciences including Equine Management. Prerequisites: Junior standing and special departmental permission. **(F;S;SS)**

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 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 463. 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 363 and special departmental permission. **(F;S;SS)**

LASC 564. 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 569. Seminar in Laboratory Animal Science **Credit 1(1-0)**
Discussion of current topics in laboratory animal science or histotechnology. **(F)**

LASC 636. 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 653. 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 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

John W. Allen ..... **Assistant Professor**
B.S., University of Georgia; M.S., Ph.D., University of North Carolina at Chapel Hill
Doris Fultz ..... **Associate Professor**
B.S. Virginia Commonwealth University; B.S., DVM, Tuskegee Institute
Tracy L. Hanner ..... **Adjunct Assistant Professor**
B.S., North Carolina Central University; DVM, North Carolina State University
M. Ray McKinnie ..... **Cooperative Extension Faculty/Associate Dean Cooperative Extension**
B.S., North Carolina A&T State University; M.S., Ohio State University, Ph.D., North Carolina State University
John R. Miller ..... **Extension Specialist**
B.S., Elon University; M.S., North Carolina A&T State University; Ph.D., Virginia Tech
Radiah Corn Minor ..... **Assistant Professor**
B.S., Florida A&M University; Ph.D., Meharry Medical College
Ralph C. Noble ..... **Associate Professor and Chairperson**
B.S., M.S., Tuskegee University; Ph.D., University Illinois-Champaign-Urbana
Sang Hyon Oh ..... **Adjunct Assistant Professor and Research Scientist**
B.S., M.S., Seoul National University; Ph.D., North Carolina State University
Jenora Waterman ..... **Assistant Professor**
B.S., Bennett College; M.S., North Carolina A&t State University; Ph.D., North Carolina State University
Kyha D. Williams ..... **Adjunct Assistant Professor**
B.S., North Carolina A&T State University; DVM, North Carolina State University
Willie L. Willis ..... **Professor**
B.S., Fort Valley State College; M.S., Ph.D., Colorado State University
Abraham Woldeghebriel ..... **Associate Professor**
B.S., Addis Ababa University; M.S., Ph.D., New Mexico State University
Mulumebet Worku ..... **Professor**
B.Sc., Addis Ababa University, Alemaya College of Agriculture; M.S., Ph.D., University of Maryland, College Park

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Department of Family and Consumer Sciences

http://www.ag.ncat.edu/academics/hefs/index.html

Valerie L. 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 (Non-Licensure) – Bachelor of Science
Child Development Early Education & Family Studies (B-K Teacher Licensure) – Bachelor of Science
Family and Consumer Sciences Education – Bachelor of Science
Family and Consumer Sciences - (Fashion Merchandising and Design) – Bachelor of Science
Food and Nutritional Sciences - (Food Science) – Bachelor of Science
Food and Nutritional Sciences - (Dietetics) – Bachelor of Science
Food and Nutritional Sciences – Master of Science*
Family and Consumer Sciences – Master of Arts in Teaching*
**See the Graduate School Bulletin*

CERTIFICATE IN FAMILY FINANCIAL PLANNING

The Family Financial Planning Certificate program is an inter-institutational 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. The certificate program is comprised of 18 credit hours and the following courses: FCS 577 Financial Planning for Families; FCS 578 Insurance Planning for Families; FCS 579 Income Tax Planning for Families; FCS 580 Investments for Families; FCS 581 Retirement Planning for Families; and FCS 582 Estate Planning for Families.

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 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 Family and Consumer Sciences Education and the Child Development, Early Education and Family Studies (Birth-Kindergarten Teacher Licensure) programs are accredited by the National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction under the University-wide accreditation and approval of teacher education programs.

The Didactic Program is approved by the Commission on Accreditation/Approval, for Dietetics Education of The American Dietetic Association, a specialized body recognized by the Commission on Recognition of Post secondary Accreditation and the United States Department of Education.

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.

TEACHER EDUCATION PROGRAM

The Child Development Early Education and Family Studies: Birth-Kindergarten (Licensure) Program has the following goals and educational outcomes:

Goals:

- To provide a course of study that prepares majors for appropriate birth-kindergarten teaching practices, and teacher-related careers.
- To provide a course of study that encourages professional knowledge, skills, and dispositions as a foundation for professional growth and development while utilizing interdisciplinary and multidisciplinary training from diverse disciplines (elementary education, special education, speech pathology, physical education (public health), psychology, sociology, and social work.
- To provide experiences and opportunities that promote professional development and affiliation.
- To coordinate and supervise clinical experiences and research activities in a range of settings that demonstrate the blend of theory and practice with young children and families.

Educational Outcomes:

- Identify a personal philosophy and a career purpose that is related to the profession and embraces the diverse characteristics of the environment.
- Demonstrate appropriate and professional knowledge, skills, and dispositions as an early childhood educator.

- Strengthen the skills needed to effectively communicate in the professional realm with administrators, co-workers, students, parents and others.
- Discover and consider benefits of graduate work within the field.
- Commit to life-long learning and self-improvement through professional development opportunities related to, but not limited to technology, and assessment.
- Identify and understand various diverse populations of young children and their families.

The Family and Consumer Sciences Education Program has the following Goals and Educational Outcomes:

Goals

- To develop student competencies necessary for integrating the philosophy of family and consumer sciences and education, knowledge of contemporary society, and professional information needed to help individuals and families achieve and maintain a satisfying life.
- To develop critical thinking skills and communication techniques necessary for transmitting knowledge, skills and attitudes to individuals and families.
- To develop competencies needed for employment and graduate study in family and consumer sciences and related areas.

Educational Outcomes:

- Identify the philosophy and role of family and consumer sciences in providing a satisfying quality of life.
- Describe the impact of cultural diversity on the economic, social, psychological and emotional well being of individuals and families in contemporary society.
- Evaluate professional subject matter content and trends meeting current family and societal needs. Incorporate educational and societal trends in developing professional subject matter content areas.
- To strengthen, skills in critical thinking, coping and communication, which will facilitate effective working relationships with persons, from diverse socio-economic levels and backgrounds.
- Demonstrate personal characteristics, attitudes, skills and knowledge needed for employment as a professional family and consumer scientist.
- Investigate opportunities to pursue research and/or graduate study.

CAREER OPPORTUNITIES

The programs in the Family and Consumer Sciences Department prepare students for, but do not limit them to the following suggested careers as public school/child-care personnel, community/early childhood center providers, family specialists, birth-kindergarten teachers, 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, apparel designers, visual merchandisers, retail buyers, managers, sketch artists, product development specialists, global sourcing managers, food production management specialist, quality assurance specialists, technical sales, food inspection specialists, and researchers for federal, state, and local government.

REQUIRED MAJOR COURSES FOR FAMILY AND CONSUMER SCIENCES
(Fashion Merchandising and Design)

FCS 160	FCS 380	FCS 483
FCS 181	FCS 382	FCS 485
FCS 183	FCS 384	FCS 486
FCS 260	FCS 460	FCS 487
FCS 280	FCS 480	FCS 489
FCS 281	FCS 482	FCS 660

A grade of "C" must be earned in all of the above requirements and an average of "C" must be earned in all courses.

CURRICULUM GUIDE FOR FAMILY AND CONSUMER SCIENCES
(Fashion Merchandising and Design)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 130	3	UNST 110[1]	3
MATH 111	4	MATH 112	4
FCS 160[1]	1	FCS 183	3
UNST 120[1]	3	FCS 181	3
SPCH 250	3	UNST 140[1]	3
HPED 200	2		16
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elective[2]	3	UNST Cluster Theme Elective[2]	3
UNST Cluster Theme Elective[2]	3	UNST Cluster Theme Elective[2]	2
ART 100	3	MATH 224 or SOCI 203	3
FCS 281	3		
FCS 280	3	SOCI 200 or 300	3
	15	ART 226	3
			15

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BUAD 422	3	FCS 260	3
FCS 380	3	FCS 382	3
FCS 384	3	FCS 483	3
ACCT 203	3	PSYC 320	3
Elective	3	FCS 486	3
	15	Elective	3
			18

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
FCS 460	3	FCS 482	3
BUAD 425	3	FCS 660[3]	3
FCS 489	3	FCS 480	3
FCS 487	3	BUED 334	3
FCS 485	3	Elective	3
BUAD 430	3		15
	18		

Total Credit Hours: 128

[1]*UNST Foundation Courses: Each student is required to complete 13 credits of freshman competency.*

[2]*UNST Cluster Theme Elective: Each student is required to complete 12 credits of cluster theme courses.*

[3]*Capstone Course (FCS 660 :Each student is required to take a senior level course focused on interdisciplinary perspectives. This course requires 50 volunteer hours*

REQUIRED MAJOR COURSES FOR CHILD DEVELOPMENT AND FAMILY STUDIES
(Non-Licensure)

FCS 160	FCS 414	FCS 551
FCS 201	FCS 417	FCS 553
FCS 260	FCS 418	FCS 600
FCS 311	FCS 419	FCS 629
FCS 356	FCS 420	FCS 639
FCS 401	FCS 430	FCS 642
FCS 403	FCS 460	FCS 660

A grade of "C" must be earned in all of the above requirements and an average of "C" must be earned in all courses.

CURRICULUM GUIDE FOR CHILD DEVELOPMENT AND FAMILY STUDIES
(Non-Licensure)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 110[1]	3	UNST 120[1]	3
FCS 160[1]	1	MATH 102	3
MATH 101	3	UNST 140[1]	3
BIOL 100/Lab	4	SPCH 250	3
HPED 200	2	FOLA 104	3
UNST 130[1]	3		15
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elect.[2]	3	FCS 201	3
UNST Cluster Theme Elect.[2]	3	UNST Cluster Theme Elect.[2]	3

SPED 350	3	FCS 311[4]	3
FCS 260	3	FCS 401[4]	3
FCS 356	3	FCS 403	3
SPCH 319	3	FCS 418[4]	3
	18		18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
HPED 442	2	FCS 417	3
UNST Cluster Theme Elect.[2]	3	FCS 419[4]	3
FCS 414	3	FCS 551	3
FCS 420	3	FCS 553	3
FCS 430[4]	3	FCS 600	3
FCS 460	3	Cognate Area Elective[5]	3
	17		18

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Elective	2	FCS 642	6
Cognate Area Elective[5]	3	Cognate Area Elective[5]	3
FCS 629[4]	3	Elective	3
FCS 660[3]	3		12
FCS 639[4]	3		
	14		

Total Credit Hours: 128

[1]*Foundation Courses: Each student is required to complete 13 credits of Freshmen competency.*

[2]*UNST Cluster Theme Elective: Each student is required to complete 12 credits of cluster theme courses.*

[3]*Capstone Course (FCS 660): Each student is required to take a senior level course focused on interdisciplinary perspectives. This course requires 50 volunteer hours.*

[4]*Field-Based Experience:Each student is required to complete a field-based experience in addition to course requirements.*

[5]*Cognate Area Elective: Each student is required to select courses from a major-related discipline area*

Child Development and Family Studies (Non-Licensure) students are required to select a cognate area, which is designed to allow the student to specialize in a major-related discipline. All students are required to complete 9 hours of coursework in one of the following disciplines, or select from either area to create a multidisciplinary focus. The multidisciplinary focus can be selected only with the approval of the academic advisor or Department Chairperson.

COGNATE AREA ELECTIVES

CHILD PUBLIC POLICY & ADMINISTRATION	**CHILD THERAPY**	**CHILD & FAMILY SERVICE COORDINATION**
POLI 150	PSYC 320	SOCI 100
POLI 250	PSYC 324	SOCI 200
POLI 340	PSYC 325	
POLI 350	PSYC 420	SOWK 133
POLI 420	PSYC 434	SOWK 372
	PSYC 644	SOWK 412
BUAD 220	PSYC 645	SOWK 472
BUAD 341		
BUAD 422		
BUAD 425		
BUAD 426		
BUAD 430		

EARLY INTERVENTION

Students will select 9 hours from the special education corollary concentration with the assistance from the academic advisor.

INTERDISCIPLINARY STUDIES

Students will select nine (9) hours from major related disciplines with the assistance from the academic advisor.

REQUIRED MAJOR COURSES FOR CHILD DEVELOPMENT EARLY EDUCATION AND FAMILY STUDIES (BIRTH-KINDERGARTEN TEACHER LICENSURE) (Teacher Licensure)

FCS 160	FCS 418	FCS 559
FCS 201	FCS 419	FCS 600

FCS 260	FCS 430	FCS 629
FCS 311	FCS 460	FCS 634
FCS 356	FCS 536	FCS 639
FCS 401	FCS 551	FCS 660
FCS 414	FCS 553	

A grade of "C" must be earned in all of the above requirements and an average of "C" must be earned in all courses.

CURRICULUM GUIDE FOR CHILD DEVELOPMENT EARLY EDUCATION AND FAMILY STUDIES BIRTH-KINDERGARTEN (BIRTH-KINDERGARTEN TEACHER LICENSURE)

(Teacher Licensure)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 110[1]	3	UNST 120[1]	3
MATH 101	3	MATH 102	3
FCS 160[1]	1	UNST 140[1]	3
UNST 130[1]	3	SPCH 250	3
BIOL 100	4	FOLA 104	2
PHED 200	2	CUIN 102	2
	16		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elect.[2]	3	UNST Cluster Theme Elect.[2]	3
UNST Cluster Theme Elect.[2]	3	SPCH 319	3
FCS 356	3	UNST Cluster Theme Elect.[2]	3
SPED 350	3	FCS 201	3
CUIN 301	2	FCS 311[4]	3
FCS 260	3	FCS 418[4]	3
	17		18

Milestone: Students must pass PRAXIS I, obtain a cumulative 2.8 GPA, and complete a 16 Factors Personality Test and Teacher Interview for admission into the Teacher Education Program.

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CUIN 400	3	FCS 401[4]	3
HPED 442	2	FCS 419	3
FCS 414	3	FCS 551	3
FCS 430[4]	3	FCS 553	3
FCS 460	3	FCS 600	3
Elective	1	FCS 559[4]	3
	15		18

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
SPED 536	3	FCS 634	3
FCS 660[3]	3	CUIN 560	6
FCS 629[4]	3	Elective	3
FCS 639[4]	3		12
Elective	3		
	15		

Total Credit Hours: 128

[1]*Foundation Courses: Each student is required to complete 13 credits of Freshmen competency.*

[2]*UNST Cluster Theme Elective: Each student is required to complete 12 credits of cluster theme courses.*

[3]*Capstone Course (FCS 660):Each student is required to take a senior level course focused on interdisciplinary perspectives. This course requires 50 volunteer hours.*

[4]*Field-Based Experience: Each student is required to complete a field-based experience in addition to course requirements.*

***Admission to Teache Education: Students should refer to the UndergraduateBulletin for detailed admission requirements*

REQUIRED MAJOR COURSES FOR FAMILY AND CONSUMER SCIENCES EDUCATION

FCS 130	FCS 300	FCS 500
FCS 160	FCS 400	FCS 503
FCS 181	FCS 401	FCS 505
FCS 183	FCS 403	FCS 604

FCS 260	FCS 446	FCS 660
FCS 281	FCS 460	FCS 679

A grade of "C" must be earned in all of the above requirements and an average of "C" must be earned in all courses.

CURRICULUM GUIDE FOR FAMILY AND CONSUMER SCIENCES EDUCATION

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 110[1]	3	UNST 130[1]	3
MATH 101	3	MATH 102	3
FCS 160[1]	1	FCS 183	3
CUIN 102	2	HPED 101	1
UNST 120[1]	3	FCS 130	3
BIOL 100	4	UNST 140[1]	3
	16		16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elect.[2]	3	SPCH 250	3
HPED 200	2	CUIN 104	0
FCS 281	3	FCS 356	3
UNST Clu. Th. El.[2]	3	UNST Cluster Theme Elect.[2]	3
FCS 181	3	CUIN 301	2
Elective	1	Elective	3
	15	UNST Cluster Theme Elect.[2]	3
			17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CUIN 400	3	FCS 403	3
FCS 300	3	FCS 500	3
FCS 401	3	CUIN 436	3
SOCI 100 or 200	3	FCS 503	3
FCS 260	3	FCS 400	3
PSYC 320	3	Elective	3
	18		18

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
FCS 460	3	FCS 504	3
FCS 660[3]	3	CUIN 560	6
Elective	3	CUIN 624	3
CUIN 528	3		12
FCS 505	3		
	15		

Total Credit Hours: 127

[1]*Foundation Courses: Each student is required to complete 13 credits of Freshmen competency.*

[2]*UNST Cluster Theme Elective: Each student is required to complete 12 credits of cluster theme courses.*

[3]*Capstone Course (FCS 660): Each student is required to take a senior level course focused on interdisciplinary perspectives. This course requires 50 volunteer hours.*

REQUIRED MAJOR COURSES FOR FOOD AND NUTRITIONAL SCIENCES – FOOD SCIENCE

FCS 160	FCS 542	FCS 641
FCS 245	FCS 543	FCS 644
FCS 260	FCS 545	FCS 646
FCS 357	FCS 546	FCS 647
FCS 443	FCS 547	FCS 649
FCS 460	FCS 548	FCS 660

A grade of "C" must be earned in all of the above requirements and an average of "C" must be earned in all courses.

CURRICULUM GUIDE FOR FOOD AND NUTRITIONAL SCIENCES – FOOD SCIENCE

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 110[1]	3	FCS 160	1
MATH 111	4	MATH 112	4

FCS 245	3	UNST 140[1]	3
CHEM 106	3	BIOL 100	4
UNST 120[1]	3	UNST 130	3
CHEM 116	1		15
	17		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
SPCH 250	3	CHEM 221	3
CHEM 117	1	CHEM 223	2
UNST Cluster Theme Elect.[2]	3	FCS 357	3
FCS 260	3	MATH 224	3
CHEM 107	3	UNST Cluster Theme Elect.[2]	3
BIOL 220	4	PHYS 110	2
	17	PHYS 111	1
			17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
FCS 545	3	FCS 443	3
UNST Cluster Theme Elect.[2]	3	FCS 542	3
CHEM 251	2	UNST Cluster Theme Elect.[2]	3
CHEM 252	1	Elective	3
FCS 543	3	FCS 547	3
AGRI 499 or Elective	3		15
	15		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
FCS 460	3	FCS 660[3]	3
FCS 546	1	FCS 647	3
FCS 644	3	FCS 548	3
FCS 646	4	FCS 641	3
FCS 649	3	Elective	3
	14		15

Total Credit Hours: 125

[1]*Foundation Courses: Each student is required to complete 13 credits of Freshmen competency.*

[2]*UNST Cluster Theme Elective: Each student is required to complete 12 credits of cluster theme courses.*

[3]*Capstone Course (FCS 660): Each student is required to take a senior level course focused on interdisciplinary perspectives. This course requires 50 volunteer hours.*

REQUIRED MAJOR COURSES FOR FOOD AND NUTRITIONAL SCIENCES – DIETETICS

FCS 150	FCS 357	FCS 652
FCS 160	FCS 454	FCS 654
FCS 245	FCS 460	FCS 656
FCS 246	FCS 544	FCS 657
FCS 260	FCS 554	FCS 658
FCS 354	FCS 555	

A grade of "C" must be earned in all of the above requirements and an average of "C" must be earned in all courses.

CURRICULUM GUIDE FOR FOOD AND NUTRITIONAL SCIENCES – DIETETICS

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 110[1]	3	UNST 130[1]	3
MATH 111	4	MATH 112	4
UNST 120[1]	3	UNST 140[1]	3
FCS 160[1]	1	CHEM 106	3
BIOL 100	4	FCS 150	3
	15	CHEM 116	1
			17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 107	3	CHEM 221	3
CHEM 117	1	CHEM 223	2

FCS 245	3	BIOL 220	4
UNST Cluster Theme Elect.[2]	3	UNST Cluster Theme Elect.[2]	3
MATH 224 or SOCI 203	3	FCS 357	3
HPED Elective	1	FCS 260	3
SPCH 250	3		18
	17		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PSYC 320	3	FCS 443	3
FCS 554	3	FCS 656	4
BIOL 361	4	ENGL 331 or BUED 360	3
CHEM 251	2	UNST Cluster Theme Elect.[2]	3
CHEM 252	1	UNST Cluster Theme Elect.[2]	3
FCS 354	3		16
	16		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
FCS 555	3	FCS 660[3]	3
FCS 657	4	FCS 658	3
FCS 654	3	FCS 544[4]	3
FCS 460	3	FCS 454	4
	13	FCS 403	3
			16

Total Credit Hours: 128

[1]*Foundation Courses: Each student is required to complete 13 credits of Freshmen competency.*

[2]*UNST Cluster Theme Elective: Each student is required to complete 12 credits of cluster theme courses.*

[3]*Capstone Course (FCS 660):Each student is required to take a senior level course focused on interdisciplinary perspectives. This course requires 50 volunteer hours.*

[4]*Field-Based Experience: Each student is required to complete a field-based experience in addition to course requirements.*

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 150. Food Preparation/Meal Management **Credit 3(2-2)**

This is an introductory food 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. **(S)**

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 160. Introduction to Family and Consumer Sciences **Credit 1(1-0)**

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 181. Social-Psychological Aspects of Dress **Credit 3(3-0)**

This course is a basic study of the social, psychological, cultural and economic influences on contemporary fashions. **(S)**

FCS 183. Textiles **Credit 3(2-2)**

This course is an introduction to the study of textiles, their sources, characteristics and production; the performance, use and care of fabrics. **(S)**

FCS 200. Introduction to Family and Consumer Sciences Education **Credit 2(2-0)**
Historical background, philosophy and objectives of education in the United States; educational, social and political movement affecting vocational education in the public schools with emphasis on the requirements of North Carolina. **(DEMAND)**

FCS 201. Cooperative Experience in Diverse Settings **Credit 3(3-0)**
Historical background, philosophy and objectives of education in the United States; educational, social and political movement affecting vocational education in the public schools with emphasis on the requirements of North Carolina. **(DEMAND)**

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 AGEC 446. **(S)**

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. Prerequisite: FCS 160. **(F;S;SS)**

FCS 280. Introduction to Fashion Merchandising **Credit 3(3-0)**
This course is an introduction to apparel business including discussions of current trends in fashion merchandising, fashion coordination and analysis of the function of fashion merchandising. **(F)**

FCS 281. Apparel Construction and Evaluation **Credit 3(1-3)**
This course is an introduction to the fundamental principles of clothing construction using a commercial pattern with emphasis on fitting, pattern adjustments, garment and basic construction skills. Laboratory experience is required. **(F)**

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 311. 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 312. 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: Instructor's permission. **(DEMAND)**

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 332. 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 357. **(DEMAND)**

FCS 354. Organizational Management in Food Service **Credit 3(3-0)**
This course is designed to study the organizations, management and administration of various food service establishments and the inclusion of personnel management. Prerequisite: FCS 150. **(F)**

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 357. Introduction to Human Nutrition **Credit 3(2-2)**
This course provides an introductory approach to the principles of nutrition as they relate to human requirements for nutrients during the life cycle; the significance of and mechanism through which nutrients meet these biological needs during the life cycle. Prerequisites: CHEM 107 and 117. **(F;S;SS)**

FCS 380. Visual Merchandising **Credit 3(3-0)**
This course explores the use of visual merchandising and promotional techniques for textile and non-textile products. Prerequisite: FCS 181, 280 or instructor's permission. **(F)**

FCS 382. Creative Apparel Design I (Flat Pattern) **Credit 3(2- 2)**
This course examines the application of principles of creative design by the use of flat pattern techniques. Laboratory experience is required. Prerequisite: FCS 281. **(S)**

FCS 384. Historic Developments of Costumes and Textiles **Credit 3(3-0)**
This course examines the evolution of dress through the study of western dress from ancient to modern times. Individual research is required. Prerequisites: FCS 181 and 183. **(F)**

FCS 398. Food and Nutritional Biochemistry **Credit 3(3-0)**
This course is an introductory course for students in agricultrual, 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 401. Family Systems **Credit 3(3-0)**
The development of the family and the impact of environmental systems on the life cycle as families move from stages of effective status to crisis status. **(S)**

FCS 403. Family Economics **Credit 3(3-0)**
This course is the study of financial budgeting and planning strategies during the various stages of the family life cycle. Consideration is given to multifaceted consumer problems and resources for problem resolution. **(S)**

FCS 414. Creative Expression in Early Education **Credit 3(2-2)**
Materials, methods and evaluation used in the development of cognitive, affective and psychomotor behaviors in dramatic play, music, art and literature will be focus areas. In addition, career opportunities in curricula and interagency services to assist families in a collaborative relationship will be emphasized. Field based teaching experiences are included in this course. Prerequisites: FCS 260, 311, and 418. **(F)**

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 417. Parent Education **Credit 3(3-0)**
Parental interactions in the child's development at home, in the school and in the community. The effective use of assistance and volunteers in the school environment as well as elements of creative parenting in a rapidly changing social environment are also studied. **(S)**

FCS 418. 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; and a review of the dynamic of the family and current issues related to the teaching profession. Emphasis will be placed on curriculum planning, the integrated day, scheduling, and the curriculum development. Field experiences are included in this course. Prerequisite: FCS 260. **(S)**

FCS 419. Practicum in Interdisciplinary Services **Credit 3(1-4)**
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. **(S)**

FCS 420. Administration of Early Care and Education Programs **Credit 3(3-0)**
This course is an introduction to business administration, organizations, and supervision in diverse early education and family interagency settings. Emphasis is placed on key administrative and human resources concepts, practices, and issues related to the administrating, planning, organizing, staffing, financing, decision-making, supervising, and evaluating early education and family interagency settings. **(F)**

FCS 421. The Cognitively Oriented Preschool Curriculum **Credit 3(3-0)**
Methods, materials and strategies in preschool education as found in the cognitively oriented curriculum. Emphasis will be placed on development of skills in teaching. **(DEMAND)**

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, 311, and 418. **(F)**

FCS 443. Food Safety and Sanitation **Credit 3(3-0)**
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. Prerequisite: FCS 245, BIOL 220. **(S)**

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 454. Quantity Foods Procurement and Production **Credit 4(1-6)**
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 and 354. **(F)**

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 480. Computer Assisted Design for Apparel **Credit 3(2-2)**
This course is an introduction to the use of the computer for sketching, pattern making, pattern grading and making markers. Prerequisite: FCS 281, 382, 489. **(S)**

FCS 482. Global Trends and National Perspectives in Clothing and Textiles **Credit 3(3-0)**
This course provides an in-depth investigation of global and national trends as they relate specifically to the textile industry. Prerequisites: FCS 181 and 280. **(S)**

FCS 483. Principles of Apparel Evaluation **Credit 3(3-0)**
This course is an individual study of the factors that determine the cost, price, quality, performance and value of textiles and apparel. Prerequisites: FCS 183 and 281. **(S)**

FCS 485. Fashion Marketing and Merchandising **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. Prerequisite: FCS 280. **(F)**

FCS 486. Cooperative Training in Business and Industry I **Credit 3(3-0)**
This course is designed to provide pre-professional experiences for students majoring in fashion merchandising and design. Emphasis will be placed on career exploration, resume writing, business correspondence, and internship preparation.

FCS 487. Cooperative Training in Business and Industry II **Credit 3(3-0)**
Students will be employed for a minimum of 200 hours in their major field of work. They will be evaluated on report by their employer and a University coordinator. Prerequisite: Senior standing. **(F)**

FCS 489. Creative Apparel Design II (Draping) **Credit 3(2-2)**
This course will focus on the application of principles of creative apparel design by the use of the draping method. Prerequisites: FCS 281 and 382. **(F)**

FCS 500. Occupational Family and Consumer Sciences **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 503. Basic Interior Design **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 505. Home Management and Equipment **Credit 3(1-4)**
This course examines the use of management principles in effecting an orderly management of the home and all of its environment. The use of basic equipment in the home that makes for an efficient and well-kept household will be emphasized. Selection and coordination of equipment for effective living is demonstrated. **(DEMAND)**

FCS 536. Inclusive Environments for Young Children and Families **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, SPED 350. **(F;S;SS)**

FCS 542. Food Engineering **Credit 3(2-2)**
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. Prerequisite: PHYS 110, PHYS 111. **(S)**

FCS 541. Food Packaging **Credit 2(2-0)**
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 543. Food Preservation **Credit 3(2-2)**
This course is a study of current methods of preserving foods - canning, freezing, dehydration, radiation and fermentation. Prerequisite: FCS 245 or equivalent. **(F)**

FCS 544. Internships **Credit 3(0-6)**

The student participates in a temporary period of supervised work experience, which provides him/her 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: Junior standing. **(F)**

FCS 545. Food Chemistry **Credit 3(2-2)**

This course is the study of food components, their interactions and reactions with emphasis on biochemical changes in fruits and vegetables on post harvest storage, postmortem biochemical changes in meat and fish, browning reactions, lipid oxidation and other chemical alternations in food. Prerequisite: FCS 245, CHEM 221, CHEM 223. **(F)**

FCS 546. Applied Food Science Seminar **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)**

FCS 547. Food Analysis **Credit 3 (1-4)**

This course is the study of fundamental chemicals, physical and sensory aspects of food composition as they relate to physical properties, acceptability and nutritional values of foods. Prerequisites: FCS 245, FCS 545, CHEM 221, CHEM 223. **(S)**

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 549. Food Consultant for Older Adults **Credit 3(3-0)**

Techniques of consultation with older adults on diets, food choices, food fads, planning, purchasing and preparational procedures will be examined. Menus for limited incomes will be emphasized. **(DEMAND)**

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 551. Multicultural Perspective **Credit 3(3-0)**

This seminar is designed to develop knowledge skills, and dispositions focused on multicultural anti-bias perspective in the field of early education and family systems. Critical review of research and literature emphasizing diversity topics will be used as a framework for discussion. Students will participate in applied activities designed to foster cultural awareness culturally and anti-bias sensitive practices, and advocacy in setting such as private and public early childhood settings, schools, hospital-based settings, family agencies, and mental health agencies. **(S)**

FCS 552. Independent Readings in Early Education 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. Prerequisites: FCS 418 and 600. **(F)**

FCS 553. Professional Development and Leadership in Early Childhood **Credit 3(3-0)**

This course is designed to provide students with an overview of the characteristics and qualities, which defines the "early childhood professional." Students will explore the meaning of ethical conduct, as well as the development of effective advocacy, leadership, networking, teamworking, and collaboration. Applied activities will provide students with the opportunity to interact with professional in the field. Prerequisites: FCS 310, 311, 418, SPCH 250. **(F;S)**

FCS 554. Advanced Nutrition **Credit 3(3-0)**

Intermediate metabolism and interrelationships of organic and inorganic food nutrients in human biochemical functions will be studied. Prerequisites: FCS 357, CHEM 221, 223. Co-requisite: CHEM 251, CHEM 242. **(F)**

FCS 555. Maternal and Lifespan Nutrition **Credit 3(3-0)**

This course emphasizes the energy and nutrient requirements and feeding practices for stages of the life span. Influences of nutrition on growth and development are discussed. The nutritional quality of food, physiological development, growth assessment, dietary evaluation and nutrition assessment for various stages of the lifespan are covered. Prerequisite: FCS 357 or instructor's permission. **(F)**

FCS 559. Fundamentals of Emergent Literacy **Credit 3(3-0)**

This course focuses on the content and materials related to the development, implementation, and evaluation of emergent literacy (pre-reading) within the early childhood classroom. Emphasis will be placed on both typical and atypical learners as well as effective teaching and assessment strategies to enhance the curricula. Applied activities will be assigned to promote content understanding **(F;S)**

FCS 577. Financial Planning for Families **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.

FCS 578. Insurance Planning for Families **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 nnuities, group insurance, and long term care.

FCS 579. Income Tax Planning for Families **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.

FCS 580. Investment Planning For Families **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.

FCS 581. Retirement Planning for Families **Credit 3 (3-0)**
This course provides information about public and private retirement plans. The public plans include Social Security, Medicare, and Medicaid. The private plans include defined benefit and defined contribution plans and their regulatory provisions. The specifics of the various plans are analyzed as well as non-qualified deferred compensation plans. Finally, issues that individuals face in retirements, such as life-styles choices and medical issues are discussed.

FCS 582. Estate Planning For Families **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.

FCS 600. Developmental and Culturally Appropriate Curricula **Credit 3(2-2)**
This course provides a review of preschool curriculum as it relates to developmental learning patterns; and the nature of knowledge, societal forces and interagency services. Also, this course develops an understanding of learning principles, developmentally appropriate resources and various educational strategies that can be organized to support an effective environment for young children. Special emphasis will be placed on screening and assessment procedures, and formulating objectives and strategies for working with professional team members. Laboratory experiences are required. **(S)**

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 606. Cooperative Extension **Credit 3(3-0)**
This course is an introduction to the organization, philosophy, financing, personnel, clientele and programs of Cooperative Extension Service. **(DEMAND)**

FCS 607. Cooperative Extension - Field Experience **Credit 3(0-6)**
The course includes field experience to provide an opportunity for students to become acquainted with the role of country personnel, office organizations and programs in Cooperative Extension Service. **(DEMAND)**

FCS 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 619. Community of Practice Internship **Credit 6(1-10)**
This course emphasizes the application and practice of methods, techniques, and materials of field-based experience in infant/toddler programs, intermediate care programs, hospitals, preschool, shelters and various family service agencies. These internships will include observation and field-based experiences under supervision. A minimum of 120 clock hours is required during internship experiences. Prerequisites: FCS 419, 660, and SPED 536. **(F;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. Prerequisites: FCS 600. **(F;S)**

FCS 634. Independent Study in Early Education and Family Studies **Credit 3(3-0)**
This course includes a synthesis of selected research for individual and group study, using projects, workshops and colloquia. The focus of the research may be an in-depth study of materials previously investigated or explored in early education, family studies, teacher preparation and developmental learning. Prerequisites: FCS 418, 514, and SPED 536. **(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 357. **(DEMAND)**

FCS 641. Current Trends in Food Science **Credit 3(3-0)**
This course is the study of recent development in food science and their implications for food scientists, nutritionists, dietitians and other professions in the food industry and related professions. **(DEMAND)**

FCS 644. Food Microbiology and Biotechnology **Credit 3(1-4)**
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. Prerequisite: FCS 245, BIOL 220. **(S)**

FCS 645. Special Problems in Food Administration **Credit 2(0-4)**
Individual work on special problems in food administration is required. **(DEMAND)**

FCS 646. Food Product Development **Credit 4(2-4)**
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 245, FCS 357, FCS 542, FCS 545. **(F)**

FCS 647. Sensory Evaluation of Foods **Credit 3(2-2)**
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 245, FCS 357, MATH 224. **(S)**

FCS 649. Food Laws and Regulations **Credit 3**
This course covers federal and state laws and regulations affecting food production, processing, packaging, marketing, and distribution of food and food products. Prerequisites: FCS 245, FCS 357, FCS 443. **(F)**

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 654. Nutrition Education **Credit 3(3-0)**
This course covers the philosophy, principles, methods and materials involved in nutrition education. The application of nutrition knowledge and skills in the development of the nutrition education curriculum and programs in schools and communities are implemented. Prerequisites: FCS 150 and FCS 357. Students must be advanced undergraduate or graduate level. **(F)**

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 656. Nutritional Therapy I **Credit 4(4-0)**
This course is designed to provide the student with the knowledge and skills for assessment of the nutritional status of individuals. Students will develop nutrient based care plans for persons with various disease conditions.

FCS 657. Nutrition 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.

FCS 658. Community Nutrition **Credit 3(2-2)**
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 program at State and Federal levels. Prerequisites: FCS 654. **(S)**

FCS 659. Fundamentals of Emergent Literacy **Credit 3(3-0)**
This course explores current research, theory, strategies and resources that enable students to acquire theoretical and practical knowledge to design research-based literacy activities and environments. Topics explored include: the social content of literacy learning; stages of language and literacy development; role of families in supporting literacy development; cultural and linguistic similarities and differences; English language learners; performance-based assessments; and adaptations for children with special needs. Prerequisites: FCS 611, SPED 600, CUIN 619. **(F;S)**

FCS 660. Integrative Approaches to Family and Consumer Sciences **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: FCS 260. **(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)**

DIRECTORY OF FACULTY

Mohamed Ahmedna.....**Professor CEPHT**
B.S., Institut Agronomique et Veterinaire Hassan II; M.S., 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

Ipek Goktepe.....**Associate Professor**
B.S., University of Istanbul; M.S., Ph.D.; Louisiana State University

Thurman Guy.....**Associate Professor**
B.S., M.S., North Carolina A&T State University; M.S., University of Wisconsin; Ed.D., University of North Dakota

Salam A. Ibrahim.....**Professor**
B.S., University of Mosul; M.S., University of Georgia; Ph.D., University of Kentucky

Chantel Lumpkin.....**Assistant Professor**
B.F.A., Bradley University; M.A., Oral Roberts University; M.A. Loyola Marymount University; Ph.D., Michigan State University

Patricia A. Lynch.....**Assistant Professor**
B.S., M.S. North Carolina A&T State University; Ph.D., R.D., University of Nebraska

Valerie J. McMillan.....**Associate Professor**
B.S., M.Ed; South Carolina State University; Ph.D. Iowa State University

Shirley R. McNeill.....**Cooperative Extension Faculty**
B.S., North Carolina A&T State University; M.Ed., North Carolina State, Ph.D., University of North Carolina at Greensboro

Elizabeth Newcomb.....**Assistant Professor**
B.S., M.S., Ph.D. North Carolina State University

Rosa S. Purcell.....**Associate Professor**
B.S., North Carolina A&T State University; M.Ed., Ph.D., University of Illinois

Geraldine Ray.....**Associate Professor**
B.S., North Carolina A&T State University; M.Ed., University of North Carolina Greensboro; Ph.D., Virginia Polytechnic Institute and State University

Claudette Smith ..... **Cooperative Extension Faculty**
B.S., North Carolina A&T State University; M.S., Ph.D., Ohio State University
Celvia E. Stovall ..... **Associate Administrator**
B.S., Central Michigan University; M.S., Louisiana State University; Ph.D., University of Minnesota
Rosemarie Vardell ..... **Assistant Professor**
B.S., Eastern Illinois University; M.S., University of Illinois; Ph.D., University of North Carolina at Greensboro
Jane Walker ..... **Associate Professor**
B.S., Appalachian State University; M.S., Virginia Polytechnic Institute and State University; Ph.D., University of North Carolina at Greensboro
Meeshay Williams-Wheeler ..... **Assistant Professor**
B.S., University of North Carolina at Greensboro; M.S., North Carolina Central University; Ph.D.University of North Carolina at Greensboro

FACULTY EMERITI

Harold E. Mazyck ..... **Professor**
B.S., South Carolina State College; M.A., New York University; Ph.D., University of North Carolina at Greensboro
Chung W. Seo ..... **Professor**
B.S., M.S., Korea University; Ph.D., Florida State University
Carolyn S. Turner ..... **Professor**
B.S., M.S., University of North Carolina at Greensboro; Ph.D., Virginia Polytechnic Institute and State University

Department of Natural Resources and Environmental Design

http://www.ag.ncat.edu./academics/natres/index.html

Louis E. Jackai, Chairperson

OBJECTIVES

The objectives of the Department of Natural Resources and Environmental Design are to meet its responsibilities to society by providing training for professional agriculturists, natural resources specialists, landscape architects, agricultural and biosystems 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 relate to man's present and future needs in managing his environment.

DEGREES OFFERED

Earth and Environmental Science – Bachelor of Science
Agricultural Science, Natural Resources (Soil Science, Environmental Horticulture) – Bachelor of Science
Biological Engineering – Bachelor of Science
Landscape Architecture – Bachelor of Science
Plant, Soil and Environmental Science – Master of Science*
**See the Graduate School Bulletin*

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

GENERAL PROGRAM REQUIREMENTS

The admission of students to the undergraduate degree programs and qualification for the Bachelor of Science degree in the Department of Natural Resources and Environmental Design are based upon the general admission and graduation requirements of the University. For admission to Biological Engineering see respective handbooks and program requirements elsewhere in this catalog.

DEPARTMENTAL REQUIREMENTS

Majors in the Department of Natural Resources and Environmental Design must complete a minimum of 124 semester hours of University courses. Included in the 124 hours are thirty hours in a major elective depending on the degree program. A minimum grade of "C" may be required for 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, 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 a licensed landscape architect providing professional design consultations. Graduates also are prepared for graduate school to pursue degrees in the environmental science, soil science, horticulture, landscape architecture and biological engineering.

REQUIRED MAJOR COURSES FOR EARTH AND ENVIRONMENTAL SCIENCES
(Earth Science Concentration)

EASC 201	EASC 508/II	EASC 566
EASC 309	EASC 510	EASC 599
EASC 330	EASC 524	EASC 622
EASC 433	EASC 525	EASC 666
EASC 508/I	EASC 544	GEOG 200

CURRICULUM GUIDE FOR EARTH AND ENVIRONMENTAL SCIENCES
(Earth Science Concentration)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
NARS 100 / UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
MATH 111	4	MATH 112	4
UNST 120	3	HPED Elective	2
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
	15		16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elective[1]	3	UNST Cluster Theme Elective[1]	3
EASC 201	3	UNST Cluster Theme Elective[1]	3
BIOL 221	4	UNST Cluster Theme Elective[1]	3
NARS 110	3	MATH 224	3
SPCH 250	3	GEOG 200	3
	16		15

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 221	3	Major Elective[2]	3
CHEM 223	2	PHYS 235	1
PHYS 225	3	AGEN 216	3
EASC 309	3	EASC 330	3
EASC 433	4	EASC 510	3
	15	EASC 508	4
			17

SENIOR YEAR

First Semester	Credit	*Second Semester*	*Credit*
EASC 524	4	EASC 566	3
EASC 525	3	EASC 599	3
EASC 508	4	EASC 544	3
EASC 525	4	EASC 517	3
	15	Free Elective (Internship)	3
			15

Total Credit Hours: 124

[1]*UNST Cluster Theme Electives: Student must choose one cluster and take courses only in that cluster*
[2]*Major Electives: EASC 330,433,444,644, BIOL 301,CIEN 310,618, AGEN 216,204,360,HIST 210,SLSC 609,SLSC 632,CHEM 222,244,PHYS 101,FORS 618, AREN 221, HIST 307, BUAD 341,ANSC 637, LASC 636, CM 593, OSH 311,312,411,413,AGED 607 and approved consortium courses. These courses must be approved by the advisor. Courses are described in the University Catalog.*

REQUIRED MAJOR COURSES FOR EARTH AND ENVIRONMENTAL SCIENCES
(Environmental Science Concentration)

EASC 201	EASC 524	GEOG 200

EASC 510	EASC 525	NARS 520
EASC 517	EASC 540/II	SLSC 338
EASC 520/I	EASC 566	SLSC 517
EASC 522	EASC 599	WMI 333

CURRICULUM GUIDE FOR EARTH AND ENVIRONMENTAL SCIENCES
(Environmental Science Concentration)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
NARS 100 / UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
MATH 111	4	MATH 112	4
UNST 120	3	HPED Elective	2
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
	15		16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elective[1]	3	UNST Cluster Theme Elective[1]	3
EASC 201	3	UNST Cluster Theme Elective[1]	3
BIOL 221	4	UNST Cluster Theme Elective[1]	3
NARS 110	3	MATH 224	3
SPCH 250	3	GEOG 200	3
	16		15

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 221	3	Major Elective[2]	3
CHEM 223	2	PHYS 235	1
PHYS 225	3	AGEN 216	3
WMI 333	1	EASC 510 / 610	3
SLSC 338	4	SLSC 517	4
EASC 520	3	NARS 520	1
	16		15

SENIOR YEAR

First Semester	Credit	*Second Semester*	*Credit*
EASC 516	3	EASC 566	3
EASC 522	3	EASC 599	3
EASC 524	4	EASC 540	4
Free Elective	2	EASC 517	2
EASC 525	4	Free Elective (Internship)	3
	16		15

Total Credit Hours: 124

[1]*UNST Cluster Theme Electives: Student must choose one cluster and take courses only in that cluster*
[2]*Major Electives: EASC 330,433,444,644, BIOL 301,CIEN 310,618, AGEN 216,204,360,HIST 210, ,SLSC 632,CHEM 222,244,PHYS 101,FORS 618, AREN 221, HIST 307, BUAD 341,ANSC 637, LASC 636, CM 593, OSH 311,312,411,413,AGED 607 and approved consortium courses. These courses must be approved by the advisor. Courses are described in the University Catalog.*

REQUIRED MAJOR COURSES FOR AGRICULTURAL SCIENCE, NATURAL RESOURCES*
(Soil Science)

SLSC 338	SLSC 633	NARS 599
SLSC 517	SLSC 634	NARS 608
SLSC 621	NARS 110	EASC 309
SLSC 632	NARS 520	EASC 622

**A grade of "C" must be made in all of the above requirements.*

CURRICULUM GUIDE FOR AGRICULTURAL SCIENCE, NATURAL RESOURCES
(Soil Science)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ENGL 100	3	UNST 110	3

CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
MATH 111	4	MATH 112	4
AGED 101	1	UNST 130	3
NARS 100/UNST 100	1	UNST 140	3
UNST 120	3		17
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
AGEN 216	3	NARS 110	3
BIOL 101	4	EASC 309	3
SPCH 250	3	PHYS 110	2
UNST Cluster Theme Elec.[1]	3	PHYS 111	1
UNST Cluster Theme Elec.[1]	3	UNST Cluster Theme Elec.[1]	3
	16	UNST Cluster Theme Elec. [1]	3
			15

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 221	3	Elective	1
CHEM 223	2	MATH 224	3
HORT 334	3	AGEC 330	3
ANSC 211	3	SLSC 517	3
SLSC 338	4	BIOL 221	4
NARS 520	1		14
	16		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
SLSC 534 / 634	4	SLSC 532 / 632	3
EASC 622	3	SLSC 521 / 621	4
SLSC 533 / 633	4	NARS 508 / 608	3
NARS 599	3	Elective (Major Area)[2]	3
Electives (Major Area)[2]	3		13
	17		

Total Credit Hours: 124

[1] *UNST Cluster Theme Elective: Student must choose one cluster and take courses only in that cluster*

[2] *Major Area Electives: CAAE 204, EASC 616, 510,566,599,540,524,522,516,517,HORT 620, NARS 618, NARS 610, NARS 603, SLSC 640*

REQUIRED MAJOR COURSES FOR AGRICULTURAL SCIENCE, NATURAL RESOURCES
(Environmental Horticulture)

EASC 201	HORT 610	NARS 520
HORT 302	HORT 611	NARS 599
HORT 303	HORT 612	NARS 608
HORT 334	HORT 620	SLSC 338
HORT 600	NARS 110	SLSC 517

CURRICULUM GUIDE FOR AGRICULTURAL SCIENCE, NATURAL RESOURCES
(Environmental Horticulture)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ENGL 101	3	UNST 110	3
EASC 201	3	MATH 102	3
MATH 101	3	UNST 130	3
NARS 110	3	UNST 140	3
NARS 100/UNST 100	1	BIOL 100	4
UNST 120	3		16
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
HORT 302	3	HORT 303	3
HORT 334	3	BIOL 240	4

CHEM 106	3	PHYS 110	2
CHEM 116	1	PHYS 111	1
UNST Cluster Theme Elect[1]	3	UNST Cluster Theme Elect[1]	3
UNST Cluster Theme Elect[1]	3	UNST Cluster Theme Elect[1]	3
	16		16

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
SLSC 338	4	AGEC 330	3
ANSC 214	3	BUAD 425	3
BIOL 220	4	SLSC 517	3
Major Elective[2]	3	BIOL 430	4
HPED Elective	2	Major Elective[2]	3
	16		16

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BIOL 530	3	NARS 608	3
HORT 610	3	HORT 600	3
BUAD 422	3	HORT 611	3
HORT 620	3	NARS 520	1
Elective	3	NARS 599	3
	15		13

Total Credit Hours: 126

[1] *UNST Cluster Theme Elective: Student must choose one cluster and take courses only in the cluster.*

[2] *Major Electives: HORT 320, 350, 400, 412, 514, 527, 612, 613, 618,630.*

LANDSCAPE ARCHITECTURE

Landscape architecture is everywhere around us from green infrastructure to shopping areas, to our homes, to communities, to parks, to transportation, to gardens, to campus and basically everywhere. Landscape architecture is the design, planning, research and management of our landscape.

Upon successful completion of the landscape architecture professional development courses, students will have the ability to:

1. Identify the environmental problems or opportunities to be solved.
2. Collect information for both the site (existing environmental conditions) and program (project needs).
3. Analyze site and program information.
4. Synthesize site and program information (design).
5. Implement design solutions (engineering and technology).
6. Communicate results of design, engineering and technology solutions.

Program Requirements

Students majoring in Landscape Architecture must complete 128 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.

REQUIRED MAJOR COURSE FOR LANDSCAPE ARCHITECTURE

LDAR 150	LDAR 370	LDAR 510
LDAR 170	LDAR 371	LDAR 520
LDAR 171	LDAR 380	LDAR 550
LDAR 270	LDAR 460	LDAR 560
LDAR 302	LDAR 461	LDAR 570
LDAR 303	LDAR 470	LDAR 571
LDAR 360	LDAR 471	LDAR 572

**A grade of "C" must be made in all of the above requirements.*

CURRICULUM GUIDE FOR LANDSCAPE ARCHITECTURE
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
NARS 100 / UNST 100	1	UNST 120	3
UNST 110	3	UNST 140	3
UNST 130	3	MATH 102	3
LDAR 150	3	LDAR 171	3
LDAR 170	3	LDAR 270	3

MATH 101	3		15
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elect.[1]	3	UNST Cluster Theme Elect[1]	3
UNST Cluster Theme Elect.[1]	3	UNST Cluster Theme Elect.[1]	3
PHYS 110	2	LDAR 303	3
PHYS 111	1	LDAR 371	3
LDAR 360	3	GCS 234	3
LDAR 370	3	EASC 201	3
LDAR 302	3		18
	18		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
LDAR 380	3	LDAR 461	4
LDAR 460	4	LDAR 471	4
LDAR 470	4	LDAR 550	3
CAAE 204	3	GCS 536	3
SLSC 338	4		14
	18		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
LDAR 560	3	LDAR 510	4
LDAR 570	4	LDAR 520	2
LDAR 572	3	LDAR 571	4
Electives	6	NARS 599	3
	16		13

Total Credit Hours: 128

[1]*UNST Cluster Theme Elective: Student must choose one cluster and take course only in that cluster.*

BIOLOGICAL ENGINEERING PROGRAM

http://www.ag.ncat.edu/academics/natres/bio_eng/index.html

Abolghasem Shahbazi, Program Director

MISSION

The mission of the Biological Engineering program is to provide its students with a quality Biological Engineering education and to satisfy the educational and technical needs of society on local, national and international levels.

OBJECTIVES

Our graduates will:

1. Demonstrate the ability to work productively as Biological Engineers or to pursue graduate education,
2. Have the skills to actively lead or participate on multidisciplinary teams,
3. Be active in professional societies, engage in continuing education, and progress towards professional registration,
4. Contribute to society and to the diversity of the workforce in their company and in their profession by actively recruiting and mentoring for these organizations.

PROGRAM REQUIREMENTS

The Biological Engineering major Bioprocess Engineering Option must complete 128 credit hours following the approved curriculum and the Natural Resources Engineering Option must complete 128 credit hours following the approved 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 (BSBE) 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 engineering design, management, research, consulting, sales, teaching, product development, governmental agencies (federal and state), industries foreign services.

REQUIRED MAJOR COURSES FOR BIOLOGICAL ENGINEERING

BIOE 330	BIOE 440	CAAE 204
BIOE 360	BIOE 501	CAAE 302

BIOE 400	BIOE 502	CAAE 331
BIOE 422	BIOE 505	CAAE 332
BIOE 423	BIOE 510	CAAE 362
BIOE 424	CAAE 101	CAAE 500
BIOE 432	CAAE 102	CAAE 501

A grade of "C" must be made in all the above requirements.

CURRICULUM GUIDE FOR BIOLOGICAL ENGINEERING
(Bioprocess Engineering Option)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
NARS 100 / UNST 100	1	UNST 120	3
CHEM 106**	3	MATH 132**	4
CHEM 116	1	PHYS 241**	3
MATH 131**	4	PHYS 251	1
UNST 110	3	UNST 130	3
GEEN 100	2	UNST 140	3
	14	GEEN 120	0
			17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CAAE 331**	3	CAAE 332**	3
MATH 231**	4	CAAE 334**	3
PHYS 242**	3	MATH 431**	3
PHYS 252	1	BIOL 221	4
BIOL 101	4	Cluster Theme Elective	3
CHEM 107**	3	GEEN 161	2
	18	CAAE 202	0
			18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEN 200	4	CHEN 320	3
CAAE 362 / MEEN 416**	3	CHEN 400	3
MEEN 441 / CHEN 310**	3	BIOE 330	4
Cluster Theme Elective	3	CHEM 221	3
BIOE 440	3	CHEM 223	2
	16	CAAE 302	0
			15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Statistics Elective	3	CHEN 311	3
BIOE 422	3	BIOE 423	3
INEN 360	2	BIOE 502	2
Cluster Theme Elective	3	BIOE Electives	3
Cluster Theme Elective	3	ELEN 440**	3
BIOE 501	1	CAAE 501*	0
CAAE 500	1		14
	16		

Total Credit Hours: 128

**If the student passes the Fundamentals of Engineering Exam in the fall of senior year, the student will be exempt from taking CAAE 501.*
***A grade of "C" is required.*
BIOE Electives: BIOE 404, BIOE 432, BIOE 505, BIOE 510, , CHEN 422, CIEN 310, or other engineering courses approved by the faculty advisor.
Statistics Electives: MATH 224, ECON 305, INEN 270, CIEN 404.

CURRICULUM GUIDE FOR BIOLOGICAL ENGINEERING
(Natural Resources Engineering Option)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
NARS 100 / UNST 100	1	UNST 140	3
CHEM 106**	3	MATH 132**	4
CHEM 116	1	PHYS 241**	3
MATH 131**	4	PHYS 251	1
UNST 110	3	UNST 120	3
GEEN 100	2	CAAE 101	2
	14	GEEN 120	0
			16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CAAE 331	3	CAAE 332**	3
MATH 231	4	CAAE 334**	3
PHYS 242	3	MATH 431**	3
PHYS 252	1	BIOL 221	4
BIOL 101	4	CAAE 102	2
CHEM 107	3	UNST 130	3
	18	CAAE 202	0
			18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CAAE 204	3	BIOE 360 / CAAE 364	3
CAAE 362 / MEEN 416	3	BIOE 432 / SLSC 632	3
MEEN 441	3	BIOE 330	4
Cluster Theme Elective	3	Cluster Theme Elective	3
BIOE 440	3	Cluster Theme Elective	3
CIEN 380	1	CAAE 302	0
	16		16

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Statistics Elective	3	BIOE 424	3
BIOE 400	3	BIOE 423	3
INEN 360	2	BIOE 502	2
EASC 522	3	BIOE Elective	3
Cluster Theme Elective	3	ELEN 440**	3
BIOE 501	1	CAAE 501*	0
CAAE 500	1		14
	16		

Total Credit Hours: 128

**If the student passes the Fundamentals of Engineering Exam in the fall of senior year, the student will be exempt from taking CAAE 501.*
***A grade of "C" is required.*
BIOE Electives: BIOE 404,BIOE 505, BIOE 510, , CHEN 422,BIOE 364, CIEN 310, CIEN 668 or other engineering courses approved by the faculty advisor.[2]Statistics Electives: MATH 224, ECON 305, INEN 270, CIEN 404.

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 216. Geographic Information Systems **Credit 3(1-4)**
This course introduces Geographic Information System (GIS) concepts and applications. GIS theory is presented, and hands-on exercises are used to demonstrate the application and use of GIS in agriculture, arts and sciences, health, political sciences, engineering, technology, and other disciplines. **(F;S)**

BIOE 330. Engineering Systems Analysis and Design **Credit 4(2-4)**
This course introduces the analysis and the design of engineering systems. Concepts, methods, and procedures associated with the engineering design process are studied. Specific topics include project management; customer need identification;

team behavior; concept generation and evaluation; embodiment design; modeling and simulation; finite element analysis software; material selection; engineering statistics; and legal and ethical issues in design. Prerequisites: CAAE 332 or MEEN 336 or equivalent. **(F;S**

BIOE 360. General Hydrology **Credit 3(2-2)**

This course is an introduction to the study of surface and subsurface hydrology. Topics include hydrologic cycle, rainfall-runoff relationships, precipitation measurements and hydrographs, unit hydrograph analysis, flood routing, planning and design of runoff/detention systems, and computer applications in hydrology. Prerequisites: CAAE 362 or MEEN416. **(F;S;S)**

BIOE 400. Soil and Water Engineering I **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: CAAE 364 or equivalent. **(F;S;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: CAAE 332 or MEEN 336 or equivalent. **(F;S;S)**

BIOE 404. Structures and The Environment **Credit 3(1-4)**

This course covers the fundamentals of timber-framed building design and construction. Topics include, selection of materials, design of foundations, beams and columns, reinforced concrete, and environmental considerations, such as temperature, humidity, condensation, and ventilation. Prerequisite: CAAE 332 or MEEN 336 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 330 or equivalent. **(F;S;S)**

BIOE 423. Fundamentals of Renewable Energy Systems **Credit 3(2-2)**

This course discusses the production, utilization, and system design for energy in food and agricultural productions. Specific topics include: biogas, biomass, solar energy, energy analysis, conservation and management, and electric power supply and motor control. Energy production through photosynthesis and energy flow in biological systems are studied. Prerequisite: MEEN 441 or CHEN 310 and BIOL 221 or equivalents. **(F;S;S)**

BIOE 424. Water Resources Engineering **Credit 3(2-2)**

This course emphasizes the analysis and design of water resources systems. Topics include water resources planning and development, hydraulic structures, introduction to aquifer analysis and contamination, well development, pump evaluation and selection, water quality, best management practices, total maximum daily load, water laws, detention and retention ponds, wastewater management, and remediation. Prerequisite: CAAE 364 or equivalent. **(F;S;S)**

BIOE 432. Physical and Engineering Properties of Soil **Credit 3(2-2)**

This course involves a study of fundamental principles of laws which govern the movement or behavior of water and air in soils. The impact of soil physical and biological properties on drainage and irrigation design are discussed. Discussion will also include stream restoration, compaction and mechanics of soil materials. Prerequisite: CAAE 364 or equivalent. **(F;S;S)**

BIOE 440. Engineering Properties of Biological Materials **Credit 3(2-2)**

This course covers engineering properties of plant and animal materials. Specific topics include structure and composition of plant and animal materials, elastic and viscoelastic properties, food rheology and thermal properties, aerodynamic and hydrodynamic properties, and electromagnetic properties. Prerequisites: BIOL 101 or equivalent; CAAE 332 or and MEEN 336 or equivalent. **(F;S;S)**

BIOE 501. Engineering Design I **Credit 1(1-0)**

In this course, each student identifies a design project, defines the problem, collects all required resources and databases and outline the work plan. This project integrates design concepts from previous courses. Prerequisite: BIOE 330. **(F;S;S)**

BIOE 502. Engineering Design II **Credit 2(2-0)**

In this course students complete the work plan established in BIOE 501. Prerequisite: BIOE 501. **(F;S;S)**

BIOE 505. Selected topics in Biological Engineering **Credit 3(3,0)**

An in-depth lecture course covering several advanced topics in Biological Engineering. Topics are selected to match student interest and faculty expertise. A specific course description will be made available at the time such a course is offered. Prerequisite: Senior standing in Biological Engineering. **(F;S;S)**

BIOE 510. Independent Study in Biological Engineering **Credit 1-3 (0-6)**

An independent study course is completed on a single topic in Biological Engineering/Topics are selected to fit the mutual interests of students and faculty advisor. The study includes the design of an apparatus, a process, or a procedure. Final written report and an oral presentation of the work are required. Prerequisites: Permission of Instructor **(F;S;S)**

BIOE 522. Food Engineering **Credit 2(2-2)**
The general engineering principles of solids, fluids, and process equipment are discussed. Topics include energy, heat, enthalpy, pyschrometrics, heat and mass transfer, drying and refrigeration of food products. Prerequisite: CHEM 107. **(F;S;S)**

BIOE 619. Instrumentation and Measurement **Credit 3(2-2)**
This course emphasizes evaluation of well established parameters such as temperature, humidity, fluid flow, pressure, displacement, velocity, acceleration, force, stress and strain. Prerequisite: CAAE 332 or MEEN 336 or equivalent. **(F;S;S)**

EARTH AND ENVIRONMENTAL SCIENCE

EASC 201. The Earth – Man's Environment **Credit 3(3-0)**
This course is a study of the earth's system as related to atmosphere, biosphere, hydrosphere and lithosphere. The interrelationship of humans with the earth's environment as revealed in the modification of natural processes will also be examined. **(F;S;SS)**

EASC 309. Elements of Physical Geology **Credit 3(2-2)**
This course examines the relation of geological principles in the development of a balanced concept of the earth and the earth's history; rock and mineral identification, utilization of geological and topographic maps, geological processes, resource conservation, urban and environmental problems. Prerequisite: CHEM 101 or consent of instructor. **(S)**

EASC 330. Elements of Weather and Climate **Credit 3(2-2)**
This course examines the fundamental elements of weather conditions as revealed in world patterns of climate types. It surveys the types of land forms and makes applications to problems in engineering, military science and in planning for agricultural, urban and regional development projects. Prerequisite: Consent of instructor. **(F)**

EASC 408. Field Work in Earth Science **Credit 3(1-4)**
Methods of geologic map construction using aerial photographic maps, Bruton Compass, etc., for stratigraphic measurements; interpretation of remotely sensed data will be studied. **(SS)**

EASC 433. Fundamentals of Mineralogy **Credit 2(1-2)**
This course provides systematic study of mineral groups, their occurrence, formation, economic importance, identification by x-ray and other techniques. Prerequisite: EASC 309. **(F)**

EASC 444. Earth and Environmental Science Seminar **Credit 3(3-0)**
Group discussions, reports, and guest lectures on current environmental issues including case studies.

Advanced Undergraduate and Graduate

EASC 616. Environmental Planning and Natural Resource Conservation **Credit 3(2-2)**
Problems of uncontrolled use of natural resources, increased urbanization, unplanned growth and general deterioration of the man-made and natural environments will be examined. The basic principles of environmental planning and natural resources management as well as natural resource conservation will also be studied. **(F)**

EASC 622. Environmental Sanitation and Waste Management **Credit 3(2-2)**
This course is the study of traditional and innovative patterns as well as problems of managing with handling waste products of urban and rural environments, their renovation and reclamation. **(F)**

EASC 624. Earth Science, 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 relation to man's activities and as the foundation for understanding the environment. **(F)**

EASC 625. Earth Resources **Credit 3(2-2)**
Conservation, management and use of renewable and nonrenewable resources and their impact on the social and economic quality of our environment. **(SS)**

EASC 644. Problem Solving in Earth Science **Credit 3(3-0)**
Independent field and/or laboratory research in earth and environmental science for advanced students is/or required. **(S)**

EASC 666. 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 activities. **(F)**

EASC 699. Environmental Problems **Credit 3(3-0)**
This course provides multidisciplinary examination of environmental problems and application of appropriate techniques of analysis to selected problems. Team taught by environmental faculty. **(S)**

ENVIRONMENTAL HORTICULTURE

HORT 302/LDAR 302. Plant Materials I **Credit 3(2-2)**
This course is 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)**

HORT 303/LDAR 303. Plant Materials II **Credit 3(2-2)**
The course is a continuation of LDAR 302 with different plant species. **(S)**

HORT 334. Plant Propagation **Credit 3(2-2)**
This course is the study of the types, construction, and management of propagation structures; and the fundamental principles of propagation by seed, cuttage, budding, grafting, and layerage. Prerequisite: NARS 110. **(F)**

HORT 412. Turf Grass Management **Credit 3(3-0)**
This course covers the establishment, maintenance, and adaptation of grasses for lawns, golf courses, parks, Athletic and playing fields and roadsides. Also considered is the association of different plant responses with soil, climate, and biotic factors. Online **(F)**

HORT 514. Nursery Production **Credit 3(2-2)**
This course includes the production principles and practices used for growing woody plants in the field and in containers along with the strategies for wholesale and retail marketing of nursery crops. Online **(S)**

HORT 527. Basic Floral Design **Credit 3(1-4)**
The essentials of flower arrangement and plant decoration for the home, office, hospital, school and church are studied. Special attention given to design principles, such as balance, scale, harmony, color, and line movement. **(DEMAND)**

Advanced Undergraduate and Graduate Courses

HORT 600. Plant Tissue Culture **Credit 3(2-2)**
Theory and principles of plant cell, tissue and organ culture, and their application in crop improvement will be studied. **(F)**

HORT 608. Special Problems in Horticulture **Credit 3(3-0)**
This course involves work along special lines given largely by the project method for advanced undergraduate and graduate students who have the necessary preparation. Special arrangement with instructor required. **(F;S;SS1)**

HORT 610. Commercial Greenhouse Management **Credit 3(2-2)**
The culture of floriculture crops in the greenhouse out-of-doors with emphasis on cut flowers and potted plants will be studied. Special attention is given to seasonal production as it relates to soils, fertilization and environmental factors. **(DEMAND)**

HORT 611. Commercial Greenhouse Production **Credit 3(2-2)**
The culture of floriculture crops in the greenhouse with emphasis on seasonal production, marketing, insect and disease controls and plant growing structures will be studied. Prerequisites: HORT 334 and HORT 610. **(DEMAND)**

HORT 612. Integrated Pest Management Systems **Credit 3 (2-3)**
This course provides basic principles and skills or the management of pest of crops, greenhouse and ornamental plants, and those attacking man and his domesticated animals. **(F;S;SS)**

HORT 613. Plant Materials and Planning Design **Credit 3(2-2)**
This course is a continuation of HORT 612 with added emphasis on plant combinations and use of plant as design elements. **(DEMAND)**

HORT 620. Vegetable Production **Credit 3(2-2)**
This course provides a comprehensive study of major and minor vegetable crops of North Carolina, the United States, and the world in relation to the industry, production practices, crop development, nutritional value, Quality characteristics, marketing, and post-harvest handling and storage. **(F)**

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. **(S)**

LDAR 150. Landscape Architecture Orientation **Credit 3(3-0)**
Students enrolled in this course will explore the broad field of landscape architecture. Students will be introduced to the planning and design process, landscape planning, site planning, and the principles and elements of design. Natural and human factors of design will also be introduced. **(F)**

LDAR 170. Landscape Architectural Orientation I **Credit 3(0-6)**
Students enrolled in this studio course will explore the field of landscape architecture and the various visual communication techniques. Students will be exposed to traditional and digital visual and graphic techniques necessary for the communication of ideas. **(F)**

LDAR 171. Landscape Architectural Orientation 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; two and three dimensional aspects of form and space creation will be explored. **(S)**

LDAR 230. Environmental Ecology **Credit 3(3-0)**
Basic concepts of ecology, ecosystem structure and function will be explored; energy flow and material recycling emphasized. Field trips are required. Prerequisite: LDAR 170. **(S)**

LDAR 270. History of Landscape Architecture I **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. Prerequisite: University History requirement. **(F)**

LDAR 271. History of Landscape Architecture 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 and the International School. Prerequisite: LDAR 270. **(S)**

LDAR 302 /HORT 302. Plant Materials I **Credit 3(1-4)**
This course will concentrate on the study of plant materials as used in landscape design. Emphasis is placed on major categories of herbaceous plants and woody plants as they pertain to landscape usage. Identification techniques will be introduced and used. **(F)**

LDAR 303/HORT 303. Plant Materials II **Credit 3(1-4)**
This course is a continuation of LDAR 302. Different plant species will be the focus of this course. Prerequisite: LDAR 302. **(S)**

LDAR 360. Landscape Construction Materials **Credit 3(2-1)**
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 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. **(S)**

LDAR 370. Basic Landscape Design I **Credit 3(0-6)**
Students in this studio course will explore basic concept development and principles and elements of design. The course will give students a greater understanding of space through analysis of forms, proportions, and scale. Students will investigate design theory by proposing solutions. Prerequisite: LDAR 170. **(F)**

LDAR 371. Basic Landscape Design II **Credit 3(0-6)**
This studio course is designed to explore further issues of design. Course material will emphasize ideologies about scales, context, and concept development. Projects will explore creative solutions to "real" world constraints (i.e. zoning regulations, economic, environmental, social, political, etc.). The cyclic nature of the design process and its layers will also be emphasized. Prerequisite: LDAR 370. **(S)**

LDAR 380.Landscape Architecture Field Study **Credit 3(0-6)**
This is a course for landscape architecture students to visit and explore examples of exemplary natural systems and built landscapes. Students will study successful North Carolina or international (i.e. Ghana, England) urban projects, gardens, parks, and residential communities, to further understand the environment. **(S;Summer)**

LDAR 460. Landscape Architectural Construction **Credit 4(0-8)**
This studio course will focus on exercises and projects in site engineering. Prerequisites: MATH 102, PHYS 110 and 111. Corequisite: LDAR 470. **(F)**

LDAR 461. Landscape Architecture Materials and Equipment **Credit 4(0-8)**
This studio course will focus on lectures, exercises and projects dealing with landscape equipment, and design methods. Prerequisites: MATH 102, PHYS 110, 111. Corequisite: LDAR 471. **(S)**

LDAR 470. Intermediate Landscape Architectural Design I **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. The student will develop programs, site analysis, concept, and presentation drawings. Prerequisites: LDAR 171, 230 and 371. Corequisite: LDAR 460. **(F)**

LDAR 471. Intermediate Landscape Architectural Design II **Credit 4(0-8)**
This studio course is a continuation of LDAR 470 addressing more complex design issues. Prerequisite: LDAR 470. **(S)**

LDAR 500. Special Problems in Landscape Architecture **Credit 3(2-2)**
This is a course for landscape architecture students to work on independent study projects. Prerequisite: Consent of the instructor and Program Director. **(F)**

LDAR 510. Professional Practice **Credit 4(4-0)**
This course is a study of the professional practice of landscape architecture, including professional ethics and registration laws; the preparation of proposals and contract documents; office administration; job supervision, and relationships with clients and customers. Prerequisites: LDAR 461, 570, 560. Corequisites: LDAR 571 and 520. **(S)**

LDAR 520. Seminar in Landscape Architecture **Credit 2(2-0)**
Individual research, group discussions, and lectures on contemporary issues relating to the practice of landscape architecture are the focus of this seminar. Prerequisite: LDAR 570. Corequisites: LDAR 571 and 510. **(S)**

LDAR 550. Planting Design **Credit 3(0-6)**
This studio course will study the fundamentals of design as applied to aesthetic and functional arrangements. Problems will include preparation of planting plans, cost estimates and technical specifications. Prerequisites: LDAR 302 and 303. Corequisites: LDAR 460 and 470. **(F)**

LDAR 560. Advanced Landscape Architectural Construction Documents **Credit 3(0-6)**
This studio course will serve as a capstone to Landscape Architectural Construction 330 and 331 with emphasis on understanding and preparing complete sets of construction documents for landscape architecture projects. Prerequisites: LDAR 460 and 461. **(F)**

LDAR 570. Advanced Landscape Architecture **Credit 4(0-8)**
This studio course is an in-depth group study of a comprehensive landscape architecture management, planning, and design problem while considering the research, programming, site analysis, conceptual studies, preliminary and master plan, design guidelines, and presentations of recommendations. Prerequisites: LDAR 461, 471, and 550. **(S)**

LDAR 571. Advanced Landscape Architectural Design II **Credit 4(0-8)**
This studio course focuses on an approved design problem requiring individual work, which will serve as a comprehensive examination. Preparation and presentation are to include a written and graphic problem statement, analysis, and detailed plans, or other activities approved by instructor. Prerequisite: LDAR 570. Corequisites: LDAR 510 and 520. **(S)**

LDAR 572.Capstone Project 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)**

NATURAL RESOURCES

NARS 100. Introduction to Natural Resources and Environmental Design **Credit 3(3-0)**
This course is designed to assist students in making personal adjustments to college living; it provides Introduction to the broad areas of natural resources and environmental design and a study of the curricula and professional opportunities in the field. In addition, this course provides a forum for dialogue among students, industry, and academia to work in partnership to define current and emerging issues in natural resources and environmental design. This course is only for freshman students in the department of Natural Resources and Environmental Design. **(F;S)**

NARS 110. Introduction to 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 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 **Credit 3(3-0)**
This course provides an introduction to the morphology, biological activity and economic importance of various groups of fungi including the application of biotechnology in research and product development. Laboratory instruction includes the isolation and identification of fungi from natural habitats and the application of physiological and biochemical model experiments. **(S)**

NARS 520. 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 603. Agricultural Chemicals **Credit 3(2-2)**
This course is a study of the important chemical pesticides and growth regulators used in the production of economic plants. Prerequisites: CHEM 102 and NARS 300. **(DEMAND)**

NARS 604. Crop Ecology **Credit 3(3-0)**
This course is the study of the physical environment and its influence on crops and geographical distribution of crops. **(DEMAND)**

NARS 605. Breeding of Crop Plants **Credit 3(2-2)**
This course examines the following: the significance of crop improvements in the maintenance of crop as well as the yields; application of genetic principles and techniques used in the improvement of crops; and the place of seed certification in the maintenance of varietal purity. **(DEMAND)**

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 610. Applied Spatial Statistics and GIS **Credit 3(2-2)**
This course introduces spatial statistical analysis techniques, which provide the students with the opportunity to conduct exploratory spatial data analysis with ArcView GIS, S-PLUS/SpatialStats and the SAS/GIS Software. The focus of this course is on effective application of spatial data analysis in GIS environment; MATH224 and GIS software or consent of instructor. **(DEMAND)**

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)**

SOIL SCIENCE

SLSC 338. Fundamentals of Soil Science **Credit 4(3-2)**
This course examines the fundamental nature and properties of soils, soil genesis, and classification and land use will be covered. **(F)**

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 environ-mental reports.

DIRECTORY OF FACULTY

Keith Baldwin ..... **Cooperative Extension Faculty**
B.S., M.Ed., University of California, Ph.D., North Carolina State University

Peggy Fersner ..... **Adjunct Assistant Professor**
B.S., Virginia Polytechnic Institute and State University; M.S., Clemson University (P.E.)

Godfrey A. Gayle ..... **Professor**
B.S., North Carolina A&T State University; M.S., Ph.D., North Carolina State University

Marihelen Glass ..... **Professor**
B.S., Texas Tech University; M.S., Ph.D., Texas A&M University

Perry Howard ..... **Associate Professor**
B.L.A., Louisiana State University; M.L.A., Harvard University, Registered Landscape Architect

Omoanghe S. Isikhuemhen ..... **Adjunct Assistant Professor**
B. S., M.S. University of Benn, Ph.D. Institute of Microbiology, MS CR, Prague

Louis E. Jackai ..... **Chairperson and Professor**
B.S., University of Cape Coast, Ghana, WA; M.S., University of Wisconsin-Superior; Ph.D., University of Illinois, Urbana-Champaign

Richard Phillips ..... **Adjunct Associate Professor**
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G. Bhaskar Reddy ..... **Professor**
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John F. Robinson ..... **Professor**
Sr., A.A., Jr. College of Albany, B.L.A., Louisiana State University, M.L.A., Harvard University, Registered Landscape Architecture

Abolghasem Shahbazi ..... **Professor**
B.S., University of Tabriz; M.S., University of California at Davis, Ph.D., Pennsylvania State University (F.E.)

Vestal Shirley ..... **Laboratory Manager**
B.S., Mid Western University; Ph.D., Louisiana State University-Baton Rouge

Godfrey A. Uzochukwu ..... **Professor**
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Gouchen Yang ..... **Adjunct Professor**
B.S., Jilin Agricultural University, M.S., Ph.D., University of Nebraska-Lincoln

COLLEGE OF ARTS AND SCIENCES

http://www.ncat.edu/artsnsci/

David W. Aldridge, Interim Dean
Nita M. Dewberry, Associate Dean for Curriculum and Student Affairs
Dina Eagle, Assistant Dean for Affiliated Academic Program

OBJECTIVES

The College of Arts and 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, the social and behavioral sciences, as well as the natural and physical sciences, the College intends to achieve the following objectives:

1. to provide courses of instruction and service-learning experiences that prepare students for professional or self-employment.
2. to provide opportunities and experiences for the student to acquire analytical and critical thinking skills.
3. to provide training in effective communication.
4. to stimulate and encourage individual creativity and personal development through research and related activities.
5. to foster and inspire creativity, self-discipline, and objective thinking among our students.
6. to provide the undergraduate academic foundation for successful graduate and professional education.

DEGREES OFFERED

The College of Arts and Sciences is comprised of thirteen academic departments with forty-eight undergraduate degree programs leading to the Bachelor of Arts, the Bachelor of Science, the Bachelor of Fine Arts, and the Bachelor of Social Work. The Bachelor of Arts degree is offered with major programs of study in English; History; Music; Political Science; Psychology; Romance Languages (French and Spanish); Sociology; Speech; Visual Arts; and Liberal Studies. The Bachelor of Science degree is offered with major programs of study in Applied Mathematics; Atmospheric Sciences and Meteorology; Biology; Chemistry; Criminal Justice; Journalism and Mass Communication; Mathematics; Physics; French and Spanish Secondary Education; and Secondary Education (Biology, Chemistry, English, History, Mathematics, Physics, Art and Music). The Bachelor of Fine Arts degree is offered in Professional Theatre and the Bachelor of Social

Work degree is offered in Social Work. Many degree programs may be pursued jointly with professional education courses offered in the School of Education. Graduates of these programs qualify for certification to teach in the K-12 schools.

INTERDISCIPLINARY DEGREE PROGRAMS

The College of Arts and 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, International Studies, customized Interdisciplinary, Women's Studies, Business, Pre-Law, Cultural Changes & Social Development, Race, Class and Culture, and Dance. Interdisciplinary and multi-disciplinary degree programs at the graduate level include the following university-wide programs: Master of Science in Computational Science and Engineering, Doctor of Philosophy in Energy and Environmental Studies, and Doctor of Philosophy in Leadership Studies.

DEGREE ENHANCEMENT OPPORTUNITIES

Undergraduate students in the College of Arts and 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, Global Studies Certificate, UNC in Washington Program, Waste Management Certificate, and Customer Relationship Marketing & Management Certificate.

DEGREE REQUIREMENTS

To attain the baccalaureate degree in the College of Arts and Sciences, a student must satisfactorily complete the requirements of his/her major field, the university studies courses, and a sufficient number of electives to total at least 124 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 and Sciences that have accrediting organizations have been accredited. They are as follows:

- The Chemistry Program is approved by the American Chemical Society (ACS).
- The Music Program is accredited by the National Association of Schools of Music (NASM).
- The Social Work undergraduate program is approved by the Council on Social Work Education (CSWE).
- 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 prepares students for careers in teaching, research, social work, 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, medicine, dentistry, 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 student advisement is provided in all departments. Academic advising is essential for assuring students that the programs of study they are pursuing include the requirements of their particular departments and desired degrees. It also assists in helping students make maximum use of the learning opportunities in the University and in helping them address academic problems.

ADMISSION REQUIREMENTS

See specific program descriptions for admission requirements for programs in the College of Arts and 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.

UNIVERSITY STUDIES REQUIREMENTS – Students in the College in Arts and Sciences

University Studies is comprised of (13 credit hours) of foundation courses and (12 credit hours) of theme-based "problem-solving" courses. Students will be expected to complete their foundation courses in the freshman year, before taking the theme-based courses.

In addition to the required University Studies courses, the College of Arts and Sciences also highly recommends that students enroll in the following courses which will further prepare students to enter the specialized programs of their university education, and to provide essential elements of higher education not necessarily included in the students' specialties.

Accordingly, the College of Arts and Sciences highly recommends students to take the following to enhance academic general knowledge:

I. 3 cr. hrs. of English 101 (English Composition) + UNST 110
II. 3 cr. hrs. of Arts or Humanities (can be met through the University Studies Theme Clusters) (Arts or Humanities may consist of Visual Arts, Music, Theatre, Dance, English, and Philosophy).
III. 3 cr. hrs. of Mathematics (can be met through the University Studies Theme Clusters)
IV. 4 cr. hrs. of laboratory science (can be met through the University Studies Theme Clusters)
V. 6 cr. hrs. of Foreign Languages

Certain courses require specific prerequisites and certain majors require specific courses; therefore, students should be knowledgeable of departmental requirements when planning their courses of study.

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 Biology

http://www.ncat.edu/~biology/

Mary A. Smith, Chairperson

OBJECTIVES

The objectives of the Biology Department are as follows:

1. to train professional biologists in the nature of scientific investigation, the principles of biology, and the value of the scientific enterprise.
2. to prepare students for career opportunities in research, industry, and government.
3. to prepare students for graduate study in the biological sciences.
4. to prepare students for admission to professional schools (i.e. medical, dental, and veterinary school).
5. provide courses in biology that fulfill the general education core requirements of the University.
6. 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.
7. to act as a resource to the University and community through cooperative programs, workshops, seminars, course offerings, and public service.
8. to conduct research and scholarly activity in the areas of biology, biotechnology, computational biology, and biology education.
9. 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
Biology – Master of Science*
Computational Science and Engineering – Master of Science*
Energy and Environmental Studies – Doctor of Philosophy*
** See the Graduate School Bulletin*

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 2008, 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 2009 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 125 hours for graduation. This includes a minimum of 47 semester hours of biology and 40 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 126 semester hours. Included in these 126 hours are a minimum of 33 semester hours of biology and 62 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. *The Life and Physical Sciences Research Symposium.* This is a forum for faculty and students to present their research, an occasion for all science students to interact with prominent scientists from government, industry, or academia and become aware of research opportunities.
3. *Health Careers Opportunity Program*. This program is a collaborative effort with the University of North Carolina at Chapel Hill School of Medicine designed to increase the number of underrepresented disadvantaged students entering the health professions. It focuses on academic skills improvement, counseling, and mentoring. **Advisors:** Dr. Catherine White and Dr. Perry Mack.
4. *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. **Advisors:** Dr. Catherine White and Dr. Perry Mack
5. *Honor Societies. Tau Phi Chapter of the Beta Bet*a Beta National Biological Honor Society. **Advisors:** Dr. Perpetua Muganda,. Beta Kappa Chi National Scientific Honor Society. **Advisor:** Dr. Claude Lamb (Chemistry Department)
6. ***Retreats.*** Hosts an annual **Faculty Strategic Planning Retreat**, an annual **Graduate Student Retreat,** an **Annual New Student Orientation Program and an Undergraduate Research Retreat..**
7. *Biotechnology Certification*. Students are e**ncouraged** *to seek intra-* and extramural internships that provide hands-on exposure to laboratory tec**hniques un**ique to biotechnology that would qualify them for research positions in research related t**o biotech**nology **Coordinator: Roy Coomans**
8. ***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. *Herbarium* (NCATG). A collection of approximately 6,000 specimens, several dozen of which were collected in the 1800's. NCATG is registered internationally.
2. *Computer Room.* This satellite computer center, located in Barnes Hines Hall, has 16-networked computers available for students.
3. *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, virology, ecology, and other biological sciences. In support of research, the Department has a suite with a scanning electron microscope, dark room, a cell tissue culture laboratory, a cold room and a greenhouse.

4. *Molecular Biology Research Core Lab.* This facility is equipped with high through-put technology including a Microarray Analyzer, CEQ 8800 Beckman Genetic Analyzer, 7500 Real Time PCR System, HPLC, -80°C freezers, and an Amersham Flourimager 595 Pentium Workstation.
5. *Lecture Facilities.* The teaching facilities in Barnes Hall include a seminar room, auditorium, and a SMART Classroom equipped with and a video-conferencing capability for online communication.
6. *Graduate Student Resource Room.* This facility provides space for graduate students to study, network, or relax.
7. *Undergraduate Research Training Center for Student Research Scholars.* This facility is equipped with computers, plasma screen, and video conference technology.

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:

- Biotechnology
- Cell & Molecular Biology
- Endocrinology/Biochemistry
- Developmental Biology
- Cancer Biology
- Biotechnology
- Bacteriology, Physiology & Genetics
- Virology/Immunology/Bioinformatics & Genomics
- Environmental Biology/Ecology
- Experimental Plant Taxonomy/Floristics
- Health Disparities
- Bacteriology, Physiology & Genetics

CAREER OPPORTUNITIES

Due to the depth of required courses in biology and the breadth of support courses in the quantitative sciences, languages, 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 260	BIOL 466
BIOL 160	BIOL 401	BIOL 501 (Capstone)
BIOL 221	BIOL 410	BIOL 561
BIOL 240	BIOL 462	

CURRICULUM GUIDE FOR BIOLOGY

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BIOL 101	4	BIOL 160	4
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
UNST 110	3	HPED 101[1]	1
UNST 120	3	UNST 130	3
UNST 100	1	UNST 140	3
	15		15

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BIOL 240	4	BIOL 221	4
CHEM 221	3	CHEM 222	3
CHEM 223	2	CHEM 224	2
MATH 131[2]	4	MATH 132	4
UNST Elective	3	UNST Elective	3
	16		16

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BIOL 401	4	BIOL 462	4
BIOL 466	3	BIOL 260	4
PHYS 241	3	PHYS 242	3
PHYS 251	1	PHYS 252	1
MATH 231, 224, or 431	3-4	UNST Elective	3
UNST Elective	3		15
	17-18		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BIOL 410	3	BIOL 501 (Capstone)	3
BIOL Elective[3]	3	BIOL 561	4
BIOL Elective[3]	3	CHEM 651	3
FOLA 100, 102, or 104[4]	3	FOLA 101, 103, or 105[4]	3
Free Elective	3	Free Elective	3
	15		16

Total Credit Hours: 125-126

[1] *Substitute courses are accepted for HPED 101 upon approval of major advisor.*
[2] *Students not eligible to enter MATH 131 must complete MATH 110 prior to enrolling in MATH 131.*
[3] *Courses taken for Biology electives must be numbered 400 or above.*
[4] *Two consecutive courses in the same foreign language.*

CURRICULUM GUIDE FOR SECONDARY EDUCATION (BIOLOGY)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BIOL 101	4	BIOL 240	4
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1
HPED 101[1]	1	HPED 200	2
UNST 110	3	UNST 130	3
UNST 120	3	UNST 140	3
UNST 100	1		16
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BIOL 221	4	BIOL 260	4
CHEM 221	3	CHEM 222	3
CHEM 223	2	CHEM 224	2
MATH 131[2]	4	MATH 132	4
UNST Cluster Theme Elective[3]	3	UNST Cluster Theme Elective[3]	3
	16		16

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PSYC 320	3	BIOL 462	4
BIOL 466	3	BIOL 561	4
PHYS 225	3	PHYS 226	3
PHYS 235	1	PHYS 236	1
CUIN 102	2	CUIN 301	2
UNST Cluster Theme Elective[3]	3	UNST Cluster Theme Elective[3]	3
	15		17

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BIOL 410	3	CUIN 500	3
CUIN 400	3	CUIN 624	3
CUIN 436	3	CUIN 560[5]	6
CUIN 535	3		12
BIOL Elective[4]	3		
Free elective	3		
	18		

Total Credit Hours: 126

[1] *Substitute courses are accepted for HPED 101 upon approval of major advisor.*
[2] *Students not eligible to enter MATH 131 must complete MATH 110 prior to enrolling in MATH 131.*
[3] *Student must choose one cluster and take 12 hours in that cluster.*
[4] *Course taken for Biology elective must be numbered 400 or above.*
[5] *Capstone course*

COURSE DESCRIPTIONS IN BIOLOGY
Undergraduate

BIOL 100. Biological Science **Credit 4(3-2)**
This is a general education course that stresses the objectives presented under the general education program of the University. This course stresses central concepts in biology including; basic chemical and physical phenomena, biochemistry, cell form and function, genetics, evolution, and multicellular organization. The laboratory will examine major biological concepts. Biological Science is not open to Biology majors. **(F;S;SS)**

BIOL 101. Concepts of Biology **Credit 4(3-2)**
This course is an introduction to science and the scientific method, basic biochemistry, cell structure and function, energy and metabolism, reproduction and genetics, evolution, life's diversity, and basic ecological principles for those students planning to enroll in additional major courses in the biological sciences. The laboratory will emphasize central biological concepts. Prerequisite: Credit or concurrent enrollment in CHEM 106 and 116. **(F;S)**

BIOL 160. General Zoology **Credit 4(3-2)**
This is an introductory study of structure, physiology and phylogeny of the major animal phyla. The laboratory emphasizes the comparative anatomy and taxonomy of the animals. Prerequisite: BIOL 101. **(F;S;SS)**

BIOL 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 101, CHEM 107 and 117. **(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 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 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 401. Molecular Biology (Formerly BIOL 201) **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 101 and CHEM 107. **(F)**

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 101, CHEM 107 and 117. **(F)**

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 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 401 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 466. Principles of Genetics **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. Prerequisite: BIOL 401 and CHEM 221. **(F)**

BIOL 468. Biology, Technology, and Ethics I **Credit 1(0-2)**

This course evaluates recent technological advances in biology and how these advances impact societal issues and create ethical concerns. The course uses a seminar format. It is required for all undergraduate biology majors. Prerequisite: Senior standing. **(F)**

BIOL 469. Biology, Technology, and Ethics II (Formerly BIOL 569) **Credit 1(0-2)**

This seminar course is concerned with ethical issues in biology. It is required for all pre-professional Biology majors. Prerequisite: BIOL 568. **(S)**

BIOL 498. Independent Study **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)**

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. **(F;S)**

BIOL 501. Senior Project **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 defense of the research project. Literature review, experimental design, hypothesis testing, data analysis, scientific writing and presentation will be major elements of the course. Prerequisites: Biology major, senior classification. **(F;S)**

BIOL 530. Plant Pathology **Credit 4(2-4)**

This course is an introduction to the organisms and environmental conditions that cause disease in plants, the disease cycle, the effects of diseases on host plants, the nature of plant resistance, and strategies for controlling plant disease. A survey of major pathogens and plant diseases with an emphasis on important agricultural and horticultural plants is included. The laboratory emphasizes the identification of plant pathogens. Prerequisite: BIOL 240. **(DEMAND)**

BIOL 561. Developmental Biology **Credit 4(2-4)**

This course is an introduction to the cellular and molecular aspects of development in animal and plant systems. Laboratory exercises provide an introduction to techniques in classical experimental embryology and modern developmental biology. Prerequisites: BIOL 401, 260. BIOL 462 is recommended. **(S)**

Advanced Undergraduate and Graduate

BIOL 620. Food Microbiology (Formerly BIOL 420) **Credit 4(2-4)**

This is a survey of selected topics in food microbiology. The course will cover the metabolic pathways, organisms and processes involved with food production from fermented dairy products, vegetables, fruits and meats. Food spoilage,

preservation, infection, and intoxication will also be discussed. The laboratory will introduce students to the microorganisms involved with food production and spoilage. Prerequisite: BIOL 220 or 221. **(F)**

BIOL 621. Soil Microbiology (Formerly BIOL 421) Credit 4(2-4)

This is a study of the major groups of soil organisms including their classification and relation to soil environments. The abundance, significance, and functions of soil microorganisms as well as their role in chemical cycles in soil will be discussed. The laboratory will emphasize methods for studying soil microbes. Prerequisite: BIOL 220 or 221. **(S)**

BIOL 630. Molecular Genetics Credit 3(3-0)

This course will examine DNA and RNA structure, function, and processing in prokaryotic and eukaryotic systems. Various aspects of recombinant DNA technology will be examined. Prerequisites: BIOL 401 and 466. **(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 401 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 benchwork 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 401 and 466. **(F;S)**

BIOL 642. Special Problems in Biology Credit 3(2-2)

This course offers laboratory research projects on specific problems in biology for advanced students. The lecture portion of the course will emphasize central concepts in the research area. Prerequisite: BIOL 462, or 466 or permission of instructor and advisor. **(DEMAND)**

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 466. **(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. Adapativeness of differences in behavior and the development of behavior will be emphasized. Prerequisites: BIOL 410 and 466. **(DEMAND)**

BIOL 671. Principles and Practices of Immunology Credit 3(3-0)

This course is a study of mammalian immune responses; 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, 466; CHEM 221, 222. **(S)**

BIOL 681. Statistical Methods for Research Credit 3(3-0)

Introductory statistical methods for biological research including: descriptive statistics, probability distributions (binomial, normal, student's t-distribution), parametric and non-parametric hypothesis tests, confidence intervals, chi-square tests/contingency table analysis, introduction to one-way ANOVA, and bivariate regression. Laboratory exercises will provide the student with experience using statistical software packages for data analysis. Prerequisite: MATH 224 or 231. **(F;S)**

BIOL 690. Introduction to Epidemiology Credit 3(3-0)

This course will include the basic principles and methods of epidemiology and applications of epidemiology to public health and clinical practice. Topics include measuring the occurrence of disease, identifying the cause of disease, estimation of risk, and evaluation of the validity and reliability of diagnostic and screening tests. Prerequisite: MATH 224 or BIOL 681 or permission of instructor. **(F;S)**

DIRECTORY OF FACULTY

David W. Aldridge..... **Professor and Interim Dean of the College of Arts and Sciences**
B.S., M.A., University of Texas-Arlington; Ph.D., Syracuse University; Postdoctoral, Woods Hole Marine Biological Laboratories

Goldie Smith Byrd.....**Nathan F. Sims Endowed Professor**
B.S., North Carolina A&T State University; Ph.D. and Postdoctoral, Meharry Medical College

Roy Coomans.....**Associate Professor**
B.S., Eckerd College; Ph.D., University of North Carolina at Chapel Hill

Doretha B. Foushee ..... **Associate Professor and Associate Chairperson**
B.S., Shaw University; M.S., North Carolina Central University; Ph.D., University of Maryland

Joseph L. Graves, Jr. .....**Professor and Dean for University of Studies Program**
A.B., Oberlin College; M.S., University of Lowell; Ph.D., Wayne State University

Gregory D. Goins .....**Associate Professor**
B.S., University of North Carolina at Chapel Hill; M.S., Ph.D., North Carolina State University; Postdoctoral, University of Minnesota

Andrew G. Goliszek .....**Associate Professor**
B.S., University of West Florida; M.S., Ph.D., Utah State University; Postdoctoral, Wake Forest University

Minnie Holmes-McNary .....**Associate Professor**
B.S., B.A., University of Illinois at Springfield; Ph.D., University of Illinois at Urbana-Champaign

Vinaya A. Kelkar..... **Research Assistant Professor**
B.S., Gujarat University-India; M.S., Old Dominion University; Ph.D., University of North Carolina at Greensboro

Perry V. Mack .....**Adjunct Professor**
B.S., South Carolina State College; M.S., North Carolina Central University; Ed.D., Rutgers University, Extramural Associate, N.I.H.-Bethesda

Patrick Martin..... **Assistant Professor**
B.S., Virginia Union University; Ph.D. and Postdoctoral, University of Virginia.

Perpetua Muganda..... **Professor**
B.S., Lock Haven State College; M.S., Howard University; Ph.D., Indiana University School of Medicine; Postdoctoral, Lineberger Cancer Research Center, University of North Carolina at Chapel Hill

Jude N. Okoyeh .....**Adjunct Professor**
B.S., M.S., University of Ibadan; Ph.D., Ahmadu Bello University, Postdoctoral, International Centre for Genetic Engineering & Biotechnology, United Nations Institute, New Delhi

Cailisha Petty..... **Adjunct Instructor**
B.S., M.S., North Carolina A&T State University

Mary A. Smith.....**Associate Professor and Chairperson**
B.S., M.S. Morgan State University; Ph.D. Cornell University; Postdoctorals, Cornell University and Michigan State University

Checo J. Rorie..... **Adjunct Assistant Professor**
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

C. Dinitra White..... **Assistant Professor**
B.S., Johnson C. Smith University, P.h.D., Wayne State University, Postdoctoral, University of North Carolina at Chapel Hill

Joseph J. Whittaker .....**Associate Professor**
A.B., Talladega College; Ph.D., Meharry Medical College; Postdoctorals, Purdue University and Washington University

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Department of Chemistry

http://chemistry.ncat.edu/

Debasish Kuila, 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, dental, and other professional schools;
3. to prepare majors for careers as professional chemists;
4. to prepare majors to teach chemistry at the secondary school level;
5. to provide majors in other departments with a functional understanding of chemistry commensurate with the needs of their chosen fields;

6. to provide all students served by the department with an insight into the nature of scientific investigations and the scientific enterprise in general;
7. to offer for graduate students learning experiences and research leading to a M.S. Degree in chemistry;
8. to offer learning experiences and research leading to a M.S. Degree in education with a concentration in chemistry;
9. to share the resources (human and physical) of the department with the local and academic community through cooperative programs, workshops, seminars, course offerings, etc.; and
10. to contribute to the extension of basic knowledge in chemistry and related sciences through applied and basic research, educational experimentation, publications, etc.

DEGREES OFFERED

Chemistry – Bachelor of Science
Chemistry (Secondary Education) – Bachelor of Science
Chemistry – Masters of Science*
Computational Science and Engineering – Master of Science*
Energy and Environmental Systems – Doctor of Philosophy*
**See the Graduate School Bulletin*

GENERAL PROGRAM REQUIREMENTS

Chemistry Major – The professional major in chemistry must complete 124 semester hours of University courses. The student may select one of four options in order to complete the professional major. The options are The American Chemical Society (ACS) Certified Program, Biochemistry Program, Research Program or the Pre-Health Program. The ACS program requires the student to complete 45 semester hours in basic chemistry courses and six to eight hours in advanced chemistry courses of which three hours must be Chemistry 503 or 504. The Biochemistry Program requires the student to compete 45 semester hours in basic chemistry courses, six to eight hours in advanced chemistry courses and 16 semester hours of basic biology courses. The Research Program requires the student to compete 45 semester hours in basic chemistry courses, three hours in advanced chemistry courses and 25 credits in research based courses. The Pre-Health Program requires the student to complete 45 semester hours in basic chemistry courses and 16 semester hours of basic biology courses. A minimum grade of "C" must be achieved in all basic chemistry courses. The capstone course must be Chemistry 503 or Chemistry 504.

Chemistry Education – The education major must complete 128 semester hours of University courses. The student may select one of two options to complete major. The options are Secondary Education with a Concentration in Chemistry or Comprehensive Science Education with a Concentration in Chemistry. Student must pass PRAXIS I. A minimum grade of "C" must be achieved in all basic chemistry courses. The Secondary Education Program is accredited by the National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction. Bachelor of Science/Master of Science in Chemistry – The curricula are identical in the first two years to the professional major's program leading to the Bachelor of Science degree. It is designed to enable talented undergraduate students to obtain the B.S. and M.S. degrees, in chemistry during a five year period of study and research. Any rising junior in chemistry with a grade point average of 3.0 in chemistry and 2.7 overall average is eligible.

ACCREDITATION

The professional curriculum (ACS Certified Program) is approved by the American Chemical Society. All Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction.

CAREER OPPORTUNITIES

B.S. level graduates in chemistry qualify for employment in many fields. There are many career opportunities for chemists in education, government, and industry.

In industry, the chemistry graduate with a B.S. degree may be employed in manufacturing-plant management, research and development, product development, technical sales, marketing, etc. B.S. level chemists work in research at federal, state, municipal, and university laboratories.

The B.S. degree program prepares students to pursue graduate study in chemistry or other chemistry-based sciences (biochemistry, pharmacology, physiology, chemical physics, material science, etc.), medicine, dentistry, and other health professional areas.

REQUIRED MAJOR COURSES FOR CHEMISTRY

CHEM 106	CHEM 224	CHEM 443
CHEM 107	CHEM 231	CHEM 444
CHEM 108	CHEM 232	CHEM 451
CHEM 116	CHEM 431	CHEM 452
CHEM 117	CHEM 432	CHEM 511
CHEM 221	CHEM 441	CHEM 610

CHEM 222 CHEM 442
CHEM 223

CURRICULUM GUIDE FOR PROFESSIONAL CHEMISTRY
(Option: ACS Certified)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 106	3	CHEM 107	3
CHEM 108/UNST 100	1	CHEM 117/CHEM 190	1
CHEM 116	1	MATH 132	4
UNST 110	3	UNST 130	3
UNST 120	3	UNST 140	3
MATH 131[1]	4	PHED[2]	1
PHED[2]	1		15
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 221	3	CHEM 222	3
CHEM 223	2	CHEM 231	3
MATH 231	4	CHEM 232	2
PHYS 241	3	PHYS 242	3
PHYS 251	1	PHYS 252	1
BIOL 101	4	Biology Elective[3]	3
	17		15

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 441	3	CHEM 442	3
CHEM 224	2	CHEM 443	1
CHEM 451	3	CHEM 511	3
CHEM 452	2	FOLA[4]	3
UNST Electives	6	UNST Electives	6
	16		16

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 431	3	CHEM 503/ CHEM 504	
CHEM 432	2	(UNST Capstone)[5]	4
CHEM 444	1	Electives	10
CHEM 545	3	CHEM 610	2
Advanced Chem. Electives[5]	3-4		16
FOLA[4]	3		
	15-16		

Total Credit Hours: 126-127

[1]*Students not eligible to enter MATH 131 must complete MATH 110 prior to enrolling in MATH 131.*
[2]*PHED 200 may be substituted for the two courses in Physical Education.*
[3]*Choice of any biology course that requires BIOL 101 as a prerequisite.*
[4]*Two consecutive courses in the same foreign language.*
[5]*To be selected from CHEM 611, 621, 631, 641, 643, 651,652 and 503 or 504.*

CURRICULUM GUIDE FOR PROFESSIONAL CHEMISTRY
(Option: Pre-Health)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 106	3	CHEM 107	3
CHEM 108/UNST 100	1	CHEM 117/CHEM 190	1
CHEM 116	1	MATH 132	4
UNST 110	3	UNST 130	3
UNST 120	3	UNST 140	3
MATH 131[1]	4	PHED[2]	1
PHED[2]	1		15
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 221	3	CHEM 222	3
CHEM 223	2	CHEM 231	3
MATH 231	4	CHEM 232	2
PHYS 241	3	PHYS 242	3
PHYS 251	1	PHYS 252	1
UNST Electives	3	BIOL 101	4
	16		16

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 441	3	CHEM 442	3
CHEM 224	2	CHEM 443	1
CHEM 451	3	CHEM 511	3
CHEM 452	2	FOLA[3]	3
BIOL 260	4	UNST Electives	6
UNST Electives	3		16
	17		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 431	3	CHEM 651	3
CHEM 432	2	CHEM 652	2
CHEM 444	1	CHEM 610	3
PSYC 320	3	BIOL 561	4
BIOL 401	4	CHEM 503/ CHEM 504	
FOLA[3]	3	(UNST Capstone)[4]	4
	16		16

Total Credit Hours: 128

[1]*Students not eligible to enter MATH 131 must complete MATH 110 prior to enrolling in MATH 131.*
[2]*PHED 200 may be substituted for the two courses in Physical Education.*
[3]*Two consecutive courses in the same foreign language.*
[4]*To be selected from CHEM 611, 621, 631, 641, 643, 651, 652 and 503 or 504.*

CURRICULUM GUIDE FOR PROFESSIONAL CHEMISTRY
(Option: Biochemistry)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 106	3	CHEM 107	3
CHEM 108/UNST 100	1	CHEM 117/CHEM 190	1
CHEM 116	1	MATH 132	4
UNST 110	3	UNST 130	3
UNST 120	3	UNST 140	3
MATH 131[1]	4	PHED[2]	1
PHED[2]	1		15
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 221	3	CHEM 222	3
CHEM 223	2	CHEM 231	3
MATH 231	4	CHEM 232	2
PHYS 241	3	PHYS 242	3
PHYS 251	1	PHYS 252	1
BIOL 101	4	UNST Electives	3
	17		15

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 441	3	CHEM 442	3
CHEM 224	2	CHEM 443	1

CHEM 451	3	CHEM 511	3
CHEM 452	2	UNST Electives	6
UNST Electives	3	BIOL 221	4
BIOL 401	4		17
	17		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 431	3	CHEM 651	3
CHEM 432	2	CHEM 652	2
CHEM 444	1	CHEM 503/ CHEM 504	
Advanced Chem. Elective[3]	3-4	(UNST Capstone)[3]	4
BIOL 466	3	FOLA[4]	3
FOLA[4]	3	CHEM 610	3
	15-16		15

Total Credit Hours: 127-128

[1]*Students not eligible to enter MATH 131 must complete MATH 110 prior to enrolling in MATH 131.*
[2]*PHED 200 may be substituted for the two courses in Physical Education.*
[3]*To be selected from CHEM 611, 621, 631, 641, 643, 651, 652 and 503 or 504.*
[4]*Two consecutive courses in the same foreign language.*

CURRICULUM GUIDE FOR PROFESSIONAL CHEMISTRY
(Option: Research)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 106	3	CHEM 107	3
CHEM 108/UNST 100	1	CHEM 190	1
CHEM 116	1	MATH 132	4
UNST 110	3	UNST 130	3
UNST 120	3	UNST 140	3
MATH 131[1]	4	PHED[2]	1
PHED[2]	1		15
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 221	3	CHEM 222	3
CHEM 223	2	CHEM 231	3
CHEM 290	3	CHEM 232	2
PHYS 241	3	CHEM 291	3
PHYS 251	1	PHYS 242	3
BIOL 101	4	PHYS 252	1
	16		15

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 224	2	CHEM 391	3
CHEM 390	3	CHEM 442	3
CHEM 441	3	CHEM 443	1
CHEM 451	3	CHEM 511	3
CHEM 452	2	UNST Electives	6
UNST Electives	3		16
	16		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 431	3	CHEM 491	3
CHEM 432	2	CHEM 499 (UNST Capstone)	3
CHEM 444	1	CHEM 501 (Seminar)	1
CHEM 490	3	CHEM 610	2
UNST Electives	3	Electives (Advance Chem.)[4]	3-4
FOLA[3]	3	FOLA[3]	3
	15		15-16

Total Credit Hours: 124-125

[1]*Students not eligible to enter MATH 131 must complete MATH 110 prior to enrolling in MATH 131.*
[2]*PHED 200 may be substituted for the two courses in Physical Education.*
[3]*Two consecutive courses in the same foreign language.*
[4]*To be selected from CHEM 611, 621, 631, 641, 643, 651,652. CHEM 503 or 504 required.*

CURRICULUM GUIDE CHEMISTRY (SECONDARY EDUCATION)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 106	3	CHEM 107	3
CHEM 108/UNST 100	1	CHEM 117	1
CHEM 116	1	UNST 130	3
UNST 110	3	UNST 140	3
CUIN 102	2	MATH 132	4
MATH 131[1]	4	UNST 120	3
PHED[2]	1		17
	15		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 221	3	CHEM 222	3
CHEM 223	2	CHEM 231	3
MATH 231	4	CHEM 232	2
PHYS 241	3	PHYS 242	3
PHYS 251	1	PHYS 252	1
BIOL 101	4	CUIN 301	2
	17		14

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 441	3	CHEM 443	1
CHEM 224	2	CHEM 511	3
CHEM 451	3	BIOL Elective	4
PHYS 252	1	CUIN 436	3
CUIN 400	2	UNST 2XX	3
UNST 2XX	3	UNST 2XX	3
UNST 2XX	3		17
	17		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEM 431	3	CUIN 500	3
CHEM 432	2	CUIN 535	3
CUIN 624	3	CUIN 560[5]	6
UNST 2XX	3		12
PSYC 320	3		
SPCH 250	3		
	17		

Total Credit Hours: 126

[1] *Students not eligible to enter MATH 131 must complete MATH 110 prior to enrolling in MATH 131.*
[2] *PHED 200 may be substituted for the two courses in Physical Education.*
[3] *Choice of any biology course that requires BIOL 101 as a prerequisite.*
[4] *Two consecutive courses in the same foreign language.*
[5] *CUIN 560 is capstone course*
Note: Student must pass PRAXIS I and be admitted to the Teacher Education Program by the end of the sophomore year and must Pass PRAXIS II before observation and student teaching.

B.S./M.S. Curricula

Additional required Chemistry courses beyond the B.S. level are: CHEM 611, 701, 702, 722, 732, 743 or 749, 799, and 5 hours from among 600 and 700 level chemistry courses.

COURSE DESCRIPTIONS IN CHEMISTRY

CHEM 099. Introductory Chemistry **Credit 3(3-0)**
This course emphasizes basic methods and concepts in chemistry with emphasis on solving chemistry problems. It is a recommended first course in chemistry for students having little or no background in high school chemistry. May be used as preparation for CHEM 104 or 106. **(F;S)**

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 104. General Chemistry IV* **Credit 3(3-0)**
This course is an introduction to fundamental techniques and concepts in chemistry, including writing and interpretation of symbols, formulas, equations, atomic structure, composition and reactions of inorganic compounds. This course is not open to majors in chemistry, physics, biology, mathematics and engineering. Corequisite: CHEM 114. **(F;S;SS)**

CHEM 106. General Chemistry VI* **Credit 3(3-0)**
This is a course which emphasizes basic principles and important theoretical concepts of chemistry. Topics will include atomic structure, electronic configuration, the wave mechanical model of the atom, chemical bonding, states of matter, chemical equilibria, systems of acids and bases, and electrochemistry. Prerequisites: 2 units of high school algebra or equivalent, and 1 unit of high school chemistry or CHEM 099. Corequisite: CHEM 116. **(F;S;SS)**

CHEM 107. General Chemistry VII* **Credit 3(3-0)**
This course is a continuation of CHEM 106. It includes chemistry of important metals and nonmetals and a rigorous treatment of qualitative inorganic analysis. Prerequisite: CHEM 106 or equivalent. Corequisite: CHEM 117. **(F;S;SS)**

CHEM 108. Chemistry Orientation **Credit 1(1-0)**
This course is a series of lectures and discussions on the nature and requirements of the chemical profession the application of chemistry to modern living, and other selected topics. **(F)**

CHEM 110. Physical Science Laboratory **Credit 1(0-2)**
This is a laboratory course designed to bring students into working contact with the essential aspects of scientific experiences. In this course the student develops concrete ideas about the operational meaning of the scientific method and problem solving. Corequisite: CHEM 100. This course is not open to students who have received credit for CHEM 114, 115, 116, or 117. **(F;S;SS)**

CHEM 114. General Chemistry IV Laboratory **Credit 1(0-3)**
This course is a study of inorganic reaction and substances and their relation to the processes. Corequisite: CHEM 104. **(F;S;SS)**

CHEM 116. General Chemistry VI Laboratory **Credit 1(0-3)**
This is a course which emphasizes quantitative studies of chemical reactions such as acid-base studies, redox reactions, and equilibrium reactions. Emphasis is also placed on the development of manipulative skills in the laboratory. Corequisite: CHEM 106. **(F;S;SS)**

CHEM 117. General Chemistry VII Laboratory* **Credit 1(0-3)**
This is a continuation of CHEM 116 with an introduction to qualitative analysis. Corequisite: CHEM 107. Prerequisite: CHEM 116. **(F;S;SS)**

CHEM 190. Introduction to Chemical Research **Credit 1(0-3)**
This course is an introduction to basic concepts of research, involving multi-step experiments and discussion of research opportunities. Corequisite: CHEM107. Prerequisite 116 **(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 2(0-4)**
This laboratory course emphasizes the study of physical and chemical properties of aliphatic and aromatic compounds. Modern instrumentation such as gas and column chromatography, infrared and ultraviolet analyses are used. Corequisite: CHEM 221. **(F;S;SS)**

CHEM 224. Organic Chemistry II Laboratory* **Credit 2(0-6)**
This course is a continuation of Chemistry CHEM. However, more emphasis is placed on syntheses and qualitative analysis of organic compounds. Corequisite: CHEM 222. Prerequisite 223. **(F;S;SS)**

CHEM 231. Quantitative Analysis I **Credit 3(3-0)**

Titrimetric and gravimetric analyses including theory and calculations associated with acid-base equilibria, oxidation reduction, nucleation, and precipitation-complexation processes will be covered in this course. Corequisite: MATH 131. Prerequisite: CHEM 102 or 107. **(S)**

CHEM 232. Quantitative Analysis I Laboratory* **Credit 2(0-4)**

This laboratory course emphasizes the basic principles of chemical separations. Laboratory studies of gravimetric and titrimetric analyses are also encountered. Corequisite: CHEM 231. Prerequisite: CHEM 117. **(S)**

CHEM 251. Elementary Biochemistry **Credit 2(2-0)**

This course is a study of fundamental cellular constituents. Emphasis is placed on physiological applications and analyses. Prerequisite: CHEM 105 or 221. Corequisite: CHEM 252. This course is open to nonchemistry majors only. **(F)**

CHEM 252. Elementary Biochemistry Laboratory* **Credit 1(0-3)**

Elementary biochemical reactions are studied with emphasis placed on applications to biology, home economics and nursing. Prerequisite: CHEM 115 or 223. Corequisite: CHEM 251. **(F)**

CHEM 290. Methods in Chemical Research I **Credit 3(1-4)**

This course is designed to provide basic research skills in the areas of analytical, inorganic, organic, physical, and biochemistry. Prerequisite: CHEM 190. **(F;S)**

CHEM 291. Methods in Chemical Research II **Credit 3(0-6)**

This course emphasizes the development of the skills required to perform an independent research project. Students will work closely with faculty to understand research literature, writing a comprehensive research report and using graphics and statistical packages to enhance their report. Prerequisite: CHEM 290. **(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 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. Research in Chemistry and Biochemistry I **Credit 3(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 291. **(F;S)**

CHEM 391. Research in Chemistry and Biochemistry II **Credit 3(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 390. **(F;S)**

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. Quantitative Analysis II 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)**

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 451. Biotechniques in Biochemistry **Credit 3(3-0)**

This course will emphasize the fundamental concepts and basic principles of biological chemistry. Topics will include acid-base properties of amino acids, protein structure and function, kinetic analysis of enzymatic reactions, isolation and characterization of biomolecules, recombinant DNA technology, and computer graphics and structure calculations. Prerequisite: CHEM 222 or permission of the instructor. **(F)**

CHEM 452. Biotechniques in Biochemistry 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 and 252, or permission of the instructor. Corequisite: CHEM 451. **(F)**

CHEM 490. Research in Chemistry and Biochemistry III **Credit 3(0-6)**

This course will provide directed research involving one-on-one interaction between faculty mentor and student researcher. The student will perform research on state-of-the-art instruments corresponding to his/her research project. Students will be encouraged to make preparation to present research results at national and/or regional meetings of the American Chemical Society (ACS) or National Organization of Black Chemist and Chemical Engineers (NOBCChE). Prerequisite: CHEM 391. **(F;S)**

CHEM 491. Research in Chemistry and Biochemistry IV **Credit 3(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 499. Chemistry Thesis **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)**

CHEM 501. Seminar **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 503. Chemical Research **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 504. Independent Study **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 511. Inorganic Chemistry **Credit 3(3-0)**

This course is an introductory survey of structure and bonding in inorganic compounds; coordination compounds of the transition metals; donor-acceptor interactions; bonding theories. Prerequisite: CHEM 441. Corequisite: CHEM 442. **(S)**

CHEM 545. Physical Chemistry III **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)**

Advanced Undergraduate and Graduate

CHEM 610. Inorganic Synthesis **Credit 2(1-3)**

A discussion of theoretical principles and experimental synthesis and development of physical-analytical techniques in the synthesis of inorganic substances will take place in this course. Prerequisite: One year of physical chemistry. **(S)**

CHEM 611. Advanced Inorganic Chemistry **Credit 3(3-0)**

This is a course in the theoretical approach to the systematization of inorganic chemistry. Prerequisite: CHEM 442. **(F)**

CHEM 621. Intermediate Organic Chemistry **Credit 3(3-0)**

This course provides an in-depth examination of various organic mechanisms, reactions, structures, and kinetics. Prerequisites: CHEM 222 and CHEM 442. **(F)**

CHEM 624. Qualitative Organic Chemistry **Credit 5(3-6)**

This is a course in the systematic identification of organic compounds. Prerequisite: One year of Organic Chemistry. **(S)**

CHEM 631. Electroanalytical Chemistry **Credit 3(3-0)**

This course is a study of the theory and practice of polarography, chronopotentiomnetry, potential sweep chronoampereometry and electrodeposition. The theory of diffusion and electrode kinetics will also be discussed along with the factors which influence rate processes, the double layer, adsorption and catalytic reactions. Prerequisite: CHEM 431 or equivalent. **(F)**

CHEM 641. Radiochemistry **Credit 3(3-0)**

This course is a study of the fundamental concepts, processes, and applications of nuclear chemistry, including natural and artificial radioactivity, sources, and chemistry of the radioelements. Open to advanced majors and others with sufficient background in chemistry and physics. Prerequisite: CHEM 442 or PHYS 406. **(S)**

CHEM 642. Radioisotope Techniques and Applications **Credit 2(1-3)**

The techniques of measuring and handling radioisotopes and their use in chemistry, biology, and other fields will be studied. Open to majors and non-majors. Prerequisite: CHEM 107. **(F)**

CHEM 643. Introduction to Quantum Mechanics **Credit 3(3-0)**

Non-relativistic wave mechanics and its application to simple systems by means of the operator formulation will be studied. Prerequisites: CHEM 442 and PHYS 222. Corequisite: MATH 231. **(S)**

CHEM 651. General Biochemistry **Credit 3(3-0)**
This is a study of modern biochemistry. The course emphasizes chemical kinetics and energetics associated with biological reactions and includes a study of carbohydrates, lipids, proteins, vitamins, nucleic acids, hormones, photosynthesis, and respiration. Prerequisites: CHEM 431, 442 and 451. **(S)**

CHEM 652. General Chemistry Laboratory **Credit 2(0-6)**
This is a companion laboratory to CHEM 651. Experimentation will include isolation and characterization of biochemical substances and studies of physical properties. Students will be introduced to a variety of techniques including high performance liquid chromatography, electrophoresis, and centrifugation. Corequisite: CHEM 651. **(S)**

**Students are required to purchase supplemental materials for these general education courses.*

DIRECTORY OF FACULTY

William K. Adeniyi.....**Associate Professor**
B.S., Hampton Institute M.S., Loyola University; Ph.D., Baylor University

Zerihun Assefa.....**Associate Professor**
B.S., Addis Ababa University, Ph.D., University of Maine

Sunyoung Bae ..... **Assistant Professor**
B.S., M.S., Seoul Women's University; Ph.D., University of Massachusetts-Lowell

Mufeed Basti.....**Associate Professor**
B.S., Baath University; Ph.D., Northern Illinois University

Marion Franks..... **Assistant Professor**
B.S., Clark-Atlanta University, Ph.D., Virginia Polytechnic Institute and State University

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B.S., Howard University; M.S., North Carolina A&T State University; Ed.D., University of North Carolina at Greensboro

Vallie Guthrie .....**Associate Professor**
B.S., North Carolina A&T State University, M.S., Fisk University; Ed.D., American University

Julius L. Harp.....**Associate Professor**
B.S., York College; Ph.D., Howard University

Margaret Kanipes-Spinks.....**Associate Professor**
B.S., North Carolina A&T State University, Ph.D., Carnegie-Mellon University

Debasish Kuila.....**Professor and Chairperson**
B.S., University of Calcutta; M.S., Indian Institute of Technology, Madras; M. Phil. The City University of New York; Ph.D. The City University of New York

Jothi V. Kumar..... **Professor**
B.S., Annamala University; Ph.D., Kansas State University

Claude N. Lamb .....**Associate Professor**
B.S., Mount Union College, M.S., North Carolina Central University; Ph.D., Howard University

Ginger P. Powe ..... **Assistant Professor**
B. S., Alcorn University; Ph.D., University of Mississippi

Divi Venteskateswarlu ..... **Assistant Professor**
B.S., Sri University, M.S., Kakatiya University, M.S., University of Hyderabad, Ph.D., North Eastern Hill University

Alex N. Williamson.....**Associate Professor**
B.S., Jackson State University; Ph.D., University of Illinois at Urbana

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Department of English

http://www.ncat.edu/~english

Chimalum Nwankwo, Chairperson

OBJECTIVES

The objectives of the English Department are as follows:

1. to provide instruction in reading and writing skills, the humanities, linguistics, and literature;
2. to prepare English majors and minors to teach and to pursue graduate training in English and other professions;
3. to train students in professional writing.

DEGREES OFFERED

English – Bachelor of Arts
English (African-American Literature) – Bachelor of Arts
English (Technical Writing) – Bachelor of Arts

English (Creative Writing) – Bachelor of Arts
English (Secondary Education) – Bachelor of Science
English Education – Master of Science*
English and African-American Literature – Master of Arts*
Leadership Studies – Doctor of Philosophy*
**See the Graduate School Bulletin*

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

Professional English major – The English major must complete 124-125 semester hours of University courses. (Whether the total is 124 or 125 semester hours depends on whether the student satisfies the Physical Science requirement with a three-credit or a four-credit course.) Included in the 125-126 semester hours are a minimum of 66 hours of English at the 200 level or above for the professional major. A minimum grade of "C" must be achieved in these courses.

The teaching major in English must complete a minimum of 125-126 semester hours of University courses. (Whether the total is 125 or 126 semester hours depends on whether the student satisfies the Physical Science requirement with a three-credit or a four-credit course.) Included in these 127-128 hours are 54 semester hours of English courses at the 200 level or above with grades of "C" or better.

English (African-American Literature) – To complete a concentration in African American Literature, the student must complete a minimum of 125-126 semester hours of University courses. (Whether the total is 125 or 126 semester hours depends on whether the student satisfies the Physical Science requirement with a three-credit or a four-credit course.) Included in these 125-126 hours are 96 semester hours of English courses at the 200 level or above with grades of "C" or better.

English (Creative Writing) – To complete a concentration in Creative Writing, the student must complete a minimum of 127-128 semester hours of University courses. (Whether the total is 127 or 128 semester hours depends on whether the student satisfies the Physical Science requirement with a three-credit or four-credit course.) Included in these 127-128 semester hours of University are 75 semester hours of English courses at the 200 level or above with grades of "C" or better.

English (Technical Writing) – To complete a concentration in Technical Writing, the student must complete a minimum of 126-127 semester hours of University courses. (Whether the total is 126 or 127 semester hours depends on whether the student satisfies the Physical Science requirement with a three-credit or a four-credit course.) Included in these 126-127 hours are 75 semester hours of English courses at the 200 level or above with grades of "C" or better.

The Minor in English (teaching and non-teaching) **–** Students desiring a minor in English must complete 24 semester hours in English at the 200 level above. The required courses are ENGL 210; 220; 221 or 222; ENGL 230 or 231; ENGL 333 or 334; ENGL 406, 410, 430 or 431, and one of the following: ENGL 335, 336, 401, 404, 435, or 436.

COMMON COURSES FOR ALL CONCENTRATIONS

A. Required Major Core Courses for All Concentrations in English (24 hours)

ENGL 210	ENGL 410	ENGL 431
ENGL 220	ENGL 430	

B. Required UNST Courses for All Core Courses in English (25 hours)

UNST 100	UNST 120	UNST 140
UNST 110	UNST 130	

FOUR THREE – HOUR UNST CLUSTER THEME ELECTIVES

C. Required English Capstone Course

ENGL 502-I Independent Study in English

The Capstone Course or the Integrative Capstone Experience is designed to incorporate multiple knowledge areas consistent with the goals and objectives of the UNST program. The Capstone Course in English provides an opportunity for majors to pursue independently (at home or abroad) in depth study in English Literature, African American Literature, English Technical Writing, Creative Writing, or Linguistics.

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.

REQUIRED MAJOR COURSES FOR ENGLISH

ENGL 101	ENGL 243	ENGL 405

ENGL 210	ENGL 331	ENGL 406
ENGL 220	ENGL 333	ENGL 410
ENGL 221	ENGL 334	ENGL 430
ENGL 226	ENGL 335	ENGL 431
ENGL 222	ENGL 336	ENGL 435
ENGL 230	ENGL 401	ENGL 436
ENGL 231	ENGL 404	ENGL 502
ENGL 240		

CURRICULUM GUIDE FOR ENGLISH
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
UNST 110	3	MATH 102	3
UNST 120	3	ENGL 200	3
SPCH 250	3	ENGL 210	3
UNST 140	3	ENGL 226	3
HIST 100	3	PHED (Activity Course)	1
	16		16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elective	3	FOLA (Intermediate) II	3
FOLA (Intermediate) I	3	UNST Cluster Theme Elective	3
UNST Cluster Theme Course	3	ENGL 201	3
ENGL 220	3	ENGL 221	3
EASC 201 or		UNST Cluster Theme Elective	3
CHEM 100 and 110 or		ENGL 101	3
PHYS 110 and 111	3-4		18
	15-16		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ENGL 333	3	ENGL 334	3
ENGL 405	3	ENGL 406	3
ENGL 230	3	Elective	3
ENGL 430	3	ENGL 231	3
ENGL 222	3	ENGL 431	3
	15		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ENGL 435	3	ENGL 436	3
ENGL 404	3	Elective	3
ENGL 410	3	ENGL 502-1 (Capstone Course)	3
ENGL 401	3	ENGL 336	3
Elective	3	ENGL 335	3
	15		15

Total Credit Hours: 124-125

REQUIRED MAJOR COURSES FOR ENGLISH (AFRICAN-AMERICAN LITERATURE)

ENGL 101	ENGL 334	ENGL 410
ENGL 210	ENGL 345	ENGL 416/417
ENGL 220	ENGL 404	ENGL 430
ENGL 221 or 222	ENGL 405	ENGL 431
ENGL 226	ENGL 406	ENGL 502
ENGL 231	ENGL 407	ENGL 505
ENGL 318	ENGL 408	ENGL 650
ENGL 333	ENGL 409	ENGL 658/660

CURRICULUM GUIDE FOR ENGLISH (AFRICAN-AMERICAN LITERATURE)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*

UNST 100	1	UNST 130	3
UNST 110	3	ENGL 226	3
UNST 120	3	HIST 215	3
SPCH 250	3	EASC 201 or CHEM 100/110	
UNST 140	3	or BIOL 100	3-4
PHED (Activity Course)	1	ENGL 210	3
	14		15-16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
FOLA (Intermediate) I	3	UNST Cluster Theme Elective	3
ENGL 333	3	ENGL 221 or 222	3
UNST Cluster Theme Elective	3	ENGL 334	3
ENGL 220	3	FOLA (Intermediate) II	3
UNST Cluster Theme Elective	3	UNST Cluster Theme Elective	3
ENGL 101	3	ENGL 231	3
	18		18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ENGL 410	3	ENGL 405	3
ENGL 404	3	ENGL 406	3
ENGL 318	3	ENGL 407	3
ENGL 345	3	ENGL 409	3
Elective	3	Elective	3
	15		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Elective	3	ENGL 650	3
ENGL 502-I (Capstone Course)	3	ENGL 408	3
ENGL 416/417	3	Elective	3
ENGL 658 or 660	3	ENGL 431	3
ENGL 430	3	ENGL 505	3
	15		15

Total Credit Hours: 125-126

REQUIRED MAJOR COURSES FOR ENGLISH (CREATIVE WRITING)

ENGL 101	ENGL 331	ENGL 410
ENGL 105	ENGL 334	ENGL 418
ENGL 210	ENGL 337	ENGL 421 or 422
ENGL 220	ENGL 342	ENGL 430
ENGL 221 or 222	ENGL 343	ENGL 431
ENGL 231	ENGL 404	ENGL 502
ENGL 311 or 312	ENGL 405	ENGL 504
ENGL 318	ENGL 406	ENGL 506
ENGL 330	ENGL 409	

CURRICULUM GUIDE FOR ENGLISH (CREATIVE WRITING)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ENGL 105	3	UNST 130	3
UNST 100	1	UNST 210	3
UNST 110	3	ENGL 200	3
SPCH 250	3	BIOL 100 or EASC 201 or	
UNST 140	3	CHEM 100/110 or	
UNST 120	3	PHYS 110/111	3-4
	16	ENGL 226	3
			15-16

SOPHMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*

ENGL 101	3	ENGL 318	3
FOLA 2 (Intermediate I)	3	Women's Studies Elective	3
ENGL 311 or 312	3	ENGL 337	3
PHED (Activity Course)	1	FOLA 2 (Intermediate II)	3
UNST Cluster Theme Elective	3	UNST Cluster Theme Elective	3
UNST Cluster Theme Elective	3	UNST Cluster Theme Elective	3
	16		18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ENGL 330	3	ENGL 418	3
ENGL 333	3	ENGL 334	3
ENGL 421 or 422	3	ENGL 416 or 417	3
ENGL 220	3	ENGL 221 or 222	3
ENGL 406	3	ENGL 231	3
	15		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ENGL 404	3	ENGL 410	3
ENGL 502-1 (Capstone Course)	3	ENGL 506	3
ENGL 430	3	ENGL 431	3
ENGL 504	3	ENGL 409	3
Elective	3	Elective	3
	15		15

Total Credit Hours: 125-126

REQUIRED MAJOR COURSES FOR ENGLISH (SECONDARY EDUCATION)

ENGL 101	ENGL 230 or 231	ENGL 410
ENGL 200	ENGL 240	ENGL 430
ENGL 201	ENGL 331	ENGL 431
ENGL 210	ENGL 333	ENGL 435
ENGL 220	ENGL 334	ENGL 436
ENGL 221	ENGL 404	ENGL 460
ENGL 222	ENGL 405	ENGL 627
ENGL 226	ENGL 406	

CURRICULUM GUIDE FOR ENGLISH (SECONDARY EDUCATION)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CUIN 102	2	ENGL 210	3
UNST 100	1	MATH 101	3
UNST 110	3	UNST 120	3
CHEM 100/110 or		ENGL 101	3
PHYS 110/111or EASC 201	3-4	UNST 130	3
ENGL 226	3		15
UNST 140	3		
	15-16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elective	3	ENGL 201	3
ENGL 220	3	HPED 204	2
ENGL 200	3	UNST Cluster Theme Elective	3
UNST Cluster Theme Elective	3	UNST Cluster Theme Elective	3
FOLA (Intermediate) I	3	ENGL 240	3
SPCH 250	3	FOLA (Intermediate) II	3
	18		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ENGL 404	3	ENGL 430	3

CUIN 301	2	ENGL 405	3
ENGL 221 or 222	3	ENGL 334	3
ENGL 333	3	CUIN 400	3
ENGL 406	3	ENGL 410	3
ENGL 230 or 231	3	ENGL 460	3
	17		18

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ENGL 435 or 436	3	CUIN 624	3
ENGL 627	3	CUIN 500	3
CUIN 436	3	CUIN 560	6
CUIN 526	3		12
ENGL 431	3		
	15		

Total Credit Hours: 125-126

REQUIRED MAJOR COURSES FOR ENGLISH (TECHNICAL WRITING)

ENGL 210	ENGL 331	ENGL 415
ENGL 220	ENGL 336	ENGL 430
ENGL 221	ENGL 411	ENGL 431
ENGL 222	ENGL 412	ENGL 434
ENGL 226	ENGL 413	ENGL 435
ENGL 230	ENGL 414	ENGL 502
ENGL 231	ENGL 432	ENGL 729

CURRICULUM GUIDE FOR ENGLISH (TECHNICAL WRITING)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHED (Activity Course)	1	UNST 130	3
SPCH 250	3	UNST 140	3
BIOL 100	4	ENGL 210	3
UNST 100	1	CHEM 100/110 or	
UNST 110	3	PHYS 110/11 or EASC 201	3-4
UNST 120	3	ENGL 226	3
	15		15-16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
GCS 120	3	ENGL 201	3
UNST Cluster Theme Elective	3	UNST Cluster Theme Elective	3
ENGL 200	3	ENGL 331	3
ECT 101	3	ENGL 230	3
UNST Cluster Theme Elective	3	ENGL 221	3
ENGL 220	3	UNST Cluster Theme Elective	3
	18		18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ENGL 411	3	ENGL 413	3
ENGL 412	3	ENGL 414	3
ENGL 222	3	ENGL 431	3
ENGL 231	3	African American Lit. Elective	3
African American Lit. Elective	3	GCS 130	3
Elective	3	ENGL 410	3
	18		18

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ENGL 415	3	ENGL 430	3
ENGL 502-I (Capstone Course)	3	ENGL 434	3
GCS 418	3	ENGL 435	3
ENGL 432	3	ENGL 436	3
	12		12

Total Credit Hours: 124-125

COURSE DESCRIPTIONS IN ENGLISH
Undergraduate

ENGL 100. Ideas and Their Expression I **Credit 3(3-0)**
This course is an introduction to college-level expository writing; it provides students with experience in writing and revising compositions. Students will also learn to write résumés, letters of application, short reports, and responses to literature. **(DEMAND)**

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 study skills. Limited registration. **(F;S)**

UNST 110. Critical Writing **Credit 3(3-0)**
This course introduces students to reading comprehension and the writing process. Students will read and evaluate selected texts and develop critical thinking abilities through writing and speaking. **(F;S;S)**

UNST 210. Critical Writing II. Ideas and Their Expression II **Credit 3(3-0)**
This is a continuation of UNST 110 which provides students with additional experience in various modes of writing, emphasizing expository writing; it introduces students to the techniques of writing the research paper and analyzing literary selections. Prerequisite: UNST 110. **(F;S;SS)**

COURSE DESCRIPTIONS IN HUMANITIES

ENGL 200. Survey of Humanities I **Credit 3(3-0)**
This course is a study of interrelationships of literature, music, and the fine arts; it is a study of master works, philosophical ideas, and artistic movements of Western Civilization, with attention given also to non-Western culture. It will survey cultures from ancient times to the end of the Renaissance. Prerequisite: ENGL 101. **(F;S;SS)**

ENGL 201. Survey of Humanities II **Credit 3(3-0)**
This course is a continuation of ENGL 200. It will begin with the Baroque period and will include Neo-Classicism. Romanticism, and modern modes of artistic expression. Prerequisites: ENGL 101 and 200. **(F;S;SS)**

ENGL 202. The Humanities in America **Credit 3(3-0)**
This course is a survey of the interrelationship of American and African-American literature, music, and art from colonial times to the present. The course will also include a study of the American historical, social, and philosophical experience. Prerequisite: ENGL 101. **(DEMAND)**

ENGL 203. Humanities Perspectives of the South **Credit 3(3-0)**
This course examines the South from the perspectives of its history, beliefs, literature, music, and art. Prerequisite: ENGL 101. **(F;S)**

ENGL 204. Topics in Humanities: A Multidisciplinary Course **Credit 3(3-0)**
This course is a study of selected topics in literature, art, music, philosophy, and other branches of the humanities. It is an elective course primarily for non-English majors. Prerequisite: UNST 210. **(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 420. Humanities III, Great Ideas of World Civilization **Credit 3(3-0)**
This is a seminar devoted to the identification, analysis, and appreciation of some of the basic ideas or concepts which have underlain world culture in the arts, religion, philosophy, and social attitudes from ancient times to the present. **(DEMAND)**

LANGUAGE AND COMPOSITION

ENGL 226. The Basic Grammar and Mechanics of Writing **Credit 3(3-0)**
This course includes instruction and review of the most troubling grammatical and mechanical errors that plague college students' writing. All writing in this course will be limited to the context of well-developed paragraphs. There will be frequent practice in identifying and avoiding common grammatical and mechanical errors. **(F;S;SS)**

ENGL 240. Advanced Grammar and Argumentation **Credit 3(3-0)**
This course covers the techniques of argumentation and the logic of grammar essential to both higher level writing and teaching in middle and high schools. **(F)**

ENGL 300. Advanced Composition for Non-Majors **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: UNST 210. **(F;S;SS)**

ENGL 305. Grammar, Literature and Composition for Pre-Professional Students **Credit 3(3-0)**
This course refines the skills in grammar, literature, and composition that are particularly needed by pre-professional students. Recommended for students preparing for the GRE, LSAT, and NTE. Prerequisite: UNST 210. **(S)**

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: UNST 210. **(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: UNST 110.

ENGL 480. Editing **Credit 3(3-0)**
This course is designed to teach the general techniques of editing. Integrity, clarification, style, recognition of the need for substantial changes, and methods of checking completeness are included. Prerequisite: ENGL 305. **(DEMAND)**

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 502-I. 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 UNST requirements, and prior consultation with department faculty. **(F;S;SS)**

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. Prerequisites: UNST 110. This course is open to non-majors. **(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. Prerequisites: UNST 110. 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. Prerequisites: UNST 110. This course is open to non-majors. **(F;S)**

ENGL 333. 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. Prerequisites: UNST 110. **(F;S)**

ENGL 334. 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. Prerequisites: UNST 110. **(F;S)**

ENGL 417. African Literature **Credit 3(3-0)**
This course surveys the literary genres and major authors of African literature and shows the relationship between modern African literature and African oral traditions, culture, and history. Texts will be selected from West, East, South, and North Africa. Prerequisites: UNST 110. **(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: UNST 110. 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. Prerequisites: UNST 110. 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 mid-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. Prerequisites: UNST 110; ENGL 333 or 334. This course is open to non-majors. **(S)**

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. Prerequisites: UNST 110; ENGL 333 or 334. 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. Prerequisites: UNST 110; ENGL 334 or 334. This course is open to non-majors. **(S)**

ENGL 409. Literature of the African Diaspora **Credit 3(3-0)**

This course is an intensive examination of black voices from around the world. The focus is on writers whose works are almost inter-textual and cross-regional in the manner in which issues affecting the destiny of black people are reflected or addressed. The course will begin with the founding voices of negritude and pan-Africanism in literature and span across newer voices with works directly or indirectly participating in the discourse. Works or writers to be discussed will be selected from the poetry, fiction, and drama of Aime Cesaire, Leopold Cedar Senghor, Birago Diop, Paule Marshall, Ama Ata Aidoo, Isidore Okpewho, Syl Cheney-Coker, Maryse Conde, Derek Walcott, Denis Williams, Toni Morrison, Tess Onueme, and others. Prerequisites: UNST 110. **(F)**

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 ad 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. Prerequisites: UNST 110. **(F)**

ENGL 417. African Literature from 1945 through the 1960's **Credit 3 (3-0)**

This course will include study of the works of major male African writers whose works have shaped the growth of modern African literature. Particular focus will be given to the literature of protest. Selections from the great works of Chinua Achebe, Wole Soyinka, Ngugi wa Thiong'o, Christopher Okigbo, Alex Laguma, Dennis Brutus, John Pepper Clark, Lewis Nkosi, Arthur Nortije, Chikaya U'Tamsi, Mongo Beti, Ousman Sembene, Camara Laye, Ayi Kwei Armah, Nurrudin Farrah, M.G. Vassanji, Amos Tutuola, Ben Okri and others. Prerequisites: UNST 110. **(F)**

ENGL 505. Interdisciplinary Research Methods in African-American Literary Studies **Credit 3(3-0)**

This course is open only to junior and senior English majors and minors. It involves an interdisciplinary approach as well as practice in the research, documentation, and critical analyses of African-American literary studies. Students will discover, compile, and evaluate resources from across the disciplines that relate to the impact African-American literature and literary studies through using computer-based and traditional sources. This course will culminate in the students' completion of a final project which will include a writing assignment in conjunction with hosting an interdisciplinary literary colloquium, organizing and participating in an interdisciplinary literary conference, or publishing their papers. Prerequisites: This course is only open to junior and senior English majors and minors. **(S)**

CREATIVE WRITING

ENGL 105. Introduction to Creative Writing **Credit 3(3-0)**

This course is for beginners in creative writing which introduces students to writing in various genres by means of creative exercises and assignments, workshops, and individual conferences. A multi-genre text on creative writing will be assigned to support the reading and analyses of published works. (Genres may include poetry, fiction, plays, and creative non-fiction.) Course may be repeated for a different focus, and there are no prerequisites. **(F;S;SS)**

ENGL 208. Spoken Word Performance Poetry Troupe I: A Practicum **Credit 3(3-0)**

This course is designed to develop and enhance the skills of individual student performers of the A&T Premier Spoken Word Troupe. Students will be instructed in the history and practice of the genre Spoken Word Performance Poetry through the study of the art form's development since the late sixties and seventies through to the current period. Influences on the art form such as Blues, Jazz, and Hip-hop will be covered. (This course can be taken more than once.) Student enrollment in this course is based on individual audition and/or by permission of the instructor. **(F;S)**

ENGL 311. Fiction Writing **Credit 3(3-0)**

Students will write and revise short fiction. A text on fiction writing will be assigned to support the reading and analyses of published fiction, including the following: developing characters, writing dialogue and managing point of view, as well as exploring techniques in narrative design in published stories. Students will also receive encouragement and constructive criticism from other writers in class, and develop the ability to criticize their own work. Contemporary authors such as Raymond Carver, Alice Walker, John Edgar Wideman, Louise Erdrich, Sandra Cisneros, Edwidge Danticat and Eudora Welty will be studied. Prerequisites: ENGL 105, 210, and a survey course in British, American, or World Literature. **(F)**

ENGL 312. 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 Kumunyakaa, Thylias Moss, Adrienne Rich, Michael Harper, Sharon Olds, Audre Lorde, Amira Baraka, Ethridge Knight, Naomi Shihab, Nye Haki Madhubuti, and Rita Dove will be studied. Prerequisites: ENGL 101, 210, and a survey course in British, American, and World Literature. **(F)**

ENGL 313. Drama Writing **Credit 3(3-0)**

This course introduces the student to the study and practice of the various elements of contemporary dramatic writing. A text on contemporary dramatic writing will be assigned to support the reading and analyses of published plays. Course topics will include format, story structure, character development, dialogue, building scenes and writing for a visual medium. Prerequisites: ENGL 101, and 210, and a survey course in British, American, or World Literature. **(DEMAND)**

ENGL 314. Workshop in Creative Nonfiction Writing **Credit 3(3-0)**

This course introduces the student to the study and practice of the various forms of literary nonfiction. A text on creative nonfiction writing will be assigned to support the reading and analyses of published works. The student writer will develop skill in the incorporation of techniques from creative writing, such as point of view, voice, characterization and dialogue. Discussion will center around works in progress as well as works by contemporary essayists, such as Katha Pollitt, Alice Walker, James Baldwin, Jewelle Gomez and Barry Lopez. Other areas of nonfiction which may be covered can include memoir, autobiography, nature writing and the personal essay. Prerequisites: ENGL 105 and 210. **(DEMAND)**

ENGL 315. Editing Encore I **Credit 3(3-0)**

This course is one in which students assist the student editor-in-chief in selecting, editing, and laying out editions of the University literary magazine sponsored by the Creative Writing Program. Prerequisites: ENGL 311, 312, 313 or 314. May be repeated. **(F;S)**

ENGL 327. Editing Encore II **Credit 3(3-0)**

This course, at the discretion of the program director, permits a student to serve as editor-in-chief. The student will work in conjunction with academic literary advisors and other student editors to edit the University literary magazine sponsored by the Creative Writing Program. Copy editing, layout, design, and aspects of distribution will be covered. Aptitude with digital and online media, as well as desktop and print publishing is essential. May be repeated. Prerequisites: ENGL 311, 312, or 313, 315, 327. **(F;S)**

ENGL 330. Creative Literary Production and Service in Society **Credit 3(3-0)**

The goal of this course is to provide students with the opportunity to apply their practice and understanding of creative writing to practical and concrete situations in their communities with groups such as the elderly in community and senior centers, teen groups and elementary students. Students will work in a variety of community settings – educational, political, and/or social service agencies – according to the availability/needs of such groups. Prerequisites: ENGL 105, 311, 312, 313 or 314. **(DEMAND)**

ENGL 337. The Elements of Craft **Credit 3(3-0)**

Students will study the techniques and process of verse and fiction writing related to issues of prosody, such as length, meter, and scansion. Readings may include published poems and essays on the art of poetry technique and process as well as published short stories and essays on the art of fiction. Prerequisites: ENGL 311, 312, 313. **(S;S)**

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" of "B" in ENGL 311 or permission of the instructor upon review of a writing sample. (This course is limited to students with a concentration in creative writing, who have completed one of the following advanced courses:

ENGL 311, 312, 313, or 314.) **(F)**

ENGL 422. Advanced Poetry Workshop **Credit 3(3-0)**

This course offers advanced work in techniques of writing poetry for students with substantial experience in writing poetry. The course will consist of workshop sessions with students commenting on each other's work. Students will be asked to pick several poets for a paper and an oral report. Prerequisites: An "A" or "B" in ENGL 312 or permission of the instructor. (This course is limited to students with a concentration in creative writing, who have completed one of the following advanced courses: ENGL 311, 312, 313, or 314.) **(F)**

ENGL 418. Special Topics in Creative Writing **Credit 3(3-0)**

Topics in this course might include "Style and Technique in African American Writing," "Style and Technique in Third World Writing," "Autobiography," "Prose and Poetry," "Poetry and Performance," "Novel Writing," "Science Fiction Writing," "Literature of Protest," "Poetry Translation," "Literature and Film," "Literature of the Black Diaspora," and "Oral History." The course may be repeated for a different focus. Prerequisites: ENGL 311, 312, or 313. **(S;S)**

ENGL 419. Writer in Residence Writing Workshop **Credit 3(3-0)**

This course includes a two day writing workshop in Poetry, Fiction, Creative Nonfiction. A course in writing is taught by the Visiting Writer in Residence. Enrollment is limited to specially selected students. Prospective enrollees should apply to the seminar committee and be prepared to submit writing samples for admittance before registering. The course is structured as a workshop and may be repeated for credit if the specific title and instructors are different. Prerequisites: ENGL 311, 312, 313 or 314. **(F;S)**

ENGL 504. Senior Seminar **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 506. Creative Thesis **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: UNST 210. **(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: UNST 110. **(F;S)**

ENGL 220. English Literature I **Credit 3(3-0)**

This course is a survey of the literary movements and major authors of English literature in relation to the cultural history of England from Beowulf to 1660 Prerequisites: UNST 210, HIST 100 and 101. **(F)**

ENGL 221. English Literature II **Credit 3(3-0)**

This course is a continuation of ENGL 220 from 1660 to 1830. Prerequisites: UNST 110 and 210. **(S)**

ENGL 222. English Literature III **Credit 3(3-0)**

This course surveys major authors and literary periods of English Literature from the beginning of the Victorian Period, about 1830, to the present.

ENGL 230. World Literature I **Credit 3(3-0)**

This course is a survey of selected major world writers from ancient times to about 1600. Prerequisite: ENGL 101 and UNST 210. **(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: UNST 210. **(S)**

WOMEN WRITERS AND W OMEN IN LITERATURE

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 224. Contemporary Women's Literature: A Worle 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 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: UNST 210. **(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: UNST 210. **(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: UNST 210. **(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: UNST 210. **(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: UNST 210. **(DEMAND)**

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: UNST 210. **(S)**

ENGL 410. Shakespeare **Credit 3(3-0)**
This course is an introduction to a study of the works of William Shakespeare through a detailed examination of representative works selected from the major periods of his development as a dramatist. Prerequisite: ENGL 210. **(S)**

ENGL 430. American Literature I **Credit 3(3-0)**
This course is a study of the literary movements and major authors of American literature in relation to the cultural history of America from the Colonial Period to 1865. Prerequisites: ENGL 210, ENGL 200, and 201. **(F)**

ENGL 431. American Literature II **Credit 3(3-0)**
This is a continuation of English 430, from 1865 to the present. Prerequisites: ENGL 210, ENGL 200, and 201. **(S)**

ENGL 435. The Novel **Credit 3(3-0)**
This course is a study of the novel as an art form, with attention to significant English novelists from 1750 to the present. Prerequisite: ENGL 210. **(F)**

ENGL 436. Poetry **Credit 3(3-0)**
This course is a study of poetry as an art form, with attention to significant English and American poets of the twentieth century. Prerequisite: ENGL 210. **(S)**

ENGL 445. Independent Study in English **Credit 3(3-0)**
This course provides an opportunity for students to pursue independently in-depth study in literature, linguistics, or professional writing. Prerequisites: Second semester junior or senior standing, and prior consultation with department faculty. **(F;S;SS)**

ENGL 460. Technology and the Teaching of English **Credit 3(3-0)**
This course provides knowledge of how technology, especially the computer and non-print media, can be utilized effectively in the teaching of English and in classroom management. Students will acquire knowledge of various instructional strategies appropriate for diverse backgrounds and learning styles. Development of appropriate professional attitudes and incorporation of research findings in the instructional program will also be included. **(S)**

ENGL 475. British and American Literary History **Credit 3(3-0)**
This course is designed to provide the student with the opportunity to develop a sense of the continuity of British and American literary history, supported by a reading of major works. Prerequisite: Senior standing. **(DEMAND)**

ENGL 502-II. 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: UNST 210. **(F;S)**

TECHNICAL WRITING

ENGL 331. Writing for Science and Technology **Credits 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 **Credits 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: UNST 210. **(F;S;SS)**

ENGL 412. Writing Reports and Proposals **Credit 3(3-0)**
This course is an intensive study of the principles and processes involved in preparing technical and scientific reports and proposals. **(F;S;SS)**

ENGL 413. Feature Writing and Editing for Technical Journals, Magazines and Trade Publications **Credit 3(3-0)**
This course provides theory and practice in writing and marketing articles for scientific publications with students submitting articles to commercial and scientific publications. This course also examines principles and practice of editors of scientific and technical publications. Students edit other students' works and that of outside clients. **(F;S;SS)**

ENGL 414. Designing and Testing User Documents for Scientific and Technical **Credit 3(3-0)**
This course is an advanced study of theories and practices associated with the production of user documents, instructional manuals and other media. **(F;S;SS)**

ENGL 415. Practicum for Technical and Scientific Communicators **Credit 3(3-0)**
This course is designed to give students practical writing experience related to scientific and technical fields. Offered as an on-campus and off-campus-directed internship, the experience teaches students the importance of client relationships, problem-solving skills, and professionalism in conduct and product. **(F;S;SS)**

ENGL 432. Writing for Health Professions **Credits 3(3-0)**
This course will consider specific forms of written and oral communications in the health professions, particularly in working with the NC A&T Department of Nursing. As an introductory writing course promoting effective communication skills, the course will ultimately contribute to the protection of the health and welfare of the public. **(F;S;SS)**

ENGL 434. Writing Case Studies **Credits 3(3-0)**
This course offers an intensive study of the principles and processes involved in writing case studies and histories. The focus will center around medical case studies and case studies dealing with engineering projects. The course is designed for both technical writing students and those in other fields such as nursing, engineering, and the sciences. **(F;S;SS)**

DIRECTORY OF FACULTY

Anjail R. Ahmad..... **Assistant Professor**
B.A., Agnes Scott College; M. A., New York University; Ph.D. University of Missouri-Columbia

Shirley H. Bell..... **Adjunct Professor**
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Patricia Bonner..... **Associate Professor**
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Jane G. Brown ..... **Associate Professor**
B.A., Converse College, M.A. Vanderbilt University; Ph.D., University of Dallas

Jason Depolo ..... **Lecturer**
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Hannah Free ..... **Lecturer**
B.S., M.S., North Carolina A&T State University

Samuel Garren ..... **Professor**
B.A., Davidson College; M.A., Ph.D., Louisiana State University

Michael Greene..... **Professor**
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Michele F. Levy ..... **Professor**
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Veloisa Marsh.....**Lecturer**
B.A.; Spelman College; M.A., University of Memphis
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B.A., M.A., North Carolina A&T State University
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Valerie Nieman..... **Assistant Professor**
B.S., West Virginia University; M.F.A., Queens University of Charlotte
Chimalum Nwankwo.....**Professor and Chairperson**
B.A., University of Nigeria, Nsukka; M.F.A., M.A., Ph.D., University of Texas at Austin
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Myrtle B. Solomon.....**Lecturer**
B.A., M.A., North Carolina A & T State University
Bryon Turman.....**Lecturer**
B.A., M.A., North Carolina A&T State University
Pauline A. Uwakweh..... **Assistant Professor**
B.A., University of Port Harcourt; Ph.D., Temple University
Marcella J. Whidbee.....**Lecturer**
B.A., M.A., North Carolina A&T State University

SPEECH PROGRAM

http://cas.ncat.edu/~speech

A.B. Mayfield-Clarke, Program Director

OBJECTIVES

The objectives of Speech Communication Studies/Speech Language Pathology and Audiology are as follows:

1. To assist students in developing critical thinking skills.
2. To encourage scholarly publications and creative productions.
3. To provide instruction in the major theories of communication and the relevance of these theories to the students' concentration.
4. To provide instruction in the qualitative and quantitative research methods in the field of communication and the relevance of these methods to students' concentration.
5. To encourage the use of technologies associated with communication and how these technologies are used in the students' concentration.

DEGREES OFFERED

Speech (Communication Studies) – Bachelor of Arts
Speech (Speech/Language Pathology & Audiology) – Bachelor of Arts

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 2.5-3.0 overall in the major.

DEPARTMENTAL REQUIREMENTS

Speech Communication Studies. A student admitted in the speech program and one who is eligible to be a candidate for the Bachelor of Arts degree must successfully complete a minimum of 124 hours and:

a. Maintain a minimal 2.5 grade point average in the course of study.
b. Have a combined Scholastic Aptitude Test (SAT) score of "800" in state and "950" out of state or an in-state ACT score of 16 or higher and out-of-state score of 18 or higher, and achieve a cumulative grade point average of "B" or better.
c. If criteria A and B are not met, a student may enter the University as an "Undecided," until the cumulative GPA of 2.5 is obtained.
d. Transfer students must have a cumulative grade point average of 2.5 or higher to be accepted as a Speech Communication Studies major.
e. Repeat any major course in which a grade of "D" or lower was achieved and receive a grade of "C" or better.

Speech (Speech / Language Pathology & Audiology): A student admitted in the Speech Language Pathology & Audiology program and one who is eligible to be a candidate for the Bachelor of Arts degree must successfully complete a minimum of 127-128 hours and:

a. Have a combined Scholastic Aptitude Test (SAT) score of "800" in state and "950" out of state or an in-state ACT score of 16 or higher and out-of-state score of 18 or higher, and achieve a cumulative grade point average of "B" or better.
b. Achieve a cumulative grade point average of 2.7 if the student entered the University as an "Undecided," to be accepted as a Speech/ Language Pathology & Audiology major.
c. Earned cumulative grade point average of 2.7 or higher as a transfer student to be accepted as a Speech Language Pathology & Audiology major.
d. Maintain a minimal 3.5 grade point average or better in the course of study.
e. Maintain a minimal 3.0grade point average overall.
f. Make a grade of "B" or better in all major core courses.
g. Repeat any core courses or clinical practicum courses in which a grade of "C" or lower was achieved and receive a grade of "B" or better.
h. Be admitted to Clinical Phase with Privileges (i.e., admission to the clinical component of the program) prior to the junior year. This consists of a minimal 3.0 grade point average in all freshman and sophomore level major courses as well as the required application.

DEPARTMENTAL REQUIREMENTS

Speech Communication Studies – Students pursuing a professional degree in speech must complete a minimum of 124 semester hours of University courses. Included in the 124 semester hours are 48 semester hours of speech courses. A minimal 2.5 grade point average overall and a minimal 2.7 grade point average in the course of study is required.

Speech/Language Pathology & Audiology – Students pursuing a pre-professional degree in Speech/Language Pathology and Audiology must complete a minimum of 127-128 semester hours of university courses. Included in the 127-128 semester hours are 54 hours of Speech/Language Pathology and Audiology courses. A minimal 3.0 grade point average overall and a minimal 3.5 grade point average in the course of study is required.

CAREER OPPORTUNITIES

A Bachelor of Arts degree in Speech Communication Studies will prepare students to pursue advanced degrees in communication, business, and law. The specific areas of emphasis include preparing students to become researchers, educators, advocates, and business and communication leaders.

A Bachelor of Arts degree in Speech/Language Pathology and Audiology will prepare students to enter a graduate program in Speech/ Language Pathology, Audiology, or Speech and Hearing Sciences. Undergraduates have to be prepared to attend and gain admittance to prestigious graduate schools to prepare them for their area of expertise. The specific areas of emphasis include preparing students to become researchers, educators, clinicians and community leaders that prevent, assess, and treat speech, language, and/or hearing disorders in a culturally diverse population. Students must receive the master's degree in Speech/Language Pathology and Audiology in order to gain employment in clinics, schools, hospitals, state and federal government agencies. Teaching positions in colleges and universities are possible with 18 credit hours of graduate courses.

REQUIRED MAJOR COURSES FOR SPEECH (COMMUNICATION STUDIES)

SPCH 102	SPCH 400	SPCH 502
SPCH 250	SPCH 401	SPCH 552

SPCH 251	SPCH 408	SPCH 565
SPCH 301	SPCH 410	SPCH 575
SPCH 314	SPCH 461	JOMC 555
SPCH 316		

CURRICULUM GUIDE FOR SPEECH
(COMMUNICATION STUDIES)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3	MATH 102	3
MATH 101	3	BIOL 100	4
SPCH 102	3	SPCH 251	3
SPCH 250	3		16
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST XXX[1]	3	UNST XXX[1]	3
UNST XXX[1]	3	UNST XXX[1]	3
FOLA I[2]	3	FOLA II[2]	3
SPCH 301	3	SOCI 100	3
SPCH 314	3	SPCH 400	3
HPED XXX[1]	1	HPED[3]	1
	16		16

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BUAD 220	3	SPCH 316	3
PSYC 320	3	SPCH 401	3
SPCH 408	3	SPCH 565	3
SPCH 410	3	Concentrated Elective	6
SPCH 461	3		15
	15		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
POLI 200	3	SPCH 502	3
SPCH 552	3	JOMC 555	3
Elective	9	SPCH 575	3
	15	Concentrated Elective	6
			15

Total Hours: 124

[1]*All 12 hours of UNST Cluster Theme courses must be selected from the same Cluster. The UNST Theme Clusters are:*
[2]*FOLA courses must be in the same language (6 credit hours)*
[4]*Any 1 credit hour HPED course may be selected*

REQUIRED MAJOR COURSES FOR SPEECH
(SPEECH/LANGUAGE PATHOLOGY & AUDIOLOGY)

SPCH 310	SPCH 379	SPCH 484
SPCH 116	SPCH 381	SPCH 509
SPCH 250	SPCH 382	SPCH 521
SPED 350	SPCH 424	SPCH 522
SPCH 259	SPCH 426	SPCH 529
SPCH 269	SPCH 478	SPCH 530
SPCH 309	SPCH 483	SPCH 587
SPCH 319		

CURRICULUM GUIDE FOR SPEECH
(SPEECH/LANGUAGE PATHOLOGY & AUDIOLOGY)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3	BIOL 100	4
MATH 101	3	MATH 102	3
ENGL 101	3	SPCH 259	3
HPED 220	2		16
	15		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
FOLA Any	3	FOLA Pt. II	3
UNST 2xx cluster	3	UNST 2xx cluster	3
UNST 2xx cluster	3	SPCH 381	3
PHYS 110/111	3	SPCH 424	1
SPCH 319	3	SPCH 382	3
SPCH 379	3	SPCH 309	3
	18		16

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
SPCH 469	3	ENGL 331	3
SPCH 509	3	SPCH 522	3
SPCH 426	3	SPCH 484	3
SPCH 483	3	PSYC 320	3
SPCH 250	3	UNST 2xx cluster	3
	15		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
SPCH 529	2	SPCH 530	2
PSYC 242	3	MUSI 216 or ART 224	3-2
SPCH 521	3	PSYC 322	4
SPED 350	3	SPCH 478	3
HEFS 310	3	SPCH 116	1
SPCH 587	3	SOCI 100	3
	17		15-16

Total Hours: 127-128

UNST Cluster theme elective students must choose one cluster from the list (See Catalogue) and take 12 hours in the cluster (UNST 209-215-217-218)

COURSE DESCRIPTIONS IN SPEECH

SPCH 102. Language Skills for Communication Professionals **Credit 3(3-0)**
This course is designed to help students master the basics of grammar, clarity, conciseness, and style in their oral and written messages. This course also includes lectures and seminars that introduce students to the communication studies discipline. Student's participation and discussion are essential. **(F)**

SPCH 116. Voice and Diction Lab I **Credit 1(0-2)**
This is a course in speech improvement with emphasis on articulation, pronunciation and projection. **(F;S)**

SPCH 250. Speech Fundamentals **Credit 3(3-0)**
This course is an introduction to the theoretical bases of human communication including verbal and nonverbal communication, preparation and practice in intrapersonal, interpersonal, group and public communication, critical listening and critical thinking. **(F;S;SS)**

SPCH 251. Public Speaking **Credit 3(3-0)**
This course examines methods of developing, organizing, and effectively delivering public speeches. Emphasis is placed on informative, persuasive, and ceremonial addresses. Prerequisite: SPCH 250. **(F;S;SS)**

SPCH 259. Introduction to Speech-Language Pathology **Credit 3(3-0)**
This course is designed for those entering the field of communication sciences and disorders. It is an introduction to the basic concepts and theories of assessment, diagnosis, and treatment of speech and language disorders. **(F;S)**

SPCH 301. Social Science Research Methods **Credit 3(3-0)**

This course is a study of the basic qualitative and quantitative methods used in communication studies. Emphasis is placed on research methods and organizationPrerequisites: 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 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 469. Introduction to Audiology **Credit 3(3-0)**

This course is a study of hearing, both normal and abnormal, with information on the nature, causes, identification and rehabilitation treatment of persons with hearing disorders. Prerequisite: Junior or senior standing. **(F)**

SPCH 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 400. 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 408. Business and Professional Communication **Credits 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 **Credits 3(3-0)**

This course studies ethical problems in public, group, and interpersonal communication; criteria for their resolution. Prerequisite: None **(F;SS)**

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 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 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 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 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 522. Aural Rehabilitation **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, 379, 381, 382, 424, 426, 483, 484, 509, 529, 521, 587. **(S)**

SPCH 529. Clinical Practicum I **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 530. Clinical Practicum in Speech-Language Pathology II **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, 381, 382, 424, 426, 483, 484, 521, 587. **(S;SS)**

SPCH 552. Persuasive Communication **Credit 3(3-0)**

This course is structured to provide the student with an organized study of the theories, principles, and strategies basic to attitude and behavior change. An attempt is made to balance the emphasis between the persuader's concerns and an understanding of various persuasive efforts directed at the consumer. A variety of persuasive contexts will be covered which include our society, the use of reasoning, advertising, and interpersonal persuasion. Prerequisite: SPCH 250. **(F;S;SS)**

SPCH 565. Speech Writing **Credit 3(3-0)**

This course introduces the student to the principles of writing speeches. Attends especially to audience adaptation, occasion analysis, and oral styles. Prerequisites: SPCH 250, 251.**(S)**

SPCH 587. Computer Applications in Communication Disorders **Credits 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, 319, 381, 424, 483, 484. **(F)**

SPCH 575. Internship (Capstone Course) **Credit 3(3-0)**
Students work in a corporate, non-profit, political, university, or departmental environment where learned skills can be implemented. Prerequisites: Senior standing, instructor's permission. **(F;S;SS)**

SPCH 580. Independent Study in Speech **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)**

DIRECTORY OF FACULTY

Kathryn Barrett ..... **Adjunct Professor**
B.S., M.S., East Carolina University, Ph.D., University of Wisconsin at Madison

June Bethea ..... **Adjunct Lecturer**
B.A., M.S., South Carolina State University

Stephanie Carrino ..... **Lecturer**
B.A., M.A., University of North Carolina at Chapel Hill

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

Ingram Land-Deans ..... **Adjunct Lecturer**
B.A., North Carolina State University, M.A., Michigan State University

A. Bernadette Mayfield-Clarke ..... **Associate Professor and Program Director**
B.S., Marquette University, M.S., Ph.D., Howard University

Carolyn Mayo ..... **Associate Professor**
B.A., M.A., Ohio State University, Ph.D., Michigan State University

Deana Lacy McQuitty ..... **Lecturer**
B.A., North Carolina A&T State University; M.S.; Southern Connecticut University; SLPD, Nova Southeastern University

Daniel Richardson ..... **Adjunct Lecturer**
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B.A., North Carolina A&T State University; M.S. Appalachian State University, Ph.D. University of North Carolina at Greensboro

Brian Tomlin ..... **Adjunct Lecturer**
B.A., University of Virginia; M.Ed., University of North Carolina at Greensboro, J.D., North Carolina Central University School of Law

Regina Williams ..... **Assistant Professor**
B.A., Hampton University, M.HR. University of Oklahoma, Ph.D. University of North Carolina at Greensboro

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Department of Foreign Languages

http://www.ncat.edu/~fola

José Bravo de Rueda, Interim Chairperson

OBJECTIVES

The specific objectives of the Department of Foreign Languages are as follows:

1. to develop facility in the listening, speaking, reading and writing of foreign languages.
2. to develop a better knowledge of foreign cultures and an appreciable awareness of one's own culture.
3. to create a spirit of international understanding that will result in respectful attitudes toward individuals and national groups.
4. to prepare students to teach second languages in elementary through secondary schools.
5. to prepare and encourage students to continue further study and research in the major areas, foreign language literature and education.
6. to provide students with experiences to develop communicative skills and competence requisite for personal fulfillment and challenging careers in which the foreign language study will be in full use or an asset.

DEGREES OFFERED

Romance Languages and Literatures, French Secondary Education – Bachelor of Science
Romance Languages and Literatures, Spanish Secondary Education – Bachelor of Science
Romance Languages and Literatures, French – Bachelor of Arts
Romance Languages and Literatures, Spanish – Bachelor of Arts
Liberal Studies (International Studies) – Bachelor of Arts*

** The Director of the Liberal Studies Program provides general oversight and administration of the program*

GENERAL PROGRAM REQUIREMENTS

The admission of students to the undergraduate degree programs in the Department of Foreign Languages is based upon the general admission requirements of the University.

DEPARTMENTAL REQUIREMENTS

Romance Languages (French or Spanish) – B.A. (Non-Teaching Major) – The curriculum in this area requires the student to complete a minimum of 125 semester hours of University courses. Included in the 125 hours are 45 semester hours of Spanish and 36 semester hours of French in courses beyond the elementary level. (The French curriculum is currently under revision.) A minimum grade of "C" must be achieved in all French or Spanish courses.

Romance Languages (French or Spanish) – B.S. (Teaching Major) – The curriculum for the teaching major in Romance Languages (French or Spanish) requires that a student complete the courses and regulations as outlined by the School of Education for certification in the elementary and secondary schools. A student must complete a minimum of 124-125 semester hours of University courses. Included in these hours are 33 semester hours of French or Spanish in courses beyond the elementary level. (A minimum grade of "C" must be achieved in all French or Spanish courses.) The Department also offers Teaching Certifications in both French and Spanish.

FOREIGN LANGUAGE PLACEMENT EXAMINATION

A foreign language placement examination will be administered to entering freshmen whose programs have a language requirement and who have taken at least two consecutive years of the same foreign language in high school. The placement test is web-based an can be accessed at: http://webcape.byuhtrsc.org/?acct=ncat. Students will need a Banner ID for taking the test. The highest level in which a student can be placed is the Intermediate II. A student cannot satisfy a language requirement by taking this examination. The foreign language placement examination will be given in order to place students in the appropriate levels only.

A minor may be achieved in French or Spanish by students who complete a minimum of 18 semester hours in Spanish or French.

ACCREDITATION

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

In this time of growing internationalism, a degree in a foreign language has a high level of importance in many professional careers. For the language major, chances of employment in areas of government service, military service, teaching, international travel, law, business, industry and mass communications, to name but a few, are greatly enhanced by the training in foreign languages.

STUDY ABROAD

The Department of Foreign Languages encourages all students to study abroad, especially foreign language majors. The Office of International Programs, (336) 334-7104, provides opportunities for A&T students to study in over 100 countries around the world while earning academic credit towards graduation.

REQUIRED MAJOR COURSES FOR ROMANCE LANGUAGES – FRENCH

FOLA 300	FOLA 411	FOLA 505
FOLA 301	FOLA 415	FOLA 506
FOLA 400	FOLA 416	FOLA 508
FOLA 410	FOLA 417	

REQUIRED MAJOR COURSES FOR ROMANCE LANGUAGES – SPANISH

SPAN 201	SPAN 303	3 SPAN Literature courses
SPAN 202	SPAN 304	3 SPAN Culture courses
SPAN 301	SPAN 305	SPAN 502
SPAN 302	SPAN 400	

Literature courses: SPAN 401, SPAN 402, SPAN 403, SPAN 404, SPAN 405, (SPAN 406, SPAN 501: Content must be literary).

Culture courses: SPAN 451, SPAN 452, SPAN 453, SPAN 454, SPAN 455, SPAN 456, (SPAN 406, SPAN 501: Content must be cultural).

REQUIRED MAJOR CUIN COURSES FOR ROMANCE LANGUAGES – FRENCH OR SPANISH SECONDARY EDUCATION

CUIN 101	CUIN 310	CUIN 640

CUIN 110	CUIN 410	CUIN 660
CUIN 210	CUIN 520	CUIN 670

REQUIRED MAJOR COURSES FOR LIBERAL STUDIES (INTERNATIONAL STUDIES)

The Director of the Liberal Studies Program provides general oversight and administration of the program. Advising for the International Studies Concentration is through the Department of Foreign Languages. This degree program requires a minimum of 124 semester hours for completion. Students must successfully complete six (6) consecutive semester hours of Foreign Language beyond the elementary level for a total of twelve (12) hours in one language. In addition, eighteen (18) hours must be selected from the following options:

ECON 505	HIST 332	HIST 451
ECON 537	HIST 409	JOMC 601
ENGL 336	HIST 412	PHIL 265
GEOG 210	HIST 418	POLI 444
GEOG 322	HIST 431	POLI 445
HIST 313	HIST 433	POLI 446
HIST 321	HIST 435	SOCI 300

CURRICULUM GUIDE FOR ROMANCE LANGUAGES AND LITERATURES – FRENCH

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	MATH 102 or higher	3
MATH 101 or higher	3	UNST 130	3
UNST 110	3	CHEM 100	3
BIOL 100	4	FOLA 301	3
FOLA 300	3	UNST 140	3
UNST 120	3		15
	17		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
SPCH 250	3	UNST Electives	6
UNST Electives	6	FOLA 411	3
FOLA 410	3	FOLA 416	3
FOLA 415	3	SPAN 102 or above	3
SPAN 101 or above	3	Elective or Minor	3
	18		18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
FOLA 400	3	FOLA 417	3
FOLA 505	3	SPAN 202 or above	3
SPAN 201 or above	3	FOLA 505 or 506	3
GEOG 210	3	Elective or Minor	6
Elective or Minor	3		15
	15		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
FOLA 508	3	FOLA Electives	6
FOLA Electives	3	FOLA 103	3
FOLA 102	3	FOLA 618 (Capstone)	3
Elective or Minor	6		12
	15		

Total Credit Hours: 125

CURRICULUM GUIDE FOR ROMANCE LANGUAGES AND LITERATURES – SPANISH

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	MATH 102	3
MATH 101	3	UNST 130	3
UNST 110	3	SPAN 202	3
SPAN 201	3	UNST 140	3
UNST 120	3	BIOL 100 or CHEM 100 (with lab)	4

ENGL 101	3		16
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
SPCH 250	3	UNST Cluster	3
UNST Cluster	3	UNST Cluster	3
UNST Cluster	3	SPAN 303	3
SPAN 301	3	SPAN 304	3
SPAN 302	3	SPAN 305	3
GEOG 210	3		15
	18		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
SPAN 400	3	SPAN (Culture)	3
SPAN (Culture)	3	SPAN (Literature)	3
Related Elective	3	ENGL 226	3
FOLA 100	3	Related Elective	3
HPED 222	3	FOLA 101	3
	15		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
SPAN (Literature)	3	SPAN (Literature)	3
SPAN (Culture)	3	SPAN 502 (capstone)	3
FOLA 300	3	FOLA 301	3
Related Elective	3	Related Elective	3
Elective	3	Elective	3
	15		15

Total Credit Hours: 125

SPAN Literature Courses: SPAN 401, SPAN 402, SPAN 403, SPAN 404, SPAN 405, (SPAN 406, SPAN 501: Content must be literary).

SPAN Culture Courses: SPAN 451, SPAN 452, SPAN 453, SPAN 454, SPAN 455, SPAN 456 (SPAN 406, SPAN 501: Content must be cultural).

Related Electives: AGEC 335, AGED 300, FCS 332 (Pre-req: FCS 337), ENGL 242 (Pre-req: UNST 210), ENGL 243 (Pre-req: UNST 210), ENGL 336 (Pre-req: ENGL 210), SPCH 314, HIST 417, HIST 418, HIST 455, HIST 477 (Pre-req: HIST 250 and 101 or 205 or instructor's consent), HIST 621, LIBS 305, LIBS 307, POLI 446, SOCI 300.

UNST Cluster: The four (4) courses must be taken from the SAME cluster.

CURRICULUM GUIDE FOR ROMANCE LANGUAGES AND LITERATURES – FRENCH (TEACHING, K-12)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 140	3
MATH 101 or higher	3	MATH 102 or higher	3
UNST 110	3	UNST 130	3
BIOL 100	4	CHEM 100	3
FOLA 300	3	FOLA 301	3
UNST 120	3	CUIN 101	1
	17	CUIN 110	2
			18

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Electives	6	UNST Electives	6
FOLA 410	3	FOLA 411	3
FOLA 415	3	FOLA 416	3
SPAN 101 or above	3	SPAN 102 or above	3
CUIN 210	2	CUIN 310	2
	17		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*

FOLA 400	3	FOLA 417	3
FOLA 505	3	SPAN 202 or above	3
SPAN 201 or above	3	FOLA 506	3
GEOG 210	3	Elective or Minor	6
CUIN 410	2	CUIN 520	2
Elective	3		17
	17		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
FOLA 508	3	CUIN 670	3
CUIN 640	3	CUIN 660 (capstone)	6
FOLA 515	3		9
Elective	2		
SPCH 250	3		
	14		

Total Credit Hours: 126

CURRICULUM GUIDE FOR ROMANCE LANGUAGES AND LITERATURES – SPANISH (TEACHING, K-12)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	SPAN 202	3
MATH 101 or higher	3	MATH 102	3
UNST 110	3	UNST 130	3
BIOL 100	4	CHEM 100	3
UNST 120	3	UNST 140	3
SPAN 201	3	CUIN 101	1
	17	CUIN 110	2
			18

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Electives	6	UNST Electives	6
SPAN 301	3	SPAN 303	3
SPAN 302	3	SPAN 304	3
FOLA 100 or above	3	FOLA 101 or above	3
CUIN 210	2	CUIN 310	2
	17		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
SPAN 305	3	SPAN (Culture)	3
SPAN 400	3	FOLA 301 or above	3
FOLA 300 or above	3	SPAN (Literature)	3
GEOG 210	3	CUIN 520	2
CUIN 410	2	Elective or Minor	3
Elective	3	SPCH 250	3
	17		17

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
SPAN 406	3	CUIN 660	6
CUIN 640	3	CUIN 670	3
Elective	3		9
FOLA Elective	3		
	12		

Total Credit Hours: 124

COURSE DESCRIPTIONS IN FOREIGN LANGUAGES

FRENCH

FOLA 100. 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)**

FOLA 101. Elementary French II* **Credit 3(3-0)**

This is a continuation of FOLA 100 with further emphasis placed on the oral-aural approach. Prerequisite: FOLA 100 or equivalent. **(F;S)**

FOLA 300. 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: FOLA 100 and 101, or two units of high school French. **(F)**

FOLA 301. Intermediate French II* **Credit 3(3-0)**

This course is a continuation of FOLA 300. Stress is placed on grammar, cultural reading and conversation. Prerequisite: FOLA 300 or equivalent. **(S)**

FOLA 400. 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: FOLA 300 and 301. **(F;S)**

FOLA 402. French for Reading Comprehension **Credit 3(3-0)**

This course includes the development of skills needed for reading competency and interpretation; preparation for French reading proficiency examinations; emphasis placed on vocabulary development; mastery of all aspects of noun/pronoun character and modifiers; knowledge of tense, mood and form of verb structure; reading comprehension analysis and evaluation of selected passages. Readings will be in areas as the humanities, mathematics, social and natural sciences. Prerequisite: Successful completion of foreign language requirements in major area or consent of instructor. **(F;S)**

FOLA 405. 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: FOLA 300 and 301. **(F;S)**

FOLA 410. Intermediate Oral French **Credit 3(3-0)**

This is an intermediate oral French course, which prepares students for FOLA 411. It is designed to enable students to understand lectures and conversations of average tempo. Prerequisites: FOLA 300 and 301. **(F;S)**

FOLA 411. Advanced Oral French **Credit 3(3-0)**

This course offers students intensive training in self-expression and an opportunity to improve pronunciation, diction, reading and speaking. Prerequisite: FOLA 410. **(F;S)**

FOLA 415. Survey of French Literature I **Credit 3(3-0)**

This course provides a general introduction to the study of French literature. It gives a clear idea of the great periods and main tendencies in history of French thought and letters from 842 to the 18th century. **(F;S)**

FOLA 416. Survey of French Literature II **Credit 3(3-0)**

This course is a continuation of French literature from the 18th century to the present. **(F;S)**

FOLA 417. Literature of Afro-French Expression **Credit 3(3-0)**

This course is an introduction to the literary style and currents of thoughts in poetry and prose of selected Afro-French writers in the Caribbean; special attention is given to "Negritude" as reflected in major works of selected Afro-French and Francophone African authors. Prerequisite: French 301 or equivalent, or consent of instructor. **(F;S)**

FOLA 505. Advanced French Composition **Credit 3(3-0)**

This is an advanced course in oral and written self-expression in French. Special attention given to vocabulary building, free composition and conversation, prepared and improvised, covering the many phases of everyday activities. **(F;S)**

FOLA 506. Advanced French Grammar and Composition **Credit 3(3-0)**

This course is designed to give students practical training in the use of advanced French grammar and reading. **(F;S)**

FOLA 508. 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)**

FOLA 515. Structural Linguistics in the Teaching of French **Credit 3(3-0)**

This course applies structural linguistic forms, doctrine and methodology to the teaching of French historical development of the French language. Presentation of dialogues and drills in French will be included. Emphasis is on phonemics, morphology and syntax. **(F;S)**

FOLA 520. Selected Tales, Legends and Proverbs of 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: FOLA 410 or consent of instructor. **(F;S)**

FOLA 521. 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: FOLA 410 and 411. **(F;S)**

FOLA 524. Seminar in Foreign Languages **Credit 3(3-0)**
This course includes readings and special topics in French and Spanish. Presentations from students, faculty and guest lectures will also be included. Papers showing research techniques in literary studies are required of all candidates for a degree with concentrations in French or Spanish. Prerequisite: FOLA 320 or 300. **(F;S)**

FOLA 528. 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: FOLA 320 or 300. **(F;S)**

Advanced Undergraduate

FOLA 602. Second Language Teaching and Learning **Credit 3(3-0)**
This course includes theoretical positions and practices in second language teaching and learning. Special features of the course will be practice, activities, and strategies for teaching and learning a new language and for developing the proficiency level(s) in a second language. Prerequisite: Junior standing. **(F;S)**

FOLA 603. Oral Course for Teachers of Foreign Languages **Credit 3(3-0)**
This course is designed for teachers of foreign languages to improve pronunciation. **(F;S)**

FOLA 606. Research in the Teaching of Foreign Languages **Credit 3(3-0)**
This course is open to students who are interested in undertaking the study of a special problem in the teaching of a foreign language. **(F;S)**

FOLA 607. French Literature of the Seventeenth Century **Credit 3(3-0)**
This course presents Classicism through masterpieces of Comeille, Racine, Moliere and other authors of the "Golden Period" in French letters. **(F;S)**

FOLA 608. 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)**

FOLA 609. 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)**

FOLA 610. 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)**

FOLA 612. The French Novel **Credit 3(3-0)**
The novel from the Seventeenth Century to the present will be studied. **(F;S)**

FOLA 614. French Syntax **Credit 3(3-0)**
This course is designed to teach grammar on the advanced level. **(F;S)**

FOLA 616. Contemporary French Literature **Credit 3(3-0)**
This course deals with the chief writers and literary currents from 1900 to the present. **(F;S)**

FOLA 618. 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: FOLA 410, 411, 412 or consent of instructor. **(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 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 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 i**s** 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: FOLA 321. **(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 501. 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 FOLA 300. **(F;S)**

SPAN 502. 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 FOLA 300. **(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.*

DIRECTORY OF FACULTY

Brigitte E. Archibald..... **Professor**
B.A., The King's College; M.A., Middlebury College; Ph.D., University of Tennessee

José Alberto Bravo de Rueda.....**Associate Professor and Chairperson**
B.A., Pontificia Universidad Católica; M.A., Ph.D., University of Maryland – College Park

Sarah M. Carrig .....**Lecturer**
B.A., Williams College; M.A., University of Wisconsin-Madison

Nita M. Dewberry.....**Associate Professor and Associate Dean**

B.A., North Carolina State University; M.A., Ph.D., University of North Carolina at Chapel Hill
Carolyn R. Durham.....**Associate Professor**
B.A., Drew University; M.A., Ph.D., Rutgers University
Chinedum Emmanuel Ikegwu.....**Associate Professor**
B.A., University of the District of Columbia; M.A., Antioch School of Law; Ph.D. Howard University
Margaret L. Morris.....**Visiting Assistant Professor**
B.A., Norfolk State University; M.A., Ph.D., University of Illinois at Urbana-Champaign
Elie Mbumina.....**Lecturer**
B.A., National University of Zaire, M.S., North Carolina A&T State University
Eileen Morales.....**Adjunct Intructor**
B.A., Saint Louis University; M.A., University of Wisconsin-Madison
Pedro Niño.....**Adjunct Assistant Professor**
B.A., Universidad Central de Venezuela; M.A., Universidad Santa María; M.A., Grand Canyon University; Ph.D., Walden University

Department of History

http://www.ncat.edu/~history/

Olen Cole, Jr., Chairperson

OBJECTIVES

The Department of History offers students a knowledge of the past that enables them to better understand today's world and prepare for the future. The Department helps students develop skills in research, analysis, decision-making, and communication. These skills prepare students for successful careers, constructive participation in civic affairs, and lifelong learning. In short, the Department of History emphasizes the personal development of each student.

The specific objectives of the History Department are: 1) to contribute to the general education of students by providing the historical, geographical, and philosophical background for the study of the arts, the sciences, and technical subjects; 2) to provide historical content and professional training to students preparing for careers in fields such as education, law, religion, international affairs, social service, journalism, history, or government; 3) to offer a curriculum that allows students to pursue the history of many areas of the world; 4) to offer a course of study leading to the Master of Science degree in Education and the Master of Arts in Teaching degree with a concentration in history; and, 5) to provide instruction for students preparing for doctoral programs.

In carrying out its aims and objectives, the Department of History offers a broad range of courses in history as well as courses in geography and philosophy. To help ensure student success the Department assigns each student major to an advisor. It is particularly important that students consult their advisors when planning their educational programs. The Department also offers students a variety of extracurricular opportunities to enrich their college experiences. These include two students organizations, The History Scholars and *Phi Alpha Theta* History Honor Society, as well as numerous public lectures. Finally, the Department participates in the University Honors Program, which enables outstanding students to work closely with faculty members on special course and research assignments.

DEGREES OFFERED

History – Bachelor of Arts
History Education – Bachelor of Science
History Education – Master of Science*
History Education – Master of Arts in Teaching*
**See the Graduate School Bulletin*

PROGRAM REQUIREMENTS

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

DEPARTMENTAL REQUIREMENTS

History Major – History majors must complete 126-127 credits of University courses. Included in the 126-127 credits are 51 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 125-126 credits of University courses. Included in the 125-126 credits are 45 credits in history courses and 15 credits in the social sciences. This major also includes 26 credits of education courses and field experience as a student teacher. Students in this major must earn at least a "C" in all history, social science, general education, and curriculum and instruction courses.

Students in the history education program are provided an opportunity to:

- Become knowledgeable about man's past experiences;

- Study the history of major world civilizations and understand the impact of various groups, institutions, and nations on global development;
- Understand the social, political, economic, and cultural forces at work in contemporary societies;
- Become more sensitive to the relationships between history and the other social science disciplines;
- Develop an understanding of the nature of history and of the methodology of historical research;
- Develop competencies essential for the effective teaching of history and social studies in secondary schools;
- Develop proficiency in using computer technology to enhance instruction;
- Qualify for initial certification in history or social studies in North Carolina; and
- Prepare for further study at the graduate level and understand the value of life-long learning.

History Minor – Students desiring to minor in history must complete 18 credits in history at the 200 level or above including HIST 204, 205, 408 and 409.

African/African-American History Minor – The minor in African and African-American History consists of 18 credits of history courses distributed as follows:

Required Courses: 12 hours

HIST 201, 202, 215, and 216

Elective Courses: 6 hours to be selected from the following:

HIST 272, 273, 320, 412, 416, 425, 455, 615, 616, 617, and 628

Museum Studies Minor – The minor in museum studies consists of 18 credits of courses as follows: HIST 270, 271, 272, 273, 320, and 321.

CAREER OPPORTUNITIES

The undergraduate degree program in history leads to careers in journalism, business, archives and museums, international affairs, and government service, among others. It also prepares students for law school, theological seminary, and other graduate and professional school programs.

REQUIRED MAJOR COURSES FOR HISTORY

HIST 201	HIST 202	HIST 204
HIST 205	HIST 206	HIST 207
HIST 250	HIST 400	HIST 408
HIST 409	HIST 425	HIST 435
HIST 599		

CURRICULUM GUIDE FOR HISTORY

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	BIOL 100, CHEM 100/110,	
UNST 110	3	or EASC 201	3-4
UNST 120	3	PHYS 100 or PHYS 105	3
HIST 206	3	ENGL 101	3
HPED 200	2	HIST 207	3
MATH 101	3	UNST 130	3
	15	UNST 140	3
			15-16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
HIST 204	3	HIST 205	3
HIST 250	3	POLI 200	3
UNST Cluster Electives	3	UNST Cluster Electives	3
SPCH 250	3	PHIL 260, 262, 263, 264, 265,	
HIST 201	3	or 266	3
	15	HIST 202	3
			15

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
HIST 408	3	HIST 409	3
Social Science Elective[1]	3	UNST Cluster Electives	3
ECON 201	3	HIST 425	3
FOLA[5]	3	FOLA[5]	3
UNST Cluster Electives	3	HIST Elective (Non-Western)[2]	3
HIST 400	3		15

	18		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Social Science Elective[1]	6	Free Electives[3]	6
HIST Electives[3]	3	HIST Electives[4]	6
HIST 435	3	HIST 599 (Capstone)	3
Free Electives[4]	6		15
	18		

Total Credit Hours: 126-127

[1]9 hrs. – Students may take any Geography, Political Science, Sociology, or Anthropology courses for which they meet the prerequisites.
[2]3 hrs. – choose from HIST 215, 216, 320, 332, 412, 417, 418, 430, 431, or 444. Seniors may also choose from HIST 616, 617, 618, 619, 620, or 621.
[3]9 credit hours of which 3 hrs. must be at the 400 level or above. Includes all Philosophy courses, except Logic..
[4]12 hrs. – Students may take any courses offered at the University for which they meet the prerequisites.
[5]Students must take 6 credits hours of the same language.

CURRICULUM GUIDE FOR HISTORY
(Option: Africana History)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	BIOL 100, CHEM 100/110,	
UNST 110	3	or EASC 201	3-4
UNST 120	3	PHYS 100 or PHYS 105	3
HIST 206	3	ENGL 101	3
HPED 200	2	HIST 207	3
MATH 101	3	UNST 130	3
	15	UNST 140	3
			15-16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
HIST 204	3	HIST 205	3
HIST 250	3	POLI 200	3
UNST Cluster Electives	3	UNST Cluster Electives	3
SPCH 250	3	PHIL 260, 262, 263, 264, 265,	
HIST 201	3	or 266	3
	15	HIST 202	3
			15

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
HIST 408	3	HIST 409	3
Social Science Elective[1]	3	UNST Cluster Electives	3
ECON 201	3	HIST 425	3
FOLA[5]	3	FOLA[5]	3
UNST Cluster Electives	3	HIST Elective (Non-Western)[2]	3
HIST 400	3		15
	18		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Social Science Elective[1]	6	Free Electives[3]	6
HIST Electives[3]	3	HIST Electives[4]	6
HIST 435	3	HIST 599 (Capstone)	3
Free Electives[4]	6		15
	18		

Total Credit Hours: 126-127

[1]9 hrs. – Students may take any Geography, Political Science, Sociology, or Anthropology courses for which they meet the prerequisites.
[2]3 hrs. – choose from HIST 215, 216, 320, 332, 412, 417, 418, 430, 431, or 444. Seniors may also choose from HIST 616, 617, 618, 619, 620, or 621.
[3]9 credit hours of which 3 hrs. must be at the 400 level or above. Includes all Philosophy courses, except Logic, along with all but the required listed courses in the catalog.
[4]12 hrs. – Students may take any courses offered at the University for which they meet the prerequisites.
[5]Students must take 6 credit hours of the same language.

CURRICULUM GUIDE FOR SECONDARY EDUCATION (HISTORY)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	BIOL 100, CHEM 100 /110,	
UNST 110	3	EASC 201, or PHYS 101	3-4
UNST 120	3	CUIN 102	2
HIST 206	3	HIST 207	3
HPED 200	2	UNST 130	3
CUIN 101	1	UNST 140	3
MATH 101	3	POLI 200[2]	3
	16		17-18

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
HIST 204	3	HIST 205	3
CUIN 301	2	HIST 250	3
UNST Cluster Electives[1]	3	UNST Cluster Electives[1]	3
UNST Cluster Electives[1]	3	UNST Cluster Electives[1]	3
PHIL 265	3	HIST 202	3
HIST 201	3	GEOG 210[2]	3
	17		18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
HIST 408	3	HIST 409	3
ECON 200	3	ECON 201	3
CUIN 400	3	PSYC 320	3
HIST 400	3	HIST 425	3
SOCI 200[2]	3	CUIN 436	3
	15		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
HIST 599 (UNST Capstone)	3	CUIN 560	6
HIST 435	3	HIST Elective (Non-Western)[3]	3
CUIN 536	3	CUIN 500	3
CUIN 624	3		12
HIST Electives[4]	3		
	15		

Total Credit Hours: 125-126

[1] *UNST Thematic Cluster Elective: Students must choose 1 cluster and take 12 hours in that cluster.*

[2] *9 hrs.- Students may take cany Geography, Political Science, Psychology, Sociology, or Anthropology courses for which they meet the prerequisites.*

[3] *3 hrs. – Choose from HIST 215, 216, 320, 332, 412, 417, 418, 430, 431, or 444. Seniors may also choose from HIST 616, 617, 618, 619, 620, or 621.*

[4] *Choose from HIST 412, 417, 418, 430, 431, 441, 616, 617, 618, 619, 620, or 621*

COURSE DESCRIPTIONS IN HISTORY

HIST 201. African-American History to 1877 **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 202. African-American History Since 1877 **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 203. North Carolina A&T State University: A Legacy of Social Activism and Aggie Pride **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 204. U.S. History From 1492-1877 **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 205. U.S. History Since 1877 **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 206. Pre-Modern World History (Formerly HIST 100)

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. Modern World History (Formerly HIST 101)

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 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 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 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 272. Oral History **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 273. African-American History and Museum Collecting **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 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 300. Ancient History **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 301. History of Asian Religions **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 302. The Pre-Modern West **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 303. History of Capitalism **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 305. Socialism Since Karl Marx **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 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 307. The Historical Origins of Environmental Crises **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 312. History of Religions **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 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 319. Topics in World History **Credit 3(3-0)**

This course will examine selected topics in modern world history. **(DEMAND)**

HIST 320. African History Through Art and Archaeology **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 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 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 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 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 ruban 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 358. Asian Perceptions of Health Preservation in Historical Perspective **Credit 3(3-0)**

The course examines the origins, evolutions, and influences of some popular Asian health preservation techniques such as Indian Yoga and Chinese *taiji* (tai-chi) and the development of modern health-care systems in major Asian countries (Japan, India, and China). **(DEMAND)**

HIST 400. Historical Research and Computer Technology **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. **(S)**

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 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 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 408. Early Modern Europe: Renaissance to 1815 (Formerly HIST 303) **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 409. Modern Europe Since 1815 (Formerly HIST 304) **Credit 3(3-0)**

This course is a survey emphasizing main trends in European development 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, Nazism, and present-day Europe. **(S)**

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. **(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 425. 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 201 and HIST 202 or permission of the instructor. **(DEMAND)**

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 (204 and 205) and the consent of the instructor. **(DEMAND)**

HIST 431. East Asian History to 1800 (Formerly HIST 330) **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 432. East Asian History since 1800 (Formerly HIST 331) **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 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 435. Global History Since 1945 **Credit 3(3-0)**

At the end of the World War II, the world political order was fundamentally restructured. The old European empires soon came to an end and the world was divided into two dominant blocks. This course explores the coming into being of the bipolar world order of the postwar period and its eventual demise. Special attention will be given to such issues as global vs. local cultures and social formation, development vs. underdevelopment, economic inequalities between the northern and southern hemispheres of the globe, wars of national liberation, ethnicity and nationalism, technological change and the environmental impact of technology, nation states vs. multi-national corporations, and the transformation of global capitalism. The final section of the course will deal with the definitions of postmodernity and their relevance for analyzing the developments in the postwar world. Prerequisite: HIST 101 or permission of the instructor. **(DEMAND)**

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 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 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 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 101 or 205 or permission of the instructor. **(DEMAND)**

HIST 501. 20th and 21st Century Women Activists of the World **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 502. Research Seminar in Africana Historiography: A Comparative Approach **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 599. Senior Seminar **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)**

CUIN 536. Methods of Teaching Social Sciences **Credit 3(3-0)**

This course is a study of techniques of social science instruction on the high school level. It is required of those planning to teach the subject. Prerequisites: 27 semester hours of social studies and 15 semester hours of education and psychology. **(F)**

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 605. Twentieth Century Russian History **Credit 3(3-0)**
This is a reading, research, and discussion course that examines the history of twentieth century Russia with special emphasis on the Russian Revolution, the development of Communist society, the impact and legacy of Stalin, relations with the United States and other countries during the Cold War, the demise of the Soviet Union, and current problems facing post-Soviet Russia. **(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 607. U.S. Since 1932-Present **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 619. 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 620. Seminar in Asian History **Credit 3(3-0)**
Research, writing, and selected topics in Asian history will be included in this course. **(DEMAND)**

HIST 621. Seminar in Latin American and Caribbean History **Credit 3(3-0)**
This course requires research, writing and discussion of selected topics in Latin American and Caribbean History, including urban and rural conflict, social revolution, race relations, problems of underdevelopment, and contemporary issues. **(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 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 631. Studies in Twentieth Century Europe, 1914-Present **Credit 3(3-0)**
This course offers an intensive study of key topics in twentieth century European history, including World Wars I and II, the Russian Revolution, Hitler and the Holocaust, the Depression, the Cold War and bipolarism, the Welfare State, the Common Market, the collapse of Communism in Eastern Europe, and current problems. **(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)**

PHILOSOPHY

PHIL 260. Introduction to Philosophy **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 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 262. Logic **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 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 265. World Religions **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 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 315. Business Ethics **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 316. Environmental Ethics **Credit 3(3-0)**

This course is an introduction to the philosophical study and moral assessment of human interaction with other species and the environment in which we live. Students will survey several environmental ethics theories including biocentrism, ecocentrism, deep ecology and social ecology and then apply these ethical tools to address real-world environmental problems. **(F;S;SS)**

PHIL 317. Medical Ethics **Credit 3(3-0)**

This course introduces students to ethical challenges arising within the practice of medicine. Topics considered include truth-telling, informed consent, confidentiality, medical futility, euthanasia, physician-assisted suicide, gene therapy, social justice in health care, use of animals and humans subjects in medical research, and organ transplantation. **(F;S;SS)**

PHIL 400. Ancient Philosophy **Credit 3(3-0)**

This course will examine the history of philosophy from the ancient Greeks t 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 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.

DIRECTORY OF FACULTY

Sarah Beale ..... **Visiting Lecturer**
B.A., Wake Forest College, M.A.T., Duke University

Olen Cole, Jr. ..... **Professor and Chairperson**
B.A., M.A., California State University – Fresno; Ph.D., University of North Carolina at Chapel Hill

Fuabeh P. Fonge ..... **Associate Professor**
B.A., University of Yaounde; M.A., Georgetown University; Ph.D., Howard University

David Harris ..... **Visiting Lecturer**
B.A., University of North Carolina at Wilmington, B.A., B.S., University of North Carolina at Greensboro; M.A., Indiana University

Karen L. Hornsby ..... **Assistant Professor**
B.A., California State University-Sacramento; M.A., Ph.D., Bowling Green State University

Conchita F. Ndege ..... **Professor and Museum Internship Coordinator**
B.F.A., Xavier University; M.A., Ph.D., Howard University

Peter V. Meyers ..... **Professor**
B.A., Wesleyan University; M.A., Ph.D., Rutgers University

Thomas E. Porter ..... **Professor and Graduate Studies Coordinator**
B.A., Loyola College; M.A., Ph.D., University of Washington

Tiffany Quaye ..... **Instructor**
B.S., Florida A&M University, M.A., University of North Carolina at Charlotte

Sonya Ricks ..... **Instructor and History Education Coordinator**
B.A. North Carolina Central University, M.S., North Carolina A&T State University; Ph.D., University of North Carolina at Greensboro

Michael Roberto ..... **Associate Professor**

B.A., Adelphi University; M.A., University of Rhode Island; Ph.D., Boston College
Sandrea T. Williamson ..... **Instructor**
B.A., Johnson C. Smith University, M.A., University of Illinois
James A. Wood ..... **Associate Professor**
B.A., Tufts University; M.A., Ph.D., University of North Carolina at Chapel Hill
Yunqui Zhang ..... **Associate Professor**
B.A., Qufu Normal University; M.A., Ph.D., University of Toronto

Department of Journalism and Mass Communication

http://www.ncat.edu/~jmc/

Humphrey A. Regis, Chairperson

OBJECTIVES

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

1. to develop in students the speaking and writing skills they apply in general communication and in professional journalism and mass communication;
2. to develop the expertise of students in their professional specialties, and provide them the opportunity to integrate multiple skill sets, in journalism and mass communication;
3. to prepare students for employment and leadership in local, national and global media markets and to pursue career advancement and graduate study;
4. to cultivate the practice of seeking interdisciplinary knowledge in students, and help them acquire and apply analytical and critical skills in developing views on issues;
5. to prepare students to transcend professional and other boundaries individually and collaboratively in addressing situations, responsibilities and challenges;
6. to cultivate in students an understanding of the historical, cultural, legal, ethical and moral contexts in which they apply their knowledge and professional skills.

DEGREES OFFERED

Journalism and Mass Communication (Broadcast Production) – Bachelor of Science
Journalism and Mass Communication (Electronic Media & Journalism) – Bachelor of Science
Journalism and Mass Communication (Media Management) – Bachelor of Science
Journalism and Mass Communication (Print Journalism) – Bachelor of Science
Journalism and Mass Communication (Public Relations) – Bachelor of Science

GENERAL PROGRAM REQUIREMENTS

The admission of students into the undergraduate degree programs in Journalism and Mass Communication is based upon the general admission requirements of the University. All students are expected to maintain a cumulative grade point average of at least 2.0 overall and 2.5 in the major.

DEPARTMENTAL REQUIREMENTS

The Journalism and Mass Communication major must complete a minimum of 124 to 126 (depending on concentration) semester hours of University courses. Included are 42 semester hours of courses in the major. A grade of "C" or better must be earned in these major courses.

All majors must meet certain prerequisites prior to beginning sophomore-level courses in their chosen concentrations. They must demonstrate computer literacy skills as defined by the College of Arts and Sciences.

They also must:

a. Make a grade of 70 or better in the Grammar Proficiency Examination.
b. Make a cumulative grade point average of 2.0 or better in the first year of courses.
c. Make a "C" or better in ENGL 101.

A student admitted in the Journalism and Mass Communication program must successfully complete a minimum of 124 to 126 (depending on concentration) hours in order to receive the bachelor of science and:

a. Maintain a minimum 2.5 grade point average in courses in the major.
b. Have a combined Scholastic Aptitude Test (SAT) score of 800 (in-state students) or 920 (out-of–state students) and achieve a high school cumulative grade point average of "B" or better.
c. If criteria A and B are not met, a student may enter the University as "Undecided;" when the student achieves the cumulative GPA of 2.5, he or she may be admitted as a Journalism and Mass Communication major.
d. Successfully complete the required Professional Development Seminar course (JOMC 591)
e. Complete an internship with an approved media organization.

f. Complete the following practicum courses with a grade of "C" or better:
   1. Broadcast Production (1 Practicum + Professional Development Seminar + Media Internship)
   2. Electronic Media and Journalism (1 Practicum + Professional Development Seminar + Media Internship)
   3. Media Management (1 Practical Writing + Professional Development Seminar + Media Internship)
   4. Print Journalism (1 Practicum + 1 Newspaper Practicum + Professional Development Seminar + Media Internship)
   5. Public Relations (1 Practicum + 1 Newspaper Practicum + Professional Development Seminar + Media Internship)

g. The department administers an exit examination to students pursuing a degree in Journalism and Mass Communication. The examination emphasizes major principles and skills in the core classes: News Writing, Media History, Technological Information Sources, and Communications Law and Ethics. Students must pass the examination before graduating from the university. The test will be given in the junior year and may be repeated until passed.

h. Repeat any major course in which a grade of "D" or lower was achieved and receive a grade of "C" or better.

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.

REQUIRED MAJOR COURSES FOR JOURNALISM AND MASS COMMUNICATION
(Broadcast Production)

JOMC 220	JOMC 406	JOMC 591
JOMC 231	JOMC 493	JOMC 598
JOMC 240	JOMC 445	Grammar Proficiency Exam
JOMC 245	JOMC 507	Exit Exam
JOMC 405	JOMC 508	

CURRICULUM GUIDE FOR JOURNALISM AND MASS COMMUNICATION
(Broadcast Production)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BIOL 100	4	ENGL 101	3
ENGL 102	2	HPED Elective	1
MATH 101	3	JOMC 220	3
UNST 100	1	MATH 102	3
UNST 110	3	UNST 130	3
UNST 120	3	UNST 140	3
Grammar Proficiency Exam	0		16
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
JOMC 245	3	FOLA Level 1[2]	3
JOMC 406	3	JOMC 231[3]	1
PHYS 105[1]	3	JOMC 419	3
SPCH 116	1	JOMC 445	3
UNST Cluster Theme Elective[7]	3	UNST Cluster Theme Elective[7]	3
UNST Cluster Theme Elective[7]	3	UNST Cluster Theme Elective[7]	3
	16		16

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ENGL 200	3	JOMC 493	3
FOLA Level 2[2]	3	JOMC 507	3
HPED Elective	1	JOMC 508	3
JOMC 240	3	JOMC 591[5]	2
JOMC 405	3	POLI 210	3
SPCH 250	3	SOCI 203	3
	16		17

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
JOMC 598	3	ART 224 or MUSI 216, 220	
JOMC Elective[4]	3	or ENGL 333	2-3
PSYC 320	3	College of A&S Elective[6]	4
SPCH 307	3	GEOG 210	3
JOMC Exit Exam	0	JOMC Elective[4]	3
	12	SPCH 552	3
			15-16

Total Hours: 124-125

[1] Natural Science Elective: If taking EASC for 3 credits, you will need 1 more credit for graduation. If taking CHEM 100/110 for 4 credits, you will not need an additional hour.

[2] French (6 hrs), Spanish (6 hrs), German (6 hrs), Russian (6 hrs), Japanese (6 hrs) or Portuguese (6 hrs).

[3] Consult the University Bulletin for Practicum requirements. Students are encouraged to work as volunteers in labs.

[4] JOMC Electives must be discussed with advisor. JOMC Electives: 202, 302, 403, 418, 470, 600, 601, 602, 603, 604, 605, 606, 607.

[5] Must pass JOMC 591, Professional Development Seminar, the semester prior to enrolling in JOMC 598.

JOMC 591 Prerequisites for Broadcast Production: Grammar Proficiency Exam, JOMC 220, 405, 406, 419, 445, 507*, 508*. (*May be taken concurrently.)*

[6] College of Arts & Sciences Electives include courses in Biology, Chemistry, Dance, English, Foreign Languages, History, Mathematics, Physics, Political Science and Criminal Justice, Psychology, Sociology and Social Work, Visual and Performing Arts, and Theatre. Students must have a minimum of 65 credit hours in the College of Arts and Sciences outside of the major.

[7] UNST Thematic Cluster Elective: A student must select a UNST cluster and take 12 hours in that cluster.

REQUIRED MAJOR COURSES FOR JOURNALISM AND MASS COMMUNICATION
(Electronic Media and Journalism)

JOMC 220	JOMC 309	JOMC 493
JOMC 231	JOMC 425	JOMC 591
JOMC 240	JOMC 435	JOMC 598
JOMC 245	JOMC 445	Grammar Proficiency Exam
JOMC 255	JOMC 475	Exit Exam

CURRICULUM GUIDE FOR JOURNALISM AND MASS COMMUNICATION
(Electronic Media and Journalism)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BIOL 100	4	ENGL 101	3
ENGL 102	2	HPED Elective	1
MATH 101	3	MATH 102	3
UNST 100	1	SPCH 116	1
UNST 110	3	UNST 130	3
UNST 120	3	UNST 140	3
	16	Grammar Proficiency Exam	0
			14

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
FOLA Level 1[2]	3	FOLA Level 2[2]	3
JOMC 220	3	JOMC 240	3
SOCI 203	3	JOMC 245	3
SPCH 307	3	JOMC 255	2
UNST Cluster Theme Elective[7]	3	JOMC 309	3
UNST Cluster Theme Elective[7]	3	UNST Cluster Theme Elective[7]	3
	18		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ENGL 200	3	GEOG 210	3
JOMC 425	3	JOMC 231[3]	1
JOMC 445	3	JOMC 435	3
JOMC 493	3	JOMC 591[5]	2
POLI 210	3	Natural Science Elective[1]	3-4
UNST Cluster Theme Elective[7]	3	SPCH 250	3
	18		15-16

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
College of A&S Elective[6]	3	ART 224 or MUSI 216, 220	
HPED Elective	1	or ENGL 333	2-3
JOMC 475	3	College of A&S Elective[6]	3
JOMC 598	3	JOMC Elective[4]	3
JOMC Elective[4]	3	PSYC 320	3
JOMC Exit Exam	0	SPCH 552	3
	13		14-15

Total Hours: 125-127

[1]Natural Science Elective: If taking EASC for 3 credits, you will need 1 more credit for graduation. If taking CHEM 100/110 for 4 credits, you will not need an additional hour.

[2]French (6 hrs), Spanish (6 hrs), German (6 hrs), Russian (6 hrs), Japanese (6 hrs) or Portuguese (6 hrs).

[3]Consult the University Bulletin for Practicum requirements. Students are encouraged to work as volunteers in labs.

[4]JOMC Electives must be discussed with advisor. JOMC Electives: 202, 302, 403, 418, 470, 600, 601, 602, 603, 604, 605, 606, 607.

[5]Must pass JOMC 591, Professional Development Seminar, the semester prior to enrolling in JOMC 598.

JOMC 591 Prerequisites for Electronic Media and Journalism: Grammar Proficiency Exam, JOMC 220, 255, 406, 425, 435, 445* (*May be taken concurrently.)*

[6]College of Arts & Sciences Electives include courses in Biology, Chemistry, Dance, English, Foreign Languages, History, Mathematics, Physics, Political Science and Criminal Justice, Psychology, Sociology and Social Work, Visual and Performing Arts, and Theatre. Students must have a minimum of 65 credit hours in the College of Arts and Sciences outside of the major.

[7]UNST Thematic Cluster Elective: A student must select a UNST cluster and take 12 hours in that cluster.

REQUIRED MAJOR COURSES FOR JOURNALISM AND MASS COMMUNICATION
(Media Management)

JOMC 220	JOMC 405	JOMC 598
JOMC 231	JOMC 406	BUAD 200
JOMC 240	JOMC 493	ECON 200
JOMC 245	JOMC 499	Grammar Proficiency Exam
JOMC 366	JOMC 522	Exit Exam
JOMC 368	JOMC 591	

CURRICULUM GUIDE FOR JOURNALISM AND MASS COMMUNICATION
(Media Management)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BIOL 100	4	ENGL 101	3
ENGL 102	2	MATH 102	3
MATH 101	3	Natural Science Elective[1]	3-4
UNST 100	1	SPCH 116	1
UNST 110	3	UNST 130	3
UNST 120	3	UNST 140	3
	16	Grammar Proficiency Exam	0
			16-17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ENGL 200	3	BUAD 220	3
FOLA Level 1[2]	3	FOLA Level 2[2]	3
HPED Elective	1	JOMC 240	3
JOMC 220	3	JOMC 245	3
UNST Cluster Theme Elective[7]	3	UNST Cluster Theme Elective[7]	3
UNST Cluster Theme Elective[7]	3	UNST Cluster Theme Elective[7]	3
	16		18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ECON 200	3	GEOG 210	3
HPED Elective	1	JOMC 493	3
JOMC 231[3]	1	JOMC 499	3
JOMC 366	3	JOMC 522	3
JOMC 405	3	SPCH 250	3
JOMC 406	3		15

SOCI 203	3
	17

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
College of A&S Elective[6]	3	ART 224 or MUSI 216, 220	
JOMC 591[5]	2	or ENGL 333	2-3
JOMC Elective	3	JOMC 368	1
PSYC 320	3	JOMC 598	3
SPCH 307	3	POLI 210	3
JOMC Exit Exam	0	SPCH 552	3
	14		12-13

Total Hours: 124-126

[1]Natural Science Elective: If taking EASC for 3 credits, you will need 1 more credit for graduation. If taking CHEM 100/110 for 4 credits, you will not need an additional hour.

[2]French (6 hrs), Spanish (6 hrs), German (6 hrs), Russian (6 hrs), Japanese (6 hrs) or Portuguese (6 hrs).

[3]Consult the University Bulletin for Practicum requirements. Students are encouraged to work as volunteers in labs.

[4]JOMC Electives must be discussed with advisor. JOMC Electives: 202, 302, 403, 418, 470, 600, 601, 602, 603, 604, 605, 606, 607.

[5]Must pass JOMC 591, Professional Development Seminar, the semester prior to enrolling in JOMC 598.

JOMC 591 Prerequisites for Media Management: Grammar Proficiency Exam, JOMC 220, 366, 405, 406, 499, 522 (*May be taken concurrently.)*

[6]College of Arts & Sciences Electives include courses in Biology, Chemistry, Dance, English, Foreign Languages, History, Mathematics, Physics, Political Science and Criminal Justice, Psychology, Sociology and Social Work, Visual and Performing Arts, and Theatre. Students must have a minimum of 65 credit hours in the College of Arts and Sciences outside of the major.

[7]UNST Thematic Cluster Elective: A student must select a UNST cluster and take 12 hours in that cluster.

REQUIRED MAJOR COURSES FOR JOURNALISM AND MASS COMMUNICATION
(Print Journalism)

JOMC 220	JOMC 424	JOMC 540
JOMC 231	JOMC 440	JOMC 591
JOMC 240	JOMC 493	JOMC 598
JOMC 245	JOMC 502	Grammar Proficiency Exam
JOMC 300	JOMC 530	Exit Exam

CURRICULUM GUIDE FOR JOURNALISM AND MASS COMMUNICATION
(Print Journalism)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BIOL 100	4	ENGL 101	3
HPED Elective	1	ENGL 102	2
MATH 101	3	HPED Elective	1
UNST 100	1	MATH 102	3
UNST 110	3	SPCH 116	1
UNST 120	3	UNST 130	3
	15	UNST 140	3
		Grammar Proficiency Exam	0
			16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ENGL 200	3	FOLA Level 2[2]	3
FOLA Level 1[2]	3	JOMC 231[3]	1
JOMC 220	3	JOMC 424	3
SPCH 250	3	Natural Science Elective[1]	3-4
UNST Cluster Theme Elective[7]	3	UNST Cluster Theme Elective[7]	3
UNST Cluster Theme Elective[7]	3	UNST Cluster Theme Elective[7]	3
	18		16-17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
JOMC 240	3	GEOG 210	3
JOMC 245	3	JOMC 231	1
JOMC 440	3	JOMC 493	3
JOMC 502	3	JOMC 530	3
SOCI 203	3	JOMC 540	3

	15	JOMC 591[5]	2
			15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
JOMC 300	3	ART 224 or MUSI 216, 220 or	
JOMC 598	3	ENGL 333	2-3
JOMC Elective	3	Coll. of Arts & Sciences Elective[6]	3
SPCH 307	3	JOMC Elective[4]	3
SPCH 552	3	POLI 210	3
JOMC Exit Exam	0	PSYC 320	3
	15		14-15

Total Hours: 124-126

[1]*Natural Science Elective: If taking EASC for 3 credits, you will need 1 more credit for graduation. If taking CHEM 100/110 for 4 credits, you will not need an additional hour.*

[2]*French (6 hrs), Spanish (6 hrs), German (6 hrs), Russian (6 hrs), Japanese (6 hrs) or Portuguese (6 hrs).*

[3]*Consult the University Bulletin for Practicum requirements. Students are encouraged to work as volunteers in labs.*

[4]*JOMC Electives must be discussed with advisor. JOMC Electives: 202, 302, 403, 418, 470, 600, 601, 602, 603, 604, 605, 606, 607.*

[5]*Must pass JOMC 591, Professional Development Seminar, the semester prior to enrolling in JOMC 598.*

JOMC 591 Prerequisites for Print Journalism: Grammar Proficiency Exam, JOMC 220, 424, 440, 502, 530* (*May be taken concurrently.)*

[6]*College of Arts & Sciences Electives include courses in Biology, Chemistry, Dance, English, Foreign Languages, History, Mathematics, Physics, Political Science and Criminal Justice, Psychology, Sociology and Social Work, Visual and Performing Arts, and Theatre. Students must have a minimum of 65 credit hours in the College of Arts and Sciences outside of the major.*

[7]*UNST Thematic Cluster Elective: A student must select a UNST cluster and take 12 hours in that cluster.*

REQUIRED MAJOR COURSES FOR JOURNALISM AND MASS COMMUNICATION (Public Relations)

JOMC 220	JOMC 330	JOMC 591
JOMC 231	JOMC 390	JOMC 596
JOMC 240	JOMC 424	JOMC 598
JOMC 245	JOMC 486	Grammar Proficiency Exam
JOMC 276	JOMC 493	Exit Exam

CURRICULUM GUIDE FOR JOURNALISM AND MASS COMMUNICATION (Public Relations)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BIOL 100	4	ENGL 101	3
HPED Elective	1	ENGL 102	2
MATH 101	3	HPED Elective	1
SPCH 116	1	MATH 102	3
UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3	Grammar Proficiency Exam	0
	16		15

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ENGL 200	3	FOLA Level 2[2]	3
FOLA Level 1[2]	3	JOMC 231[3]	3
JOMC 220	3	JOMC 276	1
JOMC 240	3	Natural Science Elective[1]	3-4
UNST Cluster Theme Elective[7]	3	UNST Cluster Theme Elective[7]	3
UNST Cluster Theme Elective[7]	3	UNST Cluster Theme Elective[7]	3
	18		16-17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
JOMC 245	3	GEOG 210	3
JOMC 330	3	JOMC 231[3]	1
JOMC 390	3	JOMC 486	3
JOMC 424	3	JOMC 591[5]	2
JOMC 493	3	SOCI 203	3
	15	SPCH 250	3

15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
JOMC 596	3	ART 224 or MUSI 216, 220	
JOMC 598	3	or ENGL 333	2-3
POLI 210	3	College of A&S Electives[6]	6
SOCI 403	3	JOMC Elective	3
SPCH 307	3	PSYC 320	3
JOMC Exit Exam	0		14-15
	15		

Total Hours: 124-125

[1]*Natural Science Elective: If taking EASC for 3 credits, you will need 1 more credit for graduation. If taking CHEM 100/110 for 4 credits, you will not need an additional hour.*

[2]*French (6 hrs), Spanish (6 hrs), German (6 hrs), Russian (6 hrs), Japanese (6 hrs) or Portuguese (6 hrs).*

[3]*Consult the University Bulletin for Practicum requirements. Students are encouraged to work as volunteers in labs.*

[4]*JOMC Electives must be discussed with advisor. JOMC Electives: 202, 302, 403, 418, 470, 600, 601, 602, 603, 604, 605, 606, 607.*

[5]*Must pass JOMC 591, Professional Development Seminar, the semester prior to enrolling in JOMC 598.*

JOMC 591 Prerequisites for Public Relations: Grammar Proficiency Exam, JOMC 220, 230, 390,424, 476, 486, (*May be taken concurrently.)*

[6]*College of Arts & Sciences Electives include courses in Biology, Chemistry, Dance, English, Foreign Languages, History, Mathematics, Physics, Political Science and Criminal Justice, Psychology, Sociology and Social Work, Visual and Performing Arts, and Theatre. Students must have a minimum of 65 credit hours in the College of Arts and Sciences outside of the major.*

[7]*UNST Thematic Cluster Elective: A student must select a UNST cluster and take 12 hours in that cluster.*

COURSE DESCRIPTIONS IN JOURNALISM AND MASS COMMUNICATION

JOMC 202. Introduction to Mass Media **Credit 3(3-0)**

This course is a survey of mass media -- including newspapers, magazines, radio, television and the Internet. **(DEMAND)**

JOMC 220. News Writing **Credit 3(2-2)**

The course is a study of the writing of leads and the elements of news stories. It covers the organization and format for writing various types of copy for newspapers, radio and television. Students must pass the Grammar Proficiency Exam to complete this course. **(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. Prerequisite: ENGL101. **(F;S;SS)**

JOMC 245. Technological Information Sources **Credit 3(3-0)**

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. Prerequisite: JOMC 220 **(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 276. Introduction to Public Relations (Formerly JOMC 476) **Credit 3(3-0)**

This course will emphasize internal and external public relations concepts for corporate, government and non-profit organizations. Prerequisite: JOMC 220. **(F;SS)**

JOMC 300. Photojournalism **Credit 3(3-0)**

This course involves instruction and practice in photographing university events, with emphasis on journalism techniques. The digital camera will be used for taking photographs for the *A&T Register* and other campus publications. **(S)**

JOMC 302. Minorities in Mass Media **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 309. Introduction to Converged Media Production **Credit 3(3-0)**

This course presents the basic production elements of converged media content. It develops an understanding of the ethics and application of audio and video production, still photography and the Internet. It involves the practical application of basic techniques and methodology of audio and video production. Prerequisite: JOMC 220. **(F;S;SS)**

JOMC 330. Public Relations Writing (Formerly JOMC 230) **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 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: Senior standing. **(F)**

JOMC 368. Practical Writing **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 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: Senior standing. **(F;S;SS)**

JOMC 403. Black Press in the United States **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. Prerequisites: JOMC 220 and 240. **(F;S;SS)**

JOMC 405. Radio Production I **Credit 3(2-2)**

Practical experience in radio broadcasting techniques and conventional studio practices; projects in radio announcing. Programs are planned and executed by the students. Prerequisites: JOMC 220, 445 and SPCH 116. **(F;S;SS)**

JOMC 406. Television Production I **Credit 3(2-2)**

This course involves methods and techniques in television production: announcing, program design, lighting, audio, camera, and electronic techniques are studied. Laboratory practice is also required. Prerequisites: JOMC 220. **(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 220, 406, and 419. **(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, 405, and 508. **(DEMAND)**

JOMC 419. Video Editing **Credit 3(3-0)**

This course involves digital audio production, as well as advanced editing and production techniques and practices. It stresses utilizing digital equipment for the production of narrations, public service and commercial announcements, and programs in the studio. Prerequisite: JOMC 220 and 406. **(F;S;SS)**

JOMC 424. News Editing and Layout **Credit 3(3-0)**

This course emphasizes basic copy editing, design and layout. It includes extensive practical work in copy editing, headline writing, principles of typography and makeup. It also includes weekly outside news and feature assignments. Prerequisites: JOMC 220, 230, 530. **(F;S;SS)**

JOMC 425. Broadcast News Writing **Credit 3(3-0)**

This course introduces students to the principles of broadcast journalism – including news gathering, reporting, writing, producing, and editing. The emphasis is on radio news. Prerequisite: JOMC 220. **(F;S)**

JOMC 431. 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: Junior or senior standing. **(DEMAND)**

JOMC 435. Advanced Reporting and Producing **Credit 3(3-0)**

This course focuses on specialized beat reporting and on producing newscasts for converged media. Students develop local news and newscasts for the studio channel and Internet. Students complete their own videography and editing. Deadlines are enforced. Prerequisites: JOMC 220, 309, 425, and SPCH 116. **(S)**

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, 406, and 419. **(DEMAND)**

JOMC 440. Editorial Writing **Credit 3(3-0)**

This course is a study of interpretation and comment in writing editorials. It also provides practical experience in writing editorials for newspapers and magazines. Prerequisite: JOMC 220, and 424. **(F)**

JOMC 441. Media Ethics **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. Prerequistites: JOMC 220. **(F;S)**

JOMC 445. Script Writing **Credit 3(3-0)**

This course focuses on writing scripts for radio and television and the audiovisual division of a corporation or educational institution. Students conduct research and write treatments for a corporate video, and write and produce promotional copy, public service announcements, talk shows, news, and commercials. Students are required to demonstrate an understanding of these fundamentals by completing a variety of practical writing assignments. Prerequisites: JOMC 220, 309 (Electronic Media Students) or 406 (Broadcast Production students) and SPCH 116. **(F;S;SS)**

JOMC 470. Converged Media Projects **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. Prerequisities: JOMC 220 and junior or senior standing. **(DEMAND)**

JOMC 475. Special Projects **Credit 3(2-2)**

Students will learn formats used in television news magazines and documentary productions, with emphasis on developing a major research effort into a half-hour or one-hour program or a multi-part series. Prerequisite: JOMC 220, 309, 425, and 435. **(F)**

JOMC 486. Research, Communication, Planning and Strategy **Credit 3(3-0)**

This course involves instruction in research, planning and evaluation for public relations practice in internal and external business environments. Prerequisite: JOMC 220, 276, 330, 390, and 424. **(S;SS)**

JOMC 493. Communications Law and Ethics **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 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)**

JOMC 500. Public Relations Seminar **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. Prerequisite: Senior standing. **(DEMAND)**

JOMC 502. Current Issues in Mass Communication **Credit 2(2-0)**

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 communications practitioners and guest speakers. Prerequisites: Junior or senior standing. **(F;S;SS)**

JOMC 507. Electronic Field and Studio Production **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 television. Prerequisite: JOMC 220, 406, 419. **(S;SS)**

JOMC 508. Advanced Radio Production **Credit 3(3-0)**

This course involves production technology – including recording, editing and production techniques and concepts. Prerequisites: JOMC 220, 405, and 445. **(S)**

JOMC 522. Media Management and Legal Issues **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 220 and 406. **(F;S;SS)**

JOMC 530. Advanced Reporting and Writing **Credit 3(3-0)**

This course involves advanced training in newsgathering with an emphasis on investigative reporting and technical writing. Students will cover assigned beats and produce stories for publication in the *A&T Register* and other university publications. Prerequisites: JOMC 220. **(S)**

JOMC 540. Feature Writing **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 550. Media and Politics (Formerly JOMC 600) **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. Prerequisites: Senior standing; POLI 200; instructor's permission. **(F;S;SS) (DEMAND)**

JOMC 551. International Communication (Formerly JOMC 601) **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: POLI 200; instructor's permission. **(F;S;SS)**

JOMC 552. Communication Theory (Formerly JOMC 602) **Credit 3(3-0)**

This course involves readings and discussions examining various communication theories. Students will prepare papers on these theories. Prerequisite: Senior standing; instructor's permission. **(F;S;SS)**

JOMC 553. Mass Communication Seminar (Formerly JOMC 603) **Credit 3(3-0)**

This course involves research, discussions, and papers on communication topics. Prerequisite: Senior standing; instructor's permission. **(F;S;SS)**

JOMC554. MediaCriticism (Formerly JOMC 604) **Credit 3(3-0)**

This course involves an explanation of the development of media and the theory and practice of media criticism. Prerequisite: Senior standing; instructor's permission. **(DEMAND)**

JOMC555. Organizational Communication (Formerly JOMC 605) **Credit 3(3-0)**

This course covers the theory and practice of communication to support organizational objectives, policies, and programs. Prerequisite: Senior standing; instructor's permission. **(F;S;SS)**

JOMC 556. Business Reporting (Formerly JOMC 606) **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: Senior standing; instructor's permission. **(F;S;SS)**

JOMC 557. Medical and Science Reporting (Formerly JOMC 607) **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: Senior standing; instructor's permission. **(DEMAND)**

JOMC 580. Independent Study in Journalism and Mass Communication (Formerly JOMC 680) **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. **(DEMAND)**

JOMC 591. Media Professional Development Seminar **Credit 2(2-0)**

This is an intensive study of professional practices, skills, etiquette and attitudes of the media industry in preparation for an off-campus field learning experience. Students will develop the necessary tools – such as the cover letter, resume, portfolio, and resume tape -- for successful interviews in their specialized areas of study. Media professionals will conduct mock interviews to assess students' skills and provide feedback in written evaluations. This course must be completed with a grade of "C" or better the semester **prior to enrolling** in JOMC 598 (Media Internship), and requires Junior or Senior standing. **There are different prerequisites** for different concentrations: Broadcast Production (JOMC 591.01) – Grammar Proficiency Exam, JOMC 220, 405, 406, 419, 445; 507*; Electronic Media and Journalism (JOMC 591.02) – Grammar Proficiency Exam, JOMC 220, 255, 406, 425, 435*, 445*; Media Management (JOMC 591.03) – Grammar Proficiency Exam, JOMC 220, 366, 405, 406, 499, 522, 499*; Print Journalism (JOMC 591.04) – Grammar Proficiency Exam, JOMC 220, 300*, 424, 440*, 502*; Public Relations (JOMC 591.05) – Grammar Proficiency Exam, JOMC 220, 276, 330, 390, 424, 486*. The course is not offered in the summer. (*Must be enrolled in or must have completed these courses). **(F;S)**

JOMC 592. Cable Television Seminar **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: JOMC 493 and 522. **(F;S;SS) (DEMAND)**

JOMC 596. Publication Design and Layout **Credit 3(3-0)**

Instruction in the principles of publication design and layout, with actual practice in laboratory publications. Prerequisite: JOMC 220, 424. **(F;S;SS)**

JOMC 598. Media Internship **Credit 3(1-4)**

Off-campus media experience designed to assist students in applying mass communication research and theory in the development of their professional practices, skills, and attitudes. 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 591 (Media Professional Development Seminar) with a grade of "C" or better, and requires Junior or Senior standing. There are different prerequisites for different concentrations: Broadcast Production (JOMC 598.01) – Grammar Proficiency Exam, JOMC 220, 231, 405, 406, 419, 445, 507, 508, 591; Electronic Media and Journalism (JOMC 598.02) – Grammar Proficiency Exam, JOMC 220, 231, 255, 406, 425, 435, 445, 591; Media Management (JOMC 598.03) – Grammar Proficiency Exam, JOMC 220, 38, 405, 406, 499, 522, 591, BUAD 220, ECON 300; Print Journalism (JOMC 598.04) – Grammar Proficiency Exam, JOMC 220, 231, 300, 424, 440, 502, 591; Public Relations (JOMC 598.05) – Grammar Proficiency Exam, JOMC 220, 231, 276, 330, 390,424, 486, 591, 596. **(F,S,SS)**

DIRECTORY OF FACULTY

Emmanuel C. Alozie..... **Professor**
B.A., Rust College; M.S., Arkansas State University; Ph.D., University of Southern Mississippi

Charles Atkinson.....**Lecturer**
B.S., Appalachian State University

Linda Callahan ..... **Professor**
B.A., University of North Carolina at Chapel Hill; M.A., Ph.D., Ohio State University

Bruce Clark.....**Lecturer**

B.A., Clark College, M.A., New York University

Vanessa Cunningham-Engram ..... **Associate Professor**
B.A., M.A., University of Louisville; J.D., Louis D. Brandeis School of Law; Ed.D., Spalding University

Dawn Nail Davis ..... **Lecturer**
B.A., North Carolina A&T State University; M.A., Austin Peay State University

Dwight Davis ..... **Lecturer**
B.A.,B.S., High Point University; M.A., University of North Carolina at Greensboro

Emily Harris ..... **Lecturer**
B.A., M.A., Marshall University

Sandra Hughes ..... **Endowed Professor**
B.S., North Carolina A&T State University

Allen Johnson ..... **Endowed Professor**
B.A., M.A., University of North Carolina at Chapel Hill

Jacqueline Jones ..... **Lecturer**
B.A., North Carolina A&T State University; M.A., Ball State University

Tamrat Mereba ..... **Professor**
B.S., University of Idaho, M.S., University of Wisconsin at LaCrosse, Ph.D., University of Wisconsin at Madison

Meryl Mullane ..... **Lecturer**
B.A., Syracuse University; APR Accreditation, PRSA

Valerie Nieman ..... **Associate Professor**
B.S., West Virginia University, M.F.A., Queens University of Charlotte

Bonita Perry ..... **Lecturer**
B.A., Winston Salem State University, M.F.A., Savannah College of Art and Design

Humphrey A. Regis ..... **Professor and Chairperson**
Certificate, Saint Lucia Teachers College; B.A., University of the District of Columbia; M.A., University of Maryland, College Park; Ph.D., Howard University

Kim Smith ..... **Instructor**
B.A., Howard University; M.M.C., Ph.D., University of South Carolina

Teresa Jo Styles ..... **Professor**
B.A., Spelman College; M.A., Northwestern University; Ph.D., University North Carolina at Chapel Hill

Brian Tomlin ..... **Lecturer**
B.A., University of Virginia; M.Ed., University of North Carolina at Greensboro, J.D., North Carolina Central University School of Law

Anthony Welborne ..... **Assistant Professor and General Manager, WNAA-FM**
B.S., M.S., North Carolina A&T State University

Sheila Whitley ..... **Associate Professor**
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

DeWayne Wickham ..... **Director, Institute for Advanced Journalism Studies**
B.S., University of Maryland, College Park; M.P.A., University of Baltimore

Gail Wiggins ..... **Assistant Professor**
B.A., M.S., North Carolina A&T State University

Department of Liberal Studies

http://www.ncat.edu/~artsnsci/Departments/Liberal_Studies/

Beverly Grier, Chairperson

OBJECTIVES

The Liberal Studies Department 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 124-125 semester hours in designated areas of competency including 24 hours of Concentration Studies, 6 hours of Related Electives and a Senior Research Project. The program seeks to provide students with a solid liberal arts education. The degree affords students a breath of academic experience as well as depth in a particular concentration field. The broad-based interdisciplinary nature of Liberal Studies provides the knowledge base and the communication and analytical skills appropriate for graduate work, entrepreneurial endeavors and numerous careers and occupations in the public and private sectors of the economy. Currently, Liberal Studies offers concentration options in African-American Studies, Cultural Change and Social Development, Dance, International Studies, Pre-Law, Race, Class and Culture, Women's Studies and the customized Interdisciplinary Studies Concentration. The Interdisciplinary Studies Concentration

option allows students to tailor a degree that meets their educational and career goals and is especially helpful to non-traditional students who are returning to college after a break for family or career pursuits.

DEGREES OFFERED

Liberal Studies (African American Studies) – Bachelor of Arts
Liberal Studies (Cultural Change and Social Development) – Bachelor of Arts
Liberal Studies (Dance) – Bachelor of Arts
Liberal Studies (International Studies) – Bachelor of Arts
Liberal Studies (Pre-Law) – Bachelor of Arts
Liberal Studies (Race, Class and Culture) – Bachelor of Arts
Liberal Studies (Women's Studies) – Bachelor of Arts
Liberal Studies (Interdisciplinary Studies) – Bachelor of Arts

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. A minimum grade of a "C" is required for all concentration, related electives, LIBS 601 (the required Senior Research Project), English 101, and History 206 and 207 courses.

CURRICULUM GUIDE FOR LIBERAL STUDIES

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3	ENGL 101	3
FOLA Elective [1]	3	FOLA Elective [1]	3
HIST 206	3	HIST 207	3
MUSI 216 or Fine Arts Elective [2]	3		15
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ENGL 200 or Hum. Elect.[3]	3	ENGL 201 or Hum. Elect.[3]	3
MATH 101	3	MATH 102	3
Science Elective[4]	3-4	Concentration Studies Elect.[6]	6
UNST Cluster Elective[5]	3	UNST Cluster Elective[5]	3
UNST Cluster Elective[5]	3	UNST Cluster Elective[5]	3
	15-16		18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Thought & Reasoning Elective[7]	3	Thought & Reasoning Elective[7]	3
SPCH 250	3	Technical & Prof. Writing Elective[10]	3
Science Elective[4]	3	Social Interactions Electives[8]	3
Concentration Studies Elective[6]	6	Microcomputer Applications Elec.[10]	3
	15	Concentration Studies Elective[6]	3
			15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Technical & Prof. Writing Ele.[10]	3	Free Electives	6
Related Electives[11]	6	Communication Skills Elective[12]	3
Concentration Studies Elective[6]	6	Concentration Studies Elective[6]	3
	15	LIBS 601 (Capstone)	3
			15

Total Hours: 124-125

[1] *Two courses in the same foreign language are required.*
[2] *Fine Arts elective options: ART 100, 224, 225, 310*, DANCE 220, 331, 450, ENGL 105, 206, JOMC 604, MUSI 216, 219, 220*, 221*, 300, 301, 302, 303, 304, 305, 306, 308, 309, THEA 210*
[3] *Humanities elective options: ENGL 200, 201, 202, 203, 204, 206*
[4] *Students must select one course from Group A and one course from Group B. Group A options: BIOL 100, CHEM 100; Group B options: EASC 201*, PHYS 101, 105*
[5] *Students must select one cluster theme and take 12 hours in that cluster.*

[6]*Students must select 24 hours of concentration studies coursework from one concentration.*
[7]*Thought & Reasoning elective options: PHIL 260, 262, 263, 266, 400, 401, SOCI 100, 204, 304, POLI 150, 200, 210, PSYC 320*
[8]*Social Interactions elective options: HEFS 310, 311, HIST 275*, HPED 104, 105, 107, 109, 110, 111, 112, 113, 114, 115, 117, 118, 203, 204, 205, 207, 213, 214, 215, 234, 235, 237, 238, 246, 247, 251, JOMC 600, NURS 315*, POLI 340, PSYC 324, 325, 420, 434, SOCI 304, 308, 473, SOWK 413, 503, SPCH 452, 461 THEA 210*
[9] *Technical & Professional Writing elective options: BUED 360, ENGL 331, 411, 412, 413*
[10] *Microcomputer Application elective options: ECT/L 101 or BUED 334*
[11] *Students must select 6 hours related to the senior research project topic with the approval of their concentration advisor.*
[12]*Communication Skills elective options: ENGL 226, SPCH 102, 251, 258, 316, 401, 461, 552**
***** *Course cannot be used to satisfy both a concentration and a required elective category or to satisfy two elective category requirements.*

African-American Studies Concentration

Students must successfully complete 24 semester hours from the following courses, selecting a minimum of one course from at least four subject areas.

ART 310	HIST 203	LIBS 221
ENGL 203	HIST 215	LIBS 223
ENGL 209	HIST 216	LIBS 225
ENGL 236	HIST 272	LIBS 235
ENGL 237	HIST 273	LIBS 236
ENGL 239	HIST 306	LIBS 402
ENGL 318	HIST 320	PHIL 264
ENGL 333	HIST 321	PHIL 312
ENGL 334	HIST 351	PHIL 404
ENGL 342	HIST 355	MUSI 219
ENGL 343	HIST 405	MUSI 220
ENGL 345	HIST 416	MUSI 221
ENGL 407	HIST 417	POLI 220
ENGL 408	HIST 425	POLI 447
ENGL 505	HIST 440	POLI 460
ENGL 654	HIST 455	POLI 643
FOLA 404	HIST 460	SOCI 306
FOLA 417	HIST 461	SOWK 414
FOLA 424	JOMC 302	THEA 364
HIST 201	JOMC 403	THEA 467
HIST 202	LIBS 220	THEA 468

International Studies Concentration

Students must successfully complete six (6) consecutive semester hours of Foreign Language beyond the elementary level for a total of twelve (12) hours in one language. The remaining eighteen (18) hours must be selected from the following options:

ECON 505	HIST 355	JOMC 601
ECON 537	HIST 402	LIBS 220
ENGL 230	HIST 407	LIBS 227
ENGL 231	HIST 409	LIBS 230
ENGL 242	HIST 412	LIBS 235
ENGL 243	HIST 414	LIBS 236
ENGL 336	HIST 417	LIBS 301
ENGL 409	HIST 418	LIBS 305
ENGL 416	HIST 421	LIBS 307
ENGL 417	HIST 422	LIBS 309
ENGL 420	HIST 423	LIBS 312
FOLA 417	HIST 431	LIBS 320
GEOG 210	HIST 432	LIBS 401
GEOG 322	HIST 433	PHIL 265
HIST 215	HIST 435	POLI 444
HIST 216	HIST 444	POLI 445
HIST 313	HIST 450	POLI 446
HIST 321	HIST 451	SOCI 200
HIST 332	HIST 616	SOCI 300

Interdisciplinary Studies Concentration

In the event that a student elects to individualize an area for concentration studies, that student may design a program of study, in consultation with the Chair of Liberal Studies, to reach the twenty-four (24) semester-hour requirement. The body of knowledge of the concentration will be determined by the participating academic units (i.e. Departments/Schools) according to their perceived disciplinary requirements. An interdisciplinary concentration and its related elective courses cannot replicate an existing degree program and must include courses from at least three different subject areas. Prior to implementation, the design of these concentration studies shall be approved by the Chair of Liberal Studies, the student's academic advisor, the departmental coordinator, and the Dean of the College of Arts and Sciences. A student cannot declare a major of Liberal Studies: Interdisciplinary until the concentration coursework has been fully approved.

Dance Concentration

All dance concentration majors must audition and be accepted into the program. All majors are required to participate in on-campus and community dance company productions as performers and/or as technical assistants. Students must successfully complete24 semester hours from the following course options.

DANC 110	DANC 220	DANC 450
DANC 200	DANC 300	DANC 500
DANC 210	DANC 301	DANC 550
	DANC 330 or 331	

Pre-Law Concentration

Students must successfully complete twenty-four (24) hours from the following courses, selecting a minimum of one course from each of three subject areas.

BUAD 361	JOMC 493	POLI 543
BUAD 462	PHIL 262	POLI 644
BUAD 463	PHIL 314	CRJS/SOWK 503
HIST 313	PHIL 402	CRJS/SOWK 670
HIST 410	POLI 200	SPCH 552
LIBS 225	POLI 542	

Women's Studies Concentration

Students must successfully complete three (3) semester hours of HIST275, Introduction to Women's Studies, preferably prior to enrolling in concentration or related elective courses. The remaining twenty- one (21) hours must be selected from the following courses, selecting a minimum of one course from each of four subject areas.

DANC 310	ENGL 318	LIBS 230
ENGL 224	ENGL 343	LIBS 302
ENGL 232	ENGL 416	LIBS 306
ENGL 233	FCS 181	LIBS 312
ENGL 236	HIST 306	NURS 315
ENGL 237	HIST 423	PHIL 310
ENGL 239	HIST 501	POLI 450
ENGL 241	HIST 622	PSYC 551
ENGL 242	JOMC 608	SOWK 320
ENGL 243		

Cultural Change and Social Development Studies Concentration

Students must successfully complete twenty-four (24) hours, to be allocated as follows:

Required Courses:

SOCI 100	SOCI 200	SOCI 413
SOCI 101	SOCI 300	SOCI 473

Choose any TWO (2) of the following:

EASC 201	LIBS 230	LIBS 320
ECON 515	LIBS 303	LIBS 401
HIST 312	LIBS 305	PHIL 265
LIBS 201	LIBS 307	POLI 444
LIBS 220	LIBS 309	SOCI 306
LIBS 223	LIBS 312	SOWK 412
LIBS 227		

Race, Class and Culture Concentration

Students must successfully complete three (3) semester hours of LIBS 201, Introduction to Race, Class and Culture, **prior to enrolling** in concentration of related elective courses. . The remaining twenty- one (21) hours must be selected from the courses listed below:

BIOL 468	HIST 415	LIBS 306
COMP 390	HIST 477	LIBS 307
ENGL 206	HIST 610	LIBS 308
ENGL 209	LIBS 220	LIBS 309
ENGL 242	LIBS 221	LIBS 312
ENGL 316	LIBS 223	LIBS 320
ENGL 318	LIBS 225	LIBS 401
ENGL 336	LIBS 227	LIBS 402
ENGL 409	LIBS 230	LDAR 102
FCS 181	LIBS 301	PHIL 265
FCS 332	LIBS 302	SOCI 304
FCS 425	LIBS 303	SOCI 406
FCS 482	LIBS 304	SPAN 456
HIST 321	LIBS 305	

COURSE DESCRIPTIONS IN LIBERAL STUDIES

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 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 **Credits 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 **Credits 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 **Credits 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 235. African-American Anti-Imperialism **Credits 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 **Credits 3(3-0)**

This course examines in depth a broad range of Black thought of scholars/activists, from W.E.B. Du Bois and Marcus Garvey to Leopold Senghor and Frantz Fanon.

LIBS 301. Ethno-Nationalism and the Reconstruction of Nations **Credit 3(3-0)**

This course examines how the breakup of the USSR led to the rise of ethno-nationalism in the process of national reconstruction. Exploring the myths, symbols and histories of those competing populations within the Soviet Union or its power, we discover a paradigm that applies to the wider postcolonial world as well.

LIBS 302. Media Analysis **Credit 3(3-0)**

This course examines the shaping of information in popular media, with special emphasis on the creation of news. Examining institutional configurations and conglomeration, it focuses on the role of news media within national discourses, on the shaping of ideological consensus and the marginalization of dissent. It asks questions about the limitations of political discourse, about bias and objectivity, about how news is defined, presented, and disseminated.

LIBS 303. Consumer Culture **Credit 3(3-0)**

This course examines the creation of consumer culture during the last two centuries. It looks at the development of advertising, public relations, mass marketing, and the construction of consumer consciousness. It also considers the consequences of global consumerism upon the environment, cultural tradition, human social relations and economic conditions.

LIBS 304. The American South **Credit 3(3-0)**

This course examines mythologies and realities of the American South: the antebellum period, the Civil War, Reconstruction, the Civil Rights era, and the New South. It looks at how these historical moments have been written and rewritten, in academic and popular discourses, in response to racial beliefs and ideological needs. It considers the South as a geographical, social, and cultural entity and as an important element within the shaping of an American national mythos.

LIBS 305. Race and Class in Caribbean Culture **Credit 3(3-0)**

This course will examine the ethnic, racial and cultural diversity of the Caribbean, including the impact of foreign cultures on the area, and the export of its unique cultural forms to the global society.

LIBS 306. Gender and Technology **Credit 3(3-0)**

This course will explore technology's interaction with the concept of gender and how gender is embodied in technologies, and conversely, how technologies shape societal notions of gender. Students will critically assess the gender relations produced in areas such as entertainment and games, work, identity, education, culture, globalism, race and ethnicity.

LIBS 307. Food and The Global Community **Credit 3(3-0)**

This course uses multidisciplinary perspectives to examine the connections between food and human life ways. Focusing on varied ethnic food traditions and people around the world, this course will explore 1) the interplay of class and gender in the preparation of food, 2) the role of political and economic power in the accessibility and distribution of food, and 3) the religious and cultural symbolism of eating.

LIBS 308. Historical, Social, and Cultural Perspectives of Technology **Credit 3(3-0)**

This course explores the interrelationships between the human race and technology, the range of determinism between the two, and the possible paths for technology and humans in the global world. Global perspectives -- including Eastern and western, Northern and Southern -- will be covered in the course.

LIBS 309. Becoming Evil: How Ordinary People Commit Extraordinary Violence **Credits 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 312. Gender and Development in Africa **Credits 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 320. Doing Culture **Credits 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 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 501. Reading and Writing Cultural Critiques **Credit 3(3-0)**

This writing intensive course emphasizes both critical analysis and writing, with particular attention on writing for a specific setting and audience.

LIBS 601. Independent Study I **Credit 3(3-0)**

This course is designed for students to conduct advanced research and study on a special topic.

LIBS 602. 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 601.

DIRECTORY OF FACULTY

Stephen C. Ferguson ..... **Assistant Professor**
B.A., University of Missouri; M.A., Ph.D., University of Kansas

Beverly Grier ..... **Professor and Chairperson**
B.A., University of Michigan; M.Phil., Ph.D., Yale University
Wendy C. Hamblet ..... **Associate Professor**
B.A., M.A., Brock University; M.A., Ph.D., Penn State University
John F. Humphrey ..... **Assistant Professor**
B.A., Manchester College; M.A., Ph.D., New School for Social Research

Department of Mathematics

http://www.ncat.edu/~math/

Guoqing Tang, Interim Chairperson

OBJECTIVES

The objectives of the Mathematics Department are as follows:

1. to prepare students for employment in government or industry as well as graduate studies;
2. to avail students of the opportunity to undertake independent investigations in mathematics;
3. to prepare students to teach and present mathematics in a modern, meaningful, and stimulating manner at secondary school level;
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

Applied Mathematics – Bachelor of Science
Mathematics – Bachelor of Science
Mathematics (Secondary Education) – Bachelor of Science
Applied Mathematics – Master of Science*
Mathematics Education – Master of Science*
Mathematics Education – Master of Arts in Teaching*
Computational Science and Engineering – Master of Science*
Energy and Environmental Studies – Doctor of Philosophy*
**See the Graduate School Bulletin*

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

Applied Mathematics

The Applied Mathematics major must complete a minimum of 124 semester hours of University courses, including 44 hours in mathematics, 8 hours in physics, 5 hours in computer programming and 24 hours of applications area electives.

Mathematics

The Mathematics major must complete a minimum of 124 semester hours of University courses. These include 50 hours in mathematics, 5 hours in computer programming and 16 hours in sciences.

Mathematics (Secondary Education)

The Secondary Education major must complete a minimum of 126 semester hours of University courses. These include 45 hours in mathematics and 25 hours in education. Also, majors must earn a "C" or better grade in each mathematics course taken to fulfill the mathematics requirement. All Teacher Education admissions, retention and graduate standards apply.

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 opportunities in education, cost analysis, government service and public health are expected to be excellent for graduates in mathematics.

REQUIRED MAJOR COURSES FOR APPLIED MATHEMATICS

MATH 105 MATH 311 MATH 480

MATH 131	MATH 431	MATH 507
MATH 132	MATH 432	MATH 608
MATH 224	MATH 440 or 465	MATH 692
MATH 231	MATH 450	

CURRICULUM GUIDE FOR APPLIED MATHEMATICS

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MATH 131	4	MATH 132	4
UNST 100	1	GEEN 163	3
UNST 110	3	UNST 130	3
UNST 120	3	UNST 140	3
FOLA Elective[1]	3	FOLA Elective[1]	3
GEEN 161	2		16
MATH 105	1		
	17		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MATH 231	4	MATH 311	4
UNST Cluster Theme Elect.[2]	3	UNST Cluster Theme Elect.[2]	3
PHYS 241/251	4	PHYS 242/252	4
UNST Cluster Theme Elect.[2]	3	Applications Area Elect.[3]	3
MATH 224	3	UNST Cluster Theme Elect.[2]	3
	17		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MATH 431	3	MATH 432	3
MATH 450	3	MATH 480	3
Applications Area Elective[3]	3	Applications Area Elective[3]	3
Applications Area Elective[3]	3	Applications Area Elective[3]	3
SPCH 250	3	Elective	3
	15		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MATH 507	3	MATH 608	3
MATH 440 or 465	3	Applications Area Elective[3]	3
Applications Area Elective[3]	3	Applications Area Elective[3]	3
UNST Capstone/MATH 692[4]	3	Elective	3
Elective	3		12
	15		

Credit Hour Summary

Mathematics	44
Physics and Computer Science	13
Applications Area Elective	24
University Studies	25
SPCH, FOLA	9
Free Elective	9

Total Credit Hours: 124

[1] *Two courses FOLA 100, 101; or FOLA 102, 103; or FOLA 104, 105: or FOLA 106, 107 taken in sequence*

[2] *UNST Cluster Theme Elective: must choose one cluster and take 12 hours in that cluster.*

[3]*Must include a total of 24 credit hours taken in one of the applications areas, including but not limited to: Applied and Computational Mathematics, 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*

[4] *MATH 692, Independent Study, is the Math Department capstone to fulfill the UNST capstone experience requirement*

REQUIRED MAJOR COURSES FOR MATHEMATICS

MATH 105	MATH 311	MATH 508
MATH 131	MATH 431	MATH 511
MATH 132	MATH 432, 440 or 465	MATH 512

MATH 224	MATH 450	MATH 692
MATH 231	MATH 507	MATH Electives (two)

CURRICULUM GUIDE FOR MATHEMATICS

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MATH 131	4	MATH 132	4
FOLA[3]	3	FOLA[3]	3
UNST 110	3	UNST 130	3
UNST 120	3	UNST 140	3
MATH 105	1	UNST 100	1
GENN 161	2	GEEN 163	3
	16		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MATH 231	4	MATH 311	4
UNST Cluster Theme Elect.[2]	3	Elective	3
PHYS 241/251	4	PHYS 242/252	4
UNST Cluster Theme Elect.[2]	3	UNST Cluster Theme Elect.[2]	3
MATH 224	3	UNST Cluster Theme Elect.[2]	3
	17		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MATH 431	3	MATH 508	3
MATH 507	3	MATH 432, 440 or 465	3
Elective	3	MATH 450	3
Science Elective[1]	4	Science Elective[1]	4
SPCH 250	3		13
	16		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MATH 511	3	MATH 512	3
UNST Capstone/MATH 692	3	MATH Elective[4]	3
Electives	6	MATH Elective[4]	3
HPED 200	2	Electives	6
	14		15

Credit Hour Summary

Mathematics	50
Science	16
University Studies	25
Free Elective	18
Computer Science	5
FOLA, SPCH, HPED	11

Total Credit Hours: 125

[1]8 hours: CHEM 100, 110 and BIOL 100; or CHEM 106,116 and CHEM 107, 117.

[2] UNST Cluster Theme Elective: must choose one cluster and take 12 hours in that cluster.

[3]A sequence of two courses in either French, German, Russian, or Spanish

[4]6 hours: MATH 223, 420, 423, 440, 460, 607, 608, 610, 611, 612, 620, 623, 624, 631, 632, 633, 650, 651, 652, 665.

REQUIRED MAJOR COURSES FOR MATHEMATICS (SECONDARY EDUCATION)

MATH 105	MATH 242	MATH 507
MATH 131	MATH 311	MATH 511
MATH 132	MATH 420	MATH 692
MATH 224	MATH 430	MATH Elective (one)
MATH 231	MATH 450	

CURRICULUM GUIDE FOR MATHEMATICS (SECONDARY EDUCATION)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MATH 131	4	MATH 132	4
FOLA Elective[4]	3	FOLA Elective[4]	3

UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3	ENGL 101	3
MATH 105	1		16
CUIN 102	2		
	17		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MATH 231	4	MATH 242	3
UNST Cluster Theme Elective[2]	3	MATH 311	4
SPCH 250	3	CUIN 301	2
UNST Cluster Theme Elective[2]	3	UNST Cluster Theme Elective[2]	3
MATH 224	3	UNST Cluster Theme Elective[2]	3
	16	HPED	2
			17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MATH 450	3	MATH 430	4
MATH 507/MATH 511	3	CUIN 436	3
CUIN 400	3	MATH Elective[3]	3
PHYS 225/235	4	Science Elective[1]	4
PSYC 320	3	Elective	3
	16		17

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MATH 507/MATH 511	3	CUIN 624	3
MATH 692	3	CUIN 500	3
MATH 420	3	CUIN 560 (UNST Capstone)[5]	6
CUIN 529	3		12
Elective	3		
	15		

Credit Hour Summary

Mathematics	45
CUIN	25
Science	8
University Studies	25
Free Elective	6
English and FOLA	9
SPCH, HPED, PYSC	8
Total Credit Hours: 126	

[1]4 hours: PHYS 226, 236 or CHEM 100, 110, or BIOL 110.
[2]UNST Cluster Theme Elective: must choose one cluster and take 12 hours in that cluster.
[3]hours: MATH 223, 423, 431, 432 or 460, 508, 512, 604, 608, 610, 612, 620, 623, 624, 631, 633, 651, 652, 665.
[4]6 hours: FOLA 100, 101 or FOLA 102, 103 or FOLA 104, 105.
[5]CUIN 560-Observation and Student Teaching is the Mathematics Education capstone to fulfill the UNST capstone experience requirement.

COURSE DESCRIPTIONS IN MATHEMATICS

MATH 099. Intermediate Mathematics **Credit 3(3-0)**
This course covers elementary properties of real numbers and basic algebra through solving of quadratic equations by various means. It is required of students whose mathematics SAT scores are low and whose major curriculum includes either MATH 101 or 111. **(F;S;SS)**

MATH 101. Fundamentals of Algebra and Trigonometry I **Credit 3(3-0)**
Numbers and their properties polynominals, rational expressions, rational exponents, radicals, equations and inequalities in one variable, relations and functions are studied. Prerequisite: A satisfactory score on the mathematics portion of the SAT or MATH 099. **(F;S;SS)**

MATH 102. Fundamentals of Algebra and Trigonometry II **Credit 3(3-0)**
This course is a continuation of MATH 101. Quadratic functions, systems of linear equations, exponential and logarithmic functions, circular functions, trigonometric functions, analytical trigonometry and the binomial theorem will be studied. Prerequisite: MATH 101. **(F;S;SS)**

MATH 105. Seminar 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. Seminar 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;S)**

MATH 110. Pre-Calculus for Engineers and Scientists **Credit 4(4-0)**
Algebraic properties of the number system, fundamental operations, exponents and radicals, functions and graphs, solutions of equations and systems of equations, trigonometric functions and identities, inequalities, logarithms, progressions, mathematical induction, binomial theorem, permutations and combinations will be studied. Prerequisites: One unit of high school algebra and one unit of high school geometry. **(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: Mathematics 099 or two units of high school algebra, one unit of high school geometry and a satisfactory score on the mathematical portion of the Scholastic Aptitude Test. **(F;S;SS)**

MATH 112. Calculus for Non-Mathematics Majors **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 102, 110, or 111. **(F;S;SS)**

MATH 115. Mathematics of Business and Finance **Credit 3(3-0)**
This course includes a brief review of computing with whole numbers, decimals, fractions, percent, problem solving and the metric system. Simple interest, discount, partial payments, payroll wages and commission accounts, discounts and mark-ups, retailing, taxes, distribution of ownership, transactions in corporate securities, insurance, compound interest, annuities amortization and sinking funds will also be studied. Prerequisite: MATH 101, 110, or 111. **(DEMAND)**

MATH 123. Discrete Mathematics I **Credit 3(3-0)**
This course is an introduction to applied discrete mathematics. Topics include set theory, introduction to logic, functions, recursion, relations, properties of integers, and elementary matrix algebra. Prerequisite: MATH 110 or equivalent. **(F;S)**

MATH 131. Calculus I **Credit 4(4-0)**
Limits and continuity of functions, the derivative, applications of the derivative, the definite integral and applications of the definite integral will be studied. Prerequisite: MATH 110 or appropriate approval. **(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 223. Discrete Mathematics II **Credit 3(3-0)**
This course is a continuation of MATH 123. Topics include Boolean algebra and applications elementary graph theory, trees and applications, and mathematical techniques for algorithm analysis. Prerequisite: MATH 123 or 311. **(F;S;SS)**

MATH 224. Introduction to Probability and Statistics **Credit 3(3-0)**
This is a general course covering fundamentals of statistics, central tendencies, variabilities, graphic methods, frequency distributions, correlations, reliability of measures, theory and methods of sampling and descriptive and analytical measures of statistics. Prerequisite: MATH 111. **(F;S;SS)**

MATH 231. Calculus III **Credit 4(4-0)**
This course will cover plane curves and polar coordinates, vector and solid geometry, vector valued functions, partial differentiation, multiple integrals, applications of multiple integrals and vector analysis. Prerequisite: MATH 132. **(F;S;SS)**

MATH 240. Introduction to the Programming of Digital Computers **Credit 3(3-0)**
This course introduces the student to problem solving using Maple, Mathematica, or Matlab. It also provides an introduction to programming in the FORTRAN language. Prerequisite: MATH 112 or 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 311. Mathematical Logic and Proof Techniques **Credit 4(3-2)**
Emphasis is placed on development or writing skills and the ability to understand and develop proofs and logical arguments. Topics include quantifiers, rules of logic, and methods of mathematical proof, with applications to sets, integers, real numbers, functions, relations, and combinatorics. In the weekly 2-hour active learning lab, exercises and proofs are given to groups of two to four. The students present solutions and the solutions are critiqued by the students and the instructor. Prerequisite: MATH 132. **(S)**

MATH 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 420. History of Mathematics **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 423. Theory of Equations **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 430. Use of Technology in Teaching Mathematics **Credit 4(3-2)**

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 431. Introduction to Differential Equations (Formerly MATH 331) **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 432. Introduction to Applied Mathematics (Formerly MATH 332) **Credit 3(3-0)**

This course will cover Fourier series, partial differential equations, complex variables, Taylor and Laurent series and residue theory. Prerequisite: MATH 431. **(F;S;SS)**

MATH 440. Numerical Methods **Credit 3(2-2)**

Numerical methods as related to programming techniques, interpolation, extrapolation, approximate solutions of algebraic and transcendental equations, simultaneous linear equations, initial-value, characteristic-value and boundary-value problems, partial differential equations of the hyperbolic parabolic and elliptic types will be studied. Corequisite: MATH 240. **(DEMAND)**

MATH 450. Linear Algebra and Matrix Theory (Formerly MATH 350) **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 460. Numerical Analysis **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 465. Introduction to Scientific Computing **Credit 3(3-0)**

This course will cover scientific computing fundamentals, and expose the student to high-performance programming languages and scientific computing tools. Topics include errors, approximations, floating point operations, polynomial interpolation, cubic splines, numerical integration, numerical linear algebra, solution of nonlinear equations, the initial value problems. The MATLAB or MAPLE computing environment is used. Prerequisites: MATH 431 and 450. **(S)**

MATH 480. Introduction to Mathematical Modeling **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, 431: Corequisites: MATH 432, 450. **(F;S)**

MATH 505. Seminar in Mathematics **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 507 or 511. **(DEMAND)**

MATH 507. Intermediate Analysis I **Credit 3(3-0)**

This course includes a rigorous treatment of the fundamental principles of analysis, limits, continuity, sequences, series, differentiability and integrability and functions of several variables. Prerequisites: MATH 231 and 311, or consent of instructor. **(F)**

MATH 508. Intermediate Analysis II **Credit 3(3-0)**

This course is a continuation of MATH 507. Prerequisite: MATH 507. **(S)**

MATH 511. Abstract Algebra I **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 231, 311 or consent of instructor. **(F)**

MATH 512. Abstract Algebra II **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 511. **(S)**

MATH 550. Vector Analysis **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 431. **(DEMAND)**

Advanced Undergraduate and Graduate

MATH 600. Introduction to Modern Mathematics for Secondary School Teachers **Credit 3(3-0)**

Elementary theory of sets, elementary logic and propositional systems, nature and methods of mathematical proofs, structure of the real number system will be studied. Evaluation of instructional software and use of computer integrated instruction to teach pertinent concepts in secondary school mathematics will also be included. Prerequisite: Consent of the instructor. **(DEMAND)**

MATH 601. Technology and Applications in Secondary School Mathematics **Credit 3(3-0)**

This course covers techniques of teaching algebra, advanced algebra, trigonometry, and other secondary mathematics using graphing calculators, software packages and other technology. Prerequisite: Consent of the instructor. **(DEMAND)**

MATH 602. Modern Algebra **Credit 3(3-0)**

This course covers mappings, binary operations, groups, rings, integral domains, fields, and some applications to coding and cryptography. Prerequisite: MATH 311 or consent of the instructor. **(DEMAND)**

MATH 603. Introduction to Real Analysis **Credit 3(3-0)**

The following topics will be covered in this course: elementary set theory, functions, axiomatic development of the real numbers, metric spaces, convergent sequences, completeness, compactness, connectedness, continuity, limits, sequences of functions, differentiation, the mean value theorem, Taylor's theorem, Riemann integration, infinite series, the fixed point theorem, partial differentiation, and the implicit function theorem. Prerequisite: MATH 311 or consent of the instructor. **(DEMAND)**

MATH 604. Modern Geometry for Secondary School Teachers **Credit 3(3-0)**

Re-examination of Euclidean geometry, axiomatic systems and the Hilbert axioms, introduction to projective geometry and other non-Euclidean geometries will be included. Prerequisite: MATH 600 or consent of the Department of Mathematics. **(DEMAND)**

MATH 606. Mathematics for Chemists **Credit 3(3-0)**

This course includes a review of those principles of mathematics which are involved in chemical computations and derivations from general chemistry through physical chemistry; topics covered include significant figures, methods of expressing large and small numbers, algebraic operations, trigonometric functions and an introduction to calculus. **(DEMAND)**

MATH 607. Theory of Numbers **Credit 3(3-0)**

Divisibility properties of the integers, the Euclidean algorithm, congruences, diophantine equations, number-theoretic functions and continued fractions will be studied. Prerequisite: Twenty hours of college mathematics. **(DEMAND)**

MATH 608. Methods of Applied Statistics **Credit 3(3-0)**

This course introduces the SAS programming language, and uses it in the analysis of variance, both single and multifactor. It includes various methods of hypothesis testing and constructing confidence intervals. The course covers simple and multiple linear regression, including model building and variable selection techniques. Elements of time series and categorical data analysis are covered. Prerequisite: MATH 224. **(DEMAND)**

MATH 610. Complex Variables I **Credit 3(3-0)**

The following topics will be covered in this course: complex number system, limits of complex sequences, complex functions, continuity, limits of functions, derivatives, elementary functions, Cauchy-Riemann equations, antiderivatives harmonic functions, inverse functions, power series, analytic functions, analytic continuation, contour integrals, Cauchy's theorem and Cauchy's integral formula. Prerequisite: MATH 231. **(DEMAND)**

MATH 611. Complex Variables II **Credit 3(3-0)**

Mathematics 611 is a continuation of Mathematics 610. The following topics will be covered in this course: Liouville's theorem, the fundamental theorem of algebra, the winding number, generalized Cauchy theorems, singularities, residue

calculus, Laurent series, boundary value problems, harmonic functions, conformal mappings, Poisson's formula, potential theory, physical applications and the Riemann mapping theorem. Prerequisite: MATH 610. **(DEMAND)**

MATH 612. Advanced Linear Algebra (Formerly MATH 520) Credit 3(3-0)

This course covers vector spaces, linear transformations and matrices determinants and systems of linear equations, eigenvalues and eigenvectors, diagonalization, inner products, bilinear quadratic forms, canonical forms, and application to engineering, and applied sciences. Prerequisite: MATH 450 or consent of the instructor. **(DEMAND)**

MATH 620. Elements of Set Theory and Topology Credit 3(3-0)

Operations on sets, indexed families of sets, products of sets, relations, functions, metric spaces, general topological spaces, continuity, compactness and connectedness will be included. Prerequisites: MATH 231 and consent of the instructor. **(DEMAND)**

MATH 623. Probability Theory and Applications Credit 3(3-0)

This course begins with an introduction to sample spaces and probability, including combinatorics. It covers continuous and discrete random variables, including multi-variate random variables and expectations; also marginal and conditional distributions are derived. The course introduces moment generating functions, and covers the central limit theorem and its applications. Prerequisite: MATH 231. **(DEMAND)**

MATH 624. Theory and Methods of Statistics Credit 3(3-0)

This course introduces methods of statistical estimation and inference including the following topics: sufficient statistics, confidence sets, hypothesis tests, and maximum likelihood methods. The theory of uniformly most powerful tests and the Neyman-Pearson Lemma are covered. Other topics include least squares estimation, the linear model, and Bayesian methods. Prerequisite: MATH 623. **(DEMAND)**

MATH 625. Mathematics for Elementary Teachers, K-8, I Credit 3(3-0)

This course is designed for in-service and prospective teachers who have as their goal "to teach the basic skills and competencies of mathematics sought in today's world." The course emphasizes that the teacher first, must have the knowledge and skills in order to accomplish this goal. It stresses fundamentals of arithmetic, sets and operations, number systems, fractions, decimals, percents, estimation, consumer arithmetic, problem solving and traditional and metric geometry and measurement. This course may not be used for degree credit. **(DEMAND)**

MATH 626. Mathematics for Elementary Teachers, K-8, II Credit 3(3-0)

This is a continuation of MATH 625; provides no credit towards a degree in mathematics; is not open to secondary school teachers of mathematics. Credit on elementary education degree. Prerequisite: MATH 625. **(DEMAND)**

MATH 631. Linear and Non-Linear Programming Credit 3(3-0)

This course includes optimization subject to linear constraints; transportation problems, SIMPLEX algorithm; network flows; application of linear programming to industrial problems and economic theories; introduction to non-linear programming. Prerequisites: MATH 450 and a high level programming language. **(DEMAND)**

MATH 632. Games and Queue Theory Credit 3(3-0)

This course is a general introduction to game theory; two-person-non-zerosum-non-cooperative games; two-person cooperative games; reasonable outcomes and values; the minimax theorem. Introduction to queuing theory; single server queuing processes; many serve queuing processes; applications to economics and business. Prerequisite: MATH 224, MATH 450, or consent of the instructor. **(DEMAND)**

MATH 633. Stochastic Processes Credit 3(3-0)

This course begins with a review of Probability and Random Variables. Markov Processes, Poisson Processes, Waiting Times, Renewal Phenomena, Branching Processes, Queuing System, Service Times are covered. Prerequisite: MATH 623 or consent of the instructor. **(DEMAND)**

MATH 650. Ordinary Differential Equations Credit 3(3-0)

This is an intermediate course in ordinary differential equations with emphasis on applications. Topics include linear systems and various phase plane techniques for non-linear ordinary differential equations. Prerequisite: MATH 431. **(DEMAND)**

MATH 651. Partial Differential Equations Credit 3(3-0)

This course includes introduction to complex variables and residue calculus, transform calculus, higher order partial differential equations governing various physical phenomena, nonhomogeneous boundary value problems, orthogonal expressions, Green's functions and variational principles. Prerequisites: MATH 431 and 432. **(DEMAND)**

MATH 652. Methods of Applied Mathematics Credit 3(3-0)

This course covers matrix theory, systems of linear equations, vector spaces, eigenvalue problem and its applications to systems of linear ODEs and mechanical vibrations, the simplest problems of calculus of variations, Euler equations, boundary conditions, extensions of Euler equations, Hamilton's Principles, constraints and Lagrange multipliers, introduction to integral equations, and solutions in iterative and other methods. Prerequisites: MATH 431 and 432. **(DEMAND)**

MATH 665. Principles of Optimization Credit 3(3-0)

Algebra, linear inequalities, duality, graph, transport network; linear programming; special algorithms; selected applications. An upper level course. Prerequisites: MATH 231 or equivalent and MATH 240 and 450. **(DEMAND)**

MATH 675. Graph Theory **Credit 3(3-0)**

Varieties of graphs, graph theory algorithms, and applications of graph theory to other disciplines will be studied. Prerequisite: MATH 450. **(DEMAND)**

MATH 691. Special Topics in Applied Mathematics **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 692. Independent Study **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)**

DIRECTORY OF FACULTY

Bampia A. Bangura.....**Associate Professor**
B.S., Njala University College; M.S., North Carolina A&T State University, Ed.D., Louisiana State University

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Department of Physics

http://www.physics.ncat.edu

Abdellah Ahmidouch, 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 (Space Science) – Bachelor of Science
Physics (Engineering Physics) – Bachelor of Science
Physics (Interdisciplinary Physics) – Bachelor of Science
Physics (Environmental Geophysics) – Bachelor of Science
Physics (Secondary Education) – Bachelor of Science
Atmospheric Sciences and Meteorology – Bachelor of Science
Physics – Master of Science*
Computational Science and Engineering – Master of Science*
Energy and Environmental Studies – Doctor of Philosophy*
**See the Graduate School Bulletin*

GENERAL PROGRAM REQUIREMENTS

In addition to the general admission requirements of the University, a student must have two units of algebra, one unit of plane geometry, and 1/2 unit of trigonometry.

DEPARTMENTAL REQUIREMENTS COURSES

Common Courses for All Concentrations (75 hours)

A. Required Major Core Courses for Physics for All Concentrations (32 hours)

PHYS 241	PHYS 400	PHYS 420
PHYS 242	PHYS 405	PHYS 430
PHYS 251	PHYS 406	PHYS 445
PHYS 252	PHYS 415	PHYS 550

B. Required Math Courses for Physics for All Concentrations (12 hours)

MATH 131	MATH 132	MATH 231

C. Required Unst Courses for Physics for All Concentrations (25 hours)

UNST 100 UNST 120 UNST 140
UNST 110 UNST 130

Four UNST Elective courses

D. Required Elective Courses for Physics for All Concentrations (6 hours)
CHEM 106 CHEM 116 GEEN 160

Physics Major – As a major in physics all students in all concentrations must complete 124-128 semester hours of University courses depending on the concentration. A minimum grade of "C" must be achieved in all physics and math courses.

Atmospheric Sciences and Meteorology Major – Students must complete 126 semester hours of University courses. A minimum grade of "C" must be achieved in all atmospheric sciences and meteorology, math and physics courses.

ENRICHMENT OPPORTUNITIES

The Department of Physics provides quality instruction, mentoring, and training in order to produce competitive graduates who are trained in the arts of critical thinking, analytical reasoning, independent learning, and problem solving. The department has strong and active collaborations with major research institutions such as Duke University, the University of North Carolina at Chapel Hill, Stanford University, the University of Connecticut, and Pennsylvania State University. Collaborations with national laboratories include the Joint Institute for Laboratory Astrophysics (JILA), Lawrence Berkeley National Laboratory (LBNL), Lawrence Livermore National Laboratory (LLNL), Los Alamos National Laboratory (LANL), Oak Ridge National Laboratory (ORNL), and Thomas Jefferson National Accelerator Facility (JLab). More than half of our physics majors participate in summer research at these institutions.

ENRICHMENT FACILITIES

Departmental teaching facilities include smart classrooms, computerized undergraduate laboratories, an astronomy observatory, a planetarium, a nuclear lab, a space science and solid state physics lab, and a chemical physics lab. The Department plays a major role in many interdisciplinary campus research activities and program developments. In addition, the department provides numerous service courses to meet the science, technology, engineering, and mathematical needs.

RESEARCH PROGRAMS

1. Experimental Low and Medium Energy Physics: Research carried out on campus, at the Thomas Jefferson National Accelerator Facility, and at the Triangle Universities Nuclear Laboratories. Research topics include: investigations of the spin structure of the nucleon, tests of fundamental symmetry-breaking predictions in the theory of the strong force through precision measurement of meson decay widths, and signature of materials by gamma exposure. The research work involves construction of detectors, data acquisition, test and calibrations, and data analysis. The research work is supported by the National Science Foundation.
2. Chemical Physics, Experimental and Theoretical: Spectroscopic techniques applied to the study of chemical reactions, non reactive energy transfer processes, and cluster photochemistry, as well as theoretical calculations involving density matrix functional theories. Program supported by the National Science Foundation.
3. Atmospheric Science: The research and technology integrated themes include: sensor science and technology, data mining and analysis, and global observing systems. This research is supported by a grant from the National Oceanic and Atmospheric Administration.
4. Physics of Materials: Experimental and theoretical research into the physical properties of amorphous, ordered, and nanostructured solids. Investigated materials include metals, insulators, semiconductors and amorphous solids.
5. Physics Education: Space and Earth Science Education development supported through a NASA grant. Research on the ionospheric phenomenon along the geomagnetic equator Also, research on web-based education and innovative teaching methods and on creating a responsive learning environment.
6. Seismic Data Processing: Research in seismic physical modeling, seismic data analysis, subsurface imaging, and non-destructive testing using ultrasonic waves. This research is supported by the National Science Foundation.
7. Computational Atomic Molecular and Optical Physics: Structural studies of organic molecular crystals. Visualization of DFT functional differences.

CAREER OPPORTUNITIES

A knowledge and understanding of the principles of physics not only lead to a profound understanding of the physical world but also supply the scientist with the insight to develop new and innovative ideas. The technology and devices that influence our daily lives are based upon the discoveries of physics. Theoretical and experimental physicists are on the cutting edge of this exciting and vital progress. They are everywhere: they work in industry, in national laboratories, on college campuses, and on Wall Street. They are astronauts in the space shuttle. They are astronomers who hunt for new planets beyond our solar system and who are concerned with the origin and evolution of the universe. They are men and women who are interested in how things work and in how things might work. A physics education develops problem-solving skills and provides a firm knowledge of basic science and the ability to apply and adapt that knowledge within the workplace. Owing to their training, physicists excel at solving complex problems, which allows them to seek employment

in a surprisingly wide range of academic, government, and industrial settings, well beyond the traditional boundaries of physics.

CURRICULUM GUIDE FOR PHYSICS

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
GEEN 160	2	PHYS 241	3
MATH 131	4	PHYS 251	1
UNST 110	3	MATH 132	4
UNST 120	3	UNST 130	3
FOLA	3	UNST 140	3
PHYS 102	1	FOLA	3
	16		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 242	3	PHYS 405	3
PHYS 252	1	PHYS 406	3
MATH 231	4	PHYS 445	3
UNST Elec.	3	UNST Elec.	3
CHEM 106	3	UNST Elec.	3
CHEM 116	1		15
	15		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 400	3	PHYS 401	3
PHYS 415	3	PHYS 416	3
PHYS 420	3	PHYS 422	3
PHYS Elect.	2	Free Elective	3
PHYS 450	3	UNST Elec.	3
	14		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 430	3	Free Electives	4
PHYS Elective[1]	6	Free Electives	6
Free Elective	3	PHYS Elect.[1]	6
PHYS 550[2]	3		16
	15		

Total Credit Hours: 124

[1] *Physics Electives: PHYS 520,467,468,465,450, 510,520*

[2] PHYS 550 – capstone course

CURRICULUM GUIDE FOR PHYSICS (SPACE SCIENCE)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
GEEN 160	2	PHYS 241	3
MATH 131	4	PHYS 251	1
UNST 110	3	MATH 132	4
UNST 120	3	UNST 130	3
PHYS 101	3	UNST 140	3
PHYS 102	1	PHYS 280	3
	16		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 242	3	MATH 231	4
PHYS 252	1	PHYS 406	3
MATH 431	3	PHYS 445	3
CHEM 106	3	UNST Elec.	3
CHEM 116	1	Elective[1]	3
Elective[1]	3		16
	14		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 400	3	PHYS 440	3
PHYS 415	3	PHYS 451	3
UNST Elec.	3	PHYS 500	3
UNST Elec.	3	Elective[1]	3
Elective[1]	6	MATH 432	3
	18	UNST Elec.	3
			18

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 430	3	Electives[1]	11
PHYS 420	3	PHYS 480	3
Electives[1]	6		14
PHYS 550[2]	3		
	15		

Total Credit Hours: 125

[1]*Electives can be taken in three categories: Earth System Science: ESAC: 201, 309,330,622,616,666, 699; Electrical Engineering: EELN: 200,300,400,650,651,657,658,674,678,685,686; Mechanical Engineering: MEEN: 335,336,337,415,422,416,653,655; Other Electives: PHYS: 401,416,450,441,490 ECT 634*

[2]*PHYS 550 – capstone course*

CURRICULUM GUIDE FOR PHYSICS (INTERDISCIPLINARY PHYSICS)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
GEEN 160	2	PHYS 241	3
MATH 131	4	PHYS 251	1
UNST 110	3	MATH 132	4
UNST 120	3	UNST 130	3
FOLA	3	UNST 140	3
PHYS 102	1	FOLA	3
	16		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 242	3	PHYS 405	3
PHYS 252	1	PHYS 406	3
MATH 231	4	PHYS 445	3
CHEM 106	3	UNST Elec.	3
CHEM 116	1	UNST Elec.	3
UNST Elec.	3		15
	15		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 400	3	DISC. Elective[1]	3
PHYS 415	3	DISC. Elective[1]	3
PHYS 420	3	PHYS Elective	3
DISC. Elective[1]	3	Free Elective	5
MATH 450	3	UNST Elec.	3
	15		17

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 430	3	DISC. Electives[1]	7
DISC Elective[1]	6	Free Electives	6
Free Elective	3		13
PHYS 550[2]	3		
	15		

Total Credit Hours: 124

[1]*Disciplinary Electives (22 credit hours) to be determined by the student's interest and approved by an advisor in Chemistry, Biology, Mathematics or Psychology*

[2] *PHYS 550 – capstone course*

CURRICULUM GUIDE FOR PHYSICS (ENGINEERING PHYSICS)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 102	1	PHYS 241	3
GEEN 160	2	PHYS 251	1
MATH 131	4	MATH 132	4
UNST 110	3	UNST 130	3
UNST 120	3	UNST 140	3
FOLA	3	FOLA	3
	16		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 242	3	PHYS 405	3
PHYS 252	1	PHYS 406	3
MATH 231	4	PHYS 445	3
CHEM 106	3	Engineering Electives[1]	4
CHEM 116	1	UNST Elec.	3
UNST Elec.	3		16
	15		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 400	3	PHYS 401	3
PHYS 415	3	PHYS 416	3
PHYS 420	3	PHYS 422	3
PHYS 520	2	Engineering Electives[1]	4
MATH 431	3	UNST Elec.	3
UNST Elec.	3		16
	17		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 430	3	Engineering Electives[1]	9
Engineering Electives[1]	8	PHYS Elective	5
MATH 432	3		14
PHYS 550[2]	3		
	17		

Total Credit Hours: 128

[1] *Students can choose any engineering discipline and follow a defined track guided by a faculty advisor.*

[2] *PHYS 550 – capstone course*

CURRICULUM GUIDE FOR PHYSICS (ENVIRONMENTAL GEOPHYSICS)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 102	1	PHYS 241	3
GEEN 163	3	PHYS 251	1
MATH 131	4	MATH 132	4
UNST 110	3	UNST 130	3
UNST 120	3	UNST 140	3
	14	ASME 200	2
			16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 242	3	PHYS 290	3
PHYS 252	1	PHYS 405	3
MATH 231	4	PHYS 445	3
UNST Elec.	3	UNST Elec.	3
GEOG 200	3	CHEM 106	3
BIOE 216	3	CHEM 116	1
	17		16

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*

PHYS 400	3	PHYS 406	3
PHYS 415	3	PHYS 441	3
PHYS 440	3	PHYS 442	3
EASC 309	3	CHEM 107	3
UNST Elec.	3	CHEM 117	1
	15	UNST Elec.	3
			16

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 407	2	PHYS 4XX[1]	3
PHYS 411	3	PHYS 500	3
PHYS 420	3	PHYS 510	1
PHYS 430	3	PHYS 550[2]	3
PHYS 4XX[1]	3	Elective	3
PHYS 510	1	EASC 433	2
	15		15

Total Credit Hours: 124

[1]*Physics elective numbered 400 or above.*

[2]*PHYS 550 – capstone course*

CURRICULUM GUIDE FOR PHYSICS (SECONDARY EDUCATION)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 102 (UNST 100)	1	CUIN 101	1
MATH 131	4	PHYS 241	3
PHYS 110	2	PHYS 251	1
PHYS 111	1	MATH 132	4
UNST 110	3	UNST 130	3
UNST 120	3	UNST 140	3
	14		15

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 242	3	PHYS 405	3
PHYS 252	1	PHYS 406	3
MATH 231	4	PHYS 101	3
UNST Elec	3	UNST Elec	3
UNST Elec	3	UNST Elec	3
CUIN 102	2	CUIN 301	2
	16		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 400	3	PHYS 445	3
PHYS 415	3	PHYS 4xx	3
PHYS 4xx	3	BIOL 101	4
CHEM 106	3	PSYC 320	3
CHEM 116	1	CUIN 436	3
CUIN 400	3		16
	16		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 420	3	CUIN 500	3
PHYS 430	3	CUIN 535	4
EASC 201	3	CUIN 560	6
BIOL 160	4	CUIN 624	3
PHYS 550[1]	3		16
	16		

Total Credit Hours: 126

[1]*PHYS 550 – capstone course*

CURRICULUM GUIDE FOR ATMOSPHERIC SCIENCES AND METEOROLOGY

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	CHEM 107	3
CHEM 106	3	CHEM 117	1
MATH 131	4	MATH 132	4
UNST 110	3	UNST 130	3
UNST 120	3	UNST 140	3
CHEM 116	1	ASME 200	2
	15		16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 241	3	MATH 431	3
PHYS 251	1	PHYS 242	3
MATH 231	3	UNST Elec.[1]	3
UNST Elec[1]	3	ASME 251	3
GEEN 160	3	ASME 252	1
MATH 224	3	ASME 231	3
	16	ASME 211	1
		PHYS 252	1
			18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ASME 433	3	ASME 434	3
PHYS 415	3	PHYS 416	3
UNST Elec.[1]	3	PHYS 550 or CHEM 503	3
PHYS 411	3	UNST Elec.[1]	3
ASME 422	4	PHYS 300	3
	16		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ASME 563	3	Free Electives[3]	6
ASME Electives[2]	3	ASME 550[5]	6
Free Electives[3]	3	PHYS/MATH Elective [6]	3
PHYS 450	3		15
PHYS Elective[4]	3		
	15		

Total Credit Hours: 126

[1]*Students must choose one cluster theme and take 12 hours in that cluster*
[2]*SME Electives: ASME: 275, 285, 440, 471, 481, 491, PHYS 412*
[3]*Free Electives: GEOM 310; 320; 520; MATH 432, 440, 651, EASC: 201; 330; 666; 699; AGEN 216*
[4]*PHYS Electives: PHYS: 280,405,406, 430, 445, 450,480,490.*
[5]*ASME 550 Cap Stone course*
[6]*Math elective listed under free electives*

CURRICULUM GUIDE FOR THE MINOR IN PHYSICS

Grades of "C" or Better in:

Course	*Credit*
PHYS 241	3
PHYS 242	3
PHYS 251	1
PHYS 252	1
PHYS 406	3
400 level or higher Physics Electives*	9
	20

**Chosen with prior approval by the Chairperson of the Department of Physics.*

COURSE DESCRIPTIONS IN PHYSICS

PHYS 101. Introduction to Astronomy **Credit 3(3-0)**

The fundamentals of astronomy with emphasis on methods of observation and the solar system; astronomical instruments including optical and radio telescopes; and the nature of the sun, moon, planets and other objects of the solar system will be studied. **(F;S)**

PHYS 102. 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 105. Physics for Nonscientists **Credit 3(3-0)**

This course is intended for non-science students. It is a qualitative introduction to topics at the forefront of modern physics, with an emphasis on conceptual understanding. Mathematics use is reduced to a minimum. The course stresses the major role physics plays in our everyday life and aims at helping students evaluate the importance of the new scientific developments and their technological and socio-economical implications. It covers a wide variety of topics such as the building blocks of matter, the evolution of our universe, superconductivity and superfluidity, MRI and medical imaging techniques, the physics of lasers, the physics of semiconductors and transistors, nanoscience and nanotechnology, modern and future energy sources and their effects on the environment. **(F;S)**

PHYS 110. Survey of Physics **Credit 2(2-0)**

This is a one-semester study of selected topics in physics from each of the following: Newtonian mechanics, heat, sound, electricity and magnetism, light, atomic, and nuclear physics, and relativity. Prerequisites: MATH 102, 110 or 111. Corequisite: PHYS 111. **(F;S;SS)**

PHYS 111. Survey of Physics Lab **Credit 1(0-2)**

This is a laboratory course to be taken concurrently with PHYS 110, Survey of Physics. Students will perform experiments designed to verify and/or clarify physics concepts. Corequisite: PHYS 110. **(F;S;SS)**

PHYS 211. Technical Physics I **Credit 3(4-0)**

This is a study of the basic principles of mechanics, thermodynamics, wave motion, sound, electricity, magnetism, optics, and modern physics. Emphasis is placed on applications of physics in modern technology. Prerequisite: MATH 111. Corequisites: MATH 112 and PHYS 216. **(DEMAND)**

PHYS 212. Technical Physics II **Credit 3(4-0)**

This is a continuation of PHYS 211. Prerequisite: PHYS 211. Corequisite: PHYS 217. **(DEMAND)**

PHYS 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 225. College Physics I **Credit 3(3-0)**

This is an algebra-based course. No calculus is used. The course is a study of fundamental principles of Newtonian mechanics, heat, and thermodynamics. Corequisite: PHYS 235, MATH 110 or 111. **(F;S;SS)**

PHYS 226. College Physics II **Credit 3(3-0)**

This is an algebra-based continuation of PHYS 225. No calculus is used. The course covers the fundamental principles of electricity, magnetism, wave motion, and optics. Corequisite: PHYS 236. Prerequisite: PHYS 225. **(F;S;SS)**

PHYS 235. College Physics I Laboratory **Credit 1(0-2)**

This is a course that will emphasize the importance of experimentation and observations in the development of a physical science. A selected group of experiments will be undertaken. 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. 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 the science that studies properties of outer space (the region beyond the Earth's atmosphere), and/or that requires 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, earthquakeseismology, 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 400. Physical Mechanics I **Credit 3(3-0)**

This is a course in Newtonian mechanics and includes particle dynamics, conservation laws, vibrational motion, central field motion, rigid body dynamics, Hamilton's principle and Lagrange's equations. Prerequisites: PHYS 242 and MATH 231. **(F)**

PHYS 401. Physical Mechanics II **Credit 3(3-0)**

This is an intermediate course on classical mechanics. Topics include: Lagrangian and Hamiltonian formalism, and special relativistic descriptions of the dynamics of particles and rigid bodies. Applications in engineering will be considered. Prerequisite: PHYS 400. **(S)**

PHYS 405. Mathematical Physics **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 406. Introduction to Modern Physics **Credit 3(3-0)**

This course is a study of the basics of special relativity, quantum, atomic, molecular, statistical, solid state, nuclear, and particle physics. Prerequisites: PHYS 242 or 226 and MATH 132. **(F;S;SS)**

PHYS 411. Atmospheric Physics I **Credit 3(3-0)**

This course covers the applications of physical laws and principles including acoustics, electricity, wave propagation, optics and radiation to the atmosphere. Prerequisites: Math 231, Phys 242 or consent of instructor **(F;S)**

PHYS 412. Atmospheric Physics II **Credit 3(3-0)**

This course is a continuation of Atmospheric Physics I and will include topics from basic principles of cloud and precipitation physics, including the study of condensation processes, freezing nucleation, ice crystal growth and weather modification. Prerequisites: PHYS 411 **(F; S)**

PHYS 415. Electromagnetism I **Credit 3(3-0)**

This course is an intermediate course in Maxwell's theory of electromagnetism. The course treats electrostatic fields in vacuum, Gauss's law, special techniques for calculating electric potentials, electrostatic fields in matter, electric polarization, linear dielectrics, magnetostatic fields and potentials in vacuum and matter, Lorentz transformation, Ampere's law, magnetization, paramagnetic, diamagnetic and ferromagnetic media, Faraday's laws and induction, Maxwell's equation,energy conservation and Poynting's theorem. Prerequisites: PHYS 242 and MATH 231. **(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 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 406. **(F;S)**

PHYS 422. Quantum Physics II **Credit 3(3-0)**

This is a continuation of PHYS 420. This course deals with selected applications of quantum mechanics to problems in atomic, molecular, nuclear, solid state physics and materials science. Topics include: approximation methods, perturbation theory, and scattering theory. Prerequisite: PHYS422. **(F;S)**

PHYS 430. Thermodynamics and Statistical Mechanics **Credit 3(3-0)**

This course reviews the principles of thermodynamics, which include macroscopic variables, thermodynamic equilibrium, the thermodynamic laws, and kinematic theory. The fundamentals of statistical mechanics are covered which include microcanonical and canonical ensembles, partition functions, Bose and Fermi statistics, and the Boltzmann equation. Prerequisite: PHYS 400. **(F;S)**

PHYS 440. Applied Geophysics **Credit 3(3-0)**

This course offers an overview of the field procedures employed to collect different types of geophysical data, and provides an introduction to the techniques employed to analyze and interpret geophysical data collected for applied and engineering purposes. It covers the major geophysical methods employed in resource exploration, environmental assessment, and geotechnical investigations and includes theory and technical background for seismic refraction and reflection methods, electrical resistivity and electromagnetic methods, ground penetrating radar method, gravity method, and magnetic method. Case studies,and field and computer exercises are also included. Students will be given hands-on exercises with geophysical survey equipment. Prerequisite: PHYS 300 **(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 445. Introduction to Computations in Physics **Credit 3(3-0)**

This course will introduce and use computational techniques to analyze and solve physical problems. Techniques to be used include visual programming language, graphing package, spread sheet, symbolic packages, and other applications. Prerequisites: PHYS 241, PHYS 242 and a course in programming. **(F;S)**

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 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, self-assembled nanostructures in nature and industry. Prerequisite: PHYS 406. **(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, super-conductors, and magnetic properties. Prerequisite: PHYS 406. **(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 406. **(F)**

PHYS 470. Intermediate Physics Laboratory **Credit 2(1-2)**

This is an intermediate level laboratory course that emphasizes performing selected experiments in electromagnetism, optics, atomic, nuclear and condensed matter physics. The purpose of this course is to introduce students to proper laboratory skills in data collection, analysis and reporting as well as giving them hands-on knowledge of experiments and ideas which revolutionized the field of physics. Prerequisites or corequisites: PHYS 406. **(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 adress the structure of solar bowels and atmosphere. Contemporary research on the Sun will also be discussed. Prerequisites PHYS 406. **(F;S)**

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 500. Special Topics in Physics **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 510. Physics Seminar **Variable Credit (1-3)**

This is a study of current developments in physics. The topics and the amount of credit will be determined before the beginning of the course. Prerequisite: Senior standing. **(DEMAND)**

PHYS 520. 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, nuclear and condensed matter physics would be performed. This course may be repeated to earn a maximum of four credits.. Prerequisite: PHYS 407. **(F;S)**

PHYS 530. Computational Techniques in Physics **Credit 3(2-3)**

This course is an application of numerical methods to solve problems in physics. It includes root finding, systems of equations, integration, differentiation, boundary-value problems, and Monte Carlo methods. Prerequisite: PHYS 405. **(DEMAND)**

PHYS 531. Experimental Physics **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 550. Undergraduate Research **Variable Credit 1-3**

This course involves student participation in research conducted by faculty. Topics may be analytical and/or experimental and encourage independent study. The amount of credit will be determined before the beginning of the course. Prerequisite: Consent of instructor. **(F;S;SS)**

PHYS 580. Introduction to High Energy Astrophysics **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)**

Some Graduate Courses

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)

Consult Graduate Programs Catalog

COURSE DESCRIPTIONS IN ATMOPSPHERIC SCIENCES AND METEOROLOGY

ASME 200. Earth System Science: Exploring the Connections **Credit 2(2-0)**

This course is an introduction to the processes of and linkages among the geosphere, hydrosphere, atmosphere, and biosphere. The influence of human activity on the earth system is also covered. **(F;S;SS)**

ASME 211. Computer Applications in Meteorology **Credit 1(0-2)**

This course is an introductory lab to familiarize students with meteorological software packages. Prerequisite: GEEN 160 or consent of instructor. **(F;S;SS)**

ASME 231. Atmospheric Thermodynamics **Credit 3(3-0)**

This course covers the general aspects of thermodynamic physical processes occurring within the atmosphere. Topics included are atmospheric statics and stability, saturation point analysis, aerosols, nucleation, the structure and content of clouds, the development of physical characteristics of precipitation, and the dynamics of rain systems. Prerequisite: PHYS 241. **(F;S)**

ASME 251. Fundamentals of Meteorology **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. Prerequisite: 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. Prerequisite: CHEM 107; Corequisite: ASME 251. **(F;S)**

ASME 275. Weather Systems **Credit 3(3-0)**

This course is an introduction to the basic characteristics, of thermodynamics, and dynamics of atmospheric weather systems on Earth and other planets. The students are exposed to observations of weather systems while reviewing non-dimensional analysis, dynamics and thermodynamics. Weather systems on earth are compared to those of other planets, and analytical tools are used to gain insights into their basic physics **(F;S)**

ASME 285. Broadcast Meteorology **Credit 3(3-0)**

This course provides an introduction to the principles of broadcast meteorology. Students will develop the skills necessary to communicate scientific information with emphasis on weather forecasts. The campus radio station will be used by the students to present weather forecasts **(F;S)**

ASME 422. Synoptic Meteorology I **Credit 4(3-3)**

This course covers the fundamentals of radiative transfer, thermodynamics, and cloud physics of the atmosphere. Topics include absorption, emission, and scattering of radiation; energy balances; adiabatic processes; entropy; water-air systems; and cloud condensation, microphysics and precipitation processes. Prerequisites: ASME 251, MATH 231 or consent of instructor. **(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: GEEN 160, MATH 431 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 middleatmosphere, wave-mean flow interaction, spectral methods, and tropical meteorology. Prerequisite: ASME 433. **(F;S)**

ASME 440. Atmopsheric 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 471. Weather Analysis and Forecasting **Credit 3(3-0)**

This course covers the analysis and forecasting of mid-latitude weather systems with emphasis on simplified Models and methods. Topics are numerical computation methods, numerical weather prediction and operational models, and subjective and objective analysis of meteorological fields. Prerequisite. MATH 431 or consent of instructor **(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 431, PHYS 241 or consent of instructor. **(F;S)**

ASME 491. Chemical and Optical Instrumentation for Atmospheric Measurment **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 550. Senior Project **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)**

ASME 563. Atmospheric Remote Sensing **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)**

DIRECTORY OF FACULTY

Abdellah Ahmidouch ..... **Professor and Chairperson**
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

Samuel S. Danagoulian ..... **Professor**
M.S., Ph.D., Yerevan Physics Institute
Kenneth Flurchick..... **Assistant Professor**
Ph.D.,Colorado State University
Ashot Gasparian..... **Professor**
B.S., Ph.D., Yerevan Physics Institute
Floyd J. James .....**Associate Professor**
B.S., M.S., University of North Carolina; 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
Ilki Kim .....**Adjunct Associate Professor**
B.S., Seoul National University, M.S., University of Hamburg, Ph.D., University of Stuttgart
Melvin Levy .....**Research Professor**
B.S., M.A., Queens College, Ph.D., Indiana University
Yuh-Lang Lin ..... **Professor**
B.S., Fujen Catholic University, M.S., South Dakota School of Mines and Tech., Ph.D., Yale University
Ronald S. Pedroni.....**Associate Professor**
B.A., Jacksonville University; Ph.D., Duke University
David B. Reusch .....**Visiting assistant Professor**
B.S., University of Main at Orono; M.S., university of New Hampshire, Ph.D., Penn State 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
Guoqing Tang.....**Adjunct Professor**
B.S., Anhui University; M.S., Nanjing University of Science and Technology; Ph.D., Rutgers University

Department of Political Science and Criminal Justice

http://www.poli.ncat.edu/

Samuel A. Moseley, Chairperson

OBJECTIVES

The specific objectives of the Political Science Program are as follows:

1. to help students develop an understanding of the operation of government at various levels.
2. to encourage students to engage in critical discourse of political and social issues.
3. to prepare students for advanced study.
4. to provide skills for employment in public and private organizations.

The specific objectives of the Criminal Justice Program are as follows:

1. to provide a broad-based liberal arts education with particular focus on the nature and causes of crime and delinquency, the correctional system, the courts, the police, the juvenile justice system, security and domestic violence.
2. to increase the pool of students with research skills and techniques in the field of criminal justice.
3. to provide an interdisciplinary focus of study in the field of criminal justice
4. to serve as a strategy for recruiting a larger and more diverse student body.
5. to increase the pool of talented and qualified minority students in this growing area of public service and professional practice.

DEGREES OFFERED

Political Science – Bachelor of Arts
Criminal Justice – Bachelor of Science
Leadership Studies – Doctor of Philosophy *
**See the Graduate School Bulletin*

GENERAL PROGRAM REQUIREMENTS

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

Political Science is the study of governments, public policies, and political behavior. Political Science uses both humanistic and scientific perspectives and skills to examine public power, social transformations, the nature of democracies, elections, public opinion, constitutions, technology and society, public policy, and similar issues. The Political Science degree program offers courses in the following fields: American Government, Public Policy and

Administration, Political Theory, Research Methodology, and International Affairs.

The Department of Political Science and Criminal Justice requires students to develop competence in the use of modern political technology and information management systems. Students have access to excellent computing facilities as well as access to the Political and Social Research Geographic Information Systems (GIS) Laboratory. Students learn how to design, administer, and analyze surveys by working with the Political Science and Criminal Justice Computer Assisted Telephone Interviewing Laboratory (CATI).

Criminal Justice will provide students with knowledge of the nature and causes of crime, criminal justice processes, security and law enforcement. Students will be introduced to social scientific methods and technologies and theoretical models needed for analysis and critique of the criminal justice system.

The departments of political science, psychology, and sociology and social work provide the core courses for the criminal justice curriculum. Instruction and research emphsizes interdisciplinarity. Students in this program have the same access as Political Science majors to the Geographic Information Science (GIS) and Computer Assisted Telephone Interviewing (CATI) Laboratory.

DEPARTMENTAL REQUIREMENTS

Political Science Major – Completion of a minimum of 124-127 semester hours of University courses. Included in the 124-127 semester hours are 36 hours of political science courses and 12 hours in a cognate area. 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 200 and 210.

Criminal Justice Major – Completion of a minimum of 124-127 semester hours of University courses. Included in the 124-127 hours are POLI 200, POLI 210, 36 hours of criminal justice courses and 12 hours in a cognate area. Criminal Justice majors are required to successfully complete an internship requirement in their senior year. A minimum grade of "C" must be attained in the major and required POLI courses.

Students wishing to minor in criminal justice must complete 18 semester hours in criminal justice, including CRJS 200, CRJS 310, CRJS320 and 330.

CAREER OPPORTUNITIES

A baccalaureate degree in **political science** prepares students for careers in government, public administration, law (for those continuing to law school), business, campaign management, foreign service, industry, interest groups, journalism, international affairs, teaching, research, and leadership in civic and political activities.

A baccalaureate degree in **criminal justice** is an asset for candidates entering the broad array of career options. Criminal justice graduates can use their knowledge and research skills in very rewarding and meaningful ways in employment in the fields of law enforcement, court related occupations security and corrections. This program will also provide an interdisciplinary foundation for students seeking advancement in these careers or wishing to pursue a graduate or professional degree.

REQUIRED MAJOR COURSES FOR POLITICAL SCIENCE

POLI 150	POLI 333	POLI 440
POLI 200	POLI 334	POLI 505 UNST Capstone
POLI 210	POLI 340	

CURRICULUM GUIDE FOR POLITICAL SCIENCE

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3	ENGL 101	3
MATH 101or 111	3-4	MATH 102 or 112	3-4
POLI 150	3	BIOL 100	4
POLI 200	3		16-17
	16-17		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elective[1]	3	UNST Cluster Theme Elective[1]	3
UNST Cluster Theme Elective[1]	3	UNST Cluster Theme Elective[1]	3
FOLA Elective[2]	3	FOLA Elective[2]	3
PHYS 101 or CHEM 100 & 110	3-4	SOCI 203 or ECON 305	3
POLI 210	3	PHIL 260 or 262	3
HPED 200	2	POLI 340	3
	17-18		18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
POLI 333	3	POLI 334	3
POLI 440	3	POLI Elective	3
ECON 200	3	ECON 201	3
ENGL 200	3	ENGL 201	3
SPCH 250	3	POLI Elective	3
	15		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
POLI Elective	3	POLI Elective	3
PSYC 320	3	POLI 505 UNST Capstone	3
Cognate Area Elective[3]	3	Cognate Area Elective[3]	3
Cognate Area Elective[3]	3	Free Elective	3
Cognate Area Elective[3]	3		12
	15		

Total Credit Hours: 124-127

[1]*UNST Theme Cluster Electives: Students must choose one cluster and take 12 hours in that cluster.*

[2]*Students must complete two courses in the same language.*

[3]*Students are required to choose their cognate area requirement of twelve hours from one of the following a disciplines: ACCT, BUAD, COMM, ECON, ENGL, HIST, SOCI, TRAN, CRJS, PSYC or any other area with the approval of the Department Chair. 100 level courses will not be accepted to meet the cognate area requirement.*

REQUIRED MAJOR COURSES FOR CRIMINAL JUSTICE

CRJS 200	CRJS 330	CRJS 500
CRJS 310	CRJS 430	CRJS 505 Capstone
CRJS 320	CRJS 440	

CURRICULUM GUIDE FOR CRIMINAL JUSTICE

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3	ENGL 101	3
CRJS 200	3	POLI 200	3
MATH 101or 111	3-4	MATH 102 or 112	3-4
SOCI 100	3	HPED Elective	1
	16-17		16-17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elective[1]	3	UNST Cluster Theme Elective[1]	3
UNST Cluster Theme Elective[1]	3	UNST Cluster Theme Elective[1]	3
FOLA Elective[2]	3	FOLA Elective[2]	3
POLI 210	3	SOCI 203 or ECON 305	3
BIOL 100	4	PHYS 101 or CHEM 100 & 110	3-4
	16		15-16

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CRJS 330	3	Cognate Elective[3]	3
PSYC 320	3	CRJS Elective	3
ECON 200	3	ECON 201	3
CRJS 430	3	CRJS 440	3
SPCH 250	3	CRJS 310	3
ENGL 200 or 201	3	HPED Elective	1
	18		16

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CRJS 320	3	CRJS/ 505 UNST Capstone	3
CRJS Elective	3	CRJS 500 Internship	3
CRJS Elective	3	Cognate Elective	3
CRJS Elective	3	Cognate Elective	3

Cognate Elective	3	12
	15	

Total Credit Hours[4]: 124-127

[1]*UNST Theme Cluster Electives: Students should choose the Community. Conflict and Society cluster and take 12 hours in that cluster.*

[2]*Students must complete two courses in the same language and CRJS 430 and CRJS 440.*

[3]*Students are required to complete 12 semester hours in a cognate area that supports the interdisciplinary focus of Criminal Justice. Suggested areas include Political Science, Sociology, Foreign Languages, Psychology, or any other area with the approval of the Department Chair or Program Director. 100 level courses will not be accepted to meet the cognate area requirement.*

[4]*The maximum number of transferable credits is 80 semester hours from a 4-year college and 64 semester hours from a 2-year college. The 64 semester hours earned at a North Carolina Community College will be accepted according to the Criminal Justice Articulation Agreement between The University of North Carolina System and the North Carolina Community College System*

COURSE DESCRIPTIONS IN POLITICAL SCIENCE

POLI 150. Introduction to Political Science **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)**

POLI 200. American Government and Politics **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 210. State and Local Government **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 220. Blacks in the American Political System **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;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;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 333. Political Research Methods I **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 334. Political Research Methods II **Credit 3(3-0)**

This course is a continuation of Political Research Methods I, focusing on data analysis, interpretation and computer utilization. **(S;SS)**

POLI 340. Public Administration (Formerly POLI 443) **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 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 390. Political Economy **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 400. Mass Political Attitudes and Behavior **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 410. Public Policy and Technology **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 415. Environmental Policy **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 420. Public Budgeting **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 430. Policy Analysis **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 440. Political Theory **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)**

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;SS)**

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. **(S)**

POLI 445. Problems of Contemporary Africa **Credit 3(3-0)**

This course presents an overview of important political, economic, and social challenges transforming modern continental Africa. Course considerations include factors influencing the development of democratic institutions and practices, the debt crisis in an environment of economic change, the nature of political violence, and the continental and foreign relations of African states. **(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 448. Politics of Transportation **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. **(DEMAND)**

POLI 460. Southern Politics **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 499. Internship **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)**

POLI 504. Independent Study **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 505. Honors Seminar in Political Science & Criminal Justice – Capstone **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)**

POLI 541. Party Politics and Pressure Groups **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 200. **(DEMAND)**

POLI 542. 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 543. 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 544. International Organization **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)**

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, 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)**

CRIMINAL JUSTICE

CRJS 200. Critical Criminology **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 310. Policing: Administration and Process **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 ploice strategy and tactics. **(F;S;SS)**

CRJS 320. Courts and the Judicial Process **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 330. Corrections **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 406./SOCI 406. Criminology **Credit 3(3-0)**
The genesis and origin of crime and an analysis of theories of criminal behavior will be studied. **(DEMAND)**

CRJS 430. Research Methods in Criminal Justice **Credit 3(3-0)**

This course introduces students to research methods with a special application to current criminal justice issues. Attention is given to analysis with data from uniform crime reports and national crime surveys. Prerequisite: Junior standing or permission of instructor. **(F;S;SS)**

CRJS 434./ PSYC 434. Abnormal Psychology **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 440. Applied Methods **Credit 3(3-0)**

This course covers applied quantitative research methods, hypothesis testing, statistical presentation and description (including mapping and graphing). Instruction will include topics on statistical tests, e.g., t-test, F-test, Chi-square and regression and software applications such as Excel, SPSS and GIS. **(F;S;SS)**

CRJS 450. Criminal Law **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 470. Criminal Procedure **Credit 3(3-0)**

This course examines the constitutional provisions on which the due process rights are based; the rules and procedures that govern the criminal justice process from arrest through trial and sentencing, and the methods of imposing liability on criminal justice personnel for violations of constitutional and other legal rights granted to citizens. Prerequisite: CRJS 200 **(F;S)**

CRJS 500. Internship **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)**

CRJS 503/ SOWK 503. Juvenile Delinquency **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/POLI 505. Honors Seminar in Political Science & Criminal Justice – Capstone **Credit 3(3-0)**

This course includes an examination of selected political science and criminal justice topics and experiences. Students participating in co-op and study abroad experiences may also enroll in this course. Seniors only. **(S)**

CRJS 510. Victimology **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 515. Alternatives to Incarceration **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 520. Race, Class and Gender in the Criminal Justice System **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 525. Drugs and Crime **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 537. White Collar Crime **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 542./POLI 542. 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)**

CRJS 543./POLI 543. 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. Prerequisite: Junior or Senior standing. **(S)**

CRJS 545. Terrorism and War Crimes **Credit 3(3-0)**

This cours will exaimine 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 546. Survey in Forensics **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)**

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.A., University of Cincinnati
Margaret Dudley ..... **Adjunct Instructor**
B.A., Howard University; J.D., Howard University
Justice Henry E. Frye..... **Distinguished Professor of Political Science and Criminal Justice**
B.S. North Carolina A&T State University; J.D. University of North Carolina at Chapel Hill School of Law
Maria Hicks ..... **Adjunct Instructor**
B.A. North Carolina A&T State University; MPA, University of North Carolina Greensboro
James Howerton..... **Adjunct Instructor**
B.A., North Carolina A&T State University; M.A., University of North Carolina at Chapel Hill
Sarita D. Jackson..... **Assistant Professor**
B.A, University of Southern California; M.A., Ph.D., Brown University
John C. Jones..... **Assistant Professor**
B.S.Ed., West Chester University; M.A. University of Florida; Ph.D., J.D. University of Iowa
James P. Mayes..... **Assistant Professor and Director of Criminal Justice Program**
B.A.,Princeton; M.A. The Ohio State University; J.D.,University of Baltimore, School of Law
Samuel A. Moseley ..... **Professor and Chairperson**
B.A., North Carolina A&T State University; M.A., Ph.D., The Ohio State University
Radscheda R. Nobles..... **Adjunct Instructor**
B.A., Shaw University; M.S., Fayettville State University
Nicole Sherrill-Corry ..... **Adjunct Instructor**
B.A., Livingstone College; M.A. Capella University
Amarjit Singh ..... **Professor (Emeritus)**
B.A., Punjab University; LL.B., University of Delhi; M.I.S., Ph.D., Claremont Graduate School
Derick Smith..... **Adjunct Instructor**
B.A., M.A., Fayetteville State University
James D. Steele ..... **Associate Professor**
BA., Morgan State University; M.A., Ph.D., Atlanta University

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Department of Psychology

http://www.ncat.edu/~psych

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
Leadership Studies – Doctor of Philosophy *
**See the Graduate School Bulletin*

DEPARTMENTAL REQUIREMENTS

Psychology major – The major in psychology must complete 124 semester hours of University courses. Included in the 124 semester hours are 25 hours of university studies requirements, 35 hours of required non-psychology courses, 50

hours of psychology courses, and 14 hours of free electives. Initial acceptance to the psychology department requires a minimum high school GPA of 2.5. Students that wish to change their major to psychology must have an overall GPA of 2.5. A minimum grade of "C" must be achieved in ALL psychology courses. Thus, psychology courses with a "D" 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.

REQUIRED MAJOR COURSES FOR PSYCHOLOGY (32 CREDIT HOURS)

PSYC 240	PSYC 324	PSYC 440/441
PSYC 242	PSYC 420	PSYC 542
PSYC 321	PSYC 434	PSYC 544
PSYC 322/323	PSYC 439	

PSYCHOLOGY (SENSATION / BIOLOGICAL / NEUROSCIENCE - SBN) COURSES 3 CREDIT HOURS (SELECT 1)

PSYC 463	PSYC 553	PSYC 565
PSYC 540		

PSYCHOLOGY (LEARNING / MEMORY /ANIMAL - LMA) COURSES 3 CREDIT HOURS (SELECT 1)

PSYC 460	PSYC 470	PSYC 550
PSYC 461		

PSYCHOLOGY ELECTIVES – 9 CREDIT HOURS (SELECT 3):

PSYC 445	PSYC 502	PSYC 550
PSYC 460	PSYC 504	PSYC 551
PSYC 461	PSYC 505	PSYC 553
PSYC 462	PSYC 506	PSYC 560
PSYC 463	PSYC 510	PSYC 565
PSYC 470	PSYC 530	PSYC 625
PSYC 500	PSYC 540	PSYC 644
PSYC 501	PSYC 545	PSYC 645

CURRICULUM GUIDE IN PSYCHOLOGY

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
PSYC 240	3	MATH 101	3
UNST 110	3	ENGL 101	3
UNST 120	3	BIOL 100	4
UNST 242	3	UNST 140	3
PSYC 321	3		16
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ENGL Elective	3	PSYC 324	3
MATH 102	3	UNST Elective 1	3
PSYC 322 / 323	4	PSYC Elective (LMA)	3
FOLA 1	3	PSYC 440 / 441	4
PSYC 420	3	FOLA 2	3
	16		16

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PSYC 434 / UNST Major 1	3	UNST Elective 2	3
PSYC 439 / UNST Major 2	3	UNST Elective 3	3
CHEM 100 / 110	4	Free Elective 1	3
PSYC Elective 1 / UNST Major 3	3	SOCI 100	3
SPCH 250	3	UNST Elective 4	3

	16		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PSYC 544	3	PSYC 542 / UNST Capstone	3
Humanities Elective	3	PSYC ELEC 3	3
PSYC ELEC (SBN)	3	Free ELEC 3	3
PSYC ELEC 2	3	Free ELEC 4	3
Free ELEC 2	3	Free ELEC 5	2
	15		14

Total Credit Hours: 124

COURSE DESCRIPTIONS IN PSYCHOLOGY

PSYC 240. Freshman Seminar **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 242. Information Processing Techniques in Behavioral Research **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 320. General Psychology **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 321. General Psychology for Majors **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 322. Psychological Statistics **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 242, 320 or 321, taken concurrently with PSYC 323. **(F;S;SS)**

PSYC 323. Psychological Statistics Lab **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 242, 320 or 321; taken concurrently with PSYC 322. **(F;S;SS)**

PSYC 324. Developmental Psychology **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 320 or 321. **(F;S;SS)**

PSYC 420. Social Psychology **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 320 or 321. **(F;S;SS)**

PSYC 434. Abnormal Psychology **Credit 3(3-0)**

Behavior deviations and psychological disorders occurring during the several developmental stages; basic concepts employed in psychopathology, mental hygiene, and psychiatry will be studied. Prerequisite: PSYC 320 or 321. **(F;S;SS)**

PSYC 439. Theories of Personality **Credit 3(3-0)**

Contemporary theoretical formulations of the structure and development of personality and their empirical bases will be covered. Prerequisite: PSYC 320 or 321. **(F;S;SS)**

PSYC 440. Methods of Psychological Research **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 242, 320 or 321, 322, 323, taken concurrently with PSYC 441. **(F;S;SS)**

PSYC 441. Methods of Psychological Research Lab **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 242, 320 or 321, 322, 323, taken concurrently with PSYC 440. **(F;S;SS)**

PSYC 445. Industrial Psychology **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 320 or 321. **(F;S;SS)**

PSYC 460. Human Motivation **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 320 or 321. **(F;S;SS)**

PSYC 461. Memory and Cognition **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 320 or 321. **(F;S;SS)**

PSYC 462. Psychopharmacology **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 320 or PSYC 321. **(F;S;SS)**

PSYC 463. Sensation and Perception **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 medicated through sensory channels. Coverage will include vision, audition, psychophysics, and practical applications (e.g., work environments, human-machine interaction). Prerequisite: PSYC 320 or 321. **(F;S;SS)**

PSYC 470. Principles of Learning **Credit 3(3-0)**

This course is a survey of different learning approaches. The focus will be on conditioning, discrimination learning, obervational learning, motor learning, and verbal learning. Discussion will include interactions of learning and innate physiological mechanisms related to behavior. Prerequisite: PSYC 320 or 321. **(F;S;SS)**

PSYC 500. Independent Research **Credit 3(3-0)**

Independent research on a specific topic or area in behavioral science. Prerequiste: PSYC 320 or 321, permission of the instructor. **(F;S;SS)**

PSYC 501. Special Topics in Developmental Psychology **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 320 or 321. **(F;S;SS)**

PSYC 502. Advanced Statistics and Computer Applications **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 242, 320 or 321, 322, 323. **(F;S;SS)**

PSYC 504. Cross-Cultural Psychology **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 320 or 321, junior standing and above. **(F;S;SS)**

PSYC 505. Internship Psychology I **Credit 3(2-2)**

This course is designed for placement of students in applied settings like hospitals, industry, mental health and rehabilitation centers, or schools. Students will gain experiences in the application of various psychological principles under professional supervision. Lecture topics will cover practical and theoretical issues related to the specific placement setting. Prerequisite: Psychology major with senior standing. **(F;S;SS)**

PSYC 506. Internship Psychology II **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 pratical and theoretical issues related to the specific placement setting. Prerequisite: PSYC 505, psychology major. **(F;S;SS)**

PSYC 510. Psychological Perspectives in Hip Hop **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. Prerequisites: (PSYC 320 or PSYC 321), PSYC 420, PSYC 439.

PSYC 530. Forensic Psychology **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 320 or 321, 434, 439. **(F;S;SS)**

PSYC 540 Biological Psychology **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. Prerequisites: PSYC 320 or 321, BIOL 100. **(F;S;SS)**

PSYC 542. Seminar in Psychology **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 work-force will be included. Prerequisite: Psychology major, junior standing and above. **(F;S;SS)**

PSYC 544. Psychological Testing **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 320 or 321, 322, 323. **(F;S;SS)**

PSYC 545. History and Systems of Psychology **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 320 or 321. **(F;S;SS)**

PSYC 550. Psychology of Animal Behavior **Credit 3(3-0)**

This course is a study of various types of animal behaviors such as communication, aggression, feedng, sexual behavior, maternal behavior, territoriality, socialization, learning processes, and responses to stressors, and how heredity and environment affect these behaviors, with emphasis on domestic animals and their often "unnatural" environments. Prerequisite: PSYC 320 or 321, junior standing and above. **(DEMAND)**

PSYC 551. Psychology of Women **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 320 and junior standing. **(F;S;SS)**

PSYC 553. Cognitive Neuroscience **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 neuroligically normal

people. Cognitive neuroscience approaches to disorders such as autism, schizophrenia, and Alzheimer's disease will also be explored. Prerequisites: (PSYC 320 or PSYC321), BIOL 100. **(F;S;SS)**

PSYC 560. Black Psychology **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. Prerequisites: (PSYC 320 or PSYC 321), PSYC 420. **(F;S;SS)**

PSYC 565. Neuropsychology **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 320 or 321), BIOL 100. **(F;S;SS)**

PSYC 625. Clinical Psychology **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 320 or 321, 434, 439, junior standing and above. **(F;S;SS)**

PSYC 644. Applied Health Psychology **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 320 or PSYC 321, junior standing and above. **(F;S;SS)**

PSYC 645. Behavior Modification **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 320 or 321, senior or graduate student standing. **(F;S;S)**

DIRECTORY OF FACULTY

Cheree Barber ..... **Visiting Lecturer**
B.A., North Carolina A&T State University, M.A., Virginia State University

Rachelle R. Barnes ..... **Visiting Lecturer**
B.A., North Carolina A&T State University, M.S., University of North Carolina at Chapel Hill

Audrey Campbell ..... **Visiting Lecturer**
B.A., University of San Francisco, M.A., Ph.D., Psychological Studies Institute

Renee Alleyne Coleman ..... **Assistant Professor**
B.A., Hampton University; Ph.D., Virginia Commonwealth University

Maya Corneille ..... **Associate Professor**
B.A., Duke University, Ph.D., Virginia Commonwealth University

Jennifer Dashiell ..... **Visiting Lecturer**
B.A., North Carolina A&T State University, M.S., Radford University

Phyllis Ford-Booker ..... **Associate Professor**
B.S., M.S., Ph.D., Howard University

Alan Goble ..... **Visiting Lecturer**
B.A., Ph.D., University of North Carolina at Chapel Hill

Marvin Hall ..... **Adjunct Assistant Professor**
B.A., M.S., North Carolina A&T State University, Ed.D., Western Michigan University

Alvin L. Keyes ..... **Associate Professor**
B.A., Wake Forest University; M.A., Ph.D., University of North Carolina at Greensboro

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

Susan Schumacher ..... **Associate Professor**
B.A., Roanoke College; M.A., Hollins College; Ph.D., University of North Carolina at Greensboro

Sarla Sharma ..... **Professor**
B.A., Banaras Hindu University; M.A., University of Chicago; Ed.D., University of North Carolina at Greensboro

Brian Sims ..... **Assistant Professor**
B.A., Florida A&M University; Ph.D., University of Michigan

Joseph Stephens.....**Assistant Professor**
B.A., Indiana University, Ph.D., Carnegie Mellon University; Post-doctoral Fellow, The Ohio State University

Department of Sociology and Social Work

http://ncat.edu/~sociolog/

Robert Davis, Chairperson

GENERAL PROGRAM REQUIREMENTS

The admission of the students to the undergraduate degree program in the Department of Sociology and Social Work is based upon the general admission requirements of the University. All majors are required to take courses in Sociology, Statistics, Sociological Theory and Research.

DEGREES OFFERED

Sociology – Bachelor of Arts
Social Work – Bachelor of Social Work
Social Work – Master of Social Work*
Leadership Studies – Doctor of Philosophy**
**See the Graduate School Bulletin (Jointly administered with UNCG)*
***See the Graduate School Bulletin*

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, university and college of arts and sciences' students who must meet major specific, general education or liberal arts requirements. It should be noted that each major in social work must complete a minimum of 27-30 credits in sociology in addition to any free elective sociology courses that he/she may choose.

SOCIOLOGY REQUIREMENTS

Sociology Major – Completion of a minimum of 128 semester hours of University courses. Included in the 128 semester hours are 49 hours of sociology. A minimum grade of "C" must be achieved in these courses; sociology majors are required to complete an 18 hour concentration. Sociology majors are required to successfully complete a one semester internship in their senior year.

Comprehensive Examination: All students prior to graduation from the department must pass the Comprehensive Exam, which is given in the Senior Seminar class during the second semester of the senior year. Those who do not pass the exam will not be able to pass the Senior Seminar course with a "C" or better and hence will not be able to meet all the requirements for graduation from the University. The exam will be administered during the mid-semester and again, for those who need it, during regular exam time. NOTE: the Senior Seminar course can be repeated, if necessary, through Independent Study if recommended by the faculty).

CAREER OPPORTUNITIES

A degree in sociology is preparatory for graduate study in sociology and can serve as the basic preparation for study of law, social work and public administration, entry into government service positions, applied research and education.

- A BA in sociology is excellent preparation for future graduate work in sociology in order to become a professor, researcher, or applied sociologist.
- The undergraduate degree provides a strong liberal arts preparation for entry level positions throughout the business, social service, and government worlds. Employers look for people with the skills that an undergraduate education in sociology provides.
- Since its subject matter is intrinsically fascinating, sociology offers valuable preparation for careers in journalism, politics, public relations, business, or public administration – fields that involve investigative skills and working with diverse groups.
- Many students choose sociology because they see it as a broad liberal arts base for professions such as law, education, medicine, social work, and counseling. Sociology provides a rich fund of knowledge the directly pertains to each of these fields.

REQUIRED MAJOR COURSES FOR SOCIOLOGY

SOCI 100	SOCI 306	SOCI 501
SOCI 101	SOCI 308	SOWK503

SOCI 203	SOCI 401	SOWK 570
SOCI 204	SOCI 402	SOCI 575
SOCI 300	SOCI 403	SOCI 625
SOCI 303	SOCI 406	SOCI/SOWK Electives (6 hrs.)

CURRICULUM GUIDE FOR SOCIOLOGY

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
SOCI 100	3	ENGL 101	3
BIOL 100	4	MATH 111	4
UNST 120	3	UNST 130	3
UNST 110	3	SOCI 101	3
SPCH 250	3	UNST 140	3
UNST 100	1		16
	17		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Electives	6	FOLA	3
FOLA	3	UNST Electives	6
SOCI 203	3	SOCI204	3
SOCI 401	3	SOCI 303	3
	15	SOCI/SOWK Elective	3
			18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
SOCI 403	3	Free Elective	3
ENGL 404 or 331	3	SOCI 402	3
SOCI 300	3	SOCI 306 or SOWK 414	3
Concentration	6	Concentration	6
Sociology/Social Work Elective	3		15
	18		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
SOCI 575	3	SOWK 570[1]	3
SOCI 406 or SOWK 503	3	SOCI 308 or 501	3
Concentration	3	SOWK/SOCI Elec/Free Elective	3
Free Electives/SOCI 625	3-5	SOCI 625[2](Capstone)	5
	12-14	Concentration	3
			17

Total Credit Hours: 128

[1]*This course includes the program's comprehensive exam.*

[2]*Internship and UNST capstone course.*

SOCIAL WORK OBJECTIVES

The objectives of the Social Work Program are as follows:

1. to prepare students for careers as generalist social workers with the knowledge, values and skills necessary for effective practice with diverse client systems in a variety of settings.
2. to prepare competent social workers who understand the value base of the profession and its ethical standards and are committed to ethical practice without discrimination that reduces social and economic inequality.
3. to prepare students for graduate education in social work or other related human service disciplines.

SOCIAL WORK REQUIREMENTS

Social Work Major – Completion of a minimum of 124 semester hours of University courses. Included in the 124 semester hours are 45 semester hours of Social Work courses. A minimum grade of "C" must be achieved in English, Speech and all major courses. Formal program admission is required before taking any upper division social work courses. Students must have and maintain a 2.6 GPA or better. Social Work majors are required to successfully complete an internship their senior year. Professional liability insurance is required before entering the Field.

Certification in School Social Work requires completion of the Social Work Curriculum and includes 3 specific social work electives, a 2 credit education course, acceptance in the Teacher Education Practicum program and completion of field hours in a school setting. Students must have and maintain a 2.8 GPA or better to be certified in school social work.

They must also be accepted and begin their coursework no later than their sophomore year.

Students interested in participating in the Child Welfare Initiative Collaborative should make their application during spring semester of their junior year, when they are applying for senior year field practicum placements.

Comprehensive Examination: All students, prior to graduation from the department, must pass the Comprehensive Exam, which is given in the Senior Seminar class during the second semester of the senior year. Those who do not pass the exam will not be able to pass the Senior Seminar course with a "C" or better and hence will not be able to meet all the requirements for graduation from the University. The exam will be administered during the midsemester and again, for those who need it, during regular exam time. NOTE: the Senior Seminar course can be repeated, if necessary, through Independent Study if recommended by the faculty).

Entering the Department: Social Work majors, transfer-in students and students desiring to change their major to Social Work (from another major) must meet with the undergraduate coordinator or her designee for an INTAKE INTERVIEW during spring semester of their sophomore year. They *must* bring the following materials with them to the interview: (1) the results of the Sixteen Personality Factor Assessment and the COPS interest inventory given by the Counseling Center; (2) an unofficial transcript or their degree audit Transfer students must provide, from the Admissions Office, a statement of the credits accepted by North Carolina A&T State University; (3) a brief essay (typewritten) that describes the personal background of the student, giving reason for selecting the major, their career goals and how the major fits into those choices. At the end of the interview, the student and the administrator will sign the *Undergraduate Student Admissions Contract.* The BSW faculty will review the application packet and students will be advised in writing about their admission/acceptance status. ***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, school social work, mental health agencies and the criminal justice system. The Social Work Program is accredited by the Council on Social Work Education, and in cooperation with the School of Education is authorized to recommend students for Baccalaureate Certification in School Social Work.

SOCIAL WORK PROGRAM TERMINATION POLICY

Program policies and procedures for terminating a student are as follows:

1. The University Administration (The Registrar's Office) monitors <u>all</u> students who in spite of ongoing advising and support of faculty continue to maintain an unacceptable academic average. These students are notified that they are on academic probation. This requires the student to contract with the department for the next semester not to exceed 12 credit hours.
2. If a student's grades do not improve, the Registrar's Office will notify the student of suspension from the University and that he/she will not be readmitted for a period of one year.
3. If faculty agrees that there is a student, who may or may not be experiencing academic problems but appears ill suited for a career in social work, the advisor meets with the student to discuss the "problem areas" observed. These areas could include, but are not limited to: 1) negative attitudes towards different populations, (2) lack of commitment in their volunteer assignments, (3) some perceived emotional problem exhibited by uncontrollable crying and/or verbal attacks on peers (in classroom settings), and (4) indication of untreated substance abuse. If the counsel provided by the advisor and/or the next level professional (University's Counseling Center or private therapist) is deemed not successful and would appear to cause the student and the potential clients' added stress, he/she is then counseled regarding other majors and other career options.
4. The field instruction program provides another opportunity to "select out" students during the application process which occurs during the junior year. Should the student be denied admission to the field, he/she has the right to invoke the appeals process. The Appeals Committee is made up of faculty and students from both field instruction programs. (NC A&T SU and UNCG). The student may select a faculty member or student to serve as his/her advocate.
5. If a student still persists in remaining in the major against all counsel, the issue of non-availability of a field placement and the department's responsibility to indicate concerns to prospective employers and/or graduate schools is discussed with the student.
6. It should be noted that students have the right to appeal through the departmental, College of Arts and Sciences' and the University's channels <u>any</u> program decision that they perceive will adversely affect them.

NOTE: All students must maintain a cumulative 2.6 grade point average to remain in the BSW program. Transfer and Change of Major students must complete the intake interview and receive a positive recommendation from the departmental faculty before registering for any upper division social work courses.

Junior Year Interview: All social work majors who have reached the status of juniors must no later than during the second semester (of the junior year), have a meeting with a panel of BSW faculty. They must bring the following to the meeting: (1) a completed copy of the "Field Application Form;" and (2) a short essay (typewritten) that outlines the students' progress toward completing requirements for their degree (BSW), and discuss progress toward their career goals.

REQUIRED MAJOR AND COGNATE COURSES FOR SOCIAL WORK

SOCI 100	SOCI 403	SOWK 512
SOCI 101	SOWK 410	SOWK 514
SOWK 133	SOWK 420	SOWK 523
SOWK 134	SOWK 235	SOWK 524
SOCI 203	SOWK 507	SOWK 570
SOCI 204	SOWK 509	SOWK/SOCI Electives (6 hrs.)
SOWK 230		

CURRICULUM GUIDE FOR SOCIAL WORK

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ENGL 101	3	UNST 110	3
MATH 111	4	SOCI 100	3
BIOL 100	4	UNST 140	3
UNST 130	3	SOWI 133[1]	3
SPCH 116	1	UNST 120	3
UNST 100	1		15
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Electives	6	UNST Electives	6
SPCH 250	3	SOWK 230	3
SOWK 134	3	PSYC 324, 325 or 434	3
SOCI 101	3	SOWK 235	3
	15	POLI 200 or ECON 200	3
			18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ENGL 404 or 331	3	SOCI 403	3
SOCI 203	3	SOWK 420	3
FOLA Elective	3	AM, EN, AFR LIT.	3
SOWK 410	3	FOLA Elective	3
SOCI 204	3	Free Elective	3
	15		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
SOWK 507	5	SOWK 509	5
SOWK 523	3	SOWK 524	3
SOWK 512	1	SOWK 514	1
SOWK Elective	3	SOWK 570(Capstone)[2]	3
SOWK Elective	3	Free Elective	3
	15		15

Total Credit Hours: 124

[1]*This course must be successfully completed prior to enrolling in any other Social Work courses.*

[2]*This course includes the program's comprehensive exam.*

All transfer social work credits must come from a CSWE accredited program.

COURSE DESCRIPTIONS IN SOCIOLOGY AND SOCIAL WORK 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. **(F;S;SS)**

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. **(F;S;SS)**

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. **(F;S;SS)**

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. **(F;S;SS)**

SOCI 303. 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. **(F;S;SS)**

SOCI 304. 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. **(F;S;SS)**

SOCI 305. 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 306. Minority Group Relations **Credit 3(3-0)**
This course is an examination of racial and ethnic relations in society. The main focus is on intergroup relations within the United States, but a global comparative approach is also emphasized. It will present views from numerous perspectives within sociology, with special emphasis on the social psychological aspects of prejudice, discrimination, and differential power structures in society. In addition, the course utilizes a comparative-historical approach to intergroup relations. **(F;S)**

SOCI 308. 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. **(F;S;SS)**

SOCI 401. 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 402. 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 401. **(S)**

SOCI 403. 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. **(F)**

SOCI 406. Criminology **Credit 3(3-0)**
The genesis and origin of crime and an analysis of theories of criminal behavior will be studied. **(F;S;SS)**

SOCI 408. Independent Study I **Credit 3(3-0)**
This course includes independent research on a specific topic or a delineated area in sociology. Prerequisite: Permission of the instructor. **(F;S)**

SOWK 412. 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. **(S)**

SOWK 413. 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. **(F;S)**

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. Prerequisites: SOCI 308 and SOWK 412. **(DEMAND)**

SOCI 473. 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 501. 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)**

SOWK 503. 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. **(F;S;SS)**

SOCI 570. Senior Seminar **Credit 3(3-0)**
Research and discussions of professional and field issues related to sociology and social work will be studied. Prerequisite: Senior standing. **(S)**

SOCI 575. 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. **(F;S)**

SOCI 625. Sociology/Social Work Internship **Credit 5(0-10)**
This course is an internship to provide opportunities for students to enhance their employability by supervised experiences in selected agencies. Prerequisites: Senior standing and SOCI 403 **(F;S)**

SOCI 672. Selected Issues in Sociology **Credit 3(3-0)**
Topics of current interest to sociologists and the student body are explored. **(S)**

SOWK 674. Evaluation of Social Programs* **Credit 3(3-0)**
The main focus is on evaluative research methodology; research designs, measurement of program effectiveness and cost effectiveness analysis. Includes case studies of needs assessment, program monitoring and impact measurement in human services. Prerequisite: Social Statistic (S203) and Research Methods (S403). **(S)**

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. **(F;S)**

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. **(F;S)**

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. **(S;SS)**

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 230. Social Welfare Policies and Services **Credit 3(3-0)**
This course examines social welfare legislation and policy. Students spend a minimum of 40 hours in a social agency. Prerequisite: SOWK 133. **(S)**

SOWK 235. 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. Prerequisites: SOWK 133, or permission of instructor. **(S)**

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. **(F)**

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 410. 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, SOCI 100, 101 and 203. Acceptance into BSW program. **(F)**

SOWK 418. 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 420. 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. Prerequisities: SOWK 133, 134, and 410. **(S)**

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 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 503. 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. **(F)**

SOWK 507. 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 volunteer hours are required. Prerequisities: SOWK 133, 134, 230, 235 230, 235, 410, and 420. Taken concurrently with SOWK 512 and 523. Acceptance into BSW program. Professional liability insurance required before entering the Field. **(F)**

SOWK 509. Field Education II **Credit 5(0-16)**

In this second sequential practicum, students will build on their generalist foundational knowledge and skills by working in a social service setting providing direct intervention to populations-at-risk, carrying professional level case loads. A total of 220 volunteer hours are required. SOWK 507, 512, 523. Taken concurrently with SOWK 514 and 524. **(S)**

SOWK 512. 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. Prerequisities: SOWK 133, 134, 230, 235, 410, and 420. Taken concurrently with SOWK 523. **(F)**

SOWK 514. 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 512 and 523. Taken concurrently with SOWK 524. **(S)**

SOWK 523. 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, 335, 410, 420 and 430. Taken concurrently with SOWK 507 and 512. Acceptance into BSW program. **(F)**

SOWK 524. 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. Prerequisities: SOWK 523. Taken concurrently with SOWK 512 and 514. Acceptance into BSW program. **(S)**

SOWK 525. 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. **(F;S;SS)**

SOWK 570. Senior Seminar **Credit 3(3-0)**

This course includes research and discussion of professional and field issues related to careers in sociology and social work. Prerequisite: Senior status. **(S)**

SOWK 571. Social Work Methods II **Credit 3(3-0)**

This course is a continuation of skill development. Emphasis is on social work intervention in larger systems, (organizations, groups and communities.) Attention is given to further understanding the dynamic relationship between people and their environments; the conflicting issues in social work practice, and the impact of various settings on practice. Taken concurrently with SOWK 520. **(S)**

SOWK 574. Institutional Services for Children **Credit 3(3-0)**
This course is a study of the primary resources available for children. Emphasis will be placed on the characteristics of children needing help and the adequacy/inadequacy of community programs. Attention is given to the cooperative nature of these programs as well as the auspices, standards and policies. **(DEMAND)**

SOWK 674. Evaluation of Social Programs* **Credit 3(3-0)**
The main focus is on evaluative research methodology; research designs, measurement of program effectiveness and cost effectiveness analysis. Includes case studies of needs assessment, program monitoring and impact measurement in human services. Prerequisites: Social Statistic (S203) and Research Methods (S403). **(S)**

**Full time social work students are required to register for SOWK 333, 410, 507, and 519 concurrently. Part time students with faculty approval may complete SOWK 333, and 410 prior to registering for 507 and 519.*

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. **(F;S)**

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. **(F;S)**

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. **(F;S;SS)**

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)**

SOWK 370. Introduction to Gerontology **Credit 3(3-0)**
Aging and its implication in social institutions are studied.**(F;S;SS)**

SOWK 414. 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. **(F;S;SS)**

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)**

SOCI 416. Sociology of Mental Health **Credit 3(3-0)**
This course is a sociocultural variation in the assessment of sociopadiological 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)**

SOWK 515. Independent Study II **Credit 3(3-0)**
Prerequisite: Six hours of statistics, and/or research. **(DEMAND)**

SOSW 600. Seminar in Social Planning **Credit 3(3-0)**
Personal and social values as related to social planning: "systems" theories program planning and evaluation are studied. Prerequisite: Senior or graduate standing. **(DEMAND)**

SOSW 601. Seminar in Urban Studies **Credit 3(3-0)**
An analysis of the nature and problems of cities, urban society and urban development will be included. **(DEMAND)**

SOCI 603. Introduction to Folklore **Credit 3(3-0)**
This course is a basic introduction to the study and appreciation of folklore. **(DEMAND)**

SOCI 625. 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. **(F;S)**

SOCI 650. 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 651. 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)**

SOSW 669. Small Groups **Credit 3(3-0)**

Elements and characteristics of small group behavior and process will be studied. Prerequisite: Senior or graduate standing; or permission of the instructor. **(F;S)**

SOSW 670. Law and Society **Credit 3(3-0)**

This course examines selected and representative forms of social justice and injustices; and barriers to and opportunities for legal redress, as related to contemporary issues. Prerequisite: Senior or graduate standing. **(F;S;SS)**

SOWK 674. Evaluation of Social Programs* **Credit 3(3-0)**

Main focus is on evaluative research methodology; research designs, measurement of Program effectiveness and cost effectiveness analysis. Includes case studies of needs assessment, program monitoring and impact measurement in human services. Prerequisite: Social Statistics (S203) and Research Methods (S403). **(S)**

SOCI 701. 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. **(S)**

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

Fasihuddin Ahmed ..... **Professor**
B.A., Forman Christian College; M.A., University of the Punjab; Ph.D., University of Chicago

Arnold Barnes..... **Associate Professor and Director of JMSW**
B.A., M.S.W., University of Maryland; Ph.D., Washington University

Glenna Barnes ..... **Assistant Professor**
B.S., Boston University; M.S.W., University of Maryland, Ph.D., Indiana University

Phillip Carey..... **Professor**
B.S, M.S., Ph.D., Oklahoma State University

Terrolyn Carter..... **Assistant Professor**
B.S., Xavier UniversityofLouisiana, M.S., Ph.D., University of Missouri-Columbia

Sharon W. Cook ..... **Assistant Professor and Director of BSW Program**
B.A., North Carolina Central University; M.S.W., University of North Carolina at Chapel Hill; Ph.D., University of North Carolina at Greensboro

Yoko S. Crume ..... **Assistant Professor**
B.A., International Christian University, Tokyo, M.S., Kettering Institute, M.S.W., Ph.D., University of North Carolina at Chapel Hill

Robert Davis ..... **Professor and Chairperson**
B.A., Southern University; M.A., Atlanta University; Ph.D., Washington State University; Post-Doctoral, University of Wisconsin, Madison

David Johnson ..... **Associate Professor**
B.A., Hamilton College, M.A., Ph.D., University of North Carolina at Chapel Hill

Mary T. Lewis..... **Assistant Professor**
B.A., Davis and Elkin College, M.S.W., University of Connecticut, Ph.D., Saybrook Graduate School and Research Center

Wayne Moore ..... **Associate Professor**
B.S., East Carolina University; M.S.W., Ohio State University; Ph.D., University of South Carolina

Elizabeth Watson ..... **Associate Professor and Co-Director of BSW Field**
B.S., Columbia Union College; M.S.W., Howard University; Ph.D., Andrews University

ADJUNCT FACULTY

Andrea Johnson..... **Lecturer**
B.A., North Carolina A&T State University, M.S., North Carolina State University, Ph.D., North Carolina A&T State University

Deirdre Posey..... **Lecturer and Co-Director of JMSW Field**
B.S.W., M.S.W., North Carolina A&T State University

Department of Visual & Performing Arts

http://www.ncat.edu/~vpa

Eleanor W. Gwynn, Chairperson

OVERVIEW

The Department of Visual and Performing Arts comprises the Programs of Music, Theatre, Visual Arts and a Dance concentration. Through an ongoing collaborative process, the Department develops and sustains the artistic and cultural environment of the university and the community. The department prepares students both academically and artistically through the implementation of interdisciplinary studies for leadership roles in a diverse society.

MISSION

The mission of the department of visual and performing arts is to provide students with exceptional professional programs, which combine development in artistic disciplines and career preparation in the arts. These programs are delivered to students through individualized and small group instruction within a broadly based curriculum. The department fosters creativity, exploration and discovery in students through interdisciplinary collaboration and outreach inspiring growth, change and global awareness through the arts. To support this mission, the faculty of the department of visual and performing arts subscribes to the highest academic, artistic and ethical standards for themselves and their students.

VISION

To be the premiere Southeastern Visual and Performing Arts center for the study, research and creation of dance, music, theatre and visual arts from a cross-cultural perspective with an emphasis in the African Diaspora.

OBJECTIVES

1. to prepare students for professional employment and admission to graduate and professional schools.
2. to engage students in dialogue about the aesthetic experience and its role in a global society.
3. to create awareness of the historical development of the arts in western and non-western traditions.
4. to provide opportunities for international studies, travel and documentation of the arts.
5. to provide an environment conducive to creative achievement in the arts.

DANCE PROGRAM

http://www.ncatdanceprogram.org

Melanie Dalton, Program Director

For the complete program, see Liberal Studies – Dance

Bachelor of Arts in Liberal Studies (Dance)

All dance concentration majors must audition and be accepted into the program. A GPA of 2.00 is required for acceptance into the program, however in special cases, a student may be admitted on a provisional bases. All majors are required to participate in on-campus and community dance company production as performers and/or as technical assistants. Students must successfully complete 24 semester hours from the following course options.

DANC 100	DANC 220	DANC 450
DANC 110	DANC 300	DANC 500
DANC 200	DANC 301	DANC 550
DANC 210	DANC 330 or 331	LIBS 601

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 chorographers, and historical periods. This course may substitute for Humanities elective. **(F;S;SS)**

DANC 300. Dunham Technique **Credit 2(1-2)**

Dunham I is designed to introduce students to the technique of noted dancer, choreographer and anthropologists Katherine Dunham. Students will be introduced to the barre' exercises, center floor skills and progressions, as well as the history and philosophy of Katherine Dunham. **(F)**

DANC 301. Dunham II **Credit 2(1-2)**

This course is a continuation and refinement of the skills covered in Dunham Technique I. Special emphasis will be given to the theoretical framework and philosophy of Dunham Technique. Acquisition of additional skills includes progressions (movement through space) and performance style. A research paper and public performance is required. **(S)**

DANC 330. World Dance **Credit 2(1-1)**

The focus of this course is dances of other world not covered in DANC 330. These countries include but are not limited to North Africa, Asia, Europe and South America (Brazil). Cultural norms, history, and aesthetics are also included, In addition to lectures, the course will incorporate slides, video tapes of the various dance forms and guest lectures. Practical experiences in the dances are an important aspect of the course. **(F;S)**

DANC 331. Dances of Africa and The Caribbean **Credit 2(1-2)**

The course is an introduction to selected dances of Africa and the Caribbean. Skill acquisition, cultural norms, history, theory and aesthetics of the selected dances will be explored in depth. Geographical areas of study include, but are not limited to Ghana, Puerto Rico, Cuba, Haiti, and Jamaica. **(F;S;SS)**

DANC 450. Blacks in Western Theatrical Dance **Credit 3(3-0)**

This course is designed to include the theoretical framework of concert vernacular dance in America with emphasis on the contributions of African-Americans from 1900 to the present. Lectures and practical experiences are a part of this course. A research paper and presentation are required. **(S)**

DANC 500. Dance Ethnography **Credit 3(3-0)**

This is an introductory course in ethnography research methods and theory in dance. Emphasis is on the art and science of describing dances, rituals, and arts and crafts of a group or culture. Movement analysis, protocol in the field and us media equipment for research are included. **(S)**

DANC 550. Summer Abroad **Credit 3(2-2)**

This study abroad course includes a three week study of traditional folk dances in a selected African or Caribbean country. The focus is on traditional dances, cultural norms, history of the country and the dances, rituals and ceremonies of the people. Students will interact with the local population in structured and non-structured classes. Students will spend time in villages and provinces accompanied by a local guide. The material gathered during the study abroad experience will form the basis for the Senior Project. Pre-and post-departure preparation will occur during the first two week, and the final week of the summer session. **(SS)**

LIBS. 601 Senior Project **Credit 3(2-2)**

The course description is under Liberal Studies.

DIRECTORY OF FACULTY

Eleanor Gwynn..... **Professor**
B.S., Tennessee A&I State University, M.F.A. UNC Greensboro, Ph. D. University of Wisconsin-Madison

Melanie Dalton .....**Adjunct Professor**
B.S. North Carolina A&T State University, B.A. UNC Greensboro

ADJUNCT FACULTY

Ara Tourek .....**Adjunct Faculty**
B.F.A. Ohio University, M.F.A. University of North Carolina at Greensboro

MUSIC PROGRAM

http://www.ncat.edu/~music

William C. Smiley, 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
Music (Secondary Education) – Bachelor of Science

The Music Program offers the Bachelor of Arts degree with two options. One option is a liberal arts curriculum leading to the Bachelor of Arts in Music degree with concentrations in general music. This degree program is designed to accommodate students who wish to enter some area of music other than teaching. The other option is a professional degree in performance. This degree is designed for students who desire a career as a concert artist. Degree program requirements differ, and are not necessarily interchangeable. Students are advised to check programs carefully.

The Bachelor of Science degree is a teacher education based curriculum with either choral or instrumental concentrations. Students who wish to teach in the public schools must follow this curriculum and the guidelines of the School of Education to meet certification and graduation requirements.

CAREER OPPORTUNITIES

Successful completion of the requirements of the B.A. degree in Music provides the student with opportunities for various careers in the performing arts, and/or related disciplines. Completion of the B.S. degree certifies one to teach in the public schools.

PROGRAM REQUIREMENTS

For certified admission to the study of music as a major, all prospective students must successfully pass auditions set by the Faculty in the principal applied music area.

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.

REQUIRED MAJOR COURSES FOR MUSIC
(Performance)

MUSI 101	MUSI 300	MUSI 408
MUSI 102	MUSI 301	MUSI 409

MUSI 113	MUSI 309	MUSI 410
MUSI 114	MUSI 302	MUSI 411
MUSI 119	MUSI 303	MUSI 412
MUSI 120	MUSI 304	MUSI 413
MUSI 121	MUSI 305	MUSI 427
MUSI 200	MUSI 306	MUSI 450
MUSI 201	MUSI 308	MUSI 501
MUSI 213	MUSI 307	MUSI 503
MUSI 214	MUSI 402	MUSI 513
MUSI 218	MUSI 403	MUSI 550
MUSI 260	MUSI 404	

(General)

MUSI 101	MUSI 201	MUSI 307
MUSI 102	MUSI 216	MUSI 309
MUSI 113	MUSI 220	MUSI 402
MUSI 114	MUSI 221	MUSI 403
MUSI 120	MUSI 300	MUSI 404
MUSI 213	MUSI 302	MUSI 501
MUSI 214	MUSI 301	MUSI 551
MUSI 200		

(Education)

MUSI 100	MUSI 213	MUSI 404
MUSI 101	MUSI 214	MUSI 413
MUSI 102	MUSI 218	MUSI 415
MUSI 105	MUSI 260	MUSI 424
MUSI 113	MUSI 300	MUSI 428
MUSI 114	MUSI 301	MUSI 429
MUSI 119	MUSI 309	MUSI 501
MUSI 120	MUSI 307	MUSI 503
MUSI 200	MUSI 402	MUSI 593
MUSI 201	MUSI 403	

CURRICULUM GUIDE FOR MUSIC (PERFORMANCE – PIANO)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MUSI 307	0	MUSI 119	1
MUSI 120	1	MUSI 121	1
MUSI 101	3	MUSI 102	3
MUSI 163	2	MUSI 163	2
MUSI 154	1	MUSI 154	1
MUSI 301	1	MUSI 301	1
UNST 100	1	MUSI 307	0
UNST 110	3	UNST 130	3
UNST 120	3	UNST 140	3
	15		15

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MUSI 200	3	MUSI 201	3
MUSI 263	2	MUSI 263	2
MUSI 254	1	MUSI 254	1
MUSI 301	1	MUSI 301	1
MUSI 306	1	MUSI 306	1
MUSI 307	0	MUSI 307	0
FOLA I	3	FOLA II	3
UNST Elective	3	UNST Elective	3
UNST Elective	3	UNST Elective	3
	17		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*

MUSI 402	3	MUSI 404	3
MUSI 463	2	MUSI 463	2
MUSI 306	1	MUSI 300,301 or 308	1
MUSI 307	0	MUSI 307	0
MUSI 403	3	MUSI 306	1
MUSI 450	1	BIOL 100	4
MUSI 301	1	MUSI 301	1
MUSI 415	2	PSYC 320	3
MUSI Elective	1	DANC 100[1]	2
MUSI 260	1		17
Free Elective	2		
	15		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MUSI 306	1	MUSI 553 (Capstone)	2
MUSI 307	0	MUSI 550 (Capstone)	1
MUSI 301	1	MUSI 306	1
MUSI 553	2	MUSI Elective	2
MUSI 409	2	MUSI 301	1
MUSI 501	2	MUSI 307	0
MUSI 503	2	Free Elective	3
MUSI Elective	3	MUSI 551	3
	13		13

Total Credit Hours: 124

[1]*PHED requirement*

CURRICULUM GUIDE FOR MUSIC (PERFORMANCE – VOICE)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MUSI 307	0	MUSI 119	1
MUSI 120	1	MUSI 121	1
MUSI 101	3	MUSI 102	3
MUSI 153	2	MUSI 153	2
MUSI 164	1	MUSI 164	1
MUSI 301	1	MUSI 301	1
UNST 100	1	MUSI 307	0
UNST 110	3	UNST 130	3
UNST 120	3	UNST 140	3
	15		15

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MUSI 200	3	MUSI 201	3
MUSI 253	2	MUSI 253	2
MUSI 264	1	MUSI 264	1
MUSI 301	1	MUSI 301	1
MUSI 306	1	MUSI 306	1
MUSI 307	0	MUSI 307	0
FOLA I German	3	FOLA II German	3
UNST Elective	3	UNST Elective	3
UNST Elective	3	UNST Elective	3
	17		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MUSI 402	3	MUSI 404	3
MUSI 453	2	MUSI 453	2
MUSI 306	1	MUSI 300,301 or 308	1
MUSI 307	0	MUSI 307	0
MUSI 403	3	MUSI 306	1
MUSI 450	1	BIOL 100	4
MUSI 301	1	MUSI 301	1

MUSI 415	2	PSYC 320	3
MUSI 427	3	DANC 100[1]	2
	16		17

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MUSI 306	1	MUSI 553 (Capstone)	2
MUSI 307	0	MUSI 550 (Capstone)	1
MUSI 301	1	MUSI 306	1
MUSI 553	2	MUSI 410	2
MUSI 411	2	MUSI 301	1
MUSI 501	2	MUSI 307	0
MUSI 503	2	FOLA II French	3
FOLA I French	3	MUSI 551	3
Free Elective	2		13
	15		

Total Credit Hours: 124

[1]*PHED requirement*

CURRICULUM GUIDE FOR MUSIC (PERFORMANCE – INSTRUMENTAL)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MUSI 307	0	MUSI 119	1
DANC 100[2]	2	MUSI 102	3
MUSI 101	3	MUSI 133[1]	2
MUSI 133[1]	2	MUSI 164	1
MUSI 164	1	MUSI 300	1
MUSI 300	1	MUSI 307	0
UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3		14
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MUSI 200	3	MUSI 201	3
MUSI 233[1]	2	MUSI 233[1]	2
MUSI 264	1	MUSI 264	1
MUSI 300 or 308	1	MUSI 300 or 308	1
MUSI 302, 303 or 304	1	MUSI 302, 303 or 304	1
MUSI 307	0	MUSI 307	0
FOLA I	3	FOLA II	3
UNST Elective	3	UNST Elective	3
UNST Elective	3	UNST Elective	3
	17		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MUSI 402	3	MUSI 404	3
MUSI 433[1]	2	MUSI 433[1]	2
MUSI 302, 303 or 304	1	MUSI 300 or 308	1
MUSI 307	0	MUSI 307	0
MUSI 403	3	MUSI 302, 303 or 304	1
MUSI 300 or 308	1	BIOL 100	4
MUSI 415	2	PSYC 320	3
MUSI 429 or 430	3	MUSI 450	1
	15		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MUSI 302, 303 or 304	1	MUSI 533[1] (Capstone)	2
MUSI 307	0	MUSI 550 (Capstone)	1
MUSI 300 or 308	1	MUSI 302, 303 or 304	1

MUSI 533[1]	2	MUSI Elective	2
MUSI Elective	2	MUSI 300 or 308	1
MUSI 501	2	MUSI 307	0
MUSI Score Reading & Conduct	2	Elective	4
Elective	4	MUSI 551	3
Elective	2		14
	16		

Total Credit Hours: 124

[1]MUSI 113 (Upper Brass), MUSI 123 (Lower Brass), MUSI 133 (Woodwinds), MUSI 143 (Percussion), MUSI 153 (Voice), and MUSI 163 (Piano). Courses with multiple numbers are determined on the basis of the principal applied instrument.

[2]PHED requirement

CURRICULUM GUIDE FOR MUSIC (GENERAL – PRE-MUSIC THERAPY)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3	MUSI 220	3
MUSI 101	3	MUSI 102	3
MUSI 113[1]	2	MUSI 113[1]	2
MUSI 164	1	MUSI 164	1
MUSI 300, 301, or 308	1	MUSI 300, 301, or 308	1
MUSI 307	0	MUSI 307	0
MUSI 119	1		16
	15		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MUSI 200	3	MUSI 201	3
MUSI 213[1]	2	MUSI 213[1]	2
PSYC 242	3	PSYC 320	3
MUSI 264	1	MUSI 264	1
MUSI 300, 301, or 308	1	MUSI 300, 301, or 308	1
MUSI 307	0	MUSI 307	0
UNST Elective	3	UNST Elective	3
UNST Elective	3	UNST Elective	3
	16		15

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
FOLA I	3	ART 224	2
PSYC 321	3	MUSI 219	3
MUSI 221	3	SPCH 250	3
MUSI 302 (or other ensemble)	1	FOLA II	3
MUSI 307	0	MUSI 302 (or other ensemble)	1
MUSI 402	3	MUSI 307	0
MUSI 403	3	MUSI 404	3
	16	DANC 100[2]	2
			17

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BIOL 100	4	BAUD 425	3
MUSI 415	2	MUSI 302 (or other ensemble)	1
MUSI 302 (or other ensemble)	1	MUSI 307	0
MUSI 307	0	MUSI 216	3
MUSI 501	3	MUSI 551 (Capstone)	3
PHIL 260	3	PSYC Elective	3
MUSI 105	1	MUSI Elective	2
	14		15

Total Credit Hours: 124

[1]MUSI 113 (Upper Brass), MUSI 123 (Lower Brass), MUSI 133 (Woodwinds), MUSI 143 (Percussion), MUSI 153 (Voice), and MUSI 163 (Piano). Courses with multiple numbers are determined on the basis of the principal applied instrument.

[2]*PHED requirement*

CURRICULUM GUIDE FOR MUSIC (GENERAL – ELECTRONIC MUSIC)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3	MUSI 220	3
MUSI 101	3	MUSI 102	3
MUSI 113[1]	2	MUSI 113[1]	2
MUSI 164	1	MUSI 164	1
MUSI 300, 301, or 308	1	MUSI 300, 301, or 308	1
MUSI 307	0	MUSI 307	0
MUSI 119	1		16
	15		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MUSI 200	3	MUSI 201	3
MUSI 213[1]	2	MUSI 213[1]	2
MUSI 226	3	MUSI 225	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
UNST Elective	3	UNST Elective	3
UNST Elective	3	UNST Elective	3
	16		15

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MUSI 415	2	ART 224	2
FOLA I	3	MUSI 219	3
MUSI 221	3	SPCH 250	3
MUSI 302 (or other ensemble)	1	FOLA II	3
MUSI 307	0	MUSI 302 (or other ensemble)	1
MUSI 402	3	MUSI 307	0
MUSI 403	3	MUSI 404	3
	15	MUSI 416	2
			17

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BIOL 100	4	BUAD 425	3
MUSI 516	2	MUSI 302 (or other ensemble)	1
MUSI 302 (or other ensemble)	1	MUSI 307	0
MUSI 307	0	MUSI 216	3
MUSI 501	3	MUSI 551 (Capstone)	3
PHIL 260	3	THEA 542	3
DANC 100[2]	2	MUSI Elective	2
	15		15

Total Credit Hours: 124

[1]*MUSI 113 (Upper Brass), MUSI 123 (Lower Brass), MUSI 133 (Woodwinds), MUSI 143 (Percussion), MUSI 153 (Voice), and MUSI 163 (Piano).. Courses with multiple numbers are determined on the basis of the principal applied instrument.*

[2]*PHED requirement*

CURRICULUM GUIDE FOR MUSIC (GENERAL – MUSIC THEATER)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3	MUSI 220	3
MUSI 101	3	MUSI 102	3
MUSI 113[1]	2	MUSI 113[1]	2

MUSI 164	1	MUSI 164	1
MUSI 300, 301, or 308	1	MUSI 300, 301, or 308	1
MUSI 307	0	MUSI 307	0
MUSI 119	1		16
	15		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MUSI 200	3	MUSI 201	3
MUSI 213[1]	2	MUSI 213[1]	2
PSYC 242	3	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 216	3
UNST Elective	3	UNST Elective	3
UNST Elective	3	UNST Elective	3
	16		16

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
THEA 210	3	ART 224	2
FOLA I	3	MUSI 219	3
THEA 231	3	SPCH 250	3
MUSI 302 (or other ensemble)	1	FOLA II	3
MUSI 307	0	MUSI 302 (or other ensemble)	1
MUSI 402	3	MUSI 307	0
MUSI 403	3	MUSI 404	3
	16	DANC 100[2]	2
			17

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BIOL 100	4	THEA 464	3
MUSI 415	2	MUSI 302 (or other ensemble)	1
MUSI 302 (or other ensemble)	1	MUSI 307	0
MUSI 307	0	MUSI 551 (Capstone)	3
MUSI 501	3	THEA	3
PHIL 260	3	MUSI 221	3
MUSI 105	1	MUSI Elective	2
	14		15

Total Credit Hours: 124

[1]MUSI 113 (Upper Brass), MUSI 123 (Lower Brass), MUSI 133 (Woodwinds), MUSI 143 (Percussion), MUSI 153 (Voice), and MUSI 163 (Piano). Courses with multiple numbers are determined on the basis of the principal applied instrument.

[2]PHED requirement

CURRICULUM GUIDE FOR SECONDARY EDUCATION (MUSIC)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3	MUSI 102	3
MUSI 101	3	MUSI 307	0
MUSI 113[1], 123, 133, 143, 153, or 163	2	MUSI 113[1], 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 300, 301, or 308	1
MUSI 307	0	MUSI 119	1
MUSI 120[2]	1	CUIN 101	1
CUIN 102	2		15
	17		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*

MUSI 200	3	MUSI 201	3
CUIN 301	2	HPED 200	2
MUSI 213[1], 223, 233, 243, 253, or 263	2	MUSI 213[1], 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 307	0
MUSI 307	0	MUSI 300, 301, or 308	1
HPED 101	1	UNST Elective	3
UNST Elective	3	UNST Elective	3
UNST Elective	3		15
	16		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PSYC 320	3	SPCH 250	3
FOLA I	3	CUIN 436	3
MUSI 300, 301, or 308	1	CUIN 530	2
MUSI 307	0	MUSI 430	2
MUSI 413[1], 423, 433, 443, 453, or 463	2	MUSI 413[1], 423, 433, 443, 453, or 463	2
MUSI 402	3	MUSI 307	0
MUSI 403	3	MUSI 404	3
MUSI 427 (Vocal majors only)	2	MUSI 300, 301, or 308	1
MUSI 415	2		16
	19		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CUIN 400	3	CUIN 500	3
CUIN 531 or 532	3	CUIN 560	6
MUSI 300, 301, or 308	1	CUIN 624	3
MUSI 307	0		12
MUSI 429	2		
MUSI 501	3		
MUSI 503	2		
MUSI 428	2		
MUSI 593[3]	2		
	18		

Total Credit Hours: 126 (8)

[1]MUSI 113 (Upper Brass), MUSI 123 (Lower Brass), MUSI 133 (Woodwinds), MUSI 143 (Percussion), MUSI 153 (Voice), and MUSI 163 (Piano). Courses with multiple numbers are determined on the basis of the principal applied instrument.

[2]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).

[3]MUSI 593 is a Capstone Experience and may not be taken concurrently with CUIN 560.

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 roof 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;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. **(F;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-Keyboard **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 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. **(S)**

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. **(DEMAND)**

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 501. Arranging **Credit 3(2-2)**

Scoring for chorus, band, orchestra, vocal and instrumental chamber ensembles will be studied. Prerequisites: MUSI 400 and 401. **(F;SS)**

MUSI 516. Electronic Music Composition **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. **(DEMAND)**

MUSIC HISTORY AND LITERATURE

MUSI 216. Music Appreciation I **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 217. Music Appreciation II **Credit 3(3-0)**

This course is a survey of the literature and styles of the several periods of music history from antiquity through the present. It is designed for the general student as a continuation of Music Appreciation I. Prerequisite: MUSI 216. **(DEMAND)**

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 musica1 forms and styles within the social, economic, and political areas. Formal musical training desirable but not required. Humanities credit given. **(S;SS)**

MUSI 221. History of Jazz **Credit 3(3-0)**
This is a general survey course of the history of jazz from its beginnings to the present, with major emphasis placed on the stylistic and evolutionary development of the music and the significant contributors to jazz styles. Lectures will be supplemented by films, slides, demonstrations, live concerts, and phonograph recordings. Course is open to non-music majors as well as music majors. No formal knowledge of music theory and history or previous background in music is necessary for enrollment. **(F;S;SS)**

MUSI 226. History of Electronic Music **Credit 3 (3-0)**
This course will survey electronic music pioneers from the early twentieth century through the latest twentieth century developments with implications for the twenty-first century. Cahill, Cage, Vare'se, Stockhausen, Babbitt, Moog and Chowing are some of the electronic composers who will be studied. **(DEMAND)**

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 405. Music of the Baroque Period **Credit 2(1-2)**
An analysis of the main works of the principal composers of the early, middle, and late Baroque periods culminating with a more detailed study of the works of Handel and J.S. Bach will be studied; vocal, keyboard and other instrumental forms are included; emphasis is on stylistic characteristics. Prerequisite: MUSI 403. **(DEMAND)**

MUSI 406. Music of the Romantic Period **Credit 2(1-2)**
This course includes intensive study of the works of the principal composers of the Romantic era; emphasis is on general and individual stylistic characteristics. Prerequisite: MUSI 404. **(DEMAND)**

MUSI 407. Modern Music from 1890 to the Present **Credit 2(1-2)**
The music of the so-called Viennese school of the twentieth century against the background of late German romanticism and French impressionism will be studied; the dissolution of the tonal system and the development of the serial principle-the music of Bartok, Stravinsky and others in the light of nineteenth and twentieth century investigations of folk or national materials and their influence upon serious artists; the relationship of Bartok and Stravinsky to traditional harmonic principles and to the formal structures of the past; and other trends in the twentieth century will be studied. Prerequisites: MUSI 201 and 404. **(DEMAND)**

MUSI 408. The Symphony **Credit 2(1-2)**
This course is the study of the formulation of classical principles of construction by Josef Haydn, with reference to the contributions of Gluck C.P.E. Bach and the Manheim school; the fulfillment of the classical ideal of the works of Mozart and Beethoven; changing concepts of the symphony after Beethoven; the Romanticists' approach to form; and study of the major Romantic symphonies by composers from Schubert to Mahler. Prerequisites: MUSI 201 and 404. **(DEMAND)**

MUSI 409. Keyboard Music **Credit 2(1-2)**
Techniques, musicianship, and stylistic aspects of interpretation from pre-Bach to the present; intellectual, emotional, and imaginative aspects of performance as exemplified by works from leading composers including Bach, Mozart, Haydn, Beethoven, Chopin, Schumann, Debussy, and Moussorgsky will be studied; all lectures illustrated at the piano. Prerequisite: MUSI 404. **(S)**

MUSI 410. Opera **Credit 2(1-2)**
The establishment of the opera as a feasible musico-dramatic genre and the various solutions to problems of the opera as suggested by composers from the seventeenth to the twentieth centuries will be examined; special emphasis will be placed on the works of Monteverdi, Scarlatti, Gluck, Mozart, Wagner, and Verdi. Prerequisites: MUSI 201 and 404. **(F)**

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)**

MUSI 412. Chamber Music **Credit 2(1-2)**
This course provides an analysis of masterworks of chamber literature for instrumental and vocal ensembles by the main composers for each of the several periods in music history and interpretation. Prerequisite: MUSI 404. **(DEMAND)**

MUSIC PEDAGOGY

MUSI 105. Class Guitar I **Credit 1(0-2)**
This course provides basic instruction in guitar performance. Designed for the general college student; the course requires no previous experience with music. **(S)**

MUSI 106. Class Guitar II **Credit 1(0-2)**
This is a continuation of MUSI 105. Prerequisite: MUSI 105. **(DEMAND)**

MUSI 111. Basic Performance Techniques **Credit 2(0-4)**
This is a study of the basic elements of tone production, reading, techniques and style in the performance of instrumental or vocal music. The course is designed for entering music majors with deficiencies in the primary performance medium and as a music elective for non-majors. This course may not be used for credit toward degrees in music. **(DEMAND)**

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. **(DEMAND)**

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. Music Pedagogy I (Strings & Vocal) **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 429. Music Pedagogy II (Brass & Woodwinds) **Credit2(2-0)**
This course is designed for the Music Education major. This course will present basic instructional techniques for playing orchestral brasswind instruments.

MUSI 430. Music Pedagogy III (Percussions) **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.

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. **(DEMAND)**

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)**

MUSI 309. University Orchestra **Credit 2(0-4)**

This is an organization designed to perform a wide range of orchestral compositions representing various musical styles, and periods. Emphasis is placed on the more important of the standard symphonic works from the eighteenth, nineteenth, and twentieth centuries. Membership is open to all qualified students through audition with the director. May be repeated for credit each semester. **(DEMAND)**

APPLIED MUSIC

Individual instruction is available in the following branches of applied music as both principal and secondary areas of study:

Piano	Flute	Bassoon	Trombone
Voice	Oboe	French Horn	Euphonium
Percussion	Clarinet	Trumpet	Tuba

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 503. Score Reading and Conducting **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.

MUSI 550. Senior Recital **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 513. For Bachelor of Arts- Performance majors the recital should be presented during the second semester of MUSI 513. Prerequisites: MUSI 113, 213, and 413. **(DEMAND)**

MUSI 593. Applied Performance Recital **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 appropriates 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. **(DEMAND)**

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 563. Principal Applied Piano **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 in 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 553. Principal Applied Voice **Credit 2(0-2)**

1. Competencies: Continuation of 413 with emphasis on preparation for senior recital.
2. Studies: Continuation of 413 with more intricate scales and arpeggios.
3. Solos: 10 songs in English, German, Italian, and French to be memorized. Representative composers: Wolf, Schumann, Faure, Verdi, Britten, Handel, Debussy.

PERCUSSIONS

Requirements for Admission: The candidate shall demonstrate satisfactory performing ability in at least one of the following areas of percussion:

Performance: Snare drum, Xylophone, marimba and timpani. These competencies will include:

1. The ability to perform a solo.
2. The ability to perform an excerpt from a book in which the applicant has studied that will demonstrate musicianship and technical skill.
3. The ability to play at sight representative literature which is characteristic of the instrument.
4. Previous ensemble in band and/or orchestra. Additional competencies for snare drum:
   a. Basic knowledge of rudiments.
   b. The performance of a Sousa march or the equivalent.

Additional competencies for xylophone marimba: The ability to play major scales through 4 flats and 4 sharps in one octave.

Additional competencies for timpani:

a. Basic knowledge of timpani techniques.
b. A thorough knowledge of the range of each timpani.

MUSI 143, 243. Principal Applied Percussions

1. Competencies:
   a. Snare Drum: Fundamentals, military techniques, reading and control.
   b. Mallets: Fundamentals, reading technique-musical orientation.
2. Studies: Price, Beginning Snare Drum; Goldeberg, Mallet Instruments; Stone, Stack Control; Bower, Drum Method; Gardner, Modern Method, Book 1, Stone, Mallet Control.
3. Solos: Wilcaxon, Rudimental Solos; Price, Exhibition Drum Solo; Colgrass, Advanced Snare Drum Solo; Brever Easy -Medium Mallet Solos; Stone, Military Drum Beats.

MUSI 443, 543. Principal Applied Percussions

1. Competencies:
   a. Snare Drum: Fine control, orchestra techniques.
   b. Mallets: Reading, advanced techniques, tambourine, castanets, brass drum, and cymbals.
   c. Timpani: Kettle technique, tuning exercises and control.
   d. Latin-American Instruments.
   e. Percussion: “Trap” techniques, tambourine, castanets, brass drum, and cymbals. Basic skills on each.
2. Studies: Price, Techniques and Exercises for Triangle, Tambourine and Castanets; Brewer, Daily Studies; Goldenberg, Mallet Instruments. Goodman, Timpani Method-Fresia, Timpani Method- Tourte, Snare Drum Technique; Gardner, Modern Method, Book II, Mallets, Chopin, Advanced Techniques for the Modern Drummer.
3. 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:

1. Basic development in embouchure and articulation.
2. Knowledge of fingering and alternates.
3. Satisfactory tone quality and control.
4. 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.
5. Minimum-Two octave range.
6. Ability to play a simple song demonstrating musicianship which includes phrasing and expression.
7. Previous study in the equivalent of the Rubank Advanced Method.

8. Previous ensemble experience in band and/or orchestra.
9. Ability to play at sight representative literature which is characteristic of the instrument.

MUSI 113-1, 213-1. Principal Applied Trumpet

1. 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.
2. Studies: "Studies: Arban's selected studies; selected studies by Getchell, Hovey, Hering and Clarke."
3. Literature-Selected from NIMAC-Music Educator's National Conference.

MUSI 413-1, 513-1. Principal Applied Trumpet

1. Competencies: Intonation; embouchure techniques; breath control and tone quality; articulation; reading; style; performance techniques.
2. Studies: Rubank, Advanced Method, Arbam Cumpleti Method for Trumpet, Fischer; Laube - CIB Contest Album; Bantold-Orchestral Excerpts.
3. 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, 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, 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, 513-2. 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 533-1. Principal Applied Flute

1. Competencies: Recital preparation.
2. Studies: Schmitd, Orchestral Studies.
3. Literature: Chaminade, Concertino, Hindemith, Sonata.

MUSI 133-2. Principal Applied Oboe

1. Competencies: Major and Minor scales through 5 sharps and 5 flats. Emphasis on fingering and tonal development.
2. Studies: Ferling, 144 Preludes and Studies; Barrett, Completed Method for Oboe.
3. Literature: Franck, Piece V, Piece in G. Minor; Handel, Sonatas.

MUSI 233-2. Principal Applied Oboe

1. Competencies: All major and minor scales throughout the practical performing range. Emphasis on sight reading. Reed adjustment.
2. Studies: Barret, Method: Tustin, Technical Studies.
3. Literature: Schumann, Three Romances: Telemann, Concerto in F Minor.

MUSI 433-2. Principal Applied Oboe

1. Competencies: Continued scale study, emphasis on performing literature. Reed- Making.
2. Studies: Tustin, Studies; Prestin.
3. Literature: Handel, Sonata in G. Minor, Goosens, Concerto.

MUSI 533-2. Principal Applied Oboe

1. Competencies: Continued emphasis on performing literature.
2. Studies: Orchestral Literature.

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 533-3. Principal Applied Clarinet

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 533-4. Principal Applied Saxophone

1. Competencies: Recital preparation.
2. Studies: Traler-Lazarus, Virtuoso Studies.
3. Literature: Bozza, Scaramouche.

MUSI 133-5. Principal Applied Bassoon

1. Competencies: Major and Minor scales through 5 sharps and 5 flats. Emphasis on fingerings and tonal development.

2. Studies: McDowell, Practical Studies, Book I; Kovar, 24 Daily Exercises; Wessen- bom, Practical Method Bassoon.

MUSI 233-5. Principal Applied Bassoon

1. Competencies: All Major and Minor scales throughout the practical playing range. Emphasis on sight reading. Reed adjustment and making.
2. Studies: Wesseborn, Method for Bassoon; Kovar, 24 Daily Exercises; McDowell, Practical Studies, Book II
3. Rep. Literature Telemann, Sonata in F Minor, Weber Concerto in F (Slow Movement)

MUSI 433-5. Principal Applied Bassoon

1. Competencies: Continued scale study, emphasis on performing literature.
2. Studies: Pierne, Concert Piece, Galliard, Sonatas, Mozart Concerto.

MUSI 533-5. Principal Applied Bassoon

1. Competencies: Recital preparation. Orchestral Studies.
2. Studies: Orchestra Passages.
3. Literature: Hindemith, Sonata.

Advanced Undergraduate and Graduate

MUSI 609. Music in Early Childhood **Credit 3(2-2)**

This course is a conceptual approach to the understanding of musical elements, and understanding of the basic activities in music in early childhood; modern trends in music education; and Kodaly and Orff methods. **(DEMAND)**

MUSI 610. Music in Elementary School Today **Credit 3(2-2)**

This course is the study of music in the elementary school curriculum creating a musical environment in the classroom; child voice in singing, selection and presentation of rote songs; development of rhythmic and melodic expressions; directed listening; experimentation with percussion and simple melodic instruments; criteria for utilization of notational elements; and analysis of instrumental materials. **(DEMAND)**

MUSI 611. Music in the Secondary School Today **Credit 3(3-0)**

This includes techniques of vocal and instrumental music instruction in the junior and senior high schools; the general music class; the organization, administration and supervision of music programs, as well as music in the humanities. This course includes the adolescent's voice and its care; the testing and classification of voices; operetta production; the instrumental program; and training glee clubs, choirs, bands, and instrumental ensembles. **(DEMAND)**

MUSI 614. Choral Conducting of School Music Groups **Credit 2(0-4)**

This course includes rehearsal techniques; balance, blend and relationship of parts to the total ensemble; analysis and interpretation of literature appropriate for use in school at all levels of ability; and conducting experience with laboratory group. **(DEMAND)**

MUSI 616. Instrumental Conducting of School Music Groups **Credit 2(0-4)**

This course includes rehearsal techniques; balance blend and relationship of parts to the total ensemble; analysis and interpretation of literature appropriate for use in school groups at all levels of ability; and conducting experience with laboratory group. **(DEMAND)**

MUSI 618. Psychology of Music **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)**

MUSI 620. Advanced Music Appreciation **Credit 3(2-2)**

Analytic studies of larger forms from all branches of music writing will be included. Special emphasis on style and structural procedures by principal composers; works taken from all periods in music history. Designed for students with previous study of music appreciation. **(DEMAND)**

RESEARCH

MUSI 551. Independent Study in Music **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. **(S;SS)**

DIRECTORY OF FACULTY

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

Ann Curtis ..... **Adjunct Instructor**
B.M., Baldwin-Wallace College, M.M., University of North Carolina at Greensboro

Michael D. Day ..... **Associate Professor**
B.F.A., and M.M., University of South Dakota; D.M.A., University of Arizona

Christina Elkins ..... **Adjunct Instructor**
B.M., M.M., D.M.A., University of North Carolina at Greensboro

Van-Anthoney Hall ..... **Adjunct Instructor**

B.A., North Carolina A&T State University, M.M., Southern Methodist University, Ph.D.University of Illinois at Urbana
John P. Henry, Jr. .....**Adjunct Instructor and Program Director**
B.M., M.M., University of Akron; D.M.A., University of Houston
Eve P. Hubbard ..... **Adjunct Instructor**
B.M., University of North Carolina at Greensboro, M.M., Northwestern University, M.M., University of North Carolina at Chapel Hill
Michael Lasley ..... **Adjunct Instructor**
B.M.E, M.M., D.M.A., University of North Carolina at Greensboro
Kenneth Ruff .....**Instructor and Director of Bands**
B.S., M.S., North Carolina A&T State University, M.M.E., Ed.D., University of North Carolina at Greensboro
Brian E. Millsapp ..... **Adjunct Instructor**
B.S., North Carolina A&T State University, M.M., Doctoral Study, University of North Carolina at Greensboro
C. Mondre Moffett ..... **Adjunct Instructor**
B.A., New College of California, M.A., New York University, Doctoral study Boston University
William C. Smiley..... **Professor**
B.M.E., Jackson State College; M.S., University of Illinois; Ed.D., University of North Carolina at Greensboro
R. Michael Stephenson..... **Adjunct Instructor**
B.M. North Carolina School of the Arts, M.M. Ithaca College

THEATRE ARTS PROGRAM

http://cas.ncat.edu/~vpa/

Frankie Day, 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 THE B.F.A IN PROFESSIONAL THEATRE
(Option: 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
   e. University/Regional Theatre Audition (URTA)
   f. Local, Regional or National Professional Theatre Companies
6. To participate in the honors program acting students must maintain a 3.00 average in all performance classes and a 2.8 overall.

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.
7. The comments and opinions of the student's adjudicators will be collected by the academic advisor and communicated orally to the student within one week after the performance. In the event of an unsatisfactory rating, a written explanation will be given to the student.

PROGRESS REVIEW EVALUATION

The Theatre Faculty will evaluate each student at the end of each academic year during jury hearings. Evaluation is based on observation of production activities **(quality and quantity)** and on academic progress toward the degree. Recommendations resulting from the evaluation will be reported to the student by the academic advisor.

AUDITIONS

All Acting students are required to audition for all main stage productions and for the Richard B. Harrison Players, the department's varsity organization. Each student is also required to make a professional audition at two or more of the following: The North Carolina Theatre Conference, Southeastern Theatre Conference, University/ Resident Theatre Conference, the Irene Ryan Acting Award Competition, M.F.A. Acting Programs, Local, Regional, or National Professional Theatre Companies.

PRODUCTION ASSIGNMENT

Each student must serve as Assistant Director or Stage Manager for at least *one* major departmental production or Studio production. This requirement must be met at some point during the student's first six semesters of residency. Evidence of its completion must be furnished in writing by the student to the Theatre Arts program director.

SENIOR THESIS PROJECT

The Acting student's degree program culminates with a fully staged senior showcase (i.e., with appropriate costumes, lighting, props, and staging) performance. At a minimum, the production must be a minimum of sixty minutes. 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/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.

THE B.F.A IN PROFESSIONAL THEATRE
(Option: 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, ccstume 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
6. To participate in the technology honors program students must maintain a 3.00 average in all Theatre classes and a 2.8 overall.

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 designing or technically directing a fully staged (i.e., with appropriate costumes, lighting, props, and staging) performance. At a minimum, the production must be -sixty minutes. 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.

CAREER OPPORTUNITIES

The mission of the Theatre is to provide opportunities for students to discover themselves, their places, duties, and abilities. Toward this end, the Theatre serves as a laboratory for the development of excellence in pre-professional training in acting and theatre technology.

Careers in theatre other than acting are beginning to unfold. Job opportunities in technical theatre and theatre management are expected to increase with the advent of regional repertory theatres. A degree in professional theatre may also prepare students for careers in drama therapy, interior decorating and design and home planning.

Forecasts for the future of the communication industry are bright. With the development of electronic technology for information dissemination, all aspects of communication will thrive. Entry level positions are numerous**,** but competition is very keen.

REQUIRED MAJOR COURSES FOR THEATRE

(Option: Acting)

THEA 211	THEA 511	THEA 416
THEA 214	THEA 521	THEA 456
THEA 231	THEA 572	THEA 465
THEA 317	THEA 585	THEA 468
THEA 360	THEA 212	THEA 513
THEA 415	THEA 215	THEA 563
THEA 422	THEA 241	THEA 584
THEA 464	THEA 318	MUSI 259
THEA 467	THEA 401	

(Option: Theatre Technology)

THEA 211	THEA 552	THEA 464
THEA 241	THEA 584	THEA 467
THEA 345	ART 100	THEA 542
THEA 360	ART 229	THEA 550
THEA 431	THEA 231	THEA 571
THEA 456	THEA 317	THEA 585
THEA 465	THEA 346	ART 226
THEA 468	THEA 401	THEA Electives
THEA 543	THEA 445	

CURRICULUM GUIDE FOR PROFESSIONAL THEATRE

(Option: Acting)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3	MATH 101	3
THEA 211	3	PHED Elective	1
THEA 214	2	THEA 212	3
THEA 241	3	THEA 215	2
	15	THEA 401	1
			16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elec.[1]	3	UNST Cluster Theme Elec.[1]	3
UNST Cluster Theme Elec.[1]	3	UNST Cluster Theme Elec.[1]	3
THEA 231	3	THEA 318	3
THEA 317	3	THEA 360	3
THEA 401	1	THEA 416	3
THEA 415	3	THEA 584	3
	16		18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
FOLA Elective[2]	3	FOLA Elective[2]	3

SOCI 100	3	MUSI 259	2
THEA 422	3	PSYC 320	3
THEA 464	3	THEA 456	2
THEA 467	3	THEA 465	3
THEA 511	3	THEA 521	3
	18	THEA 401	1
			17

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
THEA 571	3	Free Elective	3
Free Elective	3	THEA 468	3
THEA 563	3	THEA 513	3
THEA 585	3	THEA 572	3
	12		12

Total Hours: 124

[1]*Students must choose one cluster and take 12 hours in that cluster.*

[2]*FOLA placement exam required to determine level of proficiency. Six hours of FOLA required.*

CURRICULUM GUIDE FOR PROFESSIONAL THEATRE
(Option: Theatre Technology)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3	ART 100	3
MATH 101	3	MATH 102	3
THEA 211	3	SOCI 100	3
THEA 241	3	PHED Elective	1
THEA 401	1		16
	17		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elec.[1]	3	UNST Cluster Theme Elec.[1]	3
UNST Cluster Theme Elec.[1]	3	UNST Cluster Theme Elec.[1]	3
ART 226	3	ART 229	3
THEA 231	3	THEA 401	1
THEA 317	3	THEA 431	3
THEA 401	1	THEA 360	3
	16		16

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
FOLA Elective[2]	3	FOLA Elective[2]	3
THEA 345	3	THEA 346	3
THEA 445	3	THEA 456	2
THEA 464	3	THEA 465	3
THEA 542	3	THEA 543	3
THEA 550	3	THEA 552	3
	18		17

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
THEA 571 Capstone	3	Free Elective	3
THEA Elective	3	THEA Elective	3
THEA 467	3	THEA 468	3
THEA 585	3	THEA 584	3
	12		12

Total Hours: 124

[1]*Students must choose one cluster and take 12 hours in that cluster.*

[2]*FOLA placement exam required to determine level of proficiency. Six hours of FOLA required.*

COURSE DESCRIPTIONS IN THEATRE

THEA 210. Acting for Non-Theatre Majors **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 211. Acting I **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 212. Acting II **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 211 or consent of the instructor. **(S)**

THEA 214. Theatre Movement I **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 215. Theatre Movement II **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 214 or the consent of the instructor. **(S)**

THEA 231. Elements of Play Production **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 241. Stagecraft **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 317. Stage Voice I (Formerly THEA 217) **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 318. Stage Voice II (Formerly THEA 218) **Credit 3(1-4)**
Stage Voice II is a continuation of Stage Voice I (THEA 317). 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 317 or the consent of the instructor. **(S)**

THEA 345. Drafting for the Theatre (Formerly THEA 245) **Credit 3(2-2)**
Students will receive intensive instruction in the techniques of theatrical drafting, in areas of scenery, lighting, and sound. Prerequisite: THEA 241 or the consent of the instructor. **(F)**

THEA 346. Computer-Aided Design for Theatre (Formerly THEA 246) **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 360. Introduction to Drama and Theatre (Formerly Theatre 260) **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 401. Theatre Production Lab (Formerly THEA 300) **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 415. Acting III (Formerly THEA 311) **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 416. Acting IV (Formerly THEA 312) **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 422. Directing I (Formerly THEA 321) **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 431. Advanced Play Production (Formerly THEA 331) **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 231. **(S)**

THEA 445. Stage Lighting (Formerly THEA 342) **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 456. Makeup for the Performing Arts (Formerly THEA 356) **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 464. History of the Theatre I (Formerly THEA 361) **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 (Formerly THEA 362) **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 466. Playwriting (Formerly THEA 363) **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 467. African American Drama I (Formerly THEA 364) **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 468. African American Drama II (Formerly THEA 365) **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 469. Modern American Drama (Formerly THEA 366) **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 511. Acting Styles (Formerly THEA 411) **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 416. **(F)**

THEA 512. Acting Projects (Formerly THEA 412) **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 511. **(S)**

THEA 513. Acting for the Camera (Formerly THEA 413) **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 416. **(S)**

THEA 521. Directing II (Formerly THEA 421) **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 422 and 584. **(S)**

THEA 542. Sound Design for the Theatre (Formerly THEA 442) **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 543. Scene Design (Formerly THEA 443) **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 550. History of Costume and Décor (Formerly THEA 450) **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 241 or consent of the instructor. **(F)**

THEA 552. Costume Design (Formerly THEA 452) **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 thew design-team collaboration. Prerequisite: THEA 550. **(F)**

THEA 553. Advanced Costume Design (Formerly THEA 453) **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 552. **(S)**

THEA 561. Creative Dramatics (Formerly THEA 461) **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 562. Children's Theatre (Formerly THEA 462) **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 563. Theatre Projects (Formerly THEA 463) **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 571. Theatre Internship (Formerly THEA 471) **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 572. Independent Study (Formerly THEA 472) **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)**

THEA 584. Stage Management (Formerly THEA 484) **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 585. Theatre Management (Formerly THEA 485) **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)**

DIRECTORY OF FACULTY

Donna Baldwin-Bradby ..... **Assistant Professor**
B.F.A., North Carolina A&T State University; M.F.A., Virginia Polytechnic University

Frankie Day ..... **Associate Professor, Theatre Arts Program Director and Executive Director of The Paul Robeson Theatre**
B.A.., South Carolina State College; M.F.A., Southern Illinois University (Carbondale)

Stephanie Gray ..... **Adjunct Assistant Professor**
B.M.E., M.A., University of North Carolina at Greensboro

Gregory Horton ..... **Associate Professor**
B.S. North Carolina Central University; M.F.A., Michigan State University

Michael Huie ..... **Adjunct Assistant Professor**
B.A., M.A, Wake Forest University

Deborah Kintzing ..... **Adjunct Assistant Professor**
B.A., University of Tennessee; M.F.A. University of North Carolina at Greensboro

Tina Yarborough Liggins ..... **Adjunct Assistant Professor**
B.F.A., University of North Carolina at Greensboro; M.F.A., Virginia Polytechnic University
Miller Lucky, Jr. .....**Associate Professor**
B.F.A., North Carolina A&T State University; M.F.A., University of Florida (Gainesville)
Jeffrey Richardson .....**Associate Professor**
B.A. Morgan State University; M.F.A., Purdue University
Vanita V. Vactor.....**Associate Professor**
B.A., Hiram College; M.A., Western Illinois University; Ph.D., New York University

VISUAL ARTS PROGRAM

http://www.ncat.edu/~art/

LeAnder Canady, Interim 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 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 124 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 127-128 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.

REQUIRED MAJOR COURSES FOR VISUAL ARTS

ART 100	ART 302	ART 451
ART 218	ART 310	ART 452
ART 219	ART 400	ART 459
ART 226	ART 401	ART 460
ART 227	ART 402	ART 510
ART 228	ART 405	ART 524
ART 229	ART 406	ART 525
ART 300	ART 450	ART 526
ART 301		

CURRICULUM GUIDE FOR VISUAL ARTS, DESIGN

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3	ART 101	3
ART 100	3	ART 225	2
ART 224	2	ART 227	3
ART 226	3	HPED	2
	15		16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Electives	6	UNST Elective	6
ART 220	2	ART 222	3
ART 228	3	ART 300	3
ART 229	3	ART 310	2
SPCH 250	3	SPCH 251	3
	17		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ART 400	2	ART Elective	3
ART 301	3	ART 402	3
ART 401	3	ART 459	2
ART 452	3	FOLA I	3
Behavioral Science Elective	3	GCS 133	1
Humanities Elective	3	GCS 133 (Lab)	2
	17		14

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
FOLA II	3	ART 406	3
ART 405	3	ART 525	3
ART 520	2	ART 526 (Capstone)	3
ART 524	3	Free Elective	3
Free Elective	3	Free Elective	3
	14		14

Total Credit Hours: 124

CURRICULUM GUIDE FOR VISUAL ARTS, VISUAL MEDIA DESIGN

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 110	3
UNST 120	3	UNST 140	3
ENGL 101	3	UNST 130	3
Math 101	3	Math 102	3
ART 100	3	ART 229	3
ART 226	3		15
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elective	3	UNST Cluster Theme Elective	3
UNST Cluster Theme Elective	3	UNST Cluster Theme Elective	3
ART 218	3	ART 219	3
ART 228	3	ART 222	3
ART 300	3	HPED 200	2
SPCH 250	3	ART 301	3
	18		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ART 310	3	ART 520	3
ART 302	3	ART 460	3
ART 450	3	ART 540	3
ART 453	3	JOMC 300	3
FOLA I	3	FOLA II	3
	15		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ART 451	3	ART 526 (capstone)	3
ART 510	1-2	ART 616	**3**
ART 541	3	Humanities Elective	3
ART 615	3	Free Elective	3
Behavioral Science Elective	3	Free Elective	3
Free Elective/BUAD 425	3		15
	16-17		

Total Credit Hours: 127-128

CURRICULUM GUIDE FOR ART (SECONDARY EDUCATION)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3	ART 101	3
ART 100	3	ART 225	2
ART 224	2	ART 227	3
ART 226	3	ART 229	3
	15		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elective	3	UNST Cluster Theme Elective	3
UNST Cluster Theme Elective	3	UNST Cluster Theme Elective	3
ART 228	3	ART 310	2
ART 400	2	ART 222	3
FOLA I	3	FOLA II	3
CUIN 102	2	CUIN 301	2
	16		16

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ART 300	3	ART 401	3

ART 459	2	ART 402	3
ART 405	3	ART 406	3
ART 454	3	ART 520	2
ART 524	3	CUIN 400	3
SPCH 250	3	CUIN 436	3
	17		17

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ART Elective	3	CUIN 500	3
ART Elective	3	CUIN 560	6
ART 526 (Capstone)	3	CUIN 624	3
ART 600	3		12
CUIN 525	3		
	15		

Total Credit Hours: 125

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.

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 101. Lettering and Poster Design **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 218. Art History I **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 219. Art History II **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 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 224. Art Appreciation **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 every day life. **(F;S;SS)**

ART 225. An Introduction to the History of Art **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 226. Design I **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 227. Design II **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 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 300. Design Drawing **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 301. Visual Design I **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 300. **(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 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 400. Renaissance Art **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 401. Ceramics **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 402. Basic Sculpture **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 405. Materials and Techniques **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 406. Painting Techniques **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 450. Advertising Design I **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 451. Advertising Design II **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 452. Commercial Art **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 is as far as they affect graphic design. **(F)**

ART 453. Typography **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 454. General Crafts **Credit 3(0-6)**

This course is an introduction to craft processes, weaving, metalwork, leather, etc. **(S)**

ART 459. Baroque and Rococo Art **Credit 3(3-0)**

The study of art in Europe from 1600 to 1800 is emphasized. **(F)**

ART 460. Design and Typography **Credit 3(0-6)**

This is an advanced sedign 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 510. Internship **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. **(F:S)** Junior or Senior standing.

ART 520. Modern Art **Credit 3(3-0)**

European and American Art from about 1875 to the present will be studied. **(S)**

ART 524. Introduction to Graphic Arts **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 525. Lithography and Serigraphy **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 526. Senior Project **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)**

ART 528. Painting I **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 529. Painting II **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 540. Interactive Arts I **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 541. Interactive Arts II **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)**

Advanced Undergraduate Courses

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)**

ART 600. Public School Art **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 603. Studio Techniques **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 604. Ceramic Workshop **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 605. Printmaking **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 606. Sculpture **Credit 3(3-0)**
This course includes further study of sculpture with an expansion of techniques. Individual problems for advanced students. **(DEMAND)**

ART 607. Project Seminar **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 608. Arts and Crafts **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 615. Motion Arts I **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 616. Motion Arts II **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)**

DIRECTORY OF FACULTY

James Barnhill.....**Associate Professor**
B.S., University of North Carolina at Chapel Hill; M.F.A., University of North Carolina at Greensboro

LeAnder Canady.....**Associate Professor**
B.S., North Carolina A&T State University; M.F.A., University of North Carolina at Greensboro

Willie Hooker..... **Professor**
B.S., Tennessee State University; M.A., Peabody-Vanderbilt University; Ed.D., Illinois State University

Stephanie A. Santmyers.....**Associate Professor**
B.F.A., Alfred University, M.S, Illinois State University; M.F.A., University of North Carolina at Greensboro

Janet K. Seiz ..... **Assistant Professor**
B.A., Ohio Wesleyan University; M.A. Case Western Reserve University; A.B.D., University of Iowa

University Studies Program

http://www.ncat.edu/~univstud/index.html

MISSION

University Studies (UNST) is the interdisciplinary general education curriculum of North Carolina Agricultural and State University and provides the intellectual foundation for the University's degree-granting programs. Its goal is to provide students with a framework for critical inquiry that serves as a foundation for continuing academic development and life-long learning. Motivated by the principle that scholarship is best learned by the way it is practiced, University Studies applies discovery, inquiry, analysis, and application in the classroom to promote:

- broad-based critical-thinking skills,
- effective written and oral communication of ideas,
- appreciation for diverse cultures, and
- commitment to ongoing civic engagement and social responsibility.

Through coursework and co-curricular experiences, the University Studies core curriculum develops in students an understanding of the interdisciplinary nature of knowledge, encourage cross-disciplinary dialogue, and promotes the development of intentional learners who take responsibility for their learning.

ACCREDITATION

The general education program is accredited by Southern Association of Colleges and Schools (SACS).

GENERAL PROGRAM REQUIREMENTS

The University Studies program requires a minimum of 37 credit hours of coursework, as specified below. Incoming freshmen are required to complete 13 credit hours of UNST foundation courses (UNST 100, 110, 120, 130, and 140) during their first 32 credit hours of study at North Carolina A&T State University, 12 credit hours of theme-based courses,

9 credit hours of major-specified courses that support University Studies learning objectives, and 3-6 credit hours of a senior capstone experience (typically specified by the student's major department.)

Freshman students who do not meet Freshman proficiency competency requirements (see below) in English composition and/or mathematics must successfully complete UNST 103 (Basic Writing) and/or MATH 099, (Intermediate Mathematics) with a passing grade before being allowed to enroll in any University Studies Foundation courses.

Theme based University Studies courses are taken only after a student has completed all University Studies foundation courses. Students choose a University Studies thematic cluster in consultation with their advisor or major department chair prior to completing University Studies foundation coursework. Students are required to complete 12 credit hours in a single thematic cluster prior to the senior capstone experience. Students wishing to switch clusters must still complete 12 credit hours in a single thematic cluster, unless otherwise approved by the Dean of University Studies.

In addition to the 37 credit hour requirement, all North Carolina A&T State University students are required to complete 50 hours of service/experiential learning prior to the senior capstone experience. Student service/experiential learning hours will be monitored in conjunction with the Division of Student Affairs.

Students are reminded that performance in University Studies courses may influence eligibility for some majors. Many competitive major require minimum grade point averages (GPA's).

APPROVAL FOR TRANSFER CREDIT

Transfer students enrolling at North Carolina A&T State University must receive prior approval from the Office of Admissions at North Carolina A&T State University to substitute college-level coursework completed at other institutions for University Studies requirements. The Dean of the College or School in question will resolve any remaining questions regarding substitution for transfer credit. The list of approved transfer equivalencies can be found on the University Studies web site: http://www.ncat.edu/~univstud/resources.html.

ADVANCED PLACEMENT (AP) CREDIT

Entering students may obtain advanced placement and college credit based on their performance on the College Board Advanced Placement (AP) examinations. A score of three (3) or higher on the English Language and Composition or the English Literature and Composition examination will entitle the student to credit for Critical Writing (UNST 110). No other Advanced Placement examination will be considered for University Studies credit, since the field subject areas do not correspond to the interdisciplinary content of the remaining University Studies courses. The student's academic advisor and/or department chair will recommend AP credit. The final decision on accepting AP course credits as a substitute for Critical Writing (UNST 110) will be made by the Dean of the school/college.

FRESHMAN PROFICIENCY REQUIREMENTS

All Freshmen students are required to demonstrate proficiency in mathematics and English composition. SAT scores (mathematics and reading) or ACT scores (mathematics and English) are used to demonstrate this proficiency. Proficiency examinations may also be used to demonstrate this proficiency. Students who fail to reach the minimum placement cut score or passing score for the English composition assessment will be required to complete UNST 103 (Basic Writing) with a passing grade. Students who fail to reach the minimum placement cut score or passing score for the Mathematics assessment will be required to complete MATH 099 (Intermediate Mathematics) with a passing grade. These courses do not count towards University Studies requirements.

COURSE DESCRIPTIONS IN UNIVERSITY STUDIES

UNST 103. Basic Writing **Credit 3(3-0)**

This course is designed to prepare students for writing college-level compositions. The course begins with a focus on paragraph writing, requiring that students demonstrate their ability to develop and organize paragraphs adequately and clearly. In addition, the course concentrates on the short composition, requiring that students demonstrate competency in writing short essays. Computer-based tools such as Criterion may be used to address fundamental skills in student writing. The course will be offered for a Pass/Fail grade.

Foundation Courses

University Studies foundation courses focus on the four major goals of the University Studies program: broad-based critical-thinking skills; effective written and oral communication of ideas; appreciation for diverse cultures; and commitment to ongoing civic engagement and social responsibility. Foundation-level courses emphasize active learning/teaching strategies, ongoing formative assessment, and interdisciplinary thinking.

UNST 100. University Experience **Credit 1(1-0)**

This seminar emphasizes the role of the University Studies program and presents a broad overview of the curriculum structure and rationale, including an introduction to a variety of interdisciplinary themes within the University Studies program. Introductory discussions on ethics, wellness and healthy lifestyles, diversity and civic engagement will be included.

UNST 110. Critical Writing **Credit 3(3-0)**

This course introduces students to reading comprehension and the writing process. Students will read and evaluate selected texts and apply critical thinking through writing and speaking. Students will engage in formal and informal writing, revise drafts and respond to constructive feedback related to critical thinking skills, use grammar and conventions of standard written English. All students will develop a writing portfolio for course assessment.

UNST 120. The Contemporary World **Credit 3(3-0)**

This course examines the social, economic, political, and cultural roots of the contemporary world. It focuses on the major developments, events, and ideas that have shaped world societies since the beginning of the twentieth century. Close attention will be given to the concepts and categories that allow students to grasp the nature and development of the contemporary world, thus providing them with a framework for understanding the contemporary global experience. The course helps students to develop critical thinking skills in their oral and written work and to use information technology effectively.

UNST 130. Analytical Reasoning **Credit 3(3-0)**

This course engages students in scientific, quantitative, and logical reasoning processes to prepare them to interpret and solve problems encountered in everyday life. Students will consider concepts from logic and the scientific disciplines including life, social, and physical sciences. The scientific method and a variety of analytical approaches are explored, including numerical, graphical, verbal/logical, and algebraic reasoning.

UNST 140. The African American Experience: An Interdisciplinary Perspective **Credit 3(3-0)**

This interdisciplinary course introduces students to the important contributions made and challenges faced by people of African descent in America and the global community. This course will focus on oral, written, and visual means of expression as a basis for discussion, analysis, and debate.

Theme-Based Courses

Students are required to complete 12 credit hours within a single thematic cluster. If a student decides to change to a different thematic cluster, he/she will have to satisfy all the course requirements for the new cluster. The Dean of College of Arts and Sciences will consider exceptions to this rule based on individual petitions. Theme-based courses are communication intensive (oral and written) and emphasize interdisciplinary learning motivated by societal issues and problems. Course descriptions of approved thematic courses offered by departments outside of University Studies can be found in the requisite sections of the Bulletin.

Science, Technology, and Society

AGEN 216	ITT 385	SOWK 415
CHEM 100/110	MATH 111	UNST 201
COMP 390	MATH 112	UNST 203
ENGL 206	PHIL 266	UNST 206
ENGL 231	PHYS 101	UNST 207
ENGL 331	PHYS 105	UNST 210
ENGL 336	POLI 410	UNST 213
GEOM 210	POLI 448	UNST 219
HIST 307	SOCI 473	UNST 221

UNST 201. Inventing America: Science, Technology, and Progress

This course explores the complex relations among scientific discovery, technological advance, and societal change through analysis of key episodes in American history from the pre-industrial era to the Information Age. In addition, students will debate the ethical issues triggered by scientific and technological innovation, examine how technology is portrayed in literature and the arts, and evaluate the frequently made claim that more advanced science and technology lead to better lives.

UNST 203. Technology, the Real, the Fake and the Authentic

This course encourages analysis and comparison of cultural systems through case studies of real, fake, virtual and authentic works and personal experiences studied from the standpoint of the technologies and cultural communities that produced and consumed them. These case studies include works of art, technological artifacts, and other experiences.

UNST 206. Scientific Revolutions and Social Change

This course highlights the complex connections between science, technology, scientific breakthroughs, and social, political and economic change. The experiences of and lessons from the Industrial Revolution of the 18th Century will be used to understand the social, political and ethical implications and challenges of the current revolution in nanotechnology. Students are led to discover the deeper relationships between seemingly unrelated events in history, and explore competing interpretations given by different disciplines.

UNST 207. Ethics and Technology

This course examines ethical issues arising from scientific and technological advancements. The central normative question students will consider is: Simply because we can do something does this mean we should? 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.

UNST 210. Ethics in Information Technology
This course will explore moral, ethical, and legal problems associated with information technologies including issues such as security and privacy. Students will critique ethical dilemmas, debate moral issues, and develop ideas for reducing ethical problems and coping with their effects.
UNST 213. Evolution and Social Implication of Technology. Theme: Technology and Progress
This course examines diverse technology systems, such as biotechnology, communication, construction, manufacturing, medical, and transportation. Discussion focuses on the interaction of technology with human health, the environment, the global economy, and politics, as well as technological forecasting and assessment.
UNST 219. Technology and Public Wellness
This course describes, reviews and challenges issues arising from the development of technology and the implications for public health policy. Students explore the relationship between the development and implementation of technology and cultural factors such as religion, politics, history and economics. The course also examines how technology influences health and wellness in local and global contexts. In addition students critically evaluate how technology policies of the industrialized superpowers influence the well-being of people in non-industrialized nations.
UNST 221. Thematic Writing and Speaking: Technology and Society
This course is designed to improve students' abilities to write, speak and think critically about important issues in the contemporary world by focusing on the rhetoric of science, technology and progress. Students examine rhetoric as represented in fiction and nonfiction: essays, short stories, drama, poetry, novels, film, popular culture (including popular science writing and journalism), and speeches.

Energy, Environment and Society

AGEC 300	HIST 435	POLI 448
AGEN 216	MATH 111	SOCI 200
BIOL 100	MATH 112	SOCI 300
BUAD 361	PHIL 266	UNST 205
CHEM 100/110	PHYS 105	UNST 211
EASC 201	POLI 250	UNST 212
GEOG 200	POLI 410	UNST 221
GEOG 322	POLI 415	UNST 229

UNST 205. The Impact of Energy and the Environment on Development in Non-Industrialized Countries
This course examines issues and challenges that result from the formation of energy and environmental practices and policies of non-industrialized countries. Students use historical perspective to explore why non-industrialized nations are energy dependent.
UNST 211. Case Studies in Environmental Issues
This course utilizes case studies to gain an understanding of the roles environmental law, journalism/communications, economics, and science/engineering play in environmental issues.
UNST 212. Contemporary Issues in Energy Uses and Sources
This course is designed to provide integrative experiences to students using contemporary energy issues as an underlying theme. It will cover the economic importance of the energy sector, the production and use of different types of energy, and their impact on the environment and health.
UNST 221. Thematic Writing and Speaking: Technology and Society
This course is designed to improve students' abilities to write, speak, and think critically about important issues in the contemporary world by focusing on the rhetoric of science, technology and progress. Students examine rhetoric as represented in fiction and nonfiction: essays, short stories, drama, poetry, novels, film, popular culture (including popular science writing and journalism), and speeches.
UNST 229. Contemporary Issues in Nuclear Energy
This course is designed to present a current understanding of nuclear energy. Different reactor designs, economics of nuclear energy, and management of nuclear energy will be reviewed. Nuclear power will be compared to other alternative energy sources. Emphasis will be placed upon regulations, environmental issues, health issues, and security and safety concerns. Nuclear power and options for the future will be examined.

Community, Conflict, and Society

BIOL 100	HIST 418	UNST 204
BUAD 361	HIST 461	UNST 208
CRJS/SOCI 406	MATH 111	UNST 216
ENGL 336	MATH 112	UNST 220
HIST 203	PHIL 260	UNST 221
HIST 209	POLI 446	UNST 222
HIST 312	POLI 448	UNST 224
HIST 332	SOCI 406	UNST 230

HIST 336	SOWK 413	UNST 231
HIST 417		

UNST 204. 21st Century Organizations: Attitudes, Attention Drivers, and Angst
This course introduces students to the factors that affect organizations in the 21st century by exploring the principles, practices, and pitfalls that affect organizational success or failure in a global society. The empowerment of individuals to create organizational cultures will be demonstrated through case studies of successful organizations (e.g., Fortune 100 companies). Students will learn about leadership, communication, and group dynamics through the investigation of targeted units.

UNST 208. Foundations of Negotiation and Conflict Resolution
This course explores negotiation, arbitration, and mediation techniques. It encourages students to manage conflict and negotiate peaceful solutions to business, economic development, social and political problems in our local communities and global societies.

UNST 216. Genocide in the Modern World
This course examines the concept of genocide, the deliberate murder of a specific group of people, through careful analysis and discussion of theoretical approaches, specific case studies, and relevant cultural artifacts, including literature and film.

UNST 220. Social Consequences of Scientific and Technological Progress In the African American Experience
This course presents an analytical approach to the issues of social justice and environmental racism with a focus on African-American communities. Students explore historical and contemporary social and economic impacts of science and technology, how and why they differentially affect African-American communities, and how these consequences can be mitigated.

UNST 221. Thematic Writing and Speaking: Technology and Society
This course is designed to improve students' abilities to write, speak, and think critically about important issues in the contemporary world by focusing on the rhetoric of science, technology and progress. Students examine rhetoric as represented in fiction and nonfiction: essays, short stories, drama, poetry, novels, film, popular culture (including popular science writing and journalism), and speeches.

UNST 222. Introduction to Crime Studies and Research
This course will introduce students to research methodologies used in the field of crime studies. Students examine the impact of crime studies research on public policy. The topics include math and quantitative research, competing theories of crime in society, and the relationship between legal and scientific reasoning.

UNST 224. Thematic Writing Fieldwork
This course explores the interdisciplinary applications of fieldwork and emphasizes the ethnographer's skill set: cultural awareness and sensitivity, precise observation, careful interviewing and note taking, and the crafting of convincing prose. Fieldwork is centered around the principles of ethnographic research,

UNST 230. Religion and Society
This course examines interactions between religion and societies as factors influencing the formation of community, the breakdown of community, and reconciliation within and among 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, evolutionary biology, neurobiology, and neuropsychology.

UNST 231. Introduction to Christianity
This course introduces students to basic concepts and approaches to the academic study of religion including the origin and history of Christianity as evolving institutions, beliefs, practices, and the ongoing quest by Christians to define themselves in a changing, increasingly global world. The course will introduce students to the global diversity of Christian experience from its Middle Eastern and Greco-Roman origins, African, Eastern and Western forms of Orthodoxy, and contemporary international Pentecostal forms of Christianity in the global southern hemisphere.

Health, Lifestyles and Society

BIOL 100	PHIL 266	UNST 214
CRJS/SOCI 406	PSYC 320	UNST 215
HEFS 135	SOCI 304	UNST 217
HPED 219	SOCI 308	UNST 218
HPED 222	SOWK 370	UNST 221
MATH 111	SOWK 409	UNST 225
MATH 112	SOWK 415	UNST 226
NURS 305	UNST 202	UNST 227
NURS 315	UNST 209	UNST 228
NURS 415		

UNST 202. Ecological Approach to an Active Healthy Lifestyle
This course examines the integration of cultural, psychological, sociological, and ethical issues affecting and affected by the health and wellness of individuals and the society in which they live. Students explore the contextual and theoretical basis of holistic approaches including the complex nature of humans with regard to health and well-being from ecological perspectives. Students gain experience with specific methods to foster greater appreciation for personal responsibility for health and strategies to enhance and preserve the individual's and public health. Societal health issues and the factors that impact on the health and wellness of communities and the individual's role in health policy are also examined.

UNST 209. Disparities in Public Health Care: The Effects on Race, Gender, and Class
This course is designed to explore the disparities that exist among the categories of race, gender, and class in relationship to healthcare. The course focuses on six areas of major health inequities including infant mortality, cancer, cardiovascular disease, diabetes, HIV/AIDS and immunizations.

UNST 214. Maps, Mapping, and Environmental Health
This course encourages students to conceptualize and assess environmental and health issues from a spatial or geographical perspective. Topics such as air pollution, water pollution, population dynamics, occupational health, food protection, epidemiology, disease causation and prevention, vector-borne disease, and consumer protection are covered. Geographic Information Systems technology is used to model environmental health topics.

UNST 215. Comparative Socio-Cultural Environments of Health Care Systems
This course examines the differential effects of social, political, economic and cultural factors on development and utilization of health care systems across diverse societies. Students further explore the interrelationships between specific aspects of socio-cultural environment and the availability and use of health care.

UNST 217. Health and Wellness in the 21st Century
This course explores the impact of globalization on health and wellness from the perspectives of culture, religion, politics, history, economics and technology.

UNST 218. Fitness for Life
This course is a combination of classroom and activity-based learning activities with a focus on proper nutrition and the mastery of the knowledge and skills necessary for students to become accomplished monitors of their personal fitness.

UNST 221. Thematic Writing and Speaking: Technology and Society
This course is designed to improve students' abilities to write, speak, and think critically about important issues in the contemporary world by focusing on the rhetoric of science, technology, and progress. Students examine rhetoric as represented in fiction and nonfiction: essays, short stories, drama, poetry, novels, film, popular culture (including popular science writing and journalism), and speeches.

UNST 225. Epidemiology
This course will introduce students to the basic principles, theories and concepts of epidemiology and their application specifically pertaining to the distribution and determinants of disease. The course will focus upon the biological, environmental, social, and analytical approaches to understanding the determinants of human health, and the application of that knowledge to improving the health of populations

UNST 226. A Personal Approach to Health
This course will address the relationship between lifestyle health-related issues, including sexual responsibility, psychological health, nutrition, and exercise. Additionally, issues such as weight control, stress management, tobacco, and alcohol use will be addressed.

UNST 227. Global Health and Socio-Economic Development
This course will introduce students to the main concepts of global health and the critical links between public health and social and economic development. The course reviews the determinants of health status in terms of biology, demography, epidemiology, culture, sociology, economics, and politics. Global Health introduces students to key concerns regarding reproductive health, child survival, nutrition, communicable diseases, and chronic diseases.

UNST 228. Contemporary Issues in Public Health
This course explores current public health, environmental health, and health service delivery issues in the U.S. Topics include organization and costs of health systems, access to care, and the interrelationships between risk factors and health.

DIRECTORY OF FACULTY

Matthew C. Armstrong.....**Lecturer**
B.A., James Madison University; M.A., University of Virginia, M.F.A. University of North Carolina at Greensboro

Agya Boakye-Boaten.....**Assistant Professor**
B.A., University of Ghana, Ghana; M.A., M.A.I.A., Ph.D., Ohio University

Jacqueline Blackmore.....**Lecturer**
B.A., M.A. North Carolina A&T State University; Ph.D., University of Northern Illinois

Leslie M. Brown III.....**Instructor**

B.A., Elizabeth City State University; M.A., University of North Carolina at Greensboro

James Crawford ..... **Assistant Professor**

B.A., Pennsylvania State University; Ph.D., University of North Carolina at Chapel Hill

Robert Drake ..... **Assistant Professor**

B.A., Franklin & Marshall University, PA; M.A, Ph.D. University of Albany

Stephen Ferguson ..... **Assistant Professor**

B.A., University of Missouri, Columbia; M.S., Ph.D., University of Kansas

Joseph Goeke ..... **Lecturer**

B.A., M.A., SW Missouri State University, Ph.D., University of South Carolina

Joseph L. Graves, Jr. ..... **Professor (Biological Sciences)**

A.B., Oberlin College; Ph.D., Wayne State University

Robyn Greenberg ..... **Lecturer**

B.A., M.S, North Carolina A&T State University

Wendy Hamblet ..... **Assistant Professor**

B.A., M.A, Brock Univeristy, CA; Ph.D. Pennsylvania State University.

Noreen Hannon ..... **Lecturer**

B.A., St. Xavier University; M.A., University of North Carolina at Greensboro

James T. Hill ..... **Instructor**

B.A., West Virginia Wesleyan College; M.A., West Virginia University; M.A. Hollins University; M.F.A., University of North Carolina at Greensboro

John Humphrey ..... **Assistant Professor**

B.A., Manchester College; M.A., Ph.D., New School for Social Research

Moussa Issifou ..... **Lecturer**

B.A., M.A., Universite' du Benin

DeReef Jamison ..... **Assistant Professor**

B.A., Bowie State University, M.A., Florida A&M University, Ph.D., Temple University

Beth Kaufka ..... **Assistant Professor**

B.A, M.A, Portland State University, M.F.A. Bowling Green State University

Michael Lupro ..... **Lecturer**

B.S., San Francisco State University, M.A. Portland State University

Cecily McDaniel ..... **Instructor**

B.A., Xavier University, M.A. Slippery Rock Univeristy, Ph.D., The Ohio State University

Jennifer K. Noller ..... **Lecturer**

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

Tanya Price ..... **Assistant Professor**

B.A., Miami University, Ohio, M.S., Ph.D., Indiana University

Virgil Renfroe ..... **Lecturer**

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

Kevin Rippin ..... **Lecturer**

B.A., M.A., University of Pittsburgh

Chad Rohrbacher ..... **Assistant Professor**

B.F.A, Bowling Green University, M.F.A., Louisiana State University

Philip Rubio ..... **Assistant Professor**

B.A., Vermont College of Norwich University, M.S. North Carolina Central University, Ph.D., Duke University

Ron Steed ..... **Lecturer**

B.S., Duke University, M.S., Ph.D., University of Florida

Diane Williams ..... **Assistant Professor**

B.A., York College, M.B.A., High Point University, Ph.D., Capella University

Aaron West ..... **Lecturer**

B.A., University of Maryland, Baltimore County, M.A., North Carolina A&T State University

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SCHOOL OF BUSINESS AND ECONOMICS

http://www.ncat.edu/~business/

Quiester Craig, Dean

Beryl C. McEwen, Associate Dean

VISION

The vision of the School of Business and Economics at North Carolina A&T State University is to be recognized for exemplary programs in management education that focus on excellence in learning, leadership, competency development, global perspectives, and professional advancement.

MISSION

The mission of the School of Business and Economics at North Carolina Agricultural and Technical State University is to provide a high quality experience in management education in a learner-centered environment that effectively recognizes and responds to the diverse backgrounds, characteristics, and needs of students and society. An interdisciplinary foundation, faculty scholarly activity, and professional and community service are integral to this mission.

ACCREDITATION

The undergraduate accounting and business programs of the School of Business and Economics are accredited by the AACSB International – The Association to Advance Collegiate Schools of Business.

DEGREES OFFERED

Accounting – Bachelor of Science
Business Education – Bachelor of Science
Economics – Bachelor of Science
Finance – Bachelor of Science
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 School of Business and Economics may not enroll for more than eighteen (18) credit hours without the approval of the department chairperson and the dean.

GENERAL PROGRAM REQUIREMENTS

The student is held responsible for the selection of courses in conformity with the curriculum of his/her choice. A student who enters the School 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 124 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 School of Business and Economics must earn a minimum grade of "C" in UNST 110, 221; MATH 111, 112; ACCT 221, ECON 305, MGMT 220, BUED 360, MGMT 481 and MGMT 520. 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 in the applicable University *Bulletin* for the selected course of study.

Students are considered for a change of major to a program in the School of Business and Economics from other academic majors and undecided classification upon the completion of twenty-four (24) semester hours with a minimum grade point average of 2.5. The 24 semester hours must include ENGL 100 and 101; MATH 111 and 112 or equivalent. FRST 098, SCS 099, UNST 103 and MATH 099 are not considered for the 24 hour requirement. Math 131 and 132 may be substituted for Math 111 and Math 112; 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 School of Business and Economics.

Students majoring in programs in the School of Business and Economics must enroll in 3 hours of humanities, social sciences, or free electives which satisfy the African-American studies core requirement of the University.

DOUBLE MAJOR

Students who desire to obtain a double major within the School 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 School 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 School of Business and Economics must receive prior approval from the department chairperson and the dean of the School of Business and Economics for courses to be considered for transfer credit from other colleges and universities. Community College courses included in articulation agreements and/or courses that are comparable to courses (100-300 level) in the first two years of the selected program of study at North Carolina A&T State University are considered for transfer credit.

PROFICIENCY EXAMINATIONS

Students who have had some training or experience in certain fields offered in the School 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 School 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" 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 semesters as a full-time student in residence 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 School of Business and Economics.

SCHOOL REQUIREMENTS

All business programs require the completion of Business and Economics Core requirements including the following courses: ACCT 221, 222; BUED 360; MGMT 220, MIS 341, MGMT 422, MKTG 430, FIN 453, MGMT 361, MGMT 481, MGMT 520; ECON 200, 201, 305 and 310.

BETA GAMMA SIGMA

Beta Gamma Sigma is the international scholastic honor society for majors in programs in the School of Business and Economics. Membership in the Society 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 junior class, the upper 10 percent of the senior class and the upper 20 percent of the graduate students are eligible for membership. The North Carolina Agricultural and Technical State University Chapter was established in 1980 as a result of the accreditation of the undergraduate business programs in 1979.

Department of Accounting

http://www.ncat.edu/~acctdept/

Kevin James, Chairperson

MISSION

The mission of the Department of Accounting at North Carolina Agricultural and Technical State University is to provide a high quality learning experience in accounting education which effectively recognizes, appreciates, and responds to the abilities and backgrounds of a diverse student population. The academic and related programs of the Department are designed to provide students with the technical skills and ethical values required for a variety of accounting and business careers. These programs also provide opportunities for the development of the communications, analytical, and technological skills required for lifelong learning and competitive performance in a diverse and global economic environment. The Department's primary emphasis is teaching/learning with secondary and correlated emphases on research and service.

ACCREDITATION

The undergraduate accounting program is accredited by the AACSB International – The Association to Advance Collegiate Schools of Business .

DEGREE OFFERED

Accounting – Bachelor of Science

GENERAL PROGRAM REQUIREMENTS

The major in Accounting must complete minimum of 127 semester hours consistent with the curriculum guide presented below. Accounting majors must earn a minimum grade of "C" in UNST 110, UNST 221, MATH 111, 112, BUED 360, ACCT 221, ECON 305, MGMT 481 and MGMT 520.

DEPARTMENTAL REQUIREMENTS

Majors in the department must earn a minimum grade of "C" in the 10 (30 hours) courses listed as major program requirements for accounting in the applicable University *Bulletin* .

CAREER OPPORTUNITIES

Students majoring in Accounting are prepared for careers in public and/or corporate accounting, business and government, and are provided with an appropriate background for graduate study .

REQUIRED MAJOR COURSES FOR ACCOUNTING

ACCT 221	ACCT 443	ACCT 561
ACCT 222	ACCT 444	ACCT 562
ACCT 441	ACCT 545	FIN 453
ACCT 442		

CURRICULUM GUIDE FOR ACCOUNTING

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 140	3
MATH 111	4	MATH 112	4
UNST 110	3	UNST 221[2]	3
UNST 120	3	BUED 210	3
UNST 130	3	MGMT 220	3
HPED Elective[1]	1	HPED Elective	1
	15		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ACCT 221	3	ACCT 222	3
ECON 200	3	ECON 201	3
ECON 305	3	ECON 310	3
MIS 241	3	BUED 360	3
SPCH 250	3	Cluster Theme Elective	3
	15	Cluster Theme Elective	3
			18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ACCT 441	3	ACCT 442	3
ACCT 444	3	ACCT 562	3
MGMT 422	3	MKTG 430	3
FIN 453	3	Cluster Theme Elective/	
MGMT 481	3	Nonbusiness Elective[3]	3
ACCT 401	1	Nonbusiness Elective	3
	16	ACCT 402	1
			16

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ACCT 443	3	ACCT 561	3
ACCT 545	3	Accounting Elective[5]	3
MGMT 361[2]	3	MGMT 462 or ACCT 463[6]	3
Non-business Elective	3	MGMT 520***	3
Business Elective[4]	3	Nonbusiness Elective	3
	15		15

Total Credit Hours: 127

***Capstone Course

**Accounting majors must earn a minimum of a "C" in all 10 (30 hours) courses listed as major program requirements in the applicable University Bulletin for the selected area of study and a "C" in the accounting elective. Accounting majors must also earn a minimum of "C" in MGMT 220 and BUED 210.*

Students in the Department of Accounting satisfy the University Global Studies Requirement through the integration of Global Studies throughout the Accounting curriculum.

Students in the School of Business and Economics must earn a minimum grade of "C" in the following courses: UNST 110, UNST 221, BUED 360, MATH 111 , MATH 112, ACCT 221, ECON 305, MGMT 481, and MGMT 520.

[1]Recommended Courses: HPED 105, 107, 113, 114

[2]Students are required to select one cluster theme and take 12 credit hours, i.e. 4 electives, within the same theme. The cluster theme should be selected in the Fall Semester of the sophomore year. Recommended theme clusters include Energy, Environment, and Society and Community, Conflict, and Society. UNST 221, MATH 111, and MATH 112 are accepted for every cluster. MGMT 361, which is a required course, is accepted for two clusters- Energy, Environment, and Society and Community, Conflict, and Society. Consequently, four of your required courses [UNST 221, MGMT 361, MATH 111, MATH 112] satisfy the requirements for two clusters- Energy, Environment, and Society and Community, Conflict, and Society. If you declare one of these two clusters, you will then substitute a free elective where a "Cluster Theme Elective" is noted.

*[3]Students **must** select nonbusiness electives according to the criteria below:*

*A) Students **must** select one course **(3 credit hours)** from the following: PHIL 262, SPCH 251, SPCH 552 or ENGL 300.*

B) Remaining nonbusiness elective requirements may be satisfied by ECON 415 or any course offered outside of the School of Business and Economics. Recommendations include courses from the disciplines of natural science, foreign language, speech, and writing.

[4]Students should select one of the following courses: ECON 415, MIS 440, FIN 550, or FIN 553. Students planning to take the CPA Exam should select FIN 550.

[5]Students should select from ACCT 445, 491, 563, 590 and 643. Students planning to take the CPA Exam should select ACCT 590 and/or 643. ACCT 203 and ACCT 446 may not be used as an accounting elective by accounting majors.

[6]Students planning to take the CPA Exam should select ACCT 463.

COURSE DESCRIPTIONS IN ACCOUNTING

ACCT 203. 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 discussed 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. This course may not substitute for accounting or elective requirements for majors in the School of Business and Economics. 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 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 401. Accounting Colloquium I **Credit (1-1)**

This course introduces accounting majors to the accounting profession and to the resources needed to prepare for an accounting career. Topics covered include exposure to varied career opportunities in the accounting profession; preparation for the professional examinations; development of presentation and analytical skills; and identification/discussion of current and emerging issues in the profession. Additionally, learning assurance assessment activities will be conducted as needed. Prerequisites: Junior standing and Accounting major. **(F;S)**

ACCT 402. Accounting Colloquium II **Credit 1(1-1)**

Accounting Colloquium II is a continuation of ACCT 401. Prerequisite: Successful completion of ACCT 401 or permission of Chairperson, Junior standing, and Accunting major. **(F;S)**

ACCT 441. 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. **(F;S;SS)**

ACCT 442. Intermediate Accounting II **Credit 3(3-1)**

This course is a continuation of ACCT 441. It emphasizes theories and practices related to the accounting for liabilities, stockholders' equity and corporations, dilutive securities, earnings per share, revenue recognition, taxes, pensions, leases, accounting changes, and the statement of cash flows. Attention is also given to accounting for investments and derivatives. Prerequisite: C or above in ACCT 441. **(F;S;SS)**

ACCT 443. Income Tax Accounting **Credit 3(3-1)**
This course is a study of federal income tax laws for individuals. While the course focuses on a determination of tax liability and computation of taxable income, the tax structure, tax administration, property transactions and accounting periods and methods are also covered. Students are introduced to tax software for individuals. Prerequisite: C or above in ACCT 222 and junior standing. **(F;S;SS)**

ACCT 444. 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 and junior standing. **(F;S;SS)**

ACCT 445. 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 446. 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 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 361 and senior standing. **(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 and senior standing. **(F;S;SS)**

ACCT 545. 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. Prerequisite: C or above in ACCT 441. **(F;S;SS)**

ACCT 561. 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. Prerequisite: C or above in ACCT 442. **(F;S:SS)**

ACCT 562. 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. Prerequisite: C or above in ACCT 441. **(F;S;SS)**

ACCT 563. 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 444. **(S)**

ACCT 590. 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 442, senior standing, and permission of instructor. **(F:S:SS)**

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. **(F:S:SS)**

DIRECTORY OF FACULTY

Ronald Campbell.....**Assistant Professor**
B.A., Oakwood College; M.B.A., Ohio State University; Ph.D., Texas A & M University; CPA

Lemuria Carter .....**Assistant Professor**
B.S., Virginia State University; M.S., Ph.D., Virginia Polytechnic Institute and State University

William D. Cooper.....**Professor**
B.B.A., M.B.A., Georgia State University; Ph.D. University of Arkansas

Quiester Craig .....**Professor and Dean**
B.A., Morehouse College; M.B.A., Atlanta University; Ph.D., University of Missouri – Columbia; CPA

Cheryl Duncan-Gill.....**Adjunct Instructor**
B.S., North Carolina A&T State University; M.B.A., University of Wisconsin- Madison; CPA

Gwendolyn Highsmith-Quick.....**Associate Professor**
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Kevin James.....**Associate Professor and Chairperson**
B.B.A., Middle Tennessee State University; M.B.A., Middle Tennessee State University; Ph.D., University of Tennessee; CPA

Mark Kiel.....**Associate Professor and Vice Chancellor of University Advancement**
B.S., Alabama State University; M.B.A., Atlanta University; Ph.D., University of Georgia; CPA

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

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

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Brandis Phillips .....**Assistant Professor**
B.A., Michigan State University; M.B.A., University of Iowa; Ph.D., Michigan State University; CPA

Deborah Prentice.....**Assistant Professor**
B.S., M.B.A., Indiana University-Northwest; Ph.D., University of Alabama; CPA

Diana Robinson .....**Associate Professor**
B.S., North Carolina A&T State University; M.B.A., Duke University; Ph.D., Oklahoma State University; CPA

Jerry Thorne.....**Associate Professor**
B.S., North Carolina A&T State University; M.B.A., University of Wisconsin – Madison; Ph.D., Texas A&M University; CPA

Department of Business Education

http://www.ncat.edu/~sbe/bused/index.html

Lisa G. Snyder, Interim Chairperson

VISION

The Department of Business Education strives to prepare nationally competitive professionals in teaching and in information technology.

MISSION

The Department of Business Education prepares business educators and information technology professionals for the ever-changing workforce. Business education combines teaching, technology, communication, critical thinking, leadership, ethics and team building with professionalism. It prepares candidates for careers in education, business, government and other organizations.

OBJECTIVES

The objectives of the Department of Business Education are to provide quality instruction for the development of business teachers and to prepare students for professional roles in information technology, business, government and the professions.

DEGREE OFFERED

Business Teacher Education (Economics) – Bachelor of Science
Business Teacher Education (Computer Technology) – Bachelor of Science
Business Teacher Education (Marketing) – Bachelor of Science
Business Education (Information Technology) – Bachelor of Science
The Business Teacher Education Degree is now available online

GENERAL PROGRAM REQUIREMENTS

Students majoring in Business Teacher Education acquire the essential competencies that business education teachers need to function in an environment of changing technology. The Business Teacher Education program offers five concentrations: Computer Technology, Marketing, Economics, Mathematics and English. All concentrations have the same core courses in Business, Education, and University Studies. There are at least 18 credit hours in the concentration. All concentrations include business work experience.

The Information Technology majors prepare for information technology careers in business, government, and the professions. Information Technology majors complete a required core of business courses and are allowed to select an additional 18 credits of Information Technology electives from a list provided. All students completing bachelor's degree programs in the Department of Business Education must complete 124-128 semester hours, consistent with the curriculum guide of the program selected. All Business Education majors must earn a minimum grade of "C" in UNST 110, 221, MATH 111, 112, ACCT 221, MGMT 220, BUED 360,ECON 305, MGMT 481 and MGMT 520.

DEPARTMENTAL REQUIREMENTS

Majors in the Department of Business Education must earn a minimum grade of "C" in all of the 10 (30 credit hours) courses identified as major program requirements in the applicable University Bulletin for the selected course of study.

The Business Teacher Education curriculum meets the licensure requirements for the North Carolina Department of Public Instruction. The Business Education Department is guided by the State's certification procedures in force. Each Business Teacher Education major is required to pass the PRAXIS I (PPST) Test and an interview with a Teacher Education Panel for admission to the Teacher Education Program as well as pass the Specialty Area Test – PRAXIS II – before beginning student teaching. Check with your advisor or chairperson for more details.

Business Teacher Education majors must meet the relevant admission, retention, and exit criteria for the Teacher Education Programs. For more details, see the "Teacher Education Program" and "Teacher Education Admission and Retention Standards, including Certification Procedures" sections in this Bulletin.

To be eligible for student teaching in Business Education, the student must have met the following requirements:

1. Attained senior standing
2. Completed at least three-fourths of the number of hours required in business and economics courses
3. Completed at least three-fourths of the number of hours required in his/her concentration
4. Attained a grade point average of 2.8 or better in all work undertaken in the University, in all professional education courses undertaken, and in all courses undertaken in the subject matter major
5. Admitted to the Teacher Education Program
6. Passed the PRAXIS II (Specialty Area Test) in the content area – Business Education. Business Teacher Education majors who chose the Marketing Concentration may also take the Praxis II in Marketing if seeking a second license in Marketing Education

As mandated by the State Department of Public Instruction, all candidates for teacher licensure will need to show evidence of computer competency. Students must produce an electronic portfolio showing advanced technology for teaching skills during their program of study. The University, through coursework, will provide opportunities for students to produce materials necessary to fulfill the technology portfolio requirement.

ACCREDITATION

The Business Teacher Education program is accredited by the National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction. The degree is included in the programs accredited by AACSBInternational.

CAREER OPPORTUNITIES

Depending on the concentration selected, graduates of the Department of Business Education are prepared for career opportunities as business teachers in middle and secondary grades, and information technology specialists in business, industry, and the government.

REQUIRED MAJOR COURSES FOR BUSINESS TEACHER EDUCATION
(Economics)

MIS 241	BUED 675	ECON 410
BUED 210	BUED 682	ECON 415
BUED 360	ECON 310	ECON 420
BUED 624		

CURRICULUM GUIDE FOR BUSINESS TEACHER EDUCATION
(Economics)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 110	3	MATH 112	4
MATH 111	4	UNST 140	3
UNST 100	1	BUED 210	3
UNST 120	3	CUIN 101	1
MGMT 220	3	CUIN 110	2
UNST 130	3	UNST 221	3
	17		16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ECON 200	3	ACCT 222	3
ACCT 221	3	CUIN 310	2
ECON 305	3	ECON 310	3
SPCH 250	3	BUED 339[2]	3
CUIN 210	2	UNST Cluster Theme Elective	3
MIS 241	3	ECON 201	3
	17		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ECON 410	3	MGMT 361[3]	3
MGMT 422	3	CUIN 520	3
MGMT 481	3	FIN 453	3
BUED 360	3	MKTG 430	3
CUIN 410	2	ECON 420	3
BUED 342	3	BUED 671	1
BUED 670/671	1		16
	18		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ECON 415	3	CUIN 660	9
BUED 624	3	CUIN 670	3
BUED 675	3		12
BUED 682	3		
MGMT 520	3		
	15		

Total Credit Hours: 128

[1]*Cluster Theme Electives: Students are required to select one cluster theme and select four elective courses within that theme; however, the selection of either the Energy & Environment theme or the Community & Conflict theme will allow BUAD 361 to be used as one of the four theme electives.*

[2]*Students who do not pass the Proficiency Test for Data Entry and Digital Input Applications should first enroll in BUED 301.*

[3]*Selection of cluster theme Energy, Environment and Justice or Community and Conflict will allow MGMT 361 – Legal Environment of Business – to be used as one of the four cluster theme electives.*

REQUIRED MAJOR COURSES FOR BUSINESS TEACHER EDUCATION
(Computer Technology)

MGMT 241	BUED 342	BUED 624
MGMT 361	BUED 360	BUED 675
MIS 440	BUED 447	BUED 682
BUED 210		

CURRICULUM GUIDE FOR BUSINESS TEACHER EDUCATION
(Computer Technology)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 110	3	CUIN 101	1
MATH 111	4	CUIN 110	2
UNST 130	3	MATH 112	4
UNST 100	1	UNST 221	3
UNST 120	3	UNST 140	3
MGMT 220	3	BUED 210	3
	17		16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ECON 200	3	ACCT 222	3
SPCH 250	3	CUIN 310	2
ACCT 221	3	ECON 310	3
ECON 305	3	ECON 201	3
CUIN 210	2	BUED 339[2]	3
MIS 241	3	Cluster Theme Elective	3
	17		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BUED 342	3	MGMT 361[3]	3
MGMT 422	3	CUIN 520	3
MIS 440	3	FIN 453	3
MGMT 481	3	BUED 447	3
BUED 360	3	MKTG 430	3
CUIN 410	2	BUED 671	1
BUED 670	1		16
	18		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BUED 624	3	CUIN 660	3
BUED 400	3	CUIN 670	9
BUED 675	3		12
BUED 682	3		
MGMT 520	3		
	15		

Total Credit Hours: 128

[1]*Cluster Theme Electives: Students are required to select one cluster theme and select four elective courses within that theme; however, the selection of either the Energy & Environment theme or the Community & Conflict theme will allow MGMT 361 to be used as one of the four theme electives.*

[2]*Students who do not pass the Proficiency Test for Data Entry and Digital Input Applications should first enroll in BUED 301.*

[3]*Selection of cluster theme Energy, Environment and Justice or Community and Conflict will allow BUAD 361 – Legal Environment of Business – to be used as one of the four cluster theme electives.*

REQUIRED MAJOR COURSES FOR BUSINESS TEACHER EDUCATION
(Marketing)

MGMT 425	BUED 360	BUED 624
MKTG 430	BUED 210	BUED 675
MKTG 432	BUED 342	BUED 682
MKTG 435		

CURRICULUM GUIDE FOR BUSINESS EDUCATION
(Marketing)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 110	3	MATH 112	4

MATH 111	4	UNST 140	3
UNST 100	1	UNST 221	3
UNST 120	3	BUED 210	3
UNST 130	3	CUIN 101	1
MGMT 220	3	CUIN 110	2
	17	HPED 200	2
			18

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ECON 200	3	ACCT 222	3
ACCT 221	3	CUIN 310	2
ECON 305	3	ECON 310	3
CUIN 210	2	BUED 339[2]	3
MIS 241	3	BUED 342	3
SPCH 250	3	ECON 201	3
	17		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MKTG 430	3	MKTG 432	3
MGMT 422	3	CUIN 520	2
MGMT 481	3	FIN 453	3
BUED 360	3	MGMT 425	3
CUIN 410	2	MGMT 361[3]	3
BUED 670/671	1	Cluster Theme Elective	3
	15		17

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MKTG 435	3	CUIN 660	9
BUED 624	3	CUIN 670	3
BUED 675	3		12
BUED 682	3		
MGMT 520	3		
	15		

Total Credit Hours: 128

[1]*Cluster Theme Electives: Students are required to select one cluster theme and select four elective courses within that theme; however, the selection of either the Energy & Environment theme or the Community & Conflict theme will allow MGMT 361 to be used as one of the four theme electives.*

[2]*Students who do not pass the Proficiency Test for Data Entry and Digital Input Applications should first enroll in BUED 301.*

[3]*Selection of cluster theme Energy, Environment and Justice or Community and Conflict will allow MGMT 361 – Legal Environment of Business – to be used as one of the four cluster theme electives.*

REQUIRED MAJOR COURSES FOR BUSINESS EDUCATION
(Information Technology)

MIS 440	BUED 360	Information Technology – IT Elective
MGMT 520	BUED 400	Information Technology – IT Elective
MGMT 522		Information Technology – IT Elective
BUED 342		Information Technology – IT Elective

CURRICULUM GUIDE FOR BUSINESS EDUCATION
(Information Technology)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MGMT 220	3	BUED 210	3
MATH 111	4	GEEN 163/ECT 201	2
UNST 100	1	MATH 112	4
UNST 110	3	UNST 140	3
UNST 120	3	UNST 221	3
UNST 130	3	HPED Elective	1
	17		16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ACCT 221	3	ACCT 222	3
MIS 241	3	ECON 201	3
ECON 200	3	ECON 310	3
ECON 305	3	PSYC 320	3
SPCH 250	3	UNST Cluster Theme Elective[1]	3
HPED Elective	1	BUED 339[2]	3
	16		18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MGMT 422	3	MGMT 361[3]	3
MGMT 481	3	MKTG 430	3
BUED 342	3	FIN 453	3
BUED 360	3	BUED 671	1
Info. Tech. – IT Elective	3	UNST Cluster Theme Elective[1]	3
BUED 670	1	Info. Tech. – IT Elective	3
	16		16

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MGMT 426	3	MGMT 522	3
BUED 400	3	Info. Tech. – IT Elective	3
MIS 440	3	Info. Tech. – IT Elective	3
Info. Tech. – IT Elective	3	MGMT 520	3
Info. Tech. – IT Elective	3		12
	15		

Total Credit Hours: 126

[1]*Cluster Theme Electives: Students are required to select one cluster theme and select four elective courses within that theme; however, the selection of either the Energy & Environment theme or the Community & Conflict theme will allow MGMT 361 to be used as one of the four theme electives.*

[2]*Students who do not pass the Proficiency Test for Data Entry and Digital Input Applications should first enroll in BUED 301.*

[3]*Selection of cluster theme Energy, Environment and Justice or Community and Conflict will allow MGMT 361 – Legal Environment of Business – to be used as one of the four cluster theme electives.*

NOTE: A list of Information Technology Electives, including course descriptions, is available at the Department's Web site.

COURSE DESCRIPTIONS IN BUSINESS EDUCATION

BUED 210. Microcomputer Usage in Business **Credit 3(2-1)**

This course emphasizes the theory and application of business software, such as word processing, spreadsheet, database management, presentation and communication software. **(F;S;SS)**

BUED 301. Data Entry and Digital Input Applications **Credit 2(1-2)**

This course is designed to develop speed and accuracy in data entry and the use of various digital input devices. Emphasis is placed on using software for formatting basic business documents. Requirements for successful completion: 40 gross words per minute. **(F;S;SS)**

BUED 339. Information Processing Applications **Credit 3(2-1)**

This course is designed to enhance information processing skills through projects and simulations. Emphasis is placed on advanced word processing, including the integration of spreadsheets, databases and presentations. Students will use desktop publishing, multimedia, and Web page design software to produce newsletters, policies and procedures manuals, and Web pages. Goal: Keyboard at 55 gwpm; voice input at 120 gwpm. Prerequisite: Keyboarding Proficiency Test or BUED 301 and BUED 334. **(F;S)**

BUED 342. Business Programming **Credit 3(2-1)**

This course introduces computer programming for management decision making. Emphasis is on using the computer as an aid to problem solving and report generation, essential to an efficient and effective management information system. Prerequisite: BUAD 341 or equivalent. **(F;S;SS)**

BUED 360. Business Communications **Credit 3(3-0)**

This course focuses on the study and application of communication theory using state-of-the-art communication technology and techniques to develop correspondence and reports. Attention is also given to oral communication, business ethics and global interaction. Prerequisite: ENGL 101 and sophomore standing. **(F;S;SS)**

BUED 379. Personal Finance **Credit 3(3-0)**

This course examines the problems faced by individuals in managing personal incomes and expenditures. Emphasis is also placed upon credit, budgeting, borrowing, saving, and insurance. Prerequisite: Sophomore standing. **(S)**

BUED 400. Business Reports and Presentations **Credit 3(3-0)**
This course focuses on advanced applications of business and technical writing principles. Reports, proposals and procedures manuals are produced. Emphasis is placed on research, formal writing and oral presentations supported by appropriate software and multimedia technology. Prerequisites: SPCH 250, BUED 360; or junior standing and approval of the chairperson. **(F;S)**

BUED 444. Data Communications and Networks **Credit 3(3-0)**
This course emphasizes a formal approach to modern data communications and networks, including a theoretical and practical framework. It places special attention on enterprise and global systems covering voice, data, software, hardware, cellular/wireless, and bluetooth standards. Prerequisites: BUED 334, BUAD 341, ECT 213, or approval of chairperson. **(DEMAND)**

BUED 447. Advanced Microcomputer Applications **Credit 3(2-1)**
This course focuses on advanced computing concepts and applications related to information design, production and management. It includes hands-on applications using integrated software packages. The course also introduces project management skills and addresses trends in information and end-user computing. Prerequisite: BUED 334, ECT 210, or approval of chairperson. **(S)**

BUED 568. Organizational Information and Records Management **Credit 3(3-0)**
This course emphasizes the processing of organizational information at the systems level including records management, telecommunications, e-Commerce, and global information management. Consideration is also given to the appraisal of current and future technological trends in business. Prerequisite: BUED 334; BUAD 341 or equivalent and senior standing. **(DEMAND)**

BUED 624. 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. Prerequisites: BUED 334, ECT 201, or approval of the chairperson. **(F)**

BUED 670, 671. Directed Work Experience **Credit 1(0-1)**
This course requires completion of one year of work (2000 hours) or the equivalent in summer or part-time work in business-related occupations within the past five years. If there is no business-related work experience within the last five years, a work experience/internship of 400 hours at an approved job site must be completed by all business teacher education majors. Information Technology majors must complete a minimum of 200 hours. Prerequisite: Junior standing. **(F;S;SS)**

BUED 672. Directed Work Experience **Credit 0(0-0)**
This course includes observation and fieldwork in selected business firms to contribute practically to the total development of the student's educational experiences. A minimum of 100 hours must be completed each semester. Four hundred hours are required for Business Teacher Education majors. Students will receive "S" for "Satisfactory" or "U" for "Unsatisfactory" grades. Prerequisite: Junior standing. **(DEMAND)**

BUED 675. Instructional Methods in Business Education **Credit 3(3-1)**
This course focuses on helping teacher candidates develop strategies for teaching and assessing business and information technology, including the development of units of instruction, lesson plans, enrichment materials and assessments for effective teaching at the secondary level. Provisions are made for observing and participating in teaching demonstrations. This course includes 60 hours of observation in a public school business classroom. **(F;S)**

BUED 682. Business Education Planning and Leadership **Credit 3(3-0)**
This course focuses on the principles of effective administration and supervision of public school business education programs. It includes the foundations of career and technical education from the federal and state perspectives, major issues, and trends in business education. Prerequisite: Senior standing and consultation with chairperson. **(F;S)**

DIRECTORY OF FACULTY

Sherrie D. Cannoy ..... **Assistant Professor**
B.S., M.S., Ph.D., University of North Carolina at Greensboro

Betty F. Chapman ..... **Assistant Professor**
B.S., Shaw University; M.B.A., North Carolina Central University; Ph.D., Virginia Polytechnic Institute and State University

Jorge A. Gaytan ..... **Associate Professor**
B.B.A., Western Michigan University; M.B.A., Ph.D., The University of Texas at El Paso

Thelma M. King ..... **Associate Professor**
B.S., North Carolina A&T State University; M.S., University of North Carolina at Greensboro; Ph.D., Virginia Polytechnic Institute and State University

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B.A., Salem College; M.B.A., Appalachian State University

Ewuukgem Lomo-David ..... **Associate Professor**
B.S., Mankato State University; M.Ed., Ed.D., University of Memphis
Beryl C. McEwen ..... **Professor and Interim Associate Dean**
B.Ed., University of Technology, Jamaica; M.S., Ph.D., Southern Illinois University at Carbondale
Lisa Gueldenzoph Snyder ..... **Associate Professor and Interim Chairperson**
B.S., Northern Michigan University; M.Ed., Ph.D., Bowling Green State University

Department of Economics and Finance

http://www.ncat.edu/~econdept/

Jeffrey A. Edwards, Chairperson

OBJECTIVES

The objectives of the Department of Economics and Finance are to prepare highly competent and globally competitive graduates, to develop students' skills and abilities in the principles of economics and finance, and in using economic data to identify, analyze, and solve problems associated with the economy, and to develop students' potential for leadership positions in business, education, and the government.

DEGREES OFFERED

Economics – Bachelor of Science
Finance – Bachelor of Science

GENERAL PROGRAM REQUIREMENTS

Economics and Finance majors are required to complete a minimum of 125 hours for a bachelor's degree consistent with the curriculum guide for the program selected. The following two program options are available to majors in Economics: (1) Business Economics and (2) General Economics. In the General Economics option, the student is allowed 24 hours of free electives in order to develop other areas of interest, or prepare for graduate study. A Prelaw curriculum guide is also available for students planning to attend Law School.

The Business Economics option includes the same core courses required of all majors in the School of Business and Economics. Within the School of Business and Economics, all students must earn a minimum grade of "C" in UNST 110, UNST 221, ACCT 221, ECON 305, MGMT 220, MGMT 481, MGMT 520, BUED 360, MATH 111, and MATH 112.

CAREER OPPORTUNITIES

In the department, well-prepared graduates in the majors can serve in the financial or non-financial sectors of the economy, and everywhere from Wall Street to Capital Hill.

Graduates of the Economics major are prepared for careers in government services and agencies, business, and industry. Graduates are provided a strong educational background for graduate study and the study of law.

Graduates of the Finance major are prepared for careers in private industry and the government. Graduates of the Finance major also receive strong training to plan for graduate degreess and subsequent careers.

DEPARTMENTAL REQUIREMENTS

Students majoring in Economics or Finance must earn a minimum grade of "C" in the 10 (30 hours) courses listed as major program requirements. In addition, students must earn a minimum grade of "C" in all major program elective courses.

REQUIRED MAJOR COURSES FOR ECONOMICS (BUSINESS)

The following are major courses for a student choosing the Business Economics major. Students majoring in Business Economics must earn a minimum of a "C" grade in order to satisfy the major requirement:

ECON 200	ECON 410	ECON 420
ECON 201	ECON 412	ECON 505*
ECON 305	ECON 415	ECON 525
ECON 310		

**FIN 553 or MKTG 537 may be substituted for ECON 505*

CURRICULUM GUIDE FOR ECONOMICS (BUSINESS)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MATH 111[1]	4	MATH 112[1]	4
MGMT 220	3	UNST 140	3
UNST 100	1	UNST 221	3
UNST 110	3	SPCH 250	3
UNST 120	3	BUED 210	3
UNST 130	3	HPED Elective	1

	17		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ACCT 221	3	ACCT 222	3
MIS 241	3	ECON 201	3
ECON 200	3	ECON 310	3
ECON 305	3	BUED 360	3
PSYC 320[2]	3	UNST Cluster Theme or Elective	3
HPED Elective	1		15
	16		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
FIN 453	3	UNST Cluster Theme or Elective	3
FOLA Elective	3	MGMT 481	3
MGMT 422	3	FOLA Elective	3
ECON 410	3	ECON 415	3
ECON 412	3	ECON 420	3
	15		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MGMT 361[2]	3	MGMT 520	3
BUED 400	3	ECON 525 (ECON Capstone)	3
ECON 505[**]	3	ECON Elective	3
ECON Elective	3	Non-Business Elective	3
MKGT 430	3	Non-Business Elective	3
	15	15	

Total Credit Hours: 125

**ENGL 240 or SPCH 452 may be substituted for BUED 400*

***FIN 553 or MKTG 537 may be substituted for ECON 505*

[1]Math 131 and 132 are recommended as substitutes for Math 111 and Math 112 for majors planning to pursue graduate study.

[2]Students are required to select a UNST Cluster Theme and complete four courses within that theme cluster. UNST 221 is in all of the clusters, and Math 111 and Math 112 are included in four of the clusters. In addition, if a student selects the Health, Lifestyles, and Society cluster theme it includes PSYC 320 and the completion of this course may be used to satisfy one of the four theme electives. Also, if a student selects Community, Conflict and Society as their cluster theme, MGMT 361 is included and may be used to satisfy one of the four theme electives.

[3]PHIL 262, ENGL 240 or SPCH 452 may be substituted for BUED 400.

[4]FIN 553 or MKTG 537 may be substituted for ECON 505

REQUIRED MAJOR COURSES FOR ECONOMICS (GENERAL)

The following are major courses for a student who elected the Economics (General) major. Students majoring in Economics (General) must earn a minimum of a "C" grade in order to satisfy the major requirement:

ECON 200	ECON 410	ECON 420
ECON 201	ECON 412	ECON 512
ECON 305	ECON 415	ECON 525
ECON 310		

REQUIRED MAJOR COURSES FOR ECONOMICS (GENERAL)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MGMT 220	3	MATH 112[1]	4
MATH 111[1]	4	BUED 210	3
UNST 100	1	SPCH 250	3
UNST 110	3	UNST 140	3
UNST 120	3	UNST 221	3
UNST 130	3	HPED Elective	1
	17		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MIS 241	3	BUED 360	3
ECON 200	3	ECON 201	3
ECON 305	3	ECON 310	3
PHIL 262	3	FOLA Elective	3

PSYC 320[2]	3	UNST Cluster Theme or Elective[2]	3
HPED Elective	1		15
	16		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ECON 410	3	ECON 415	3
ECON 412	3	ECON 420	3
FOLA Elective	3	ECON 512	3
BUED 400 or SPCH 452	3	ECON Elective	3
UNST Cluster Theme or Elective	3	FOLA Elective	3
	15		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ECON 505	3	ECON 525 (ECON Capstone)	3
ECON Elective	3	Elective	3
Elective	3	Elective	3
Elective	3	Elective	3
Elective	3	Elective	3
	15		15

Total Credit Hours: 125

[1]Math 131 and 132 are recommended as substitutes for Math 111 and Math 112 for majors planning to pursue graduate study.

[2]Students are required to select a UNST Cluster Theme and complete four courses within that theme cluster. UNST 221 is in all of the clusters, and Math 111 and Math 112 are included in four of the clusters. In addition, if a student selects the Health, Lifestyles, and Society cluster theme it includes PSYC 320 and the completion of this course may be used to satisfy one of the four theme electives. Also, if a student selects Community, Conflict and Society as their cluster theme, MGMT 361 is included and may be used to satisfy one of the four theme electives.

REQUIRED MAJOR COURSES FOR FINANCE

The following are major courses for a Finance major. Students majoring in Finance must earn a minimum of a "C" grade in order to satisfy the major requirement:

FIN 453	FIN 551	ACCT 441
FIN 455	FIN 553	ACCT 442
MGMT 462	FIN 556	ECON 415
FIN 550		

CURRICULUM GUIDE FOR FINANCE

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MGMT 220	3	BUED 210	3
MATH 111	4	MATH 112	4
UNST 100	1	SPCH 250	3
UNST 110	3	UNST 140	3
UNST 120	3	UNST 221	3
UNST 130	3	HPED Elective	1
	17		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ACCT 221	3	ACCT 222	3
ECON 200	3	BUED 360	3
ECON 305	3	ECON 201	3
MIS 241	3	ECON 310	3
PSYC 320[2]	3	UNST Cluster Theme or Elective	3
HPED Elective	1		15
	16		

[1]Recommended HPED Electives: HPED 104, 105, 107, 109, 113, 114, and 118.

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MGMT 422	3	MGMT 482	3
MGMT 481	3	FIN 455	3
FIN 453	3	ACCT 442	3

ACCT 441	3	FIN 550	3
ECON 415	3	UNST Cluster Theme or	
	15	Non Business Elective[4]	3
			15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MKTG 430	3	MGMT 520 (Capstone)	3
FIN 553	3	FIN 556	3
FIN 551	3	MGMT 462	3
Finance Elective[3]	3	Finance Elective[3]	3
MGMT 361[2]	3	Non-Business Elective[4]	3
	15		15

Total Credit Hours: 125

**Students in the School of Business and Economics may use MATH 131 and 132 to satisfy MATH 111 and 112 providing that a grade of "C" or better is earned. Math 110 is not a substitute for either MATH 111 or MATH 112.*

[2]Students are required to select a UNST Cluster Theme and complete four courses within that theme cluster. UNST 221 is in all of the clusters, and Math 111 and Math 112 are included in four of the clusters. In addition, if a student selects the Health, Lifestyles, and Society cluster theme it includes PSYC 320 and the completion of this course may be used to satisfy one of the four theme electives. Also, if a student selects Community, Conflict and Society as their cluster theme, MGMT 361 is included and may be used to satisfy one of the four theme electives.

.[3]Select courses from the following: MIS 440, FIN 464, FIN 465, and FIN 552; ECON 410, ECON 420, and ECON 505, additional courses in Accounting or Computer Science (200 level or above) in consultation with advisor.

[4]Nonbusiness[5]Nonbusiness Electives: SPCH 452 (Public Speaking); SPCH 552 (Persuasive Communication); ENGL 240 (Advanced Grammar and Argumentation); ENGL 300 (Advanced Composition); COMM 500 (Public Relations Seminar); COMP (200 level and above) in consultation with advisor and Foreign Languages.

COURSE DESCRIPTIONS IN ECONOMICS

ECON 200. Principles of Economics (Micro) **Credit 3(3-0)**

This course is an introduction to the principles of economics as they relate to individual segments of the society. Emphasis will be placed upon scarcity, supply and demand, consumer behavior, business firms and market structures. **(F;S;SS)**

ECON 201. Principles of Economics (Macro) **Credit 3(3-0)**

This course introduces the student to the principles of economics as they apply to the economy as a whole. National income determination, inflation, unemployment, monetary and fiscal policies, and the basics of international economic relations are examined. **(F;S;SS)**

ECON 305. Elementary Statistics **Credit 3(3-1)**

This course is an introduction to descriptive statistics, including tabular and graphic presentation of data, measures of central tendency and of dispersion; index numbers; probability; probability distributions; sample design and sampling distributions; and estimation. Prerequisite: A minimum grade of C in MATH 112 or MATH 131. **(F;S;SS)**

ECON 310. Advanced Statistics **Credit 3(3-1)**

This course focuses on inferential statistics, including classical hypothesis testing, chi-square tests and analysis of variances; regression analysis; correlation analysis; time series analysis; and decision theory. Prerequisite: A minimum grade of C in ECON 305. **(F;S;SS)**

ECON 401. Public Finance **Credit 3(3-0)**

In this course, an analysis is made of 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 and ECON 201. **(DEMAND)**

ECON 405. History of Economic Thought **Credit 3(3-0)**

This course is a survey of the history of economic thought from the Middle Ages to John M. Keynes. The course 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 410. 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 310 or equivalent. **(F;S)**

ECON 412. Quantitative Analysis **Credit 3(3-0)**

This course is intended to provide students with a solid foundation to basic mathematical methods employed in macro and micro economic theory. It includes elementary application of calculus and analytical geometry, and matrix algebra to illustrate income - expenditure model, demand theory, production function, problems of cost minimization and profit maximization, and linear programming. Prerequisites: A minimum grade of C in ECON 200, ECON 201; and MATH 112 or MATH 131. **(F)**

ECON 415. Money and Banking **Credit 3(3-0)**

This course introduces the student to 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. Prerequisites: A minimum grade of C in ECON 200, ECON 201 and ECON 305 or equivalent. **(F;S;SS)**

ECON 420. 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 and ECON 310. **(F;S)**

ECON 472. 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 and Junior standing. **(DEMAND)**

ECON 501. Labor Relations **Credit 3(3-0)**

This course introduces the student to the economic analysis of labor markets. Labor economics is a field in applied microeconomics, and draws upon basic microeconomic and statistical concepts. Topics to be studied 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 and ECON 310. **(F)**

ECON 505. International Economic Relations **Credit 3(3-0)**

This course examines the national specialization and international exchange. The history and significance of international trade among nations of the world will be studied. Prerequisites: A minimum grade of C in ECON 200 and ECON 201. **(F)**

ECON 510. Business Cycles **Credit 3(3-0)**

In this course, the general instability of capitalism and its causes, seasonal fluctuations and the secular trend will be studied 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 and ECON 201. **(S)**

ECON 512. Introduction to Econometrics **Credit 3(3-0)**

This course is intended to provide the student with a working knowledge of applications of modern statistical tools for the formulation and the verification or refutation of economic theories. Primary attention is given to quantitative estimates of parameters in single equation stochastic models. The course also introduces the student to simultaneous-equation models. Prerequisites: A minimum grade of C in ECON 200, ECON 201 and ECON 310 or consent of the instructor. **(S)**

ECON 515. 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 520. 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 and ECON 201. **(DEMAND)**

ECON 525. 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. This course will also include exposure to recent developments in economics. Prerequisite: A minimum grade of C in ECON 410, ECON 420 and Senior standing. **(S)**

ECON 599. Independent Study **Credit 3 or 6**

This course is designed for students involved in Cooperative Work-Study Program where the length and nature of their involvement warrant the awarding of such credit. The following conditions must be met in order to receive credit: (1) The credit will be determined by the department chairman at the time of registration; (2) the student must be registered at the University during the off-campus assignment; (3) the student should spend a minimum of three months in the off-campus experience for each three semester hours of academic credit. When the off-campus experience is in the form of seminar exposure, not less than forty-five clock hours should represent three semester hours of academic credit; and (4) the student will be required to present a written report and/or other evaluation criterion that will be evaluated by the supervising teacher. Any special problem or technical report pursued by the student will be subject to prior approval by the department chairman or supervising teacher. Prerequisite: Consent of the advisor and/or department chairperson. **(S)**

Advanced Courses

ECON 601. Economic Understanding **Credit 3(3-0)**

This course is an introduction to the principles of economics utilizing the macro approach. No credit is given towards a degree in economics. **(DEMAND)**

ECON 602. Manpower Problems and Prospects **Credit 3(3-0)**

This course is an analysis of manpower development problems and prospects, with particular reference to the problems of unemployment, underemployment and discrimination. The course will focus on problem measurement, evaluation of existing policy and prospects for achievement of all human resource development. The course will invite an interdisciplinary participation on the part of students and faculty. Prerequisite: ECON 200 or ECON 201; ECON 305 or equivalent, or consent of the instructor. **(DEMAND)**

ECON 603. Manpower Planning **Credit 3(3-0)**

Manpower planning centers chiefly on the adjustment necessary to adapt labor resources to changing job requirements. This course is designed to prepare students to create plans which will facilitate this adjustment. This course will attempt to acquaint the student with labor force and labor market behavior such that the is able to make planning decisions relating to job creation (increasing demand) and education and training (increasing supply). Planning will be done at both the national (macro) and local (micro) levels, with special emphasis on the latter. We will further attempt to evaluate all planning decision by use of Cost-Benefit Analysis or Multivariate Analysis. Prerequisite: ECON 200 or ECON 201; ECON 305 or equivalent, or consent of the instructor. **(DEMAND)**

ECON 604. Economics Evaluation Methods **Credit 3(3-0)**

The course will cover needed tools of research design, statistical reporting, cost benefit analysis and other related techniques for internal and external evaluations of human resource development programs. The course is designed both for in-service personnel currently employed by agencies, and for the regular student enrolled in a degree-granting program. Prerequisites: ECON 200 and ECON 201. **(F)**

ECON 608. 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. Prerequisite: Senior standing and ECON 200 and ECON 201 or consent of Instructor. **(S)**

ECON 610. Consumer Economics **Credit 3(3-0)**

This course is designed to acquaint 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 will consider the economic choices faced by the consumers in maximizing satisfaction with limited means. Prerequisites: ECON 200 and ECON 201. **(DEMAND)**

ECON 615. 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 will examine the economic and social conditions of income, inequality and explore the national commitment to equal opportunity. Special emphasis will be placed on illustrations from North Carolina and adjacent states. Prerequisites: Junior standing and permission of instructor. **(DEMAND)**

ECON 690. Special Topics in Economics **Credit 3(3-0)**

This course is an examination of problems and analytical techniques in economics. The pursuit of certain specific or problem oriented area in economics not covered in other courses. Course content may vary from semester to semester. May not be repeated for credit. Prerequisite: Junior standing and permission of instructor. **(DEMAND)**

FINANCE

FIN 453. Business 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 222 and Junior standing. **(F;S;SS)**

FIN 455. Investments **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 453. **(F;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. Prerequisite: A minimum grade of C in Junior standing. **(F)**

FIN 465. 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 466. 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. Prerequisite: A minimum grade of C in FIN 465, FIN 453, or instructor consent. **(S)**

FIN 550. Financial Analysis **Credit 3(3-0)**

The course focuses on short-term financial analysis processes and techniques for managing current assets and liabilities. It emphasizes both practical and theoretical approaches for making optional decisions and includes consideration of appropriate policies and procedures to ensure continuity in decision-making. Prerequisite: A minimum grade of C in FIN 453. **(F;S;SS)**

FIN 551. 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 453. **(F;S)**

FIN 552. 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 453 and ECON 415. **(S)**

FIN 553. International Business 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 453. **(F)**

FIN 555. 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 455. **(S)**

FIN 556. Financial Markets **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 453 and ECON 415. **(S)**

FIN 557. Cases in Business Finance **Credit 3(3-0)**

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 FIN 550 or FIN 551 and Senior standing. **(DEMAND)**

DIRECTORY OF FACULTY

Robert J. Angell..... **Professor**
B.S. B.A., University of North Carolina at Chapel Hill; M.B.A., University of Virginia; D.B.A., Florida State University

Jennis Biser..... **Assistant Professor**
B.S., West Virginia University; M.A., Ph.D., George Mason University

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

David Chen ..... **Associate Professor**
B.S., National Taiwan University; M.S., New Mexico State University; Ph.D., University of Wisconsin

Charles Cole..... **Assistant Professor**
B.S., MBA; Delta State University; Ph.D. University of Arkansas, Fayetteville

John Cole ..... **Associate Professor**
B.A., University of Alberta (Canada); Ph.D., University of Michigan

Basil Coley ..... **Professor Emeritus**
B.S. A&T College; M.S., Pennsylvania State University; Ph.D., University of Illinois

Jeffrey Edwards ..... **Associate Professor and Chairperson**
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B.A., Williams College; M.B.A., University of Chicago; Ph.D., Ohio State University
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B.A., University of the Americas, Puebla, Mexico; M.A., PhD., Virginia Polytechnic Institute and State University
Ryoichi Sakano ..... **Associate Professor**
B.S., Keio University; M.B.A., M.A., University of North Carolina at Greensboro; Ph.D., University of Alabama
Scott Simkins ..... **Associate Professor and Director of the Academy for Teaching and Learning**
B.A., St. John's University; Ph.D., University of Iowa
Hal Snarr ..... **Associate Professor**
B.S., State University of New York; B.S., Idaho State University; Ph.D., Washington State University
Vereda Williams ..... **Associate Professor**
B.A., Johnson C. Smith University; M.B.A., North Carolina Central University; Ph.D., Duke University
Danielle D. Winchester ..... **Assistant Professor**
B.S., M.B.A., University of North Carolina at Greensboro; PhD., Texas Tech University

Department of Management

http://www.ncat.edu/~sbe/mgmt/

Pamela E. Carter, Chairperson

OBJECTIVES

The objectives of the Management Department are to provide fundamental knowledge concerning the field of management by emphasizing the tools and critical thinking essential for problem solving and decision-making and to develop competencies necessary for accomplishing managerial goals.

DEGREES OFFERED

Management – Bachelor of Science
Management (Management Information Systems) – Bachelor of Science
Management (Entrepreneurship) – Bachelor of Science

CERTIFICATE IN ENTREPRENEURSHIP

The Department of Management administers the Certificate in Entrepreneurship that offers a unique learning experience for students who aspire to start their own businesses or to secure employment with an entrepreneurial company. Coursework provides theoretical, experiential, and practical information about starting, operating, and managing entrepreneurial firms. Students will explore the entrepreneurial career option, examine the entrepreneurial process from the idea stage through business operations to harvest, discuss corporate intrapreneurship, examine the skills-set needed for entrepreneurial success, and develop and present a business plan. Opportunity to apply the knowledge and skills is provided to students through the Entrepreneurial Internship Program.

The Certificate in Entrepreneurship is available to students in all University majors. Interested students are required to complete 18 semester hours from the following:

Six (6) to nine (9) credit hours from MGMT 425, 460, 475 and 499; six (6) to nine (9) credit hours of electives selected by each department; and 6 additional credit hours of business courses (MGMT 422 and MKTG 430) required for non-business majors.

GENERAL PROGRAM REQUIREMENTS

Students majoring in programs in the Department of Management must complete a minimum of 125 credit hours consistent with the curriculum guide for the area of study selected. Majors must earn a minimum grade of "C" in UNST 110, 221, MGMT 220, MATH 111, 112, ACCT 221, ECON 305, MGMT 481, MGMT 520, BUED 360 and all major program electives.

DEPARTMENTAL REQUIREMENTS

Students in the Department of Management must select a major in Management. **Students majoring in Management may elect a program concentration in Management Information Systems (MIS) or Entrepreneurship.** All students must earn a minimum grade of "C" in each of the 10 (30 credit hours) courses listed as major program requirements for the selected major in the applicable University Bulletin for the selected major.

CAREER OPPORTUNITIES

Students earning a degree in Management will acquire the technical preparation and competencies for challenging management careers in public, private, and entrepreneurial activities and for competitiveness in prestigious graduate and professional programs.

REQUIRED MAJOR COURSES FOR MANAGEMENT

ACCT 446	FIN 453	MGMT 522
MGMT 422	MGMT481	MGMT 524
MGMT 426	MGMT 482	MGMT526
MKTG 430		

CURRICULUM GUIDE FOR MANAGEMENT

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 110	3	UNST 221	3
UNST 120	3	UNST 140	3
UNST 130	3	MATH 112	4
MATH 111	4	SPCH 250	3
MGMT 220	3	MIS 241	3
UNST 100	1	HPED Elective[1]	1
	17		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elective[3]	3	ECON 201	3
ECON 200	3	ECON 310	3
ECON 305	3	ACCT 222	3
ACCT 221	3	BUED 360	3
PSYC 320	3	UNST Cluster Theme Elective[3]	3
HPED Elective [1]	1		15
	16		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MGMT 481	3	MGMT 482	3
MKTG 430	3	ECON 415	3
MGMT 422	3	MGMT 522	3
FIN 453	3	MGMT 426	3
ACCT 446	3	UNST Cluster Theme Elective[3]	
	15	or Non-business Elective[4]	3
			15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MGMT Elective	3	MGMT 462	3
MGMT 524	3	MGMT 520 (Capstone Course)	3
MGMT 361	3	Management Elective[2]	3
Non-business Elective[5]	3	Management Elective[2]	3
MGMT 526	3	Non-business Elective[4]	3
	15		15

Total Credit Hours: 125

[1]*Recommended HPED Electives: HPED 104, 105, 107, 109, 113, 114 and 118*

[2]*Recommended electives include: MGMT 425, 463, 699; MKTG 432, 433, 434, 435, 537; MIS 342, 440; FIN 553; ECON 410, 412, 420, 501, 505, 510, 512, 520; and TSCM 340.*

[3]*Students are required to select one cluster theme and take 12 credit hours, i.e. 4 electives, within the same theme. The cluster theme should be selected in the Fall Semester of the sophomore year. A recommended theme cluster is Community, Conflict, and Society. If students select this recommended cluster, UNST 221, MATH 111, MATH 112, and MGMT 361, all required courses, are included in this cluster theme.*
[4] *Non-business Electives: SPCH 552;ENGL 300); JOMC 500 COMP (200 level and above) in consultation with advisor and Foreign Languages.*

REQUIRED MAJOR COURSES FOR MANAGEMENT (MIS CONCENTRATION)

ACCT 446	MIS 449	MGMT 426
MIS 352	MIS 500	MGMT 482
MIS 447	MIS 620	MGMT 520
MIS 448		

CURRICULUM GUIDE FOR MANAGEMENT (MIS CONCENTRATION)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 221	3
UNST 120	3	UNST 140	3
UNST 130	3	SPCH 250	3
UNST 110	3	MATH 112*	4
MATH 111*	4	HPED Elective [1]	1
MGMT 220	3	MIS 241	3
	17		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ECON 200	3	ECON 201	3
BUED 360	3	MIS 352	3
ECON 305	3	ECON 310	3
ACCT 221	3	ACCT 222	3
PSYC 320	3	UNST Cluster Theme Elective[2]	3
HPED Elective[1]	1		15
	16		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ACCT 446	3	FIN 453	3
MIS 447	3	MIS 448	3
MGMT 422	3	MGMT Elective[3]	3
MGMT 481	3	MGMT 482	3
UNST Cluster Theme Elective[2]	3	UNST Cluster Theme Elective[2]	
	15	or Non-business Elective[5]	3
			15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MGMT 361	3	MIS 620 (Capstone Course)	3
MKTG 430	3	MGMT 426	3
MIS 449	3	MGMT 520	3
MIS 500	3	MGMT 462	3
MIS Elective[4]	3	Non-business Elective[5]	3
	15		15

Total credit hours: 125

***Note:** Students may take one of three math sequences: MATH 111 & MATH 112 (as indicated in the freshman year above), MATH 123 & MATH 131 (Discrete Mathematics and Calculus I), or MATH 131 & MATH 132 (Calculus I and Calculus II).

[1]*Recommended HPED Electives: HPED 105, 107, 113, 114, and 115.*

[2]*Students are required to select one cluster theme and take 12 credit hours, i.e. 4 electives, within the same theme. The cluster theme should be selected in the Fall Semester of the sophomore year. A recommended theme cluster is Community, Conflict, and Society. If students select this recommended cluster, UNST 221, MATH 111, MATH 112, and MGMT 361 are included in this cluster theme.*

[3]*Recommended electives include: MGMT 320, 483, 522 and 699.*

[4]*Recommended electives include: MIS 342, 440 or related courses as approved by your academic advisor.*

[5]*Nonbusiness Electives: ENGL 331; HIST 307; PHIL 315; SPCH 314, 410, 552; UNST 220 and Foreign Languages*

REQUIRED MAJOR COURSES FOR MANAGEMENT (ENTREPRENEURSHIP)

MGMT 422	MGMT 482	MKTG 430
MGMT 425	MGMT 468	MKTG 435
MGMT 472	MGMT 526	BUED 624
MGMT 520		

CURRICULUM GUIDE FOR MANAGEMENT (ENTREPRENEURSHIP)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 110	3	UNST 221	3
UNST 120	3	UNST 140	3
UNST 130	3	MATH 112	4
MATH 111	4	SPCH 250	3
MGMT 220	3	MIS 241	3
UNST 100	1	HPED Elective[1]	1
	17		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elective[3]	3	ECON 201	3
ECON 200	3	ECON 310	3
ECON 305	3	ACCT 222	3
ACCT 221	3	BUED 360	3
PSYC 320	3	UNST Cluster Theme Elective[2]	3
HPED Elective [1]	1		15
	16		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MGMT 481	3	MGMT 482	3
MGMT 425	3	MKTG 430	3
MGMT 422	3	MGMT 468	3
ACCT 446	3	MGMT 522	3
FIN 453	3	UNST Cluster Theme Elective[2]	
	15	or Entrepreneurship Elective[3]	3
			15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MGMT 361	3	MGMT 462	3
BUED 624	3	MGMT 520	3
MKTG 435	3	MGMT 472	3
MGMT 470	3	Entrepreneurship Electives[3]	6
MGMT 526	3		15
	15		

Total Credit Hours: 125

[1]*Recommended HPED Electives: HPED 104, 105, 107, 109, 113, 114, and 118*

[2]*Students are required to select one cluster theme and take 12 credit hours, i.e. 4 electives, within the same theme. The cluster theme should be selected in the Fall Semester of the sophomore year. A recommended theme cluster is Community, Conflict, and Society. If students select this recommended cluster, all four cluster theme courses - UNST 221, MATH 111, MATH 112and MGMT 361, which are required courses, are included in this cluster theme.*

[3]***Entrepreneurship electives**: Select six hours from the following – MGMT 320, 460; 475; 499; 525; MIS 440; MKTG; 432; 537; FIN 553; TSCM 340 or BUED 400. Students may also elect courses required for the CRM&M Certificate (MKTG 434, MKTG 535, MKTG 536 and MKTG 539.*

Other recommended electives are: SPCH 552, Computer Science courses (200 and above) and Foreign Languages.

INTERDISCIPLINARY CENTER FOR ENTREPRENEURSHIP AND E-BUSINESS (ICEEB)

The Interdisciplinary Center for Entrepreneurship and E-Business (ICEEB) 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 ICEEB is a program of the Department of Management. It collaborates with the other Schools and Colleges to offer a Certificate in Entrepreneurship, a Concentration in Entrepreneurship (for Management majors only), entrepreneurial internships and a lecture series. The Center hosts undergraduate, graduate, and high school business plan

competitions, offers the Student Entrepreneur of the Year Award and the Entrepreneur-in-Residence Program that includes mentoring and counseling to assist students in starting businesses.

All programs of the Center, except the Concentration in Entrepreneurship, are open to all students in the University. All students participating in the activities of the Center are encouraged to become members of the Aggie Student Entrepreneurship Club. Visit: http://www.ncat.edu/~sbe/centerins/iceeb.html.

COURSE DESCRIPTIONS IN MANAGEMENT

MIS 241. Introduction to Management Information Systems **Credit 3(3-0)**

This course is an introduction to management information systems and their role in supporting and transforming modern organizations and management activities. Topics include: a survey of software, hardware, communication networks, and storage components used to support a wide variety of business processes and functions of the digital firm; ethical issues in the Information Age; as well as issues of social impact, privacy, and security. Current application software is used to solve typical business problems. Prerequisite: MGMT 220. **(F;S;SS)**

MIS 342. Business Decisions and Processing using Information Technology **Credit 3(3-0)**

This course uses advanced information technologies and techniques to model and solve business problems, make business decisions, and implement business processes in information systems. Enterprise systems, such as SAP, and spreadsheet technologies will be utilized. Prerequisite: MIS 241.

MIS 352. Object-Oriented Programming **Credit 3(3-0)**

The course will address Object-oriented programming principles for Business using an Object-oriented language. Topics will include object classes, inheritance, polymorphism, encapsulation, graphical user interface application development (GUI), and event driven programming. Additionally, the Model-View-Control (MVC), messaging objects, and approaches to server side programming will be introduced. **(F)**

MIS 440. Management of Information Resources **Credit 3(3-0)**

This course extends the management information systems concepts studied in MIS 341 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: MIS 241 and junior status. **(F;S)**

MIS 447.Object-Oriented Analysis & Design **Credit 3(3-0)**

The course will focus on the Object-oriented analysis and design approach to information systems analysis. Topics will include analysis and design, business object models, encapsulation, and inheritance using modern tools and concepts to help produce quality reusable software. Other emerging approaches to information systems analysis and design will also be reviewed. Prerequisite: MIS 352. **(F)**

MIS 448. Business Process and Systems Analysis **Credit 3(3-0)**

This course focuses on the requirements analysis, design, and implementation phases of systems development, using the traditional life cycle techniques and rapid application development techniques. Students will prepare formal design documents such as feasibility analysis, data flow diagrams, entity-relationship diagrams, interface designs, and a project management plan. Prerequisites: MIS 241, MIS 352, MIS 447. **(S)**

MIS 449. Advanced Programming for Business Systems **Credit 3(3-0)**

This course presents object oriented and procedural software engineering methodologies in data definition and measurement, abstract data type construction and use in developing screen editors, reports and other IS applications using data structures and indexed files. This course provides an understanding of algorithm development, programming, computer concepts and the design and application of data and file structures. Prerequisite: MIS 241, MIS 352 and MIS 447. **(F)**

MIS 500. Database Application Development **Credit 3(3-0)**

This course covers information systems design and implementation within a database management systems environment. Students will demonstrate their mastery of the design process acquired in earlier courses by designing and developing applications using database software to implement the logical design. Prerequisite: MIS 448. **(F)**

MIS 620. Strategic IT Service Management **Credit 3(3-0)**

This is the capstone course for the management information systems concentration in management. Students will integrate their knowledge, skills and abilities developed in prerequisite coursework. The application of IT service management standards and best practices is emphasized. A course project is required. Prerequisites: MIS 448, MIS 500, and senior or graduate standing. **(S)**

MIS 640. MIS Topics **Credit 3(3-0)**

This course focuses on emerging MIS topics such as advances in Internet security and privacy, IS auditing, information assurance, outsourcing/insourcing, data mining, database administration, web application development, IT infrastructure, and enterprise architecture. Prerequisite: MIS 448 or consent of instructor and senior or graduate standing. **(DEMAND)**

MGMT 220. 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 320. Global Business Environment **Credit 3(3-0)**

Global Business Environment provides students with both an understanding of the fast changing global society and an awareness of the challenges and opportunities in the global economy. It provides approaches to understanding international relationships among nations (the political, socio-cultural, legal, economic, and technological factors influencing international operations). Emphasis is placed on the cultural challenges of global business as well as maintenance of a global perspective in all business decision making. The course will include a 7-10 day experience abroad (spring break) whereby students can visit foreign business operations and cultural centers.

MGMT 361. 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. Substantial coverage includes business organizations and society, administrative agencies, consumer protection, employment law and contractual relations. Prerequisite: Sophomore standing. **(F;S;SS)**

MGMT 422. Management Concepts **Credit 3(3-0)**

This course covers an analysis of the basic managerial processes at the administrative, staff, and operational levels of a firm with consideration given to business ethics and social responsibility in both domestic and international environments. Appropriate attention is given to the role of organization theory as it applies to achieving managerial objectives through available tools for obtaining desired results. Prerequisite: Junior standing. **(F;S;SS)**

MGMT 425. Entrepreneurship **Credit 3(3-0)**

This course examines the unique aspects of small businesses. Attention will be given to competitive strategy, regulatory environment, and sources of financing. The role of the small business within the macro economy is also explored. Prerequisite: Junior standing. **(F;S)**

MGMT 426. 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 422. **(F;S)**

MGMT 460. Special Topics in Entrepreneurship **Credit 3(3-0)**

Topics included in this course address selected issues in entrepreneurship, and will vary each semester. Minority entrepreneurship, corporate entrepreneurship, entrepreneurial finance, franchising, technology in small businesses, and critical success factors for new ventures are examples of some of the topical areas examined. Prerequisite: MGMT 425 or permission of instructor. **(S;SS)**

MGMT 462. Business Law **Credit 3(3-0)**

Using the background provided in Business Administration 361, topics related to the legal implications of business activity will be continued in this course. Coverage includes negotiable instruments, sales of goods, security and debt, bankruptcy, insurance and government regulation. Prerequisites: MGMT 361 and senior standing. **(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 361 and senior standing. **(S)**

MGMT 468. Entrepreneurial Financing **Credit 3(3-0)**

This course examines financing the start-up of a new business venture or growing venture. The advantages and disadvantages of the sources of new venture financing are studied from commercial banks, angel funding, private placement, venture capitalist, public equity markets and financial plan preparation. Prerequisite: MGMT 425 and FIN 453. **(F;S;SS)**

MGMT 470. 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 425. **(F;S;SS)**

MGMT 472. 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 425. **(F;S;SS)**

MGMT 475. 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 425; permission of instructor. **(F;S;SS)**

MGMT 481. 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 305, and junior standing. **(F;S;SS)**

MGMT 482. Production 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 481 and junior status. **(F;S;SS)**

MGMT 483. Service Innovation and Project Management **Credit 3(3-0)**

This course covers the special requirements of managing projects that include service innovations. General project management topics, tools, and techniques are also covered. Topics include service innovation characteristics, project stakeholders, the project life cycle, as well as the management of time, cost, scope, quality, human resources, communications, risk, and procurement. Prerequisite: MGMT 481. **(DEMAND)**

MGMT 499. 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 425. **(SS)**

MGMT 520. 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 422, MKTG 430; FIN 453; ACCT 221 and 222; Senior status. **(F;S;SS)**

MGMT 522. Human Resource Management **Credit 3(3-0)**

This course offers an introductory overview of human management functions, including the processes or systems that are designed to recruit, select, train, develop, motivate and retain a productive workforce. The emphasis is on management and utilization of people as organizational resources to achieve organizational objectives. The course covers relevant social, cultural, political, legal and global environment developments and provides the student with both general and specialized knowledge of the field and practice of human resource management in a variety of organizational settings. Prerequisites: MGMT 422 and advanced junior status. **(F;S;SS)**

MGMT 524. Organizational Theory **Credit 3(3-0)**

This study of organizations examines the basic managerial concepts of systems, organizational contingencies, conflict, and technology. Emphasis is placed on design, authority, structure and effectiveness. The global environment and innovation are considered. Prerequisites: MGMT 422 and senior standing. **(F;S;SS)**

MGMT 525. 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 425. **(F;S;SS)**

MGMT 526. 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 599. 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 699. Special Topics in Human Resources Management **Credit 3 (3-0)**

This course will address selected topics in Human Resources Management (HRM). Examples include onsite assessment of HRM issues, strategies and policies; current trends in funding employee medical and retirement benefits; collective bargaining strategies for global enterprises; industry comparisons of critical success factors for HRM; and advanced technologies for employee training and development. This course may also include an international experience (study abroad) when offered in the summer. Prerequisites: MGMT 522, 730 or permission of the instructor. **(DEMAND)**

DIRECTORY OF FACULTY

Obasi H. Akan ..... **Assistant Professor**
B.A., Howard University; M.S., Ph.D.., Case Western Reserve University

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B.S., Southern University; M.S., University of West Florida; Ph.D., Florida State University

Chiekwe Anyansi-Archibong ..... **Professor**
B.S., M.B.A., Ph.D., University of Kansas

Pamela E. Carter ..... **Associate Professor and Chairperson**
B.I.S., George Mason University; M.B.A., University of Maryland; Ph.D., Florida State University

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B.S., Boston University; M.B.A., Clark University; Ph.D., University of Cincinnati

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Frank Mullins ..... **Adjunct Assistant Professor**
B.S., Oakwood University; M.B.A., Syracuse University

Patrick Rogers ..... **Associate Professor**
B.S., B.A., M.B.A., Western Carolina University; Ph.D., University of Tennessee at Knoxville

Belinda P. Shipps ..... **Assistant Professor**
B.A., Michigan State University; A.A.S., Richland College; M.S., Ph.D., University of Wisconsin-Milwaukee

Alice Stewart ..... **Associate Professor**
B.B.A., M.B.A., University of Kentucky; Ph.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

Silvanus Udoka ..... **Associate Professor**
B.S., Weber State University; M.S., Ph.D., Oklahoma State University

Isaiah O. Ugboro ..... **Professor**
B.S., Utah State University; M.B.A., Ph.D., University of North Texas
Joanne Sulek Utley ..... **Professor**
B.S., M.A., Wake Forest University; Ph.D., University of North Carolina at Chapel Hill
Hong Wang ..... **Associate Professor**
B.S., Dalian University of Technology; M.A., Ph.D., The Ohio State University

Department of Marketing, Transportation & Supply Chain

http://www.ncat.edu/~sbe/busadmin/index.html

Edna J. Ragins, Chairperson

OBJECTIVES

The objectives of the Department of Marketing, Transportation & Supply Chain are to provide fundamental knowledge concerning the disciplines s of marketing, transportation & supply chain by emphasizing the tools essential for problem solving and decision-making and to develop competencies necessary for accomplishing managerial goals.

DEGREES OFFERED

Marketing – Bachelor of Science
Marketing (Sales) – Bachelor of Science
Supply Chain Management – Bachelor of Science

CERTIFICATE IN CUSTOMER RELATIONSHIP MARKETING & MANAGEMENT

The Department of Marketing, Transportation & Supply Chain administers the Certificate in Customer Relationship Marketing & Management (CRM&M) that uniquely enables students to gain the competencies needed to extend and increase long-term customer value. This certificate program is appropriate for marketing majors, other business majors and for students with career interests in areas such as engineering, technology, and the health and physical sciences that interface directly with customers. Opportunity to apply the CRM&M knowledge and skills is provided to students through a Customer Relationship Marketing & Management Internship experience.

The Certificate in Customer Relationship Marketing & Management is designed to augment undergraduate-level education for students enrolled in all baccalaureate degree programs at North Carolina A&T State University and will be awarded during Commencement. Receipt of the Certificate is contingent upon successful completion of 18 semester hours of course work *(additional coursework may be required for non-business majors)* that includes the following:

Three (3) credit hours from BUAD 432 or 434 and fifteen (15) credit hours from BUAD 435, 535, 536 and 539. In addition, students are required to complete a three-credit-hour internship (BUAD 498).

GENERAL PROGRAM REQUIREMENTS

Students majoring in programs in the Department of Marketing, Transportation & Supply Chain must complete a minimum of 125 hours consistent with the curriculum guide for the area of study selected. Majors must earn a minimum grade of "C" in UNST 110 (Critical Writing I), UNST 221 (Thematic Writing and Speaking), MATH 111, 112, (or MATH 131, 132), ACCT 221, ECON 305, MGMT 220, MGMT 481, MGMT 520, BUED 360 and in the major electives.

DEPARTMENTAL REQUIREMENTS

Students in the Department of Marketing, Transportation & Supply Chain must select a major in Marketing or Transportation Supply Chain Management **Students majoring in Marketing may elect a program concentration in Sales.** All students must earn a minimum grade of "C" in each of the 10 (30 credit hours) courses listed as major program requirements in the applicable University Bulletin for the selected major and in the major program electives. Note: Marketing and Marketing/Sales majors must also earn a minimum grade of "C" or better in TSCM 340.

CAREER OPPORTUNITIES

Students earning a degree in Marketing will acquire the technical preparation and competencies for challenging management careers in public, private, and entrepreneurial activities and for competitiveness in prestigious graduate and professional programs. The Transportation and Supply Chain Management major is prepared for careers in purchasing and materials management with railroads, motor lines, water carriers, airlines, other industries and the government.

CURRICULUM GUIDE FOR TRANSPORTATION SUPPLY CHAIN MANAGEMENT or MARKETING MAJORS

The following courses provide a background and basic knowledge for business necessary before selecting a Marketing or Marketing/Sales major:

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 110	3	UNST 221	3
UNST 120	3	UNST 140	3
UNST 130	3	MATH 112[1]	4
MATH 111[1]	4	SPCH 250	3
MGMT 220	3	BUED 210	3
UNST 100	1	HPED Elective[2]	1
	17		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PSYC 320	3	ECON 201	3
ECON 200	3	ECON 310	3
ECON 305	3	ACCT 222	3
ACCT 221	3	BUED 360	3
MIS 241	3	UNST Cluster Theme Elective[3]	3
HPED Elective[2]	1		15
	16		

[1]Students in the School of Business and Economics may use MATH 131 and 132 to satisfy MATH 111 and 112 providing that a grade of "C" or better is earned.

[2]Recommended HPED Electives: HPED 104, 105, 107, 109, 113, 114, and 118.

[3]Students are required to select one cluster theme and take 12 credit hours, i.e. 4 electives, within the same theme. The cluster theme should be selected in the Fall Semester of the sophomore year. You are encouraged to select Community, Conflict and Society as a cluster theme so that all of the cluster theme electives will be satisfied via MATH 111, MATH 112, UNST 221 and MGMT 361; however, other electives must be taken to fulfill the remaining hours to complete the required minimum of 125 hours.

REQUIRED MAJOR COURSES FOR MARKETING

ACCT 446	MKTG 435	MKTG 538
MKTG 438	MKTG 639	MGMT 481
MKTG 430	MKTG 537	ECON 310
MKTG 432		

CURRICULUM GUIDE FOR MARKETING

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BUAD 481	3	MKTG 432	3
MKTG 430	3	MGMT 482	3
MGMT 422	3	MKTG 435	3
FIN 453	3	UNST Cluster Theme Elective[3]	
ACCT 446	3	or Non-business Elective[4]	3
	15	ECON Elective[6]	3
		TSCM 340	3
			18

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MKTG 438	3	MGMT 520 (Capstone Course)	3
MKTG 538	3	MKTG 537	3
Non-business Elective	3	MKTG 639	3
Marketing Elective[5]	3	Marketing Elective[5]	3
MGMT 361	3	MGMT 462	3
	15		15

Total Credit Hours: 128

[1]Students in the School of Business and Economics may use MATH 131 and 132 to satisfy MATH 111 and 112 providing that a grade of "C" or better is earned.

[2]Recommended HPED Electives: HPED 104, 105, 107, 109, 113, 114, and 118.

[3]Students are required to select one cluster theme and take 12 credit hours, i.e. 4 electives, within the same theme. The cluster theme should be selected in the Fall Semester of the sophomore year. You are encouraged to select Community, Conflict and Society as a cluster theme so that all of the cluster theme electives will be satisfied via MATH 111, MATH 112, UNST 221 and MGMT 361; however, other electives must be taken to fulfill the remaining hours to complete the required minimum of 125 hours.

[4]*Non-business Electives: SPCH 452 (Public Speaking); SPCH 552 (Persuasive Communication); ENGL 260 (Expository Writing); ENGL 300 (Advanced Composition); COMM 500 (Public Relations Seminar; Computer Science (200 level and above) in consultation with advisor; and Foreign Languages. Only MATH courses beyond MATH 111 and MATH 112 may be used to satisfy the no-business electives. NOTE: Music 300 (University Band) and Music 301 (University Choir) credits can be used ONCE to satisfy a 1-hour non-business elective.*

[5]*Select 6-hours from the following: MKTG 433, 434, 535, 536, 539; BUED 400; or TRAN 360.*

[6]*Select one course from the following: ECON 410 (Intermediate Microeconomic Theory); ECON 412 (Quantitative Analysis); ECON 415 (Money and Banking); or ECON 505 (International Economic Relations).*

REQUIRED MAJOR COURSES FOR MARKETING (SALES)

MKTG 430	MKTG 438	MKTG 636
MKTG 432	MKTG 535	TSCM 340
MKTG 434	MKTG 538	ECON 310
MKTG 435		

CURRICULUM GUIDE FOR MARKETING (SALES)
JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MGMT 481	3	MGMT 482	3
MKTG 430	3	MKTG 432	3
MGMT 422	3	MKTG 434	3
FIN 453	3	MKTG 435	3
ACCT 446	3	TSCM 340	3
	15		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MGMT 361	3	ECON 415	3
MKTG 438	3	BUAD 462	3
MKTG 538	3	BUAD 520 (Capstone Course)	3
MKTG 535	3	BUAD 636	3
UNST Cluster Theme Elective[3]		Non-business Elective[4]	3
or Non-business Elective[4]	3		15
	15		

Total Credit Hours: 125

[1]*Students in the School of Business and Economics may use MATH 131 and 132 to satisfy MATH 111 and 112 providing that a grade of "C" or better is earned.*

[2]*Recommended HPED Electives: HPED 104, 105, 107, 109, 113, 114, and 118.*

[3]*Students are required to select one cluster theme and take 12 credit hours, i.e. 4 electives, within the same theme. The cluster theme should be selected in the Fall Semester of the sophomore year. You are encouraged to select Community, Conflict and Society as a cluster theme so that all of the cluster theme electives will be satisfied via MATH 111, MATH 112, UNST 221 and MGMT 361; however, other electives must be taken to fulfill the remaining hours to complete the required minimum of 125 hours.*

[4]*Non-business Electives: SPCH 452 (Public Speaking); SPCH 552 (Persuasive Communication); ENGL 260 (Expository Writing); ENGL 300 (Advanced Composition); COMM 500 (Public Relations Seminar; Computer Science (200 level and above) in consultation with advisor; and Foreign Languages. Only MATH courses beyond MATH 111 and MATH 112 may be used to satisfy the non-business electives. NOTE: Music 300 (University Band) and Music 301 (University Choir) credits can be used ONCE to satisfy a 1-hour non-business elective.*

REQUIRED MAJOR COURSES FOR SUPPLY CHAIN MANAGEMENT

TSCM 340	TSCM 450	TSCM 672
TSCM 360	TSCM 580	MGMT 481
TSCM 425	TSCM 670	MGMT 482
TSCM 431		

REQUIRED MAJOR COURSES FOR SUPPLY CHAIN MANAGEMENT
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MGMT 220	3	BUED 210	3
MATH 111[1]	4	MATH 112[1]	4
UNST 100	1	SPCH 250	3
UNST 110	3	UNST 140	3
UNST 120	3	UNST 221	3
UNST 130	3	HPED Elective[2]	1
	17		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ACCT 221	3	ACCT 222	3
ECON 200	3	BUED 360	3
ECON 305	3	ECON 201	3
TSCM 340	3	ECON 310	3
MIS 241	3	TSCM 360	3
HPED Elective[2]	1		15
	16		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MGMT 422	3	MGMT 361	3
MGMT 481	3	MKTG 430	3
TSCM 425	3	TSCM Elective[5]	3
TSCM 431	3	MGMT 482	3
UNST Cluster Theme Elective[3]	3	TSCM 450	3
	15		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
FIN 453	3	BUED 400	3
TSCM 580	3	TSCM 672	3
TSCM 670	3	TSCM Elective[5]	3
UNST Cluster Theme[3] or Non-Business/Econ Elective[4]	3	UNST Cluster Theme[3] or Non-Business/Econ Elective[4]	3
ECON 410	3	MGMT 520	3
	15		15

Total Credit Hours: 125

[1]*Students in the School of Business and Economics may use MATH 131 and 132 to satisfy MATH 111 and 112 providing that a grade of "C" or better is earned.*

[2]*Recommended HPED Electives: HPED 104, 105, 107, 109, 113, 114, and 118.*

[3]*Students are required to select one cluster theme and take 12 credit hours, i.e. 4 electives, within the same theme. The cluster theme should be selected in the Fall Semester of the sophomore year. You are encouraged to select Community, Conflict and Society as a cluster theme so that all of the cluster theme electives will be satisfied via MATH 111, MATH 112, UNST 221 and MGMT 361; however, other electives must be taken to fulfill the remaining hours to complete the required minimum of 125 hours.*

[4]*Non-business Electives: To be selected in consultation with advisor. Only MATH courses beyond MATH 111 and MATH 112 may be used to satisfy the non-business electives. NOTE: Music 300 (University Band) and Music 301 (University Choir) credits can be used ONCE to satisfy a 1-hour non-business elective.*

[5]*Two of the following courses must be completed as a TSCM elective: MIS 342, MIS 440, MKTG 434, TSCM 470; TSCM 598; TSCM 600; TSCM 665*

SUPPLY CHAIN MANAGEMENT ELECTIVES:
(Two electives must be completed from the courses listed below)

MIS 342	3	Business Decisions & Processes Using IT
MIS 440	3	Management of Information Resources
MKTG 434	3	Business-to-Business Marketing
TSCM 470	3	Urban Transportation Concepts
TSCM 598	3	Independent Study
TSCM 600	3	Selected Topics in Transportation
TSCM 665	3	Transportation Regulation and National Policy

UPS ENDOWED CHAIR

The UPS Endowed Chair was established 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 a number of different departments to create an interdisciplinary unit that conducts research, public service and 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 poor to analyzing transportation financing. The Institute has achieved a national reputation for its funded research in small city and rural transportation.

Students play an important role in each of the research projects. Under the guidance of the faculty, student research assistants help to develop and conduct funded projects awarded to the Transportation Institute. The Institute makes substantial financial awards to students who receive research assistantships.

The Institute is a regional center that offers seminars, workshops, and short courses designed to provide instruction in current techniques and transportation concepts. These programs are designed for individuals outside the University who have an interest in transportation. In addition, they may use the extensive resource collection on transportation that is housed in the Transportation Institute's facilities, located in Merrick Hall.

COURSE DESCRIPTIONS IN MARKETING

MKTG 430. Marketing Concepts **Credit 3(3-0)**

This course provides an introduction to marketing activities of organization 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: Junior standing. **(F;S;SS)**

MKTG 432. 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, cultural environment. Prerequisite: MKTG 430. **(F;S;SS)**

MKTG 433. 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 430. **(F)**

MKTG 434. Business-to-Business (B2B) Marketing **Credit 3(3-0)**

Business-to-Business Marketing is concerned with the vital and rapidly changing organizational marketplace. 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 430. **(F;S)**

MKTG 435. Selling and Sales Management **Credit 3(3-0)**

This course focuses on the functions and skills surrounding the personal selling effort. The emphasis is on developing skills essential to persuasive communication in a buyer-seller context. The course also addresses topics such as sales recruiting, selecting, compensating, and evaluating sales personnel. Prerequisites: MKTG 430. **(F;S)**

MKTG 438. Marketing Communications **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 432. **(F;S)**

MKTG 498. 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 criterion that will be submitted to the supervising instructor. Prerequisites: MKTG 430 and consent of the department chair and/or supervising instructor. **(F,S,SS)**

MKTG 535. Customer Relationship Marketing/Management (CRM&M) Concepts **Credit 3(3-0)**

This course introduces students to the concepts of customer partnering relationships, with a goal of creating high customer satisfaction, market share, and net cash flow. Students will focus on integrating strategic, organizational, informational, operational and financial perspectives to build strategic, organizational, informational, operational and financial perspectives to build effective solution-based outcomes for the customer and the organization. Other topics include key account management, negotiation strategies, and information data mining. Prerequisite: MKTG 432 or MKTG 434. **(F;S)**

MKTG 536. 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 software for sales, marketing, and customer service. Prerequisite: MKTG 535 or permission of the instructor. **(F;S)**

MKTG 537. International Marketing **Credit 3(3-0)**

This course examines the application of marketing, management, and research, with appropriate consideration given to institutional and environmental factors associated with international marketing. Case studies are used to enhance the study of international marketing concepts. Prerequisite: MKTG 430. **(F;S)**

MKTG 538. 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 marketing research. Prerequisites: ECON 310 and MKTG 430. **(F;S)**

MKTG 539. 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 535 or permission of the instructor. **(F;S)**

MKTG 636. Sales Leadership & Ethics Credit 3(3-0)
This course integrates and extends the professional selling and customer relationship management topics discussed in previous courses and is designed to foster competencies in leadership and increase 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 435 and MKTG 535. **(F;S)**

MKTG 639. Marketing Management **Credit 3(3-0)**
This course provides an analysis of the fundamental and emerging issues that influence decisions involved in planning and managing marketing activities to create value for customers. It combines theory and application in teaching students how to make decisions about segmentation/targeting, product, price, distribution, promotion, the marketing environment and electronic commerce. Prerequisite: MKTG 438. **(F;S;SS)**

SUPPLY CHAIN MANAGEMENT

TSCM 340. Introduction to Supply Chain Management **Credit 3(3-0)**
The management of the logistics function is examined with an emphasis on the impact on firm and supply chain. 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)**

TSCM 360. Introduction to Transportation **Credit 3(3-0)**
Transportation provides the basic service of moving people and freight, creating time and place utility. Recent changes in the transportation industry have been dramatic and involve the value added throughout the supply chain. This course emphasizes the fundamental role and importance of transportation, its strategic importance, the effect of technology, and the changing structure of the industry due to competition and consolidation. **(F;S)**

TSCM 425. 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: ECON 200, 201 and junior standing or permission of instructor. **(F)**

TSCM 431. Supply Chain Analysis **Credit 3(3-0)**
Design, develop and use decision models for analysis of logistics problems. Coursework emphasizes computer spreadsheet applications. Prerequisite: ECON 310 and MIS 341. **(F;S)**

TSCM 450. 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. Prerequisite: TSCM 425 or consent of instructor. **(F;S)**

TSCM 470. Urban Transportation Concepts **Credit 3(3-0)**
This course is an analysis of 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. **(F)**

TSCM 580. International Logistics and Supply Chain Management **Credit 3(3-0)**
This course will examine the participants and their responsibilities in international logistics and supply chains and the challenges involved in dealing with the increased difficulty of managing cultural differences, business practices, variances in systems of jurisprudence, terms of sale and payment, and governmental units. The course will also examine elements of international logistics such as inventory cost, transportation cost, and the complex documentation that is required in international trade. Prerequisite: TSCM 340. **(S)**

TSCM 598. Independent Study **Credit 3(3-0)**
This course is designed for students who want to explore a transportation or logistics topic in depth. The following conditions must be met. (1) The student must select a topic with a transportation/logistics faculty and study it for at least three hours per week for one semester. (2) The student will be required to present a written report and/or other evaluation

criterion that will be evaluated by the supervising instructor. Prerequisite: Consent of the advisor and/or department chair. **(S)**

TSCM 600. Special Topics in Transportation and Logistics **Credits 3(3-0)**
This course is an examination of 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. **(F or S)**

TSCM 650. Transportation Law **Credit 3(3-0)**
In this course, a detailed review of the development of transportation law will be made. An analysis of the Interstate Commerce Act and its impact on surface carriers will be completed. This course will assist 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 361 or equivalent is recommended. **(F)**

TSCM 660. 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. **(S)**

TSCM 665. Transportation Regulation and National Policy **Credits 3(3-0)**
This course will examine the development of transportation regulation in the United States and the subsequent development of federal transportation policy applicable to the individual modes. It will examine the deregulatory state of the industry, its impact on Federal Transportation Policy, and the current status of federal regulation as it applies to the various modes of transportation. Included will be an analysis of the environmental laws and safety regulations that have developed in the last few years. This course will assist those students studying for the Transportation Law Exam in the American Society of Traffic and Transportation series as well as the Practitioner Exam of the Surface Transportation Board. Prerequisites: MGMT 361. **(F)**

TSCM 670. 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 in order 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, distribution and TQM. **(F)**

TSCM 672. 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. **(S)**

DIRECTORY OF FACULTY

Abdussalam Addus.....**Associate Professor**
B.A., Addis Ababa University; M.S., University of Wisconsin; Ph.D., Pennsylvania State University

Julian Benjamin ..... **Professor**
B.S., New York University; M.S., Ph.D., State University of New York at Buffalo

Jeffrey G. Blodgett .....**Associate Professor**
B.S.; University of Illinois (Urbana-Champaign); M.B.A., Illinois State University; PhD., Indiana University

Kathryn Cort ..... **Assistant Professor**
B.S.Ed., M.A., The Ohio State University; M.B.A. and Ph.D., Kent State University

Kathryn E. Dobie..... **Professor and Director of Transportation Institute**
B.M., Wittenburg University; A.S., Dalton College; M.B.A., University of Central Arkansas; Ph.D., University of Memphis; C.P.M.

Lawrence M. Glisson..... **Professor**
B.S., M.A., East Carolina University; M.B.A., Ph.D., The American University; C.P.M.

Keith C. Jones.....**Associate Professor**
B.S., Northeast Missouri State University (Truman State University); M.B.A., Northwest Missouri State University; Ph.D., The University of Memphis

Roland Leak..... **Assistant Professor**
B.S., North Carolina A&T State University; M.B.A., Wake Forest University; Ph.D., University of South Carolina

Kimberly R. McNeil .....**Associate Professor**
B.S., North Carolina A&T State University; Ph.D., Florida State University

Japhet H. Nkonge ..... **Professor**
B.A., North Carolina A&T State University; M.B.A., Rutgers University; Ph.D., University of North Carolina at Chapel Hill

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
Edna Johnson Ragins.....**Associate Professor and Chairperson**
B.S., Hampton University; M.S., University of Wisconsin; Ph.D., Florida State University
Harry Sink .....**Associate Professor**
B.S., M.B.A., Ph.D., University of Tennessee
George W. Stone.....**Associate 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..... **Adjunct Assistant Professor**
B.Sc., University of the West Indies; M.B.A., Rochester Institute of Technology; Ph.D. Syracuse University

SCHOOL OF EDUCATION

http://www.ncat.edu/~schofed/

Dorothy Leflore, Interim Dean

Through its three departments, the School of Education prepares students for careers in PK-12 schools, industry, government and other agencies. The Department of Curriculum & Instruction (CUIN), the Department of Human Development & Services (HDSV), and the Department of Human Performance & Leisure Studies (HPLS) have programs leading to degrees at the undergraduate and graduate levels. All of our teacher education programs are accredited by the National Council for the Accreditation of Teacher Education (NCATE) and approved by the NC Department of Public Instruction. In addition, our counseling programs are accredited by the Council for the Accreditation of Counseling and Related Educational Programs (CACREP). We were the first HBCU to receive CACREP accreditation.

The Dean of the School of Education is the designated authority (by NC Department of Public Instruction and UNC General Administration) for university-wide licensure programs for teachers, school administrators, school counselors, and other school personnel. As such, although most licensure programs are housed in other academic units, the School of Education is responsible for coordinating and monitoring admission, placements, and assessment for all professional education students at the university. NC A&T SU offers 39 licensure programs at the undergraduate (initial licensure) and graduate (advanced licensure) levels. The Dean chairs the Teacher Education Council, which is the governance structure for all professional education (licensure) programs at the university. The TEC approves and monitors implementation of curriculum development as well as admission, placement, and assessment policies and procedures for licensure programs. Consequently, the School of Education through the TEC is responsible for overseeing (a) state mandated revisioning of professional licensure programs and (b) attainment of state teacher productivity mandates.

The Department of Curriculum & Instruction (CUIN) provides the professional studies component for the preparation of effective teachers and school personnel at the bachelor's and master's degree levels; the department cooperates with various departments within the university that offer teacher education programs. CUIN offers a bachelor's degree in elementary education, with dual licensure in special education. Master's degrees include the MAT in Special Education, the MAED in Elementary Education, the MAED in Reading, and the MS in Instructional Technology. The Department of Human Development & Services (HDSV) offers master's level programs in School Counseling, Community/Agency Counseling, Rehabilitation Counseling, Adult Education, and School Administration. The Department of Human Performance & Leisure Studies (HPLS) provides the necessary preparation for students planning careers as PK-12 physical education teachers, sport science specialists, fitness managers, recreation administrators and athletic coaches. In addition, the department offers a master's program with concentrations in teacher education, sport psychology and adapted physical education.

MISSION

The School of Education is a learning centered organization that prepares a variety of educators and human services professionals and supports their continuing professional development. Building on our historically Black university (HBCU) legacy of exemplary teaching and scholarship, as well as effective public service, we offer degrees at the baccalaureate and master's levels. Our graduates are catalysts for learning and leading in diverse contexts who engage in collaborative practice with key stakeholders from local to global communities.

VISION

The School of Education aspires to be a premier center for multicultural, intellectual, and collaborative engagement of professionals who are catalysts for learning and leading in a global society.

ACCREDITATION

Teacher education programs were accredited initially in 1976 by the National Council for the Accreditation of Teacher Education. This national accreditation was reaffirmed in 2007 until 2014. Our counseling programs are accredited by the

Council for the Accreditation of Counseling and Related Educational Programs (reaffirmed in 2009) and the Council on Rehabilitation Education (reaffirmed in 2010).

DEGREES OFFERED

Elementary Education – Bachelor of Science
Sport Science and Fitness Management – Bachelor of Science
Elementary Education, General – Master of Education*
Instructional Technology – Master of Science *
Masters of Art in Teaching – Master of Arts*
Master of School Administration – Master of Science*
Physical Education – Master of Science*
Physcial Education – Master of Arts*
Adult Education – Master of Science*
Human Resources (Agency Counseling) – Master of Science*
Human Resources (Vocational Rehabilitation) – Master of Science*
Counselor Education – Master of Science*
Leadership Interdisciplinary Studies – Doctor of Philosophy *
**See the Graduate School Bulletin*

GENERAL PROGRAM REQUIREMENTS

General program requirements for School of Education programs can be found in this catalogue under the departmental sections.

TEACHER EDUCATION

Teacher Education at North Carolina Agricultural and Technical (NC 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. Teacher Education degree programs are housed in five colleges and schools at the University; the licensure component is coordinated and managed by the School of Education. Each Teacher Education degree program is composed of the general program requirements as defined by the University Studies Program, the content area specialization, and the Professional Education core.

University Studies

University Studies provides experience and learning which meet the fundamental needs of all teachers as persons, in the role of teacher and citizen in a democracy. It provides the candidate with the opportunity to gain the understanding, knowledge, appreciation, and sensitivity attainable through the study of a broad range of materials and concepts ranging across the humanities, the arts, the social sciences, the natural sciences and mathematics. Furthermore, it provides a broad understanding of the cultural heritage and of the physical and social environments. University Studies is an essential foundation for the teaching specialty and professional education.

Content Area Specialization

Subject-matter specialization provides opportunities for the student to understand the theoretical basis upon which subject content is developed and organized. It also provides the student an opportunity to accumulate and understand a vast body of facts which comprises one's selected discipline. The function of knowledge in the development of mature scholarship is emphasized in this segment of the prospective teacher's experiences also.

Professional Education Core

Teacher Education candidates engage in Professional Learning Communities (PLCs), or communities of practice where all members work collaboratively to create a shared vision, as they matriculate through Teacher Education. The Shared Vision of the Professional Education Unit at North Carolina A&T State University was developed in collaboration with the five academic colleges that house professional education degree programs –the College of Arts and Sciences, the School of Agriculture and Environmental Sciences, the School of Business and Economics, the School of Education, and the School of Technology – 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 respond to these needs by creating interdisciplinary learning environments where critical thinking, collaboration, communication, and commitment to service guide thinking and behavior. As such, the Professional Education Program at North Carolina A&T State University is committed to the development of 21st Century Professional Educators who are aware of diverse populations in their communities, who appropriately use and interpret assessment data to guide future decision making, who engage in the skillful art of reflection to transform thinking and practice, and who use various forms of technology to manage instruction and assessment.

The Professional Education Program has adopted the theme "21st Century Professional Educators: Catalysts for Learning and Leading" as its core belief to produce educators who work with learners of all ages with varying experiences and various approaches to learning. Relying on an inquiry approach to teaching and learning where candidates use critical

thinking skills to work collaboratively with stakeholders, the Professional Education Program emphasizes the merging of theoretical and practical knowledge to develop educators who engage, inspire, and encourage learners to explore, discover, and become advocates for lifelong learning and service to humankind. Four core values interwoven throughout the Professional Education Program guide the development of professional educators at North Carolina A&T State University: Diversity, Assessment, Reflection, and Technology. Infused throughout the Professional Education Program are seven key principles necessary for the growth and development of an effective 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 teacher education programs at NC A&T, all candidates study in Professional Learning Communities (PLCs), completing a developmental scope and sequence of courses collectively called the Professional Education Core (PEC). There are four PLCs – one associated with each academic year. The PLC associated with the freshman year (PLC 1) introduces candidates to the profession. Each candidate will be required to take the course *CUIN 110 Ethics of Teaching,* which has an accompanying two-hour weekly clinical experience. Candidates are also required to take an additional course that addresses instructional technology for the 21st century classrooms. During the sophomore year candidates will gain necessary skills for planning instruction in PLC 2 by completing two courses – *CUIN 210 Culturally Relevant Pedagogy* and *CUIN 310 Assessment for 21st Century Classrooms*. A three-hour weekly clinical experience will be required with *CUIN 210 Culturally Relevant Pedagogy.* In the PLC planned for the junior year (PLC 3) candidates will learn to implement instructional plans for all students. The two required courses are: *CUIN 410 Differentiated Instruction* and *CUIN 520 Content Area Literacy*. The bi-weekly, 3 hour per day clinical experience in PLC 3 will focus on application of theories in the school. PLC 4 will be completed during the candidate's senior year and will provide candidates with the opportunity to practice the teaching profession. During PLC 4, candidates will complete *CUIN 640 Methods of Teaching for the 21st Century Classrooms, CUIN 660 Clinical Practice in Teacher Education,* and *CUIN 670 Capstone Experience in Teacher Education.* While completing *CUIN 640 Methods of Teaching got 21st Century Classrooms*, the associated full day, bi-weekly clinical experience focuses on pedagogical strategies within the content area. In *CUIN 660 Clinical Practice for Teacher Education* candidates will be assigned to a school Monday through Friday for the entire school day. *CUIN 670 Capstone in Teacher Education* is taken in conjunction with CUIN 660 and enables candidates to reflect upon their practice and learn from one another while participating in the clinical experience. At the culmination of each PLC candidates are expected to have completed specific modules, evidences, and other requirements to transition to the next PLC. These transition points are the basis for monitoring candidates' progress toward program completion. Candidates receive annual written status reports detailing their progress toward completing each transition point. Additionally, candidates begin developing evidences for their final candidate portfolio during PLC 1 and deposit these into electronic portfolios. Specified evidences are added to the portfolios during each PLC. The evidences will be assessed using a team composed of university faculty and administrators and public school partners.

Enrollment In Advanced Courses

Only formally admitted candidates may enroll in advanced courses in the Professional Education Sequence. Students enrolled in all field experience courses and clinical practice courses must show proof of educator's liability insurance at the beginning of the semester.

The Professional Studies Sequence includes: CUIN 101 (or equivalent), 110, 210, 310, 410, 520, 640, 660, and 670. All courses numbered 400 and above in this sequence require formal admission to the Teacher Education Licensure Program.

Clinical Practice

(Students are required to complete all licensure tests prior to admission to beginning clinical practice.)

Admission to Clinical Practice requires (1) formal admission to the Teacher Education Licensure Program, (2) an approved clinical practice application form signed by the candidate's advisor and department chairperson, (3) a personnel data sheet which is needed for placement, (4) a cumulative GPA of 2.80, (5) copy of individual scores on Praxis II in licensure area and (6) proof of educator's liability insurance.

All candidates are required to take *CUIN 670 Capstone in Teacher Education* in conjunction with the Clinical Practice course. Students enrolled in a clinical practice course that is 6 credit hours are permitted to take only one additional 3 credit hour course during the clinical practice semester. This additional course cannot be scheduled during the public school day nor during the student teaching seminar. All students enrolled in a student teaching course are REQUIRED to pay a student teaching fee.

Candidate Dispositions

All Teacher Education candidates are expected to exhibit appropriate dispositions at all times. Candidates are expected to embrace and abide by tenets described in the "Aggie Pact", the NEA Code of Ethics, and professional dispositions described in the Conceptual Framework that are integrated throughout the program. The display of appropriate dispositions is especially significant for candidates enrolled in clinical, field, or internship experiences to ensure that candidates' behavior represents appropriate and acceptable professional standards of conduct at all times. Examples of inappropriate dispositions include, but are not necessarily limited to, inappropriate language, dress, immoral conduct, tardiness, dishonesty, etc. Documented instances/episodes of inappropriate behavior may be grounds for a candidate's

dismissal from Teacher Education. Persons who have been convicted of a felony will not be recommended for licensure; therefore, all candidates should be able to submit to a criminal background check at their own expense, if necessary.

Admission, Retention, and Licensure

The Dean of the School of Education is the designated University Official with the authority and responsibility to recommend to the State Department of Public Instruction candidates who apply for licensure in the following fields:

1. Agriculture
2. Art
3. Biology Education
4. Birth through Kindergarten
5. Career Exploration
6. Chemistry Education
7. Comprehensive Social Studies
8. Elementary Education
9. English
10. French
11. Family and Consumer Sciences
12. Industrial Cooperative Training
13. Mathematics
14. Music
15. Physics Education
16. School Social Work
17. Spanish
18. Special Education (General Curriculum)
19. Technology Education
20. Trade Preparatory Programs
21. Vocational Business Education
22. Vocational Business Education – Data Processing

ADMISSION

All candidates who are recommended for licensure must be admitted to the Teacher Education Licensure Program. Undergraduate candidates are expected to be admitted to the Teacher Education Licensure Program during their Freshman year. Failure to be formally admitted to Teacher Education will limit candidates' progress in the completing the Professional Education core (see section on Enrollment in Advanced Courses). The application for admission includes:

- A completed application for admission to Teacher Education, which can be found at: http://www.ncat.edu/~schofed/forms_tea.html;
- A minimum 2.8 cumulative GPA on a 4.0 scale;
- Basic skills competency demonstration, most frequently done by Praxis I; and
- Successful completion of an interview with a Teacher Education faculty panel.

It is the candidate's responsibility to ensure the application for admission and proof of basic skills competency are provided to the Office of the Dean of the School of Education. Additionally, the candidate should schedule an interview with a Teacher Education faculty panel using the publicized method. The GPA is verified before the candidate is admitted to Teacher Education.

Retention

To remain in Teacher Education, candidates must maintain a minimum cumulative academic overall grade point average of 2.80. Students are encouraged to meet with their advisors a minimum of three times per semester to discuss their progress in the program. A candidate who fails to maintain a 2.8 cumulative GPA will be placed on probation for one semester. If the candidate's GPA does not increase to a minimum 2.8 GPA after the semester, the candidate will be dropped from the program. Candidates are notified in writing of their probationary status and/or subsequent removal from the program by the Office of the Dean of the School of Education.

Readmission To Teacher Education

Once a candidate has been dropped from the Teacher Education Licensure Program for any reason, the following steps must be taken before a student will be readmitted:

1. The students must file a formal application for re-admittance to the Teacher Education Program (cumulative 2.80 GPA).
2. The application of the student along with the student's complete profile must be reviewed by the Teacher Education Council for action.
3. The student, program coordinator, department chairperson, and dean of the school involved will be notified in writing of the Teacher Education Council's decision on the student's application for readmission to the Teacher Education Program.

Licensure

Upon completing the Teacher Education degree, candidates are eligible to apply for state licensure in the Office of the Dean of the School of Education. Upon receipt of the candidate's application, approval or endorsement of the licensure application is secured from the candidate's major department. After processing the application, the completed application form is forwarded to the Office of Registration and Records, who attaches a copy of the candidate's official transcript to the application form and forwards it to the State Department of Public Instruction in Raleigh, North Carolina.

Note: The candidate is required to take and pass all appropriate PRAXIS II tests before being recommended for licensure. The candidate should consult with his/her advisor, department chairperson or dean to determine passing scores on Praxis Tests for licensure. The University reserves the right to refuse to recommend any applicants for licensure when they are deficient in mental or physical health, scholarship, character, or other qualifications deemed necessary for success in the education profession.

Transfer To The Teacher Education Program

All students transferring into the Teacher Education Program must have a cumulative GPA of 2.80 (on a 4.0 scale) and must meet all other requirements for entry to the Teacher Education Program.

Department of Curriculum and Instruction

http://www.ncat.edu/~schofed/SOE%20curric.htm/

Anthony Graham, Interim Chairperson

OBJECTIVES

The Department of Curriculum and Instruction provides the professional studies component for the preparation of effective teachers and school personnel at the bachelor's degree and master's degree levels. The department cooperates with the various academic departments of the University for teacher education preparation. In addition, the department offers graduate programs in the areas of elementary education and instructional technology.

DEGREES OFFERED

Elementary Education – Bachelor of Science
Elementary Education General, General – Master of Art in Education*
Reading Education General, General-Master of Art in Education*
Instructional Technology – Master of Science *
Elementary Education – Master of Art in Teaching*
Special Education – Master of Art in Teaching*
**See the Graduate School Bulletin*

PROFESSIONAL STUDIES COMPONENT

The professional studies component of the Teacher Education Program is designed to provide for the development of those competencies essential to the professional role of the teacher. Integrated throughout the professional component are standards for teacher education programs which are diversity, assessment, reflection and technology (DART).

Undergraduate. Approximately eighteen percent of the undergraduate curriculum constitutes the professional studies component. Specific teacher competencies are developed through the provision of:

1. A study of the processes and theories of human growth development, learning and teaching with field experiences.
2. A humanistic study of the problems, issues and trends in education within a historical, philosophical, sociological, economical and governmental framework.
3. Instruction and experiences in creating and using learning environments.
4. A study of the process and techniques for analyzing and evaluating the teaching learning environment.
5. Experiences for the acquisition of knowledge, attitudes, and skills for positive human and social relationships (dispositions).
6. Integrating technology throughout the program.

ELEMENTARY EDUCATION PROGRAM

The objectives of the undergraduate elementary education program are: to provide a course of study to prepare students for teaching; to offer a course of study which promotes the development of general content and professional knowledge that serves as a foundation for appropriate educational practices; and to provide opportunities which develop knowledge, skills and disposition.

The emphasis of the program is on the application of learning theory, pedagogy as it relates to instructional practice. The program provides opportunities for prospective teachers to plan, organize, and implement developmentally appropriate instructional experiences. Experiences that expedites development and learning in the following areas are emphasized: cognitive, language, physical, social, psychological and aesthetic. Also, the program provides for sequentially planned field experiences, which enables potential teachers to apply knowledge and skill to actual learning situations (theory to practice).

Candidates must meet the requirements for admission, retention, and exit from the University's Teacher Education Program.

DEPARTMENTAL REQUIREMENTS

Candidates majoring in elementary education at the undergraduate level must complete 128 semester hours consistent with the curriculum guide. The curriculum guide for elementary education includes corollary study hours in a basic academic discipline. Candidates must meet the requirements for admission to teacher education. Individuals should refer to the section entitled *Teacher Education Admission and Retention Standards (Undergraduate Bulletin)* for pertinent information relative to requirements as a teacher education candidate. Students must accumulate a minimum of "C" in major courses and specialty area courses.

INITIAL LICENSURE REQUIREMENTS

Undergraduate Students-The candidate is required to take the Praxis I (Pre-Professional Skills Tests – PPST) or the Computer-Based Tests (CBT) tests in reading, writing, and mathematics. For licensure, candidates must take the Praxis II (Specialty Area or Subject Assessment Tests). Candidates must attain passing scores on these respective tests as established by the State Board of Education.

Graduate Students-Individuals who have graduated from an accredited college/university and did not pursue a program of study or complete requirements leading to teacher certification should file application for admission to the School of Graduate Studies. Refer to the section, *Procedures or Graduates Who Completed A Non-Teacher Education* (undergraduate) *Program* for explicit instructions.

REQUIRED MAJOR COURSES FOR ELEMENTARY EDUCATION

Students must attain a grade of "C" in the following courses:

CUIN 101	CUIN 543	ELED 512
CUIN 110	ELED 316	ELED 513
CUIN 310	ELED 404	ELED 514
CUIN 401	ELED 415	ELED 515
CUIN 410	ELED 510	ELED 544
CUIN 542	ELED 511	ELED 559

CURRICULUM GUIDE FOR ELEMENTARY EDUCATION

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 120	3
UNST 110	3	UNST 140	3
UNST 110	3	CUIN 110	2
ELED 120	3	FCS 311	3
BIOL 100	4	CUIN 101	1
ELED 201	2	Corollary Studies (3)	3
	16		15

Transition Points
TE Transitions
ELED Candidate Meeting

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elective	3	UNST Cluster Theme Elective	3
UNST Cluster Theme Elective	3	UNST Cluster Theme Elective	3
ELED 121	3	CUIN 310	2
CUIN 210	2	ELED 316	3
SPED 350	3	ELED 415	2
Corollary Studies	3	Corollary Studies	3
	17		16

Transition Points
TE Transitions
ELED Candidate Meeting
First Aid/CPR Certification

The suggested UNST Cluster Theme Elective for Elementary Education majors is Health, Lifestyles and Society. Elementary candidates are encouraged to take: UNST 208, UNST 209, UNST 217 and BUED 379 to meet the UNST Cluster Theme requirement.

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CUIN 401	3	ELED 510	3
CUIN 410	2	ELED 511	3
ELED 300	2	ELED 512	3
CUIN 413	3	ELED 513	3
Corollary Studies (6)	3	ELED 514	3
	3	ELED 404	1
	16	SPED 441	2
			18

Transition Points
TE Transitions

ELED Candidate Meeting
Regional/State/National Professional Meeting
404 Online Module Completion

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CUIN 543	3	ELED 559	12
CUIN 542	3	Capstone Course	12
CUIN 544	3		
ELED 515	2		
SPED 452	3		
Corollary Studies	3		
	17		

Total Credit Hours: 128

Transition Points:
SOE Transitions
Praxis II
ELED Portfolio Docs

Total Credit Hours: 128
Benchmark: To graduate, Student MUST meet all requirements of the Program.

COROLLARY STUDIES

Elementary Education Majors MUST Select One Area (18 hours)

Diverse Learners Corollary: CUIN 302, SPED 355, 354, ELED 641, HEFS 401, 551
Spanish Corollary: FOLA 104, 105, 320, 321, 441, 440, 442, 450, 453
Math, Science & Technology Corollary: ELED 557, 604, 614, CUIN 617. *Choose three hours from the following:* PHYS 101, 105, BIOL 369. *Choose three hours from the following:* EASC 201, 309, 330
Special Education Corollary: SPED 325, 355, 354, 539, 546, 565. Special Education concentration seekers will take two (2)additional courses; SPED 548 and 564

COURSE DESCRIPTIONS IN CURRICULUM AND INSTRUCTION

CUIN 101. Technology for 21st Century Classrooms **Credit 1(0-2)**
This course examines the authentic use of various technological applications for 21st Century classrooms. Teacher candidates are introduced and exposed to current technological tools used to engage PK-12 students in 21st Century learning environments. **(S;SS)**

CUIN 102. Introduction to Teacher Education I **Credit 2(2-0)**
This course is designed to provide prospective (new and freshman) teacher education students with an orientation to the Teacher Education Program requirements and to assist them in preparation for the Praxis I (mathematics, reading and writing) examinations. This course is required of all undergraduate prospective teacher education majors. Students are required to have 6 hours of computer practice time per week. Grade: Pass/Fail. **(F;S;SS)**

CUIN 104. Introduction to Teacher Education II **Credit 0(1-0)**
This course provides students with information relative to the application process for formal admission to the Teacher Education Program. Students are required to take the Praxis I (mathematics, reading, and writing) examinations either on the scheduled Educational Testing Service (ETS) dates or on the Computer Based Test (CBT) format. Grade: Satisfactory/Unsatisfactory. **(F;S)**

CUIN 110. Ethics of Teaching **Credit 2(2-1)**
This course introduces students to the teaching profession. Major emphasis is placed on the ethical and moral responsibility of the classroom teacher to meet the needs of the learner in increasingly diverse school environments. Teacher candidates explore the philosophical and historical context of public schooling and the importance of supporting overall PK-12 student development. A 20-hour service learning experience is required. **(S;SS)**

CUIN 210. Culturally Relevant Pedagogy **Credit 2(2-1)**
This course examines culturally responsive learning environments that engage and empower PK-12 students. Emphasis is placed on using the context of the learning environment to make instructional decisions. A 30-hour field experience in an approved learning environment is required. Prerequisite: CUIN 101 or equivalent and CUIN 110. **(F;SS)**

CUIN 301. Philosophical and Sociological Foundations of Education **Credit 2(2-0)**
This course provides a view of the educative process and its philosophical foundations with emphasis on the philosophical implications of education as they relate to student curriculum, teacher and the institution. There will be classroom observation/participation experiences. **(F;S;SS)**

CUIN 302. Field Experiences and Community Services **Credit 1-3**
This course provides field experiences as tutor, assistant participant or employee in a school or education related institution, organization, agency, community, church, business or industrial program involving interaction with children, youth or adults. Evaluation and written reports planned in consultation with an instructor will be required. **(F;S;SS)**

CUIN 303. Socio-Philosophical Aspects of Education **Credit 4(4-0)**
This course examines past and contemporary factors in American education through philosophical and sociological perspectives. Problems and possibilities inherent in relating theory and practice in education will be explored. **(F;S;SS)**

CUIN 310. Assessment for 21st Century Classrooms **Credit 2(2-0)**
This course introduces teacher candidates to basic assessment principles and practices. Emphasis will be placed on formative and summative evaluation processes. Prerequisite: CUIN 210 and admission to Teacher Education **(S;SS)**

CUIN 315. Family, Community, and School **Credit 3(3-0)**
This course studies the relationships of the family, community, and school that involve the learner, with emphasis on the young child. Attention will be given to family structure, parent education and involvement with the school and community, community development and participation in education. Research and identification of current problems and issues will be considered and projects relating to the local community will be completed. **(F;S;SS)**

CUIN 400. Psychological Foundations of Education – Growth and Development **Credit 3(2-2)**
This course is restricted to Teacher Education students and studies the psychological principles governing the interests and needs of pre-adolescence and adolescence; emphasis is placed on general principles of growth and development, physical, motor, intellectual, social, emotional and moral aspects. Observing, recording and interpreting human behavior including functional conceptions of learning will be provided in laboratory settings. (Field Experience Required). Prerequisite: CUIN 102 (Formal admission to Teacher Education). **(F;S;SS)**

CUIN 401. Classroom and Behavioral Management **Credit 3(3-0)**
This course is designed to give preservice elementary and special education majors a broad range of philosophies and concepts about classroom and student behavior management. Concepts will include preventive, diagnostic, and prescriptive behavior planning and implementation for classroom management. **(F;S;SS)**

CUIN 402. Extramural Studies I **Credit 1-3**
This course provides off-campus experiences, testing or exploring relevance of education to real world situations in an agency, organization, institution or business. There will be a project report and evaluation by permission of department. **(F;S;SS)**

CUIN 410. Differentiated Instruction **Credit 2(2-1)**
This course focuses on how classroom teachers address the needs of learners using a variety of instructional approaches. Emphasis will be placed on using ongoing formal and informal assessment to design, implement, and modify instruction appropriate for the learner. A 40-hour field experience in an approved PK-12 school is required. Prerequisites: CUIN 310 and admission to Teacher Education. **(F)**

CUIN 412. Classroom Management **Credit 3(3-0)**
This course examines major schools of thought involved in classroom management and motivation. Alternative ways to help children develop self-control and acquire practical strategies and techniques for successful classroom management to maximize student learning will be explored. Prerequisites: CUIN 102. **(F;S;SS)**

CUIN 413. Learning and Practice **Credit 3(3-0)**
This course is a survey and analysis of learning theories and the learning process with applications to education. The integration of theoretical viewpoints and research finings with observations and experience in classroom situations will be studied. Prerequisite: PSYC 320. **(F;S;SS)**

CUIN 436. Evaluation and Assessment **Credit 3(2-2)**
This course is a basic study of standardized and teacher-made measuring devices, acceptable methods selecting, administering, and interpreting all types of tests applicable to the school and classroom. Prerequisite: CUIN 102. **(F;S;SS)**

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)**

All courses numbered 500 and above require formal admission to the Teacher Education Program.

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 520. Content Area Literacy **Credit 2(2-0)**
This course provides teacher candidates with the strategies to assess and diagnose literacy skills and provide effective instruction to improve student learning. Prerequisite: CUIN 310 and admission to Teacher Education. **(S;SS)**

CUIN 525. 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 l 5 hours of education and psychology. **(F;S)**

CUIN 526. 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: English 450, 430; 24 additional hours of English courses above English 100 and 15 semester hours in education and psychology. **(F;S)**

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 529. 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 530. 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 531. 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 532. Band Methods **Credit 3(3-0)**
This course is a study of the school band organization and administration. **(F)**

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 535. 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 536. 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 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 542. 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)**

CUIN 543. 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)**

CUIN 556. Curriculum and Methods in Literature, Language Arts, and Social Studies in Early Childhood Education **Credit 3(2-2)**

This course is the study of basic principles underlying the social studies and language arts curriculum, children's literature, appropriate materials and methods for kindergarten-primary grades. Concepts and skills relating to the scope and importance of social studies and language arts in the total program will be developed. There will also be laboratory and observation experiences. **(F;S;SS)**

CUIN 558. Student Teaching and Seminar in Early Childhood Education **Credit 6(2-8)**

This course includes the observation and study of the guided teaching experiences in the kindergarten through grade three to include ninety or more clock hours of actual teaching. The study of the application and practice of methods, techniques and materials of instruction in a real classroom situation under supervision, includes purposeful observation, organization of teaching materials, participation in other activities will be included. **(F;S;SS)**

CUIN 562. Seminar in Elementary Education **Credit 3(1-0)**

A consideration of selected topics and current trends in the field of elementary education. Topics differ in response to current interests, issues and research findings. Candidates will participate in-group sessions during the student teaching experience. The sessions may be conducted at a selected school or on campus. **(F;S;SS)**

CUIN 611. Utilization of Education Media **Credit 3(2-2)**

Applies basic concept to problems in teaching and learning with school and adult audiences. Relates philosophical and psychological bases of communications to teaching. Discusses the role of communications in problem-solving, attitude formation, and teaching. Methods of selecting and using educational media materials effectively in teaching. Experience in operating equipment, basic techniques in media preparation. Practice in planning and presenting a session. Prerequisite: CUIN 102. **(F;S;SS)**

CUIN 613. Media and Literature for Children **Credit 3(3-0)**

This course will entail a study of children's literature with emphasis on aids and criteria for selection of books and other materials for preschool through late childhood ages; story-telling, and an investigation of reading interests. Prerequisite: CUIN 102. **(F;S;SS)**

CUIN 623. Methods and Materials in Teaching Reading in Elementary School **Credit 3(3-0)**

The application of principles of learning and child development ot the teaching of reading and the related language arts. Methods and Approaches to the teaching of reading in the elementary school; including phonics, developmental measures, informal testing Procedures, and construction and utilization of instructional materials. **(F;S;S)**

CUIN 624. Teaching Reading in the Secondary School **Credit 3 (3-0)**

Nature of a developmental reading program, initiating and organizing a high school reading program, the reading curriculum, including reading in the content subjects, critical reading, procedures and techniques, and corrective and remedial aspects. **(F;S;S)**

CUIN 625. Theory of American Public Education **Credit 3 (3-0)**

An examination of the philosophical resources, objectives, historical influences, social organization, administration, support, and control of public education in the United States. **(F;S;S)**

CUIN 627. Literacy in the Content Areas **Credit 3 (3-0)**

This course is designed to prepare secondary school teachers to plan and deliver literacy-focused instruction in all content areas. Students will examine current research and instructional models for improving 21st century literacy skills. **(F;S;S)**

CUIN 628. Seminar and Practicum in Urban Education **Credit 3 (1-4)**

A synthesis of practical experiences, ideas and issues pertinent to more effective teaching in urban areas. **(F;S;S)**

CUIN 629. Classroom Diagnosis in Reading Instruction **Credit 3(3-0)**

Methods, techniques and materials used in the diagnosis of reading problems in the kindergarten-primary area through the intermediate level. Attention upon the pupil and the interpretation of physiological, psychological, sociological, and educational factors affecting learning to read. Opportunity for identification, analysis, interpretation on, and strategies for fulfilling the reading needs of all pupils. Prerequisite: CUIN 511. **(F;S)**

CUIN 630. Reading Practicum **Credit 3 (3-0)**

Application of methods, materials and professional practices relevant to teaching pupils. Provisions for participation in and teaching of reading. Designed to coordinate the student's background in reading, diagnosis, learning and materials. Supervised student teaching. Prerequisite: 12 credit hours in reading. **(F;S;S)**

CUIN 631. Reading for the Atypical Learner **Credit 3 (3-0)**

Attention to the gifted child, the able retarded, the slow learner, the disadvantaged, and the linguistically different child. Special interest groups will be formed for investigation reports. **(F;S;S)**

CUIN 632. Basic Technology Literacy for K-12 Educators **Credit 3(3-0)**

This course provides instruction in basic computer literacy skills and classroom integration for K- 12 educators. The instruction is designed to meet the North Carolina Department of Public Instruction's requirements for basic level computer competencies for public school teachers. Topics include word processing, spreadsheet usage, database design and management, teacher utilities, and fundamentals of modem computing. **(F;S;SS)**

CUIN 640. Methods of Teaching for 21st Century Classrooms **Credit 3(3-1)**
This course provides the opportunity for teacher candidates to design, deliver and assess effective instruction. Emphasis will be placed on the use of multiple methodologies to inform instruction to meet the needs of culturally and linguistically diverse populations. A 60-hour field experience in an approved PK-12 school is required. Prerequisites: CUIN 410 and CUIN 520 and admission to Teacher Education. **(F;S)**

CUIN 660. Clinical Practice in Teacher Education **Credit 6-9(0-18)**
This course is the culminating clinical experience for teacher candidates. Teacher candidates must complete a full-time supervised teaching experience in an approved PK-12 classroom. This course must be taken in conjunction with the capstone experience. Prerequisite: CUIN 640 or equivalent and admission to Teacher Education' Co-requisite: CUIN 670. **(F;S)**

CUIN 670. Capstone Experience in Teacher Education **Credit 3(3-0)**
Teacher candidates will analyze topics related to professional practice, in the context of their culminating clinical experience. They will refine evidences of professional knowledge, skills, and dispositions through presentation in a capstone portfolio. Prerequisite: CUIN 640 and admission to Teacher Education. Corequisite: CUIN 660. **(F;S)**

CUIN 681. Issues in Education **Credit 3(3-0)**
A critical review of the background and functions of the school as a social institution. **(F;S;S)**

ELEMENTARY EDUCATION

ELED 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. Algebra, Number Theory and Number Systems in Our World **Credit 3(3-0)**
This inquiry based course examines concepts, operations, and structures occurring in number systems, number theory and algebra. Prerequisites: ELED 120. **(F;S;SS)**

ELED 201. 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 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. Prerequisites: Admitted to Teacher Education. **(F;S;SS)**

ELED 316. 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 404. Teacher Licensure – Review Seminar **Credit 0(1-0)**
This course offers students an opportunity to discuss, review and prepare for the required state licensure examinations. Students will be expected to acquire the passing score on the specialty area licensure examination in order to receive a "Satisfactory" in this course. Grade: Satisfactory/Unsatisfactory. Prerequisite: Admission to Teacher Education. **(F;S;SS)**

ELED 415. 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 510. 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: CUIN 102. **(F;S)**

ELED 510. Language Arts Lab **Credit 0(0-0)**
Candidates will complete 2 hours of field experience per week.

ELED 511. Reading in the Elementary School **Credit 3(30)**
This course focuses on content and materials used in reading instruction grades K-6. Attention to the acquisition, development and extension of language will be emphasized in this course. To be taken with 510, 512, 513, 514. Prerequisite: CUIN 102. **(F;S)**

ELED 512. Social Studies in the Elementary School **Credit 2(2-0)**
This course addresses the instructional program in social studies for grades K-6. Emphasis is on content, resources, and materials in this course. To be taken with 510, 511, 513, 514. Prerequisite: CUIN 102. **(F;S)**

ELED 513. Science in the Elementary School **Credit 2(2-0)**
This course stresses an integrated discovery-centered program with developmentally appropriate experiences for children in grades K-6. Emphasis is on the processes of science and assessment of student learning. To be taken with 510, 511, 512, 514. Prerequisite: CUIN 102. **(F;S)**

ELED 514. Mathematics in the Elementary School **Credit 2(2-0)**
This course focuses on the elementary mathematics content and materials. Emphasis is on developing an understanding of concepts and skills through discovery. To be taken with 510, 511, 512, 513. Prerequisite: CUIN 102. **(F;S)**

ELED 515. Methods of Teaching **Credit 2 (2-0)**
This course emphasizes an interdisciplinary approach to the course of study in various subject-matter areas. It is designed to enable students to observe master teachers and to test methods, materials, resources and techniques to facilitate student learning. This course should be taken in conjunction with the content courses preceding the student- teaching experience. Students are required to participate in a minimum of 60 hours per week in a classroom setting. Prerequisite: CUIN 102. **(F;S)**

ELED 544. Diagnostic-Prescriptive Reading Instruction in Elementary Education **Credit 3(3-0)**
The study of diagnostic instruments, formal and informal testing procedures, report writing, and development of educational prescriptions. The candidates will work with individual students or small groups identified as problem readers. **(F;S;SS)**

ELED 557. Curriculum and Methods in Science and Mathematics in Early Childhood Education **Credit 3(2-2)**
This course is a study of the underlying basic principles are underlying the science and mathematics curriculum. Consideration of appropriate materials and methods for kindergarten through primary grades will be given. Concepts and skills relating to the scope and importance of science and mathematics in the schools programs will be developed. There will be simulated teaching experiences**. (F;S;SS)**

ELED 559. Student Teaching in the Elementary School **Credit 12(0-24)**
This course provides candidates observation and supervised teaching experiences in the elementary grades (K-6). It includes the study of application and practice of methods, techniques and materials of instruction in a classroom situation will be demonstrated and observed. Students must be admitted to the Teacher Education Program. Students will meet periodically during student teaching for purposes of group discussion. This is a full semester experience. **(F;S)**

ELED 601. Theory and Techniques of Planning and Instruction **Credit 3 (3-0)**
This course requires the candidate to analyze theories of instruction, methods, and materials in the elementary school curriculum; observe classroom procedures; and participate in teaching demonstrations. Emphasis is placed on the application of effective instructional theory and practice, sound decision-making and multicultural education in a field-based content. **(F;S;S)**

ELED 602. Language Arts through Children's Literature **Credit 3 (3-0)**
This course is a study of models of teaching the English Language Arts at the elementary (K-6) level. Guided Reading, Integrated Instruction, Writers Workshop and Literature-Based Reading, Literature Circles and Writing Instruction will be featured. The writing process is emphasized. **(F;S;S)**

ELED 603. Elementary Curriculum: Science/Social Studies/Health **Credit 3 (3-0)**
This course explores the scope and sequence of the elementary curriculum areas of science, social studies, and health. Instructional strategies studied include content integration, cooperative grouping and effective questioning techniques. Hands on guided discovery teaching as well as the use of children's literature will be the major focus. **(F;S;S)**

ELED 604. Mathematics Curriculum and Assessment **Credit 3(3-0)**
This course is designed to develop the knowledge and skills to effectively teach math concepts to the young child through grade six. Methods will be presented in a developmental sequence that supports children's construction of the concepts essential to understanding mathematics. Each new concept will be introduced with concrete materials and exploratory activities**. (F;S;SS)**

ELED 605. Reading in the Elementary Classroom **Credit 3 (3-0)**
This course provides a framework for understanding the development of language and literacy in children. It is designed to help students learn to build on what children ring to oral language, reading and writing, and to enhance developmentally appropriate language and literacy activities. Literacy learning is presented as a language-learning process that is best acquired through functional, purposeful use of print. **(F;S;S)**

ELED 607. Multiple Intelligences **Credit 3 (3-0)**
This course utilizes the Multiple Intelligences Theory posited by Howard Gardner to provide effective classroom instruction that meets the needs of a wide variety of students. This course will also aid candidates in meaningful integration of visual arts, music, drama, dance, and movement throughout the elementary curriculum by providing a basic arts and movement knowledge base, clear reasons for integration, and specific arts integration principles. **(F;S;S)**

ELED 608. Clinical Application of Instruction **Credit 6 (6-0)**
This course is an internship which emphasizes the development and use of teaching strategies, methods, skills, and assessments as they relate to the principles of teaching and learning, and the decision making process. Time will be spent on applying planning management skills to instruction discipline, behavioral concerns and decision making in instruction,

the instruction of small groups and whole class. The student will use a variety of teaching strategies, methods skills, and instructional resources. **(F;S;S)**

ELED 610. Knowledge of the Elementary Learner in the Differentiated Classroom Credit 3(3-0)
This course is designed to provide candidates with the basic skills for effective classroom teaching. These skills include writing instructional objectives, planning for instruction, developing higher order questions, utilizing effective communication skills, understanding theories of learning and classroom management, and developing effective evaluation methods relative to the differentiated elementary classroom. Prerequisites: SPED 661, INST 605. **(F;S;SS)**

ELED 611. Balanced Literacy for Elementary Learners I Credit 3(3-0)
This course provides a framework for understanding the development of language and literacy in children. It is designed to help students learn to build on what children bring to oral language, reading and writing, and to enhance developmentally appropriate language and literacy activities. Prerequisites: SPED 661, INST 605. **(F;S;SS)**

ELED 612. Mathematics Curriculum & Pedagogy I Credit 3(3-0)
This course is designed to develop the knowledge and skills to effectively teach math concepts to the young child through grade six. Methods will be presented in a developmental sequence that supports children's construction of the concepts essential to understanding mathematics. Specifically, this course will provide elementary education candidates with an activity and project-based exploration of informal geometry in two and three dimensions. Prerequisites: INST 605, SPED 661 and ELED 610. **(F;S;SS)**

ELED 613. Classroom Management Credit 1(1-0)
This course provides the candidates with an opportunity to develop, synthesize, and implement a classroom management plan in their field experience. **(F;S;SS)**

ELED 614. A Conceptual Approach to Teaching Mathematics for Elementary Teachers Credit 3(3-0)
This course is designed to develop knowledge and skills to effectively teach mathematical concepts to young children from kindergarten through grade six. **(F;S;SS)**

ELED 615. Balanced Literacy for Elementary Learners II Credit 3(3-0)
This course is part 2 of ELED 611 Balanced Literacy I and emphasizes a study of models of teaching the English Language Arts at the elementary level. Prerequisites: ELED 611. **(F;S;SS)**

ELED 616. Social Studies and Science Curriculum & Pedagogy Credit 3(3-0)
This course explores the scope and sequence of the elementary curriculum areas of science, social studies and health. Prerequisites: ELED 610. **(F;S;SS)**

ELED 617. Mathematics Curriculum & Pedagogy II Credit 3(3-0)
This course is designed to develop the knowledge and skjlls needed to effectively teach math concepts to the young child through grade six. Methods wil be presented in a developmental sequence that supports children's construction of the concepts essential to understanding mathematics. Prerequisites: ELED 612. **(F;S;SS)**

ELED 618. Clinical Practices for 21st Century Elementary Classrooms Credit 6-(6-6)
A field experience which emphasizes the development and use of teaching strategies, methods, skills, and assessments as they relate to the principles of teaching and learning, and the decision making process. The student will use a variety of teaching strategies, methods, skills, and instructional resources. Prerequisites: All Phase I Course work. **(F;S)**

ELED 619. Action Research for the Elementary Education Classroom Credit 2(2-0)
This course will provide candidates an opportunity to look at the role of the teacher as researchers, emphasizing the use of research to inform practice. **(F;S;SS)**

CUIN 629. Classroom Diagnosis in Reading Instruction Credit 3(3-0)
Methods, techniques and materials used in the diagnosis of reading problems in the kindergarten-primary area through the intermediate level. Attention upon the pupil and the interpretation of physiological, psychological, sociological, and educational factors affecting learning to read. Opportunity for identification, analysis, interpretation on, and strategies for fulfilling the reading needs of all pupils. Prerequisite: CUIN 511. **(F;S)**

CUIN 632. Basic Technology Literacy for K-12 Educators Credit 3(3-0)
This course provides instruction in basic computer literacy skills and classroom integration for K- 12 educators. The instruction is designed to meet the North Carolina Department of Public Instruction's requirements for basic level computer competencies for public school teachers. Topics include word processing, spreadsheet usage, database design and management, teacher utilities, and fundamentals of modem computing. **(F;S;SS)**

ELED 641. Teaching and Learning in a Multicultural Classroom Credit 3(3-0)
The course focuses on curricular and pedagogical practices that embrace the intellectual, emotional, and contextual realities of a multicultural classroom, Holistic teaching methods that stress an inclusive, democratic, cooperative and multicultural environment consistent with a social justice framework will be emphasized in this course. **(F;S;SS)**

CURRICULUM GUIDE FOR ELEMENTARY EDUCATION
Dual Licensure Degree Program – Special Education Corollary/Licensure
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 120	3
UNST 110	3	UNST 140	3
UNST 130	3	CUIN 110	2
ELED 120	3	CUIN 101	1
BIOL 100	4	FCS 311	3
ELED 201	2	SPED 350	3
	17		15

Transition Points
TE Transitions
ELED Candidate Meeting

SOPHMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 217	3	UNST 208	3
UNST 209	3	BUED 379	3
CUIN 210	2	ELED 415	2
ELED 121	3	ELED 316	3
Corollary Studies	6	CUIN 310	2
(SPED 354 / 355)	17	Corollary Studies (SPED 452)	3
			16

Transition Points
TE Transitions
ELED Candidate Meeting
First Aid/CPR Certification
SPED Candidate Completes Occupation Orientation and Transition Module

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CUIN 401	3	ELED 510	3
SPED 441	2	ELED 511	3
CUIN 410	2	ELED 512	3
ELED 300	2	ELED 513	3
CUIN 413	3	ELED 514	3
Corollary Studies	6	SPED Licensure* (SPED 548)	3
(SPED 539 / 540)	18		18

Transition Points
TE Transitions
ELED Candidate Meeting
Regional/State/National Professional Meeting
404 Online Module Completion

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CUIN 543	3	ELED 559	12
CUIN 542	3		12
ELED 544	3		
ELED 515	2		
ELED 404	1		
Corollary Studies (SPED 565)	3		
SPED Licensure* (SPED 564)	3		
	17		

Transition Points
SOE Transitions
Praxis II (ELED and SPED)
(ELED/SPED Candidates will complete a dual experience)
***Additional courses needed for licensure**

TOTAL HOURS (including Special Education Licensure) = 130

Special Education Corollary/Licensure Option

COURSES TO BE COMPLETED

SPED 355 Introduction to Mild Disabilities* (3hrs)
SPED 354 Urban Schools (3hrs)
SPED 452 Assistive Technology for Students with High Incidence Disabilities (3hrs)
SPED 539 Teaching Students with Persistent Reading Problems (3hrs)
SPED 540 Research Based Strategies for Teaching Mathematics (3hrs)
SPED 565 Teaching Strategies for Exceptional Students in Inclusive Settings* (3hrs)

Candidates enrolled in secondary programs will take instead of SPED 355

SPED 455 Teaching Adolescents with Learning and Behavior Disorders* (3hrs)

Candidates enrolled in B-K programs will take instead of SPED 548

SPED 536 Assessment and Inclusive Practices in Early Childhood* (3hrs)

Special Education concentration licensure candidates will take the following two additional course:

SPED 548 Diag. Assessment & Prescriptive Techniques for Except. Individuals (3hrs)
SPED 564 Methods & Materials & Problems in Teach. Special Needs Child* (3hrs)

Candidates will also complete an Occupation Orientation and Transition Skills module.

**Courses with field experience requirement*

Clinical Practice *(15 weeks) formally known as student teaching will be completed as 10 weeks in the candidates major setting and a minimum of 5 weeks in a special education setting.*

COURSE DESCRIPTIONS IN SPECIAL EDUCATION

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 350. Introduction to Exceptional Children **Credit 3(3-0)**
This course provides an overview of the laws, characteristics and instructional accommodations for individuals with low and high incidence disabilities served in diverse educational and community settings. **(F;S;SS)**

SPED 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 354. 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 355. 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 350. **(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 441. Teacher-Parent Community Resources for Exceptional Children **Credit 3(3-0)**
This course examines the socio cultural factors affecting students, children and their families. Emphasis is placed on strategies for effective communication and collaborative planning with families, community agencies and teacher leadership skills used toward school improvement. Prerequisite: Admission to Teacher Education. **(F;S;SS)**

SPED 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 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. Prerequisite: Admission to Teacher Education, SPED 350. **(F;S;SS)**

SPED 455. 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. Prerequisite: Admission to Teacher Education, SPED 350. **(F;S;SS)**

SPED 536. Adaptive and Inclusive Practices in Early Childhood **Credit 3(3-0)**

This course is designed to develop assessment, individualized, program planning and intervention skills for working with young children with special needs and their families. Emphasis is placed on developmentally appropriate best practices in natural and inclusive environments and working with other professionals. A 20 hour field experience in an approved setting is required. Prerequisite: Admission to Teacher Education**. (F;S;SS)**

SPED 539. Teaching Students with Persistent Reading Problems **Credit 3(3-0)**

This course offers explicit instructional techniques on how to teach phonenic awareness, phonics, word study, fluency, vocabulary and comprehension using research-based teaching strategies. Emphasis is placed on using assessment to monitor academic progress and guide instructional decision making in reading. Prerequisite: Admission to Teacher Education. **(F;S;SS)**

SPED 540. 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. Prerequisite: Admission to Teacher Education, ELED 120. ELED 121. **(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 548. Diagnostic Assessment and Prescriptive Techniques for Exceptional Individuals **Credit 3(3-0)**

This course utilizes a strength based approach in assessment, identification, IEP development and family involvement for diverse learners. The roles of assessment in the prereferral and referral process, placement, and overrepresentation of culturally different students in special education is a major focus. Prerequisite: Admission to Teacher Education **(F;S;SS)**

SPED 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. Prerequisite: Teacher Education Admission and PRAXIS II passage. **(F;S)**

SPED 564. 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 565. 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. 3(3-0) Prerequisite: Admission to Teacher Education Prerequisite: SPED 355 **(F;S;SS)**

SPED 660. Introduction to Exceptional Children **Credit 3(3-0)**

A survey of children and youth with special needs focusing on historical and current treatment. Emphasis will be on psychological, sociological, physiological, and educational needs of special needs children. **(F;S;SS)**

SPED 661. Psychology of the Exceptional Child **Credit 3(3-0)**

An analysis of psychological factors affecting identification and development of individuals with high and low incidence disabilities. **(F;S;SS)**

SPED 662. Mental Deficiency **Credit 3(3-0)**

An overview of mental retardation across the life span including causes, characteristics of at various functioning levels, testing, classification, and legal issues, and current "best practices" for school and community inclusion. **(F;S;SS)**

SPED 663. Measurement and Evaluation in Special Education **Credit 3(3-0)**
The selection, administration, and interpretation of individual tests; intensive study of problems in testing exceptional students. **(F;S;SS)**

SPED 667. Specific Learning Disabilities **Credit 3(3-0)**
This course will address specific learning problems associated with reading, writing, language, cognition, perception, attention, mathematics, social and emotional disabilities. **(F;S;SS)**

SPED 668. Children & Youth with Behavioral Disorders **Credit 3(3-0)**
A survey of various behavioral disorders including causes, characteristics, classification and legal issues, and interventions designed to permit functioning in least restrictive school and community environments. **(F;S;SS)**

DIRECTORY OF FACULTY

David Boger ..... **Professor**
B.S., Livingston College; M.S., New Mexico Highlands University; Ph.D., University of New Mexico

Tyrette S. Carter ..... **Assistant Professor**
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W. V. Cobitz ..... **Assistant Dean**
B.S., M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University

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

Tiece Ruffin..... **Assistant Professor**
B.S., M.Ed, Ph.D., Ohio State University

Thomas J. Smith..... **Assistant Professor**
B.A., Manchester College; M.S., Indiana University; Ph.D., University of South Carolina

Karen Smith-Gratto..... **Associate Professor**
B.A., Christopher Newport College; M.A., Ph.D., University of New Orleans

Dawn C. Waegerle..... **Assistant Professor**
B.A., M.A., Oral Roberts University; Ed.D. College of Williams and Mary

Ereka Williams..... **Assistant Professor**
B.S., M.A.; Fayetteville State University; Ph.D., University of North Carolina at Greensboro

Department of Human Performance and Leisure Studies

http://www.ncat.edu/~schofed/SOE%20hper.htm

Robert Trent Larson, Interim Chairperson

OBJECTIVES

The Department of Human Performance and Leisure Studies will provide the following:

1. Preparation for students planning careers as managers in the sport, fitness and recreation industry.
2. Specialization in teacher education/administration, adapted physical education and sport psychology at the graduate level.
3. Instruction in a wide variety of service courses to meet the needs and interests of all students.
4. Student experiences which will enhance a strong self-concept, emotional stability and social skills for positive human relationships.
5. Learning experiences that utilize instructional technology.
6. Encouragement of students' active involvement and participation in professional activities both at the state and national levels.

DEGREES OFFERED

Sport Science and Fitness Management – Bachelor of Science
Physical Education – Master of Science*
Master of Arts In Teaching*
**See the Graduate School Bulletin*

DEPARTMENTAL REQUIREMENTS

There are three options in the Sport Science and Fitness Management (SSFM) degree program. These are Business Administration, Pre-Physical Therapy (Pre-PT) and Leisure Studies. Students are required to select one of the three options.

Students in the Business Administration or Leisure Studies option must maintain a 2.3 grade point average (GPA),while students in the Pre-Physical Therapy must maintain a 2.8 GPA. In addition, grades of "D" and "F" received in major and professional courses must be repeated.

CAREER OPPORTUNITIES

Career opportunities for Sport Science and Fitness Management majors include, but are not limited to, exercise program directors in business, industry, hospitals, health and fitness club managers, strength and conditioning coaches, sport nutritionists, public park recreation administrators, and professional sport administrators. In addition, the Pre-PT option helps prepare students to apply for graduate programs in the field.

REQUIRED MAJOR COURSES FOR SPORT SCIENCE AND FITNESS MANAGEMENT
(Business Administration Option)

SSFM 103	SSFM 340	HPED 105
SSFM 201	SSFM 400	HPED 350
SSFM 202	SSFM 403	HPED 445
SSFM 204	SSFM 433	HPED 475
SSFM 225	SSFM 571	HPED 520
SSFM 230	SSFM 572	HPED 569
SSFM 300	SSFM 590	HPED 570
SSFM 301		

CURRICULUM GUIDE FOR SPORT SCIENCE AND FITNESS MANAGEMENT
(Business Administration Option)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 110	3	ENGL 101	3
MATH 101 or above	3	UNST 120	3
UNST 130	3	UNST 140	3
SSFM 103	2	BUAD 220	3
UNST 100	1	HPED 105	1
BIOL 100	4	SSFM 230	3
	16		16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster	3	UNST Cluster	3
UNST Cluster	3	UNST Cluster	3
SPCH 250	3	SSFM 202	2
SSFM 201	2	HPED 350	2
SSFM 204	2	BIOL 361	4
BUAD 341	3	SSFM 225	3
	16		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
FCS 336	3	SSFM 301	3
SSFM 300	3	HPED 475	3
HPED 445	3	SSFM 400	3
BUAD 422	3	HPED 570	3
BUAD 425	3	SSFM 403	3
SSFM 340	3	SSFM 433	3
	18		18

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BUAD 430	3	SSFM 590	9
HPED 520	3	Elective	3
HPED 569	3		12
SSFM 571	3		
SSFM 572	3		
	15		

Total Credit Hours: 128

COURSE DESCRIPTIONS FOR SPORT SCIENCE AND FITNESS MANAGEMENT
(Business Administration Option)

SSFM 103. Introduction to Lifetime Physical Fitness **Credit 2(2-0)**
This course provides an introduction to the foundations of lifetime physical fitness and its related activities. Prequisite: SSFM majors only. **(F)**

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. **(F;S)**

SSFM 201. Fitness Concepts **Credit 2(1-2)**
This course is a study in the practical application of fitness training principles and theory. Major only. **(**F**)**

SSFM 202. Advanced Fitness Concepts **Credit 2(1-2)**
This course is an advanced study in the practical application of fitness training principles and theory. Prerequisites: SSFM 201 or consent of instructor and SSFM majors only. **(S)**

SSFM 204. Stress Management **Credit 2(2-0)**
This course is a study of stress and its impact on health, fitness and wellness including the theories of intervention, principles of stress resilience and methods of eliciting the relaxation response. 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 230. History of Sport and Exercise **Credit 3(3-0)**
This course focuses on the historical development and growth of the sport and fitness industry. It will explore the biological, sociological and socioeconomic dynamics of sport and exercise. Prerequisite: SSFM majors only. **(F;S;SS)**

SSFM 300. Fitness Facilities and Equipment **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 301. 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 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 350. Information Technology for Human Performance and Leisure Studies **Credit 2(1-2)**
This course is designed to introduce students to the use of information technology as applied to HPLS. It includes applications of field specific software and appropriate software to develop professional documents, presentations, databases, web-pages and portfolios. National Education Technology Standards for Teachers will be addressed. Prerequisite: SSFM majors only. **(F;S)**

SSFM 400. Field Experience I **Credit 3(0-6)**
This course will provide an introductory practical experience in applying theoretical knowledge and skills through assisting professionals in physical fitness/wellness programs. Prerequisites: Junior standing in the Fitness Management Program and SSFM majors only. **(F;S)**

SSFM 403. Nutrition for Sport and Fitness **Credit 3(3-0)**
This course is designed to study the impact of nutrition on health, fitness and sports performance. Emphasis will be on basic nutrition, diet analysis, weight control, special diets, eating disorders, and the use of ergogenic aids in sport and fitness. Prerequisite: SSFM majors only. **(F;S)**

SSFM 433. 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 majors only.

HPED 445. Kinesiology **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: BIOL 361 and SSFM majors only. **(F)**

HPED 475. 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 will be examined. Prerequisites: HPED 262, or permission of instructor, and SSFM majors only. **(S)**

HPED 520. 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: HPED 475, or permission of instructor, and SSFM majors only. **(F)**

HPED 569. Assessment and Evaluation in Human Performance and Leisure Studies **Credit 3(3-0)**
This course is a study of the applications of assessment, statistics and evaluation in Physical Education and Recreation. Focus is placed upon the selection, development, administration, interpretation, and evaluation of the results of teacher made and professional instruments. The use of assessment and evaluation in terms of grading and grading systems will also be addressed. Prerequisite: SSFM majors only. **(F)**

HPED 570. 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: HPED 445; BIOL 361, and SSFM majors only. **(S)**

SSFM 571. 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 570 and SSFM majors only. **(F;S)**

SSFM 572. 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 various populations and conditions, including but not limited to cardiovascular disease, stroke, hypertension, obesity, diabetes, oldest-old and children. 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 570 and SSFM majors only. **(F;S)**

SSFM 590. Fitness Management Internship **Credit 9(0-18)**
This course will provide in-depth practical work experience with public or private physical fitness/wellness programs emphasizing the development of management skills. Prerequisite: SSFM Majors only with all major courses completed. **(S)**

REQUIRED MAJOR COURSES FOR SPORT SCIENCE AND FITNESS MANAGEMENT
(Leisure Studies Option)

SSFM 103	SSFM 403	LSS 464
SSFM 201	SSFM 433	LSS 465
SSFM 202	SSFM 571	HPED 105

SSFM 204	SSFM 572	HPED 350
SSFM 225	SSFM 590	HPED 445
SSFM 230	LSS 160	HPED 475
SSFM 300	LSS 260	HPED 520
SSFM 301	LSS 446	HPED 569
SSFM 340	LSS 463	HPED 570
SSFM 400		

CURRICULUM GUIDE FOR SPORT SCIENCE AND FITNESS MANAGEMENT
(Leisure Studies Option)

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 110	3	ENGL 101	3
MATH 101 or Above	3	UNST 120	3
UNST 130	3	UNST 140	3
LSS 160	3	BIOL 100	4
SSFM 103	2	SSFM 230	3
HPED 105	1		16
UNST 100	1		
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster	3	UNST Cluster	3
UNST Cluster	3	UNST Cluster	3
SPCH 250	3	HPED 350	2
LSS 260	3	SSFM 202	2
SSFM 201	2	SSFM 225	3
SSFM 204	2	BIOL 361	4
	16		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
LSS 464	3	SSFM 301	3
SSFM 300	3	SSFM 403	3
SSFM 340	3	HPED 570	3
FCS 336	3	SSFM 433	3
SSFM 400	3	HPED 475	3
HPED 445	3	LSS 463	3
	18		18

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
HPED 520	3	SSFM 590	9
HPED 569	3	LSS 446	3
SSFM 571	3		12
SSFM 572	3		
LSS 465	3		
	15		

Total Credit Hours: 128

COURSE DESCRIPTIONS FOR SPORT SCIENCE AND FITNESS MANAGEMENT
(Leisure Studies Option)

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 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 446. 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 463. 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 464. Group Leadership **Credit 3(3-0)**
This course examines the techniques of group dynamics and methods of developing group leadership capabilities. **(F)**
LSS 465. Program Planning Recreation **Credit 3(3-0)**
This course includes analysis of recreation programs. Emphasis is placed on objective, personnel and facilities. **(S)**
LSS 512. Recreation Internship **Credit 6(6-0)**
This supervised internship has been designed to allow students to acquire the knowledge competencies and skills necessary for a successful performance in the field. It is recognized that classroom studies are not efficient in and of themselves to prepare students for successful entry into the recreation profession. The opportunity to implement skills and knowledge in a practical situation is a necessary compliment to class experience. This internship is a minimum of ten weeks of 400 clock hours in a recreational setting. Students will complete the experience after the majority of the classroom work has been finished, which gives them the opportunity to apply learning gained through didactic studies. **(SS)**
LSS 560. Comprehensive Planning for Recreation **Credit 3(3-0)**
This course examines the process of developing comprehensive master plans for recreation areas. It includes the conservation and planning of recreational resources. **(S)**
LSS 571. Supervision of Recreation and Park Services **Credit 3(3-0)**
This course includes an analysis and investigation of supervision of employees involved in recreational services. **(F)**

REQUIRED MAJOR COURSES FOR SPORT SCIENCE AND FITNESS MANAGEMENT
(Pre-PT Option)

SSFM 103	SSFM 301	SSFM 590
SSFM 201	SSFM 340	HPED 350
SSFM 202	SSFM 400	HPED 445
SSFM 204	SSFM 403	HPED 475
SSFM 230	SSFM 433	HPED 520
SSFM 225	SSFM 571	HPED 569
SSFM 300	SSFM 572	HPED 570

CURRICULUM GUIDE FOR SPORT SCIENCE AND FITNESS MANAGEMENT
(Pre-PT Option)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 110	3	ENGL 101	3
MATH 110	4	UNST 120	3
UNST 130	3	UNST 140	3
SSFM 103	2	MATH 131	4
UNST 100	1	SSFM 230	3
BIOL 100	4		16
	17		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster	3	UNST Cluster	3
UNST Cluster	3	UNST Cluster	3
CHEM 106/116	4	CHEM 107/117	4
SSFM 201	2	SSFM 202	2
SSFM 204	2	BIOL 370	3
BIOL 369	3	SSFM 225	3
	17		18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
HPED 350	2	SSFM 301	3
SSFM 300	3	HPED 475	3
HPED 445	3	SSFM 400	3
PHYS 225	4	HPED 570	3
SSFM 340	3	SSFM 403	3
	15	SSFM 433	3
			18

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ECON 305	3	SSFM 590	9
HPED 520	3		3
HPED 569	3		12
SSFM 571	3		
SSFM 572	3		
	15		

Total Credit Hours: 128

COURSE DESCRIPTIONS IN PHYSICAL EDUCATION (ACTIVITY CLASSES)
(For Non-SSFM Majors)

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. **(DEMAND)**

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. **(DEMAND)**

HPED 106. Swimming for Nonswimmers **Credit 1(0-2)**
This course includes orientation to the water along with the development of survival skills. Instruction in the basic strokes, safety and rescue skills is a part of the curriculum. The course is designed for nonswimmers and those who are not comfortable in deep water. **(F;S;SS)**

HPED 107. Racquetball **Credit 1(0-2)**
This course is designed to offer the student an opportunity to develop performance skills, an understanding of rules and strategies, and an appreciation for racquetball which can be enjoyed as a lifetime activity. **(DEMAND)**

HPED 108. Beginning Springboard Diving **Credit 1(0-2)**
This course introduces the student to the basic skills, knowledge and mechanics of springboard diving. **(DEMAND)**

HPED 109. Fundamentals of Team Sports **Credit 1(0-2)**
This course seeks to develop an understanding of the values and the logic behind exercise and sports activity and regular habits of exercise, to determine the physical fitness needs of the student with the nature, basic rules, techniques and skills of a wide variety of popular American sports and guide students into activities which will be of most interest and benefit students now and in the future. **(DEMAND)**

HPED 110. Aerobic Training **Credit 1(0-2)**
This course emphasizes the improvement of cardiovascular fitness through various forms of aerobic activity. **(DEMAND)**

HPED 111. Fundamentals of Gymnastics **Credit 1(0-2)**
In this course, students will develop an understanding of the basic skills and knowledge in the olympic-gymnastic events through a performance oriented experience. Students will perform on the vault, balance beam, parallel bars, horizontal bar, side horse, rings and floor exercise. The course provides a performance oriented gymnastic experience. **(DEMAND)**

HPED 112. Fundamentals of Dance **Credit 1(0-2)**
In this course, students will develop an understanding of the following concepts: Kinesthietic awareness of how body movement is controlled, and the elimination of muscular tension. **(DEMAND)**

HPED 113. Beginning Tennis **Credit 1(0-2)**
This course is a study of the basic skills and knowledge of tennis. **(DEMAND)**

HPED 114. Beginning Golf **Credit 1(0-2)**
This course is a study of the basic skills and knowledge of golf. **(DEMAND)**

HPED 115. Beginning Bowling **Credit 1(0-2)**
This course is a study of the basic skills and knowledge of bowling. **(DEMAND)**

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. **(DEMAND)**

HPED 117. Beginning Badminton **Credit 1(0-2)**
This course is a study of the basic skills and knowledge of badminton. **(DEMAND)**

HPED 118. Water Aerobics **Credit 1(0-2)**
This course is a physical fitness course designed to develop cardiovascular endurance, muscular strength, endurance and flexibility via exercises in the swimming pool. Swimming skills are not required. **(DEMAND)**

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 120. Beginning Sailing **Credit 1(0-2)**
This course is designed to teach students the basic skills of dinghy sailing as outlined by United States Sailing and the American Red Cross. **(DEMAND)**

HPED 121. Beginning Tae Kwon Do Credit **1(0-2)**
This course is designed to provide students through active participation fundamental skills; cultural etiquette, values and terminology as well as historical and scientific information pertaining to Tae Kwon Do. **(F;S;SS)**

HPED 122. Beginning Self Defense Credit **1(0-2)**
This course introduces the student to basic self defense principles and values. Active class participation is a requirement in order to proficiently demonstrate application of these concepts at the end of the course. **(F;S;SS)**

HPED 123. Volleyball Credit **1(0-2)**
This course is designed to introduce and instruct students in basic volleyball techniques, rules and strategies. **(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 200. Personal Health **Credit 2(2-0)**
This course is designed to study personal health needs and problems. It emphasizes the acquisition of health knowledge and skills needed to critically analyze and evaluate health practices. **(F;S;SS)**

HPED 203. Weight Management **Credit 2(1-2)**
This course is a study of the principles and applications of proper weight management. It includes assessment, physiological and psychological aspects of weight control, and activities related to weight management. **(S)**

HPED 205. Intermediate Swimming **Credit 1(0-2)**
This course teaches the student intermediate/advanced swimming skills necessary to meet American Red Cross Level Five standards. Prerequisite: HPED 105 or consent of instructor. **(F;S;SS)**

HPED 207. Intermediate Racquetball **Credit 1(0-2)**
This course teaches the student intermediate level racquetball skills, techniques and strategies. Prerequisite: HPED 107 or consent of instructor. **(DEMAND)**

HPED 213. Intermediate Tennis **Credit 1(0-2)**
This course teaches intermediate level tennis skills, techniques and strategies. Prerequisite: HPED 113 or consent of instructor. **(DEMAND)**

HPED 214. Intermediate Golf **Credit 1(0-2)**
This course teaches intermediate level golf skills, techniques and strategies. Prerequisite: HPED 114 or consent of instructor. **(DEMAND)**

HPED 215. Intermediate Bowling **Credit 1(0-2)**
This course teaches intermediate level bowling skills, techniques and strategies. Prerequisite: HPED 115 or consent of instructor. **(DEMAND)**

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;~~SS~~)**

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 229. Movement and Dance **Credit 1(0-2)**
This course is designed to study basic locomotor and axial movements in dance. It includes group problem solving utilizing the elements of time, space and force to create dance works. **(DEMAND)**

HPED 231. Developmental Movement and Dance **Credit 2(1-3)**
This course is designed to study basic locomotor and axial movements. It includes elements of time, space and force to create dance works. Students will also study folk, square, social and aerobic dance. **(F;S) (Majors only)**

HPED 235. Flag Football and Basketball **Credit 1(0-2)**
This course is designed to study the basic skills and knowledge of basketball, field hockey and softball. It includes the history, terminology, skill techniques, strategies and knowledge of rules and officiating. **(DEMAND)**

HPED 237. Group Games and Outdoor Leisure **Credit 1(0-2)**
This course is designed to study the basic skills and knowledge of group games and outdoor leisure pursuits. It includes group games suitable for the gym, playground and camps, and outdoor leisure pursuits such as camping, backpacking, frisbee, orienteering and canoeing. **(DEMAND)**

HPED 246. Tennis and Golf **Credit 1(0-2)**
This course is designed to study the basic skills and knowledge of tennis and golf. It includes the history, terminology, skill techniques, strategies and knowledge of rules. **(DEMAND)**

HPED 251. Soccer and Volleyball **Credit 1(0-2)**
This course is designed to study the basic skills and knowledge of soccer and knowledge of soccer and volleyball. It includes the history, terminology, skill techniques, strategies and knowledge of rules and officiating. **(DEMAND)**

HPED 263. Rhythms **Credit 1(0-2)**
This course examines suitable types of rhythmical activities for students including fundamental movements, folk, tap, social dance and singing games. **(DEMAND)**

HPED 401. Field Experience **Credit 3(0-3)**
This course is designed to provide an introductory practical experience in applying theoretical knowledge and skills through assisting professionals in physical fitness/wellness and recreation programs. Students are presented the opportunity to relate theory to practice through observation and experience.

HPED 442. First Aid and Safety **Credit 2(1-2)**
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 the home, school and community. **(F;S;SS)**

HPED 458. Lifeguard Training **Credit 2(1-2)**
This course provides students with aquatic skills and knowledge to meet American Red Cross Lifeguard Training. It includes American Red Cross certification in Standard First Aid. **(DEMAND)**

HPED 459. Water Safety Instructor **Credit 2(1-2)**
This course provides students with skills and knowledge to meet American Red Cross standards for Water Safety Instructor. It includes American Red Cross certification in Health Services Education. **(DEMAND)**

HPED 590. Fitness Management Internship **Credit 6(0-12)**
This course will provide in-depth practical work experience with public or private physical fitness/wellness programs emphasizing the development of management skills. **(SS)**

DIRECTORY OF FACULTY

Phoebe B. Ajibade ..... **Assistant Professor**
B.S., Radford University; M.S., Old Dominion University; Ed.D., The George Washington University

Paul K. Ankomah ..... **Associate Professor**
B.A., University of Ghana, Legon; M.S., Wilfrid Laurier University; Ph.D., Texas A&M University

David Boger ..... **Professor**
B.S., Livingstone College; M.S., NM Highlands University; Ph.D., University of Mexico

Deborah J. Callaway ..... **Associate Professor**
B.S., Virginia State College; M.Ed., Virginia Commonwealth University; Ed.D., Virginia Polytechnic Institute and State University

Yongchul Chung ..... **Assistant Professor**
B.S., Seoul National University; M.S., Ph.D., University of North Carolina at Greensboro

Teresa Dail ..... **Assistant Professor**
B.S., Wake Forest University; M.S., University of North Carolina at Chapel Hill; Ph.D., University of North Carolina at Greensboro

Regina A. Epps ..... **Lecturer**
B.A., Charter Oaks State College; M.S., North Carolina A&T State University

Tiffany Fuller ..... **Instructor**
B.S., M.S., North Carolina A&T State University

Shawn Hendrix ..... **Lecturer**
B.S., High Point University

Robert Trent Larson ..... **Associate Professor and Interim Chairperson**
B.S., M.S., Brigham Young University; Ph.D., University of New Mexico

Diana Melton ..... **Assistant Professor**
B.S., Springfield College; M.S., Ed.D., University of North Carolina at Greensboro

Gloria M. Palma ..... **Associate Professor**
B.S.E., University of the Philippines; M.S., Ph.D., Washington State University

Venita Roberson ..... **Assistant Professor**

B.A., Langston University, M.Ed., University of Central Oklahoma; Ph.D., Temple University
Jerono Rotich..... **Assistant Professor**
B.S., Kenyatta University; M.S., State University of New York; Ph.D., University of North Carolina at Greensboro
Brenda Swearingin..... **Instructor**
B.S., M.S.; University of Arkansas; ; Ph.D., University of North Carolina at Greensboro
Richard Watkins ..... **Instructor**
B.S., High Point College; M.S., North Carolina A&T State University
Daniel Webb ..... **Assistant Professor**
B.S., Coppin State College; M.S., University of Wisconsin; Ph.D., Ohio State University
Shemena M. Wiggins..... **Instructor**
B.S., M.S., Winston Salem State University

SCHOOL OF TECHNOLOGY

http://www.ncat.edu/~sot

Benjamin Uwakweh, Dean

The primary focus of the School of Technology is to prepare individuals who are uniquely proficient in the application of basic science and technology. Thus, faculty of the school 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.

Curriculum and programs of the school are continually reviewed by advisory groups associated with the various professions represented by the school. Based upon this input, the curriculum is reflective of what business, industry and education need.

Programs of the school that are designed to prepare individuals for industry are built upon a technical-management orientation. Thus, graduates pursue career opportunities in a variety of fields ranging from research and design to inspection, distribution and service. Graduates are employed as project managers, quality control engineers, operation officers, shift superintendents, employment managers, safety engineers, occupational health specialists, construction managers, loss prevention representatives, etc.

Several of the programs of the School are designed to prepare individuals for a variety of educational careers. These, graduates are employed as technology education or industrial vocational education instructors at the secondary and post-secondary levels. In addition, many education program graduates are employed in the private and governmental sectors in a variety of occupational areas.

The specific objectives of the school are as follows:

1. To provide an environment which nurtures individual development and creativity through scholarly pursuits;
2. To provide a basic knowledge of management skills and problem solving techniques;
3. To develop scientific and technological proficiency through organized instruction and research;
4. To prepare persons to secure positions in industrial-technical training and teaching at the secondary and post-secondary level;
5. To prepare persons to secure positions of a technical-management nature in business, industry, and government; and
6. To provide advanced technological competencies and leadership in the utilization of computers in industry, business, and technical settings.

ACCREDITATION

The undergraduate programs are as follows: construction management, electronics technology, graphic communication systems, manufacturing systems, and occupational safety and health. These programs are accredited by the Association of Technology, Management, and Applied Engineering (ATMAE). Industrial Technology is a field of study designed to prepare technical and/or management oriented professionals for employment in business, industry, education, and government. The undergraduate and graduate teacher preparatory programs are accredited by the National Council For Accreditation of Teacher Education (NCATE) and approved by the State Department of Public Instruction (SDPI). The Technology Education program is also certified by the International Technology Education Association (ITEA).

DEGREES OFFERED

Construction Management – Bachelor of Science
Electronics Technology – Bachelor of Science
Graphic Communication Systems – Bachelor of Science
Manufacturing Systems – Bachelor of Science
Occupational Safety and Health – Bachelor of Science
Technology Education – Bachelor of Science

Information Technology – Master of Science*
Technology Education – Master of Science*
Industrial Technology – Master of Science*
** See the Graduate School Bulletin*

GENERAL PROGRAM REQUIREMENTS

Admission requirements for entering students in the School of Technology are the same as those for the University. Transfer students must have a 2.0 GPA overall. 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 construction management, electronics technology, graphic communication systems, manufacturing systems and vocational industrial education with advanced classification by submitting their credentials to the University Admissions Office. The school also has several 2+2 agreements with area community colleges. The maximum number of transfer credits allowed with the Associate Degree Program is 64 semester hours or approximately junior status.

Department of Construction Management & Occupational Safety and Health

http://www.ncat.edu/~cms/index.html

Robert B. Pyle, Interim Chairperson

OBJECTIVES

The Department of Construction Management & Occupational Safety and Health at North Carolina Agricultural and Technical State University prepares men and women in the scientific, managerial, and supervisory areas required in the programs of construction management and occupational safety and health.

The program in Construction Management (CM) emphasizes all areas of construction from the viewpoint of the contractor/constructor. This includes developing, planning, estimating, scheduling, managing, and supervising the construction of structures.

The program in Occupational Safety and Health (OSH) 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.

DEGREES OFFERED

Construction Management – Bachelor of Science
Occupational Safety and Health – Bachelor of Science

GENERAL PROGRAM REQUIREMENTS

The admission of students to the undergraduate degree program in the Department of Construction Management & Occupational Safety and Health is based upon the general admission requirements of the University.

DEPARTMENTAL REQUIREMENTS

Students who desire to matriculate in the Department of Construction Management and Occupational Safety and Health must have a strong background in math, science and communication skills. Some 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 Construction Management and Occupational Safety and Health from other disciplines within the University must have a minimum of 2.50.

Students majoring in Construction Management or Occupational Safety and Health must complete a minimum of 126 semester hours of University courses. Included in these 126 semester hours are major courses, which must be completed in order to receive the Bachelor of Science degree in the respective field.

ACCREDITATION

The degree programs in Construction Management and Occupational Safety and Health are accredited by the National Association of Industrial Technology.

The Construction Management degree program is also accredited by the American Council for Construction Education.

CAREER OPPORTUNITIES

Graduates of our Construction Management and Occupational Safety and Health program are very successful in gaining employment in industry, government, and business as supervisors, managers, engineers, technical salespersons and researchers.

REQUIRED MAJOR COURSES FOR CONSTRUCTION MANAGEMENT

CM 100	CM 310	CM 594
CM 150	CM 317	CM 596
CM 190	CM 318	CM 598
CM 214	CM 320	CM 600
CM 215	CM 410	CM 601
CM 216	CM 412	CM 650

CURRICULUM GUIDE FOR CONSTRUCTION MANAGEMENT

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	ENGL 101	3
MATH 111	4	UNST 140	3
UNST 110	3	MATH 112	4
UNST 120	3	CHEM 106/116	4
CM 100	3	CM 150	3
UNST 130	3		17
	17		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Elective	3	UNST Cluster Elective	3
PHYS 225/235	4	PHYS 226/236	4
SPCH 250	3	GCS 292	3
HPED Elective	1	CM 215	3
CM 190	3	CM 320	3
CM 214	3		16
	17		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Elective	3	UNST Cluster Elective	3
CM 216	3	CM 318	3
CM 310	3	ECON 200	3
CM 317	4	ACCT 203	3
CM 594	3	CM 410	3
	16		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CM 596	3	CM 598	3
CM 600	3	CM 601	3
BUAD 422	3	CM 650	3
CM 412	3	Elective	1
PSYC 320	3	BUAD 426	3
	15		13

Total Credit Hours: 126

REQUIRED MAJOR COURSES FOR OCCUPATIONAL SAFETY AND HEALTH

OSH 201	OSH 413	OSH 516
OSH 210	OSH 414	OSH 632
OSH 312	OSH 416	OSH 672
OSH 411	OSH 513	

CURRICULUM GUIDE FOR OCCUPATIONAL SAFETY AND HEALTH

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3	OSH 201	3
MATH 111	4	MATH 112	4
CHEM 106	3	CHEM 107	3
CHEM 116	1	CHEM 117	1

	15		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Elective	3	UNST Cluster Elective	3
PHYS 225	3	PHYS 226	3
PHYS 235	1	PHYS 236	1
MFG 191	3	CHEM 221	3
BIOL 361	4	CHEM 223	2
OSH 210	3	ENGL 101	3
	17	OSH 312	3
			18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Elective	3	UNST Cluster Elective	3
HPED 200	2	MATH 224	3
OSH 413	4	OSH 416	4
OSH 411	3	OSH 414	3
PSYC 445	3	CM 320	3
	15		16

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
SPCH 250	3	BUAD 461	3
BUAD 422	3	OSH 632	3
OSH 516	3	OSH Elective	3
OSH 513	3	OSH 672	3
OSH CO-OP Elective	3	Free Elective	1
	15		13

Total Credit Hours: 126

COURSE DESCRIPTIONS IN CONSTRUCTION MANAGEMENT

CM 100. Computer Applications in Construction Management **Credit 3(2-2)**
This course will give students an introduction to historical perspectives of the construction industry. Emphasis is placedon computer applications, career opportunities, types of construction processes, specifications and related technology. This course will present an overview of the construction industry, career opportunities, types of construction, general construction 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: CM100. **(S)**

CM 190. Construction Materials **Credit 3(2-2)**
This course will provide a comprehensive overview of the structure, properties, and application of construction materials and their integration into building systems. The laboratory exercises will focus on construction materials, soils and concrete testing. The structure of the course will follow the format of the Construction Specification Institute (CSI). Prerequisite: CM 100. **(F)**

CM 214. Construction Surveying **Credit 3(2-3)**
This course provides an introduction to surveying theories, principles, and practices. Methods of leveling, angle measurements, property survey, topographic and construction layout will be studied. Care and use of surveying instruments will be emphasized. Prerequisite: MATH 111. **(F)**

CM 215. Residential Construction and Codes **Credit 3(2-2)**
The content of this course includes the principles of light frame construction foundations, framing, exterior finish and related areas of layout, estimating, materials procurement, and conventional and modular component systems. Special emphasis will be placed on applicable building codes, ordinances, and blueprint reading. Prerequisite: CM 190. **(S)**

CM 216. Construction Methods and Equipment Commercial/Industrial Construction Methods and Equipment **Credit 3(2-2)**
This course focuses on the construction methods and equipment currently used on commercial/industrial building projects. Special emphasis will be placed on site layouts, foundations, structural systems, exterior and interior finishings. Prerequisite: CM 215. **(F;S;S)** Principles of heavy construction methods and procedures will be studied. Current

construction practices for industrial/commercial projects, site layout, foundations, structural systems, exterior and interior finishing, and equipment will be emphasized. Prerequisite: CM 215. **(F)**

CM 256. Introduction to Building Information Model (BIM) Credit 3(2-2)

This course is a study of BIM technology as it is applied to various building types and their respective building systems. Emphasis is placed on research and integration of architectural, structural, MEP, specifications and cost estimating of building systems for decision modeling using BIM. Prerequisites: CM 310 or permission by instructor. **(F;S;S)**

CM 300. Industrial Experience I CM 497. 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.

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 301. Industrial Experience II CM 498. Industrial Experience II Credit 3(3-0)

Continuation of CM 300. 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.

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. Prerequisite. CM 300 **(F;S;SS)**

CM 310. Principles of Structures Construction Structures I 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 strenght of materials will be included. Prerequisites: PHYS 225/235 and CM 215. **(F,S,S)**

This course will focus on analysis and evaluation of structural elements and systems and their integration into building design. Study of forces, force systems, building structural mechanics, statics, and strength of materials will be included. Prerequisites: PHYS 225/235 and CM 215. **(F)**

CM 317. Construction Estimating Credit 4(2-4)

This course is designed to enable the student to gain competency in estimating the amount of materials, time, labor, and equipment required to complete construction projects. A practical approach is emphasized in the estimating process to simplify preparation of formal estimates. Prerequisites: Math 111 and CM 216. **(F)**

CM 318. Advanced Construction Estimating Credit 3(2-2)

The focus of this course is on the general concepts of computer applications in construction estimating. Special emphasis will involve the utilization of selected commercial estimating software. A comprehensive estimating project is required for completion of the course. Prerequisite: CM 317, (F,S,S)The focus of this course is on the general concepts of computer applications in construction estimating. Special emphasis will involve the utilization of selected commercial estimating software. A comprehensive estimating project is required for completion of the course. Prerequisite: CM 317. **(S)**

CM 320. Construction Safety Credit 3(3-0)

This is a study and evaluation of OSHA standards and regulations as they relate to the construction industry. Safety requirements on various construction operations will be analyzed and discussed. Also, students will learn the principles of safety management, accident prevention, and safety program development methods. Prerequisite: Sophomore standing. **(F;S;SS)**

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)**

CM 348. 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. Prerequisites: PHYS 225/235 and CM 310. **(F;S;S)**

CM 410. Structural Systems Construction Structures II Credit 3(2-2)

This course focuses on advanced structural principals 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 310. **(F;S;S)**

This course focuses on advanced structural principles and practices in construction. Topics of discussions 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 310. **(S)**

CM 412. Mechanical, Electrical & Plumbing Systems in Construction Mechanical and Electrical Systems in Construction **Credit 3(2-2)**

This course covers the basic principles and advanced practices in the selection, installation, operation, and maintenance of mechanical and electrical equipment for buildings. Topics include Plumbing system; Water supply and design; Sanitary drainage system and design; HVAC and Cooling systems; Electrical and lighting systems, and applicable codes. Prerequisite: Junior standing. **(F;S;S)**

This course covers the basic principles and advanced practices in the selection, installation, operation, and maintenance of mechanical and electrical equipment for buildings. Topics include water supply systems, HVAC systems, electrical systems, and the applicable codes. Prerequisite: Junior standing. **(F)**

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 indepth analysis of green building systems, planning, assessment, and implementation. Prerequisites: CM 216; CM 412. (F,S,S)

CM 490. Human Relations in Construction **Credit 3(3-0)**

This course provides a study of work place issues, which will aid the students in getting along with people on the job, in the community, and the home. The units of work in class will include ethics, rights, obligations, employee/employer responsibilities, and state and federal regulations. **(S)**

CM 500. Senior Capstone Project I CM 600. Senior Seminar **Credit 3(3-0)**

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. Prequisites: Senior standing, CM 320, 348, 460. **(F;S:S)**

The seminar will address how to develop a comprehensive proposal for an actual construction project. Prerequisite: Senior standing. **(F)**

CM 570. Environmental Controls, AC and Heating Systems **Credit 4(2-4)**

This course includes the study of principal equipment, design, and load calculations for cooling and heating layouts and controls employed in various types of systems. This course is augmented by a practical design problem. Prerequisite: CM 216. **(F)**

CM 571. Commercial Refrigeration, Heating and Ventilation **Credit 4(2-4)**

This course is a study of steam systems, hot water systems, warm air systems and electrical systems used in heating buildings; load calculation for walk-in cooler and deep freezer and drinking water fountains; and special refrigerating devices and applications. Prerequisites: CM 570. **(S)**

CM 590. Heavy Construction Methods **Credit 3(3-0)**

This course focuses on the methods and equipment used in the heavy construction industry: highway, airport, dam construction. The methods will include haulage system design and analysis; fleet design and equipment scheduling; drilling and blasting; compaction and stabilization; dewatering systems and equipment. In addition, the economics of these methods and equipment will also be discussed. Prerequisites: CM 216, Senior Standing, CM Major or Permission of Instructor. **(F;S;S)**

CM 592. Project Management **Credit 3(3-0)**

This is an introductory course in project management principles including the development of project management and organizational skills for technology, engineering and business applications. Other topics include materials management, computer applications, and ethical issues relevant to project management. **(F;S;SS)**

CM 594. Construction Planning, Scheduling and Control **Credit 3(2-2)**

This course will focus on actual planning, scheduling and controlling of construction projects. Students will define specific activities and work tasks, prepare work schedules, measure performance, and evaluate options. Students will learn to develop presentations of accurate and timely information by appropriate computer software. Prerequisite: CM 216. **(F)**

CM 596. 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 construction a building project – commercial or residential. Construction estimating and scheduling for the comprehensive project are developed, and financial reports of the business are prepared, using appropriate software. Prerequisites: ACCT 203, BUAD 425, Senior Standing and CM Major. **(F;S;S)**

This course will provide students with skills in bookkeeping methods and financial analysis for constructors. Factors that impact on contractors' credit image will be discussed along with job management and tax planning. Prerequisites: ACCT 203 and CM 216. **(F)**

CM 598. Construction Management (Formerly CM 413) **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 594 and 596. **(S)**

CM 599. 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 or senior standing. **(F;S;SS)**

CM 601. Senior Capstone Project II **Credit 3(3-0)**

This course prepares students to become project managers by having students develop a final set of descriptive specific construction documents; including production drawings and specifications. The students will review and discuss contracts, ethics, construction administration and management as they relate to the project. Prerequisite. Senior Standing and CM 500. **(F;S:S)**

CM 603. Environmental Technology for Construction **Credit 3(3-0)**

The environmental issues facing the construction industry are studied. Issues include site management, water supply, storm water management, sewage disposal, solid and hazardous waste management, air and noise pollution. Emphasis will be placed on local, state and federal standards that impact upon construction projects during each phase from design to completion. Prerequisite: Senior standing. **(F)**

CM 617. Independent Studies I **Credit 3(3-0)**

Study is arranged on a special construction topic of interest to the student and faculty member, who will act as advisor. Consent of instructor required. Senior or Graduate Standing. **(F;S;SS)**

CM 618. Independent Studies II **Credit 3(3-0)**

Study is arranged on a special construction topic of interest to the student and faculty member, who will act as advisor. Consent of instructor required. Senior or graduate standing. **(F;S;SS)**

CM 650. 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 594 or equivalent. Senior or Graduate Standing. **(S)**

CM 675. Advanced Construction Planning and Scheduling **Credit 3(2-3)**

The planning, scheduling, and organizing of construction projects to control time, costs and other resources are studied. Emphasis is on advanced preparation, analysis, and control of network schedules, using computers and a variety of software. Prerequisite: CM 594 or equivalent. Senior or Graduate Standing. **(F;S;SS)**

CM 678. Real Estate and Land Development **Credit 3(3-0)**

This course will provide an overview of land planning and development. A step-by-step description of the land development process and the relationship of each of the steps to the overall process will be the main focus. Topics to be covered include regulatory and financial elements as they relate to the development process such as zoning, floor area rations, development bonus for amenities, zoning variances, building permits and inspections, real estate taxes, development districts, historic preservation, market feasibility studies, financial analysis, management, and leasing processes. Prerequisite: CM 216 or equivalent. Senior or Graduate Standing. **(F)**

CM 690. Special Problems in Construction Management **Credit 3(3-0)**

Study is arranged on a special construction management topic of interest to students and faculty member who will act as advisor. Topics may be analytical and/or experimental and require independent study with a construction industry partner. Consent of instructor and construction industry partner. Senior or Graduate Standing. **(F;S;SS)**

CM 692. Project Management **Credit 3(3-0)**

This is an advanced 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. Prerequisite: CM 598. Senior or Graduate Standing. **(S)**

COURSE DESCRIPTIONS IN OCCUPATIONAL SAFETY AND HEALTH

OSH 201. Introduction to Occupational Safety and Health **Credit 3(3-0)**

This course is an introduction to the standards of the Occupational Safety and health 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;SS)**

OSH 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)**

OSH 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)**

OSH 220. Safety and Security Management **Credit 3(3-0)**
This course provides students with the technical know how to effectively communicate after the September 11, 2001 disaster and their need to manage, ensure and receive the necessary resources for organizational success. It examines new risk assessment models and proactive strategic planning concepts. It places emphasis on measurable metrics as applied to dealing with workplace violence, anti-terrorism and other security threats. Prerequisites: OSH 201 or consent of the instructor. **(F;S;S)**

OSH 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. **(S)**

OSH 305. Fire Protection Law **Credit 3(3-0)**
This course covers Fire Protection Law. Topics include torts, legal terms, liability, review of case histories and other related topics. Upon completion the student should be able to discuss laws, codes and ordinances as they relate to the fire service. Prerequisite: OSH 205. **(S)**

OSH 312. Accident Investigation Analysis and Records **Credit 3(2-2)**
This course is an introduction to the basic principles of accident investigation including the importance, use, scope, and requirements of accident investigation. An emphasis is placed on casual analysis and the people, position, parts, and paper relevant to accident investigation. Topics of discussion also include record-keeping and reporting requirements of federal, state, and local agency standards. Prerequisite: OSH 201. **(S)**

OSH 393. Safety Management **Credit 3(3-0)**
This course focuses on the industrial manager's role in preventing accidents, protecting workers' health and maintaining safety awareness in the workplace. **(SS)**

OSH 394. Environmental Health **Credit 3(3-0)**
This course begins with the major concepts and principles of environmental health, emphasizing the chemical, biological and physical agents and factors that constitute a risk to humans. The principles and methods of risk assessment and risk management are identified and used throughout the course as a unifying theme. Prerequisite: OSH 201. **(S)**

OSH 405. Portable and Fixed Extinguishing Systems **Credit 3(3-0)**
This course provides a study of various types of fixed and portable extinguishing systems, their operation, installation and maintenance. Topics include applications, testing and maintenance of Halons, carbon dioxide, dry chemical and special extinguishing agents in fixed portable systems. Upon completion, students should be able to identify various types of fixed and portable systems, including their proper application and maintenance. Prerequisite: OSH 305. **(F)**

OSH 411. Hazardous Materials for the Safety Professional **Credit 3(2-2)**
This course is an introduction to the principles of liquid and solid hazardous waste management. An emphasis is placed on pertinent federal regulatory legislation and environmental effects of released contaminants. Prerequisite: CHEM 107 or equivalent. **(F)**

OSH 413. Industrial Hygiene I **Credit 4(3-3)**
This course is an overview of the principles of industrial hygiene. An emphasis is placed on the quantitative evaluation of physical and chemical work-place hazards and pertinent standards of the Occupational Safety and Health Administration. Topics of discussion include industrial noise, particulate, solvents, hazard communication, heat stress, and biohazards. Reference is made to the anatomical systems affected by exposures. Laboratory work emphasizes hands-on experience with state-of-the-art industrial hygiene survey equipment. Prerequisites: PHYS 226 and 236 or equivalent CHEM 107 or equivalent BIOL 361 and MATH 111 or equivalent. **(F)**

OSH 414. Principles of Fire Prevention **Credit 3(2-2)**
This course is an introduction to the principles of fire prevention and fire theory. An emphasis is placed on the Life Safety Code of the National Fire Protection Agency and pertinent standards from the Occupational Safety and Health Administration. Prerequisites: CHEM 107 or equivalent, and OSH 312. **(S)**

OSH 415. Standards and Regulations in Occupational Safety and Health **Credit 3(3-0)**
This course is an overview of regulatory compliance in the field of occupational safety and health. An emphasis is placed on the Occupational Safety and Health Administration standards for general industry and construction. Prerequisite: OSH 201. **(S)**

OSH 416. Industrial Hygiene II **Credit 4(3-3)**
This course is a continuation of OSH 413. Topics of discussion include ionizing radiation, non-ionizing radiation, ergonomics, toxicology, industrial ventilation, general ventilation, and respiratory protection. An emphasis is placed on methods of control of work place hazards. Prerequisite: OSH 413. **(S)**

OSH 417. Introduction to Job Search, Internship and Work Environment **Credit 3(3-0)**
A course designed to develop practical job search and internship skills to increase the student's options and opportunities for locating immediate and appropriate job sites. Emphasis will be placed on developing the self-knowledge, grammar, and skills necessary to write a traditional resume, participate in a job interview, personal profile, and develop a plan of action for employment in the local job market. Prerequisites: OSH 210 or consent of the instructor. **(F;S;S)**

OSH 426. Terrorism and Workplace Safety **Credit 3(3-0)**
This course provides students with the tools and skills to understand theory behind terrorism. Historical background, definitions, tactics, ideologies and terrorism's impact on twenty-first century civilization around the world will be explored. Both current and historical events are analyzed within course context to provide experiential learning and development of critical thinking skills. Prerequisites: OSH 210 or consent of the instruction. **(F;S;S)**

OSH 497.Industrial Experience I **Credit 3(3-0)**
Students must work in industry during one semester or summer (300 hours) in their major field and complete all Departmental requirements. They will be evaluated on reports from on-site supervisors and the University coordinator. **(F)**

OSH 498.Industrial Experience II **Credit 3(3-0)**
Students must work in industry during one semester or summer (300 hours) in their major field and complete all Departmental requirements. They will be evaluated on reports from on-site supervisors and the University coordinator. **(S)**

OSH 505. Fire Fighting Strategies **Credit 3(3-0)**
This course provides preparation for command of initial incident operations involving emergencies within both the public and private sector. Topics include incident management, fire-ground tactics and strategies, incident safety and command/control of emergency operations. Upon completion, students should be able to describe the initial incident system as it relates to operations involving various emergencies in fire and non-fire situations. In addition, students study fire strategies as they relate to selected NFPA standards. Prerequisite OSH 405. **(F)**

OSH 510. Workplace Violence Prevention and Reaction **Credit 3(3-0)**
This course provides students with an understanding of the holistic and systems approach towards preventing and responding to workplace violence. Students learn how to design a multidisciplinary strategy involving senior management, union officials, human resource managers, labor law attorneys, employee assistance program professionals, security, safety, public relations and maintenance. Prerequisites. OSH 312 or consent of the instructor. **(F;S;S)**

OSH 513. Human Factors **Credit 3(2-2)**
This course is an overview of the discipline of human factors. Emphasis is placed on ergonomics and the hazards of physical work, including cumulative trauma disorders, lower back injuries, and over-work. Topics of discussion include system theory and reliability calculation, cost/benefit analysis, signal detection theory, human perception, and anthropometry. Prerequisite: PSYC 445 or equivalent. **(S)**

OSH 515. Evaluation for Occupational Safety and Health **Credit 3(1-4)**
This course is an introduction to technical writing for the occupational safety and health profession. An emphasis is placed on documentation of calibration and analytical methods for industrial hygiene hazard evaluation. Prerequisite: OSH 210. **(S)**

OSH 516. Occupational Safety and Health Management **Credit 3(3-0)**
This course is an overview of the application of management principles to the establishment and maintenance of occupational safety and health programs. An emphasis is placed on written safety and health programs in compliance with standards from the Occupational Safety and Health Administration. Prerequisites OSH 312 and BUAD 422. **(F)**

OSH 517. Materials Handling for the Safety Professional **Credit 3(2-3)**
This course is an introduction to the recognition, evaluation, and control of work place hazards associated with the handling of materials. An emphasis is placed on the materials handling and storage standards of the Occupational Safety and Health Administration. Prerequisites: OSH 210 and MATH 111 or equivalent. **(S)**

OSH 555. 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. **(S)**

OSH 599. Independent Study in Occupational Safety and Health **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)**

OSH 600. Environmental & Occupational Toxicology I **Credit 3(3-0)**
This course is a basic survey of the principles of toxicology. Emphasis will be placed on the effects of common industrial toxicants; absorption, distribution, secretion and biotransformation of toxicants; and toxicological assay methods. Mechanisms of action, testing, risk assessment, carcinogenesis, ontogenesis, receptors, toxicological evaluation and host/environmental interactions will be discussed. Prerequisites: CHEM 107 and BIOL 361. Senior or Graduate Standing. **(F)**

OSH 613. Industrial Hygiene Ventilation **Credit 3(3-0)**
This course is an introduction to the design of local exhaust ventilation systems for the control of airborne contaminants. An emphasis will be placed on the velocity pressure method of predicting system performance and minimization of total installation and operational costs. Prerequisite: OSH 416. Senior or Graduate Standing. **(S)**

OSH 614. Industrial Relations **Credit 3(3-0)**
This course is an overview of legislation and methods pertinent to the practice of occupational safety and health in the human resource environment. Emphasis is placed on total quality management, anti-discrimination legislation, wage and hour law, workers' compensation, training for safety, behavioral aspects of safety, and the process of health and safety inspections of the Occupational Safety and Health Administration. Prerequisite: OSH 416. Senior or Graduate Standing. **(F)**

OSH 617. Independent Study I **Credit 3(3-0)**
Study is arranged on a special Occupational Safety and Health topic of interest to the student and faculty member. The faculty member will act as the advisor of the project. Consent of instructor is required. Senior or Graduate Standing. **(F;S)**

OSH 630. Industry Safety **Credit 3(3-0)**
This course is an in-depth OSHA certification review of the rules and regulations for general industry. Students will review the current OSHA standards contained in the 29 CFR 1910 regulations. Prerequisite: OSH 415 Senior or Graduate Standing. **(F)**

OSH 632. Design of Engineering Hazard Controls **Credit 3(2-2)**
This course is an overview of the design and assessment of engineering controls for the abatement of health and safety hazards in the work-place. An emphasis is placed on cost benefit analysis, and technical and financial feasibility. Topics of discussion include industrial noise abatement, industrial ventilation, machine guarding, and walking and working surfaces. Prerequisites: OSH 416, MFG 191 and 491. Senior or Graduate Standing. **(F)**

OSH 637. Machine and Welding Safety **Credit 3(3-0)**
This course covers the general safety practices and precautions that all welders and safety professionals should follow during welding procedures. Topics such as health factors, ventilation, hot-work management, safe practices and personal protective equipment are covered. Further hazards related to welding such as: electrical shock, arc radiation, air contamination, fire and explosion and compressed gasses are studied. Prerequisites: OSH 312 and PHYS 226. Senior or Graduate Standing. **(SS)**

OSH 642. Electrical Safety **Credit 3(3-0)**
This course is an overview of the identification and control of the fire and electrocution hazards of electrical wiring and equipment. An emphasis is placed on the National Electric Code and electrical standards of the Occupational Safety and Health Administration found in the Code of Federal Regulations. Prerequisites: OSH 312, PHYS 226 Senior or Graduate Standing. **(S)**

OSH 655. Systematic Approaches to Emergency Management **Credit 3(3-0)**
This course introduces students to the dynamics of management practice and provides them with a wide variety of management techniques available to them as emergency management professionals. In addition, it will help participants gain an integrated picture of the management process as well as the skills required for effecting organizational change, increasing managerial and service efficiency, implementing program improvements and establishing systems for program evaluation. Prerequisite: Senior or Graduate Standing. **(F)**

OSH 656. Impact of Disaster on Cultures and Communities **Credit 3(3-0)**
This course is designed to equip the student with an overview of emergency management, focusing on the effects of disasters on different populations and the current disaster response measures in place. The class structure is based on the life cycle of emergency management. Prerequisite: Senior or Graduate Standing. **(S)**

OSH 658. Disaster and Emergency Management Policies **Credit 3(3-0)**
This course examines the structure and missions of local, state, national and international emergency management agencies and their relationships with public safety and voluntary organizations and other regulatory agencies. Prerequisite: Senior or Graduate Standing. **(S)**

OSH 659. Values and Ethics for Administrative Decision Making **Credit 3(3-0)**
This course will provide students with a comprehensive understanding of the major traditions of ethical reflection and the implications for the emergency manager. Students will be challenged to clarify and reflect critically on their values and ethical standards. Prerequisite: Senior or Graduate Standing. **(F)**

OSH 660. Risk Management and Boiler Safety **Credit 3(3-0)**
This course provides a comprehensive study of risk management and boiler safety including concepts, methodologies and applications. It includes systematic approaches to risk identification, risk modeling, risk impact assessment, response planning and documentation. Prerequisite: Senior or Graduate Standing. **(S)**

OSH 670. Research Methods in Occupational Safety and Health **Credit 3(3-0)**
This course provides students with tools to research emergency and disaster management problems as diverse as the social aspects of hurricane evacuation, behavior change in employee emergency preparedness programs and applying a cost dimension to traditional risk assessment. Prerequisite: Senior or Graduate Standing. **(S)**

OSH 672. 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. **(S)**

OSH 678. Experiential Education I **Credit 3(3-0)**
To satisfy the requirements of this course, students must engage in cooperative activities within industry, government agencies, or consulting firms. Work responsibilities must include significant hazard assessment activities. Conditions of experience are supervised by department faculty. Senior or Graduate Standing. **(F;S)**

OSH 679. Experiential Education II **Credit 3(3-0)**
To satisfy the requirements of this course, students must engage in intern activities within industry, government agencies, or consulting firms. Work responsibilities must include significant hazard assessment activities. Conditions of experience are supervised by department faculty. Senior or Graduate Standing. **(F;S)**

DIRECTORY OF FACULTY

Horlin Carter.....**Associate Professor**
B.A., M.S., Marshall University; Ph.D. Michigan State University

Tony Graham .....**Assistant Professor**
B.S., North Carolina A&T State University, M.S. and Ph.D., Morgan State University

Iman Moore .....**Instructor**
B.S., M.S. North Carolina A & T State University

Andrea Ofori-Boadu .....**Instructor**
B.S., University of Science and Technology; Ghana; M.S., North Carolina A&T State University

Robert B. Pyle.....**Professor and Interim Chairperson**
B.A., M.A., Trenton State College; Ph.D., University of Pittsburgh

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B.E., Poona, India; M.S., Illinois State University; Ph.D., Texas A&M University

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B.S., North Carolina A&T State University; M.S., Pittsburgh State University; DIT University of Northern Iowa

Syrulwa L. Somah.....**Associate Professor**
B.S., Empire State College State University of New York; M.S., Central Michigan University; M.S., University of Oklahoma; Ph.D., The Union Institute

Michael D. Taggart .....**Assistant Professor**
B.S., University of S.C.; M.S., University of S.C.; Ph.D., University of S.C.; M.P.H.

Lewis S. Waller.....**Assistant Professor**
B.S., M.S., North Carolina A&T State University; Ph.D.; Capella University

Frank E. Yeboah .....**Assistant Professor**
M.E.; Technical University of Clausthal, Germany; D.Eng-Sc.; Columbia University of New York

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Department of Electronics, Computer, and Information Technology

http://www.ncat.edu/~ecit

Clay Gloster, Jr., Chairperson

OBJECTIVES

The Department of Electronics, Computer, and Information Technology (ECIT) 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 electronics technology. The ECIT department emphasizes development of "real world" competencies demanded by employers. Students receive thorough grounding in electronics; digital and microprocessor systems; computer technologies computer networking; communication systems; electrical power systems; and automation and control systems. Additional emphasis is placed on courses in business management, statistical process control, safety, project management, and manufacturing processes. Such courses instill an appreciation for the economic and managerial aspects of the business enterprise.

DEGREES OFFERED

Electronics Technology (General) – Bachelor of Science
Electronics Technology (Information Technology) – Bachelor of Science
Electronics Technology (Computational Technology) – Bachelor of Science
Information Technology – Master of Science*
Information Technology – Master of Science in Industrial Technology*
Electronics and Computer Technology – Master of Science in Industrial Technology*

** See the Graduate School Bulletin*

CERTIFICATE IN RADIO FREQUENCY & MICROWAVE WIRELESS COMMUNICATION SYSTEMS

The Department of Electronics, Computer, and Information Technology administers the Certificate in Radio Frequency and Microwave Wireless Communication Systems. The certificate program in Radio Frequency and Microwave Wireless Communication Systems requires a total of 15 credit hours to complete. Under the supervision of a certificate faculty advisor, students will take 6 credit hours of required core courses, select 6 credit hours of elective courses and complete a required 3 credit hours of independent study focusing on one or more selected wireless topics. The 3 credit hours of independent study would assure that the certificate program maintains a certain level of "hands-on" training by requiring students to complete a project.

Required Core Courses (6 hours): ECT 650 and 665
Elective Courses (6 hours): ECT 634, 655, 660, 670, 675, 680, and 690
Required Project Course (3 hours) ECT 699

GENERAL PROGRAM REQUIREMENTS

The admission of students into the undergraduate degree program in the Department of Electronics, Computer, and Information Technology is based upon the general admission requirements of the university.

DEPARTMENTAL REQUIREMENTS

Electronics, Computer, and Information Technology majors, regardless of concentration, must complete 128 semester hours of coursework and a minimum grade of "C" must be earned in all major courses. Electronics, Computer, and Information Technology students earning a Bachelor of Science in Electronics Technology, with a concentration in Information Technology, entering Fall 2004 or after must earn a grade of "C" or better in all courses in the major and in all mathematics and science (chemistry, physics) courses required for graduation.

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 transferring to the Department of Electronics, Computer, and Information Technology from other disciplines must have a minimum of 2.0 overall G.P.A., except for the Information Technology program, which requires an overall G.P.A. of 2.5.

ACCREDITATION

The Association of Technology, Management, and Applied Engineering (ATMAE) accredits all undergraduate degree programs in the department.

CAREER OPPORTUNITIES

ECIT 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 General Dynamics, IBM, Anheuser-Busch, Tyson, JP Morgan Chase, Alcoa, Wachovia, Lucent Technologies, AT&T, John Deere, Cisco Systems, Accenture, and numerous public agencies.

REQUIRED MAJOR COURSES FOR ELECTRONICS TECHNOLOGY

ECT 101	ECT 211	ECT 312
ECT 120	ECT 212	ECT 313
ECT 198	ECT 213	ECT 314
ECT 201	ECT 298	ECT 398
ECT 598		

CURRICULUM GUIDE FOR ELECTRONICS TECHNOLOGY

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100 or ECT 103	1	ECT 104	0
UNST 110	3	UNST 130	3
UNST 120	3	UNST 140	3
MATH Elective[1,2]	4	ECT 201	3
ECT 101	3	ECT 211	3
ECT 120	3	MATH Elective[1,2]	4
ECT 119[8]	0		16

17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Elective[3]	3	CHEM 106[4]	3
ECT 198	1	CHEM 116[4]	1
ECT 213	3	UNST Cluster Elective[3]	3
MATH Elective[1,2]	3	ECT 312	3
ECT 212	3	ECT 313	3
GCS 292	3	Statistics Elective[7]	3
	16		16

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Elective[3]	3	UNST Cluster Elective[3]	3
ECT 298	2	SPCH 250	3
ECT 314	3	PHYS 226	3
PHYS 225	3	PHYS 236	1
PHYS 235	1	ECT/ITT Technical Elective[5]	3
ECT 350	3	ECT 360	3
ECT 355	3		16
	18		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BME Elective[6]	3	BME Elective[6]	3
BME Elective[6]	3	BME Elective[6]	3
BME Elective[6]	3	ECT 598	3
ECT 398	2	ECT/ITT Technical Elective[5]	3
ECT/ITT Technical Elective[5]	3		12
ECT/ITT Technical Elective[5]	3		
	17		

Total Credit Hours: 128

[1] *A prerequisite of MATH 110 is recommended for students lacking high school Advanced Algebra and Trigonometry..*
[2] *Student must select at least 11 credits from the following list: MATH 110, MATH 131, MATH 132, MATH 231, MATH 431.*
[3] *Student must choose one cluster and take 12 credit hours in that cluster..*
[4] *A prerequisite of CHEM 099 is recommended for students lacking high school Chemistry.*
[5] *See an advisor for a list of approved Electronics, Computer and Information Technology Electives.*
[6] *See an advisor for a list of approved Business, Management, and Economics Electives.*
[7] *Students must select at least 3 credits from the following list: AGEC 405, ECON 304, MATH 224, SOCI 203.*
[8] *Students can take ECT 121 instead of ECT 119*

CURRICULUM GUIDE FOR ELECTRONICS TECHNOLOGY (Information Technology)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100 or ECT 103	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3	ECT 104	0
ITT 111	3	ECT 101	3
ECT 120	3	ITT 185	3
MATH 131	4	MATH 132	4
	17		16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
GCS 292	3	SPCH 250	3
UNST Cluster Theme Elective[5]	3	MATH 224	3
ITT 298	1	UNST Cluster Theme Elective[5]	3
ITT 305	3	ITT 240	3
ECT 201	3	ITT 325	3
MATH 123	3		15
	16		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elective[5]	3	UNST Cluster Theme Elective[5]	3
ITT 398	2	ITT 315	3
ITT 355	3	Science Elective & Lab[4]	4
Science Elective & Lab[4]	4	ITT 330	3
ITT 300	3	ITT Technical Elective[2]	3
ITT 329	3		16
	18		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ITT Technical Elective[2]	3	BME Elective[3]	3
ITT 498	2	BME Elective[3]	3
BUAD 220	3	ITT Technical Elective[2]	3
BME Elective[3]	3	ITT 598	3
ITT Technical Elective[2]	3	ITT Technical Elective[2]	3
	14		15

Total Credit Hours: 127

[1]*A prerequisite of MATH 110 is recommended for students lacking high school Advanced Algebra and Trigonometry*
[2]*See an advisor for a list of approved Information Technology Electives*
[3]*See an advisor for a list of approved Business, Management, and Economics Electives*
[4]*See an advisor for a list of approved Science courses*
[5]*See an advisor for a list of University Studies Theme Cluster Electives*

CURRICULUM GUIDE FOR ELECTRONICS TECHNOLOGY (Computational Technology)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100 or ECT 103	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3	ECT 104	0
ECT 101	3	ECT 201	3
ITT 111	3	ITT 112	3
ECT 120	3	MATH 131[1]	4
	16		16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
GCS 292	3	CHEM 106/116[3]	4
UNST Cluster Theme Elective[2]	3	UNST Cluster Theme Elective[2]	3
ITT 298	1	ITT 340	3
ITT 329	3	ITT 430	3
ITT 420	3	ITT 432	3
MATH 132	4		16
	17		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elective[2]	3	UNST Cluster Theme Elective[2]	3
ITT 398	2	SPCH 250	3
PHYS 241/251	4	PHYS 242/252	4
ITT 433	3	ITT 434	3
BME Elective[5]	3	Computational Tech Elective[4]	3
Computational Tech Elective[4]	3		16
	18		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ITT 435	3	BME Elective[5]	3
ITT 498	2	Computational Tech Elective[4]	3
BME Elective[5]	3	Computational Tech Elective[4]	3
BME Elective[5]	3	ITT 598	3
Computational Tech Elective[4]	3		12

Computational Tech Elective[4]	3
	17

Total Credit Hours: 128

[1]*A prerequisite of MATH 110 is recommended for students lacking high school Advanced Algebra and Trigonometry*
[2]*Student must choose one cluster and take 12 credit hours in that cluster*
[3]*A prerequisite of CHEM 099 is recommended for students lacking high school Chemistry*
[4]*See an advisor for a list of approved Computational Technology Electives*
[5]*See an advisor for a list of approved Business, Management, and Economics Electives*

COURSE DESCRIPTIONS IN ELECTRONICS AND COMPUTER TECHNOLOGY

ECT 101. Microcomputer Applications **Credit 3(2-2)**
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;S;SS)**

ECT 103. Colloquium 1: University Experience **Credits 1(0-2)**
This colloquium will emphasize the role of the University Studies program and present a broad overview of the curriculum structure and rationale, including an introduction to a variety of interdisciplinary themes within the UNST program. Introductory discussions on ethics, wellness and healthy lifestyles, diversity and civic engagement will be included. 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 technology. Prerequisites: None **(F;S;SS)**

ECT 104. Colloquium II **Credit 0(0-1)**
This course is a continuation of ECT 103. It provides a forum for dialogue among students, industry, and academia to work in partnership to define current and emerging issues in technology. Prerequisites: ECT 103 **(F;S;SS)**

ECT 119. Introduction to Electronic Circuit Fabrication Techniques **Credit 0(0-1)**
This course introduces the basic skills required for electrical/electronics technologist. Topics include soldering, desoldering, safety practices, test equipment, American Wire Gauge (AWG) table, the resistor color code, electronic symbols and schematics, and use of hand tools. This class will be graded on a pass/fail basis. **(F;S;SS)**

ECT 120. Quantitative Fundamentals of Electronics and Computer 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)**

ECT 121. Electronic Circuit Fabrication Techniques **Credit 1(0-2)**
This course is designed to facilitate the integration of electronic circuit construction techniques into multiple electronic courses. This course is further designed to teach the student how to construct electronics circuits on breadboards and printed circuit boards. The students will also be exposed to the technique of hand soldering. **(F;S;SS)**

ECT 197. Co-Operative Training in Industry I **Credit 1(0-2)**
This course allows students to earn university credit while they are employed as an intern or on cooperative assignment in industry. Students must be employed for the entire semester on assignments that are representative of the student's field of study in the department. The student and employer will be required to submit reports and evaluations on the experience to the departmental internship coordinator by the conclusion of the semester the student enrolled into the course. Prerequisites: ECT 120. **(F;S;SS)**

ECT 198. Freshman Project **Credits 1(0-3)**
Under the direction and guidance of departmental faculty, the student will perform independently selected laboratory experiments to reinforce concepts and experimental techniques learned in the first year of study in the major. In addition, the student will build and test a series of approved software and electronic projects. Each project will be accompanied by an exam which will test the student's understanding of basic concepts underlying the project. Prerequisites: ECT 101, 120, 201, and 211. **(F;S;SS)**

ECT 201. Introduction to Computer Programming **Credit 3(2-2)**
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. Prerequisites: ECT 101. **(F;S;SS)**

ECT 203. Colloquium III **Credit 0(0-1)**
This course is a continuation of ECT 104. This course provides a forum for dialogue among students, industry, and academia to work in partnership to define current and emerging issues in technology. Prerequisites: ECT 104 **(F;S;SS)**

ECT 204. Colloquium IV **Credit 0(0-1)**
This course is a continuation of ECT 203. This course provides a forum for dialogue among students, industry, and academia to work in partnership to define current and emerging issues in technology. Prerequisites: ECT 203 **(F;S;SS)**

ECT 211. Electric Circuits I **Credit 3(2-2)**
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. Prerequisites: ECT 120 and MATH 110 or 111. **(F;S;SS)**

ECT 212. Electric Circuits II **Credit 3(2-2)**
This course is a continuations of Electric Circuits I. Topics include network analysis, power factor correction, complex impedance, polyphase systems, filters, resonance, and simple dynamos. Prerequisite: ECT 211. **(F;S;SS)**

ECT 213. Digital Circuits **Credit 3(2-2)**
This course deals with digital logic fundamentals. Topics include combinational and sequential circuits and systems. Karnaugh maps and software tools are utilized. Prerequisite: ECT 211. **(F;S;SS)**

ECT 297. Co-Operative Training in Industry II **Credit 1(0-2)**
The description of this course is the same as ECT 197 and is normally the second co-op experience of the student. This course allows students to earn university credit while they are employed as an intern or on cooperative assignment in industry. Students must be employed for the entire semester on assignments that are representative of the student's field of study in the department. The student and employer will be required to submit reports and evaluations on the experience to the departmental internship coordinator by the conclusion of the semester the student enrolled into the course. Prerequisites: ECT 197, 212, 213. **(F;S;SS)**

ECT 298. Sophomore Project **Credits 2(0-4)**
Under the direction and guidance of departmental faculty, the student will perform independently selected laboratory experiments to reinforce concepts and experimental techniques learned in the second year of study in the major. In addition, the student will build and test a series of approved software and electronic projects. Each project will be accompanied by an exam, which will test the student's understanding of basic concepts underlying the project. Prerequisites: ECT 212, 213, 312, and 313. **(F;S;SS)**

ECT 299. Survey of Electronics and Computer Technology **Credit 3(2-2)**
This course provides a comprehensive introductory survey of analog and digital electronics. Some of the topics covered in this course include: voltage, current, resistance, types of electronic components and circuits, semiconductor devices, and hands-on lab instructions. This course is intended as a bridge course for non-majors who are interested in taking more advance electronics, computer and information technology classes. Prerequisites: MATH 102 or 110 or 111 or ECT 120. **(F;S;SS)**

ECT 312. Electronic Devices and Circuits I **Credit 3(2-2)**
This course provides a comprehensive treatment of topics in electronic devices. Topics to be covered include basic to advance theories of electronics devices such as diodes, Bipolar-Junction transistors, and Operational amplifiers with hands on laboratories to be complemented by the use of software simulation packages. Prerequisites: ECT 212 or 299. **(F;S;SS)**

ECT 313. Electronic Microcomputer Systems I **Credit 3(2-2)**
This course addresses the programming and interfacing of microcomputer based systems. Prerequisite: ECT 213. **(F;S;SS)**

ECT 314. Electronic Devices and Circuits II **Credit 3(2-2)**
This course is a continuation of ECT 312. This course is designed to give the student an understanding of the fundamental theories and applications of electronic devices such as Junction Field-Effect Transistors, Metal Oxide Semiconductor Field-Effect Transistors, Operational Amplifiers, Thyristors, and active filters. The course will include hands on laboratories which will be complemented by the use of software simulation packages. Prerequisites: ECT 312. **(F;S;SS)**

ECT 330. Robotics and Controls I **Credit 3(2-2)**
This course deals with the fundamentals of first and second order electromechanical dynamic systems, frequency and time domain analysis of the systems, sensors and actuators, structure and specification of industrial robots, and robot control fundamentals. Prerequisites: ECT 312 and MATH 132. **(F;S;SS)**

ECT 334. Electronic Instrumentation **Credit 3(2-2)**
This course is designed to develop basic competencies related to components and circuits used in instrumentation to include basic transistor configurations; voltage regulators; integrated circuit operational amplifiers, amplifier feedback principles and DC to DC converters. Prerequisite: ECT 312. **(F;S;SS)**

ECT 350. Communications Systems **Credit 3(2-2)**
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: ECT 312. **(F;S;SS)**

ECT 355. Electrical Power and Machinery **Credit 3(2-2)**
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: ECT 212. **(F;S;SS)**

ECT 360. Industrial Electronics and Controls **Credit 3(2-2)**
This course addresses the role of electronic circuits and control systems in industry. The topics include application of power semiconductor devices for conversion and control of electrical energy, electromechanical devices, fundamentals of open and closed loop control systems, process control, and Programmable logic controllers. Prerequisite: ECT 312. **(F;S;SS)**

ECT 390. Special Topics in Electronics, Computer, and Information Technology **Credit 3(2-2)**
This course is used to introduce new topics in the field of electronics, computer or information technology. The subject matter will be identified prior to the beginning of the course. Prerequisite: Consent of chairperson. **(F;S;SS)**

ECT 397. Co-Operative Training in Industry III **Credit 2(0-4)**
The description of this course is the same as ECT 197 and is normally the third co-op experience of the student. This course allows students to earn university credit while they are employed as an intern or on cooperative assignment in industry. Students must be employed for the entire semester on assignments that are representative of the student's field of study in the department. The student and employer will be required to submit reports and evaluations on the experience to the departmental internship coordinator by the conclusion of the semester the student enrolled into the course. Prerequisites: ECT 297 and 312. **(F;S;SS)**

ECT 398. Junior Project **Credits 2(0-4)**
Under the direction and guidance of departmental faculty, the student will perform independently selected laboratory experiments to reinforce concepts and experimental techniques learned during the third year of study. In addition, the student will build and test a series of approved software and electronic projects. Each project will be accompanied by a formal report on the project. Also examinations will be given to test the student's understanding of basic concepts underlying the projects. Technical writing and project management skills will be emphasized throughout the course. Prerequisites: Junior Standing. **(F;S;SS)**

ECT 399. Independent Study in Electronics, Computer and Information Technology **Credit 3(0-6)**
This course allows a student to select a technical problem from the fields of electronics, computer or information technology for special research and study in consultation with a faculty member in the area of interest. Prerequisite: Consent of instructor. **(F;S;SS)**

ECT 413. Electronic Microcomputer Systems II – Embedded Systems **Credit 3(2-2)**
This project oriented course will introduce students to standalone measurement and control systems. Programming and interfacing at both the hardware and software level will also be emphasized. Prerequisite: ECT 313. **(F;S;SS)**

ECT 414. Introduction to Semiconductor Device Physics and Fabrication **Credit 3(2-2)**
The course provides basic treatment of the physics of semiconductor materials and of solid state electronics and photonic devices (eg. low frequency diodes, bipolar transistors, microwave Gunn diodes, semiconductor lasers, etc.). Techniques used in micro-, nano-, and mems- technologies for fabricating devices are detailed. Laboratory work includes simple measurements and tests of semiconductor materials and device characteristics. Prerequisites: PHYS 242, 252, ECT 314. **(F;S;SS)**

ECT 430. Robotics and Controls II **Credit 3(2-2)**
The course is the continuation of ECT 330. Emphasis of the course will be on the details of control systems, foundations and principle of robotic manipulation, and detailed case studies of the existing systems. The course will also discuss the programming, design and building of a prototype robot. Prerequisite: ECT 330. **(F;S;SS)**

ECT 460. Industrial Electronics and Controls II **Credit 3(2-2)**
This course is the continuation of ECT 360. Emphasis is on the analysis of complex industrial control systems, robotics, advanced topics in programmable logic controllers, and the role of electronics in industry. Prerequisite: ECT 360. **(F;S;SS)**

ECT 497. Co-Operative Training in Industry IV **Credit 2(0-4)**
This course allows students to earn university credit while they are employed as an intern or on cooperative assignment in industry. Students must be employed for the entire semester on assignments that are representative of the student's field of study in the department. The student and employer will be required to submit reports and evaluations on the experience to the departmental internship coordinator by the conclusion of the semester the student enrolled into the course. Prerequisite: ECT 397. **(F;S;SS)**

ECT 498. Co-Operative Training in Industry V **Credit 2(0-4)**
The description of this course is the same as ECT 497. This course allows students to earn university credit while they are employed as an intern or on cooperative assignment in industry. Students must be employed for the entire semester on assignments that are representative of the student's field of study in the department. The student and employer will be required to submit reports and evaluations on the experience to the departmental internship coordinator by the conclusion of the semester the student enrolled into the course. Prerequisite: ECT 497. **(F;S;SS)**

ECT 598. Senior Project: A Capstone Experience **Credit 3(0-6)**
Under the direction and guidance of departmental faculty, the student will perform independently selected laboratory experiments to reinforce concepts and experimental techniques learned during the fourth year of study. In addition, the student will build and test a series of approved software and electronic projects. Each project will be accompanied by a formal report on the project. Also examinations will be given to test the student's understanding of basic concepts underlying the projects. Technical writing and project management skills will be stressed throughout the semester. Prerequisite: Senior Standing. **(F;S;SS)**

ECT 599. Independent Study **Credit 3(0-6)**
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 (6) 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 standing with department chair approval. **(F;S;SS)**

Undergraduate/Graduate

ECT 600. Electromechanical Systems Analysis **Credit 4(4-0)**
This course deals with the fundamentals of electrical and mechanical dynamical systems. Frequency and time domain analysis techniques are utilized. Electrical and mechanical applications of first and second order linear differential and difference equations are examined through transform techniques. Specialized applications software packages are examined. Prerequisite: Departmental approval. **(F;S;SS)**

ECT 613. Advanced Digital Circuits **Credit 3(2-2)**
This course will place emphasis on logic families, state machines, shift registers, timers, analog-to-digital, digital-to-analog, programmable logic devices, and practical development of digital systems. Prerequisites: ECT 313 or consent of instructor. **(F;S;SS)**

ECT 614. Microelectronic Fabrication Technology **Credit 3(1-4)**
This course provides basic lab works on processes as wafer preparation, oxidation, photolithography, doping and deposition used in semiconductor device fabrication. Wafer test equipments, measurement/evaluation techniques, as well as clean room microcontamination control and operation/safety practices are taught through industry field trips and hands-on experiments. Economics and industrial production control issues are examined. Students project on simple mask-making, and fabricating a working transistor-based IC. Prerequisite: ECT 314 or 414. **(F;S;SS)**

ECT 615. Introduction to Semiconductor Manufacturing Equipment Technology **Credit 3(1-4)**
This course teaches basic industrial instrumentation (electrical and non-electrical) and automation, as well as associated fundamental concepts used to develop various applications for the semiconductor industry. This course covers various industrial applications including: Vacuum theory and technology, Design and Installation of industrial clean room facilities and equipments for photolithography, CVD/PVD,RF plasma, etc. Prerequisites: ECT 360 and 414. **(F;S;SS)**

ECT 616. Applied Materials, Semiconductors, and Superconductivity **Credit 3(2-2)**
This course covers band theory of solids, crystal imperfections; mechanical and thermal properties; microscopic theory of conductivity, polarizability, permeability, including high frequency effect; Elemental and compound semiconductors; Introduction to BCS theory of superconductivity, Josephson tunneling, type II superconductors. Laboratory experiments conducted in the course includes: basic measurements of mechanical, chemical, thermal, electrical and magnetic properties of various electronic materials; fabrication and testing of solar cells, Josephson junction, cryogenics, and vacuum deposition of films. Prerequisites: PHYS 225, 226, 235, and 236. **(F;S;SS)**

ECT 617. Advanced Solid State Devices **Credit 3(2-2)**
This course covers band model and carrier transport in semiconductors; excess carriers; Interfaces; Physics of the p-n junction and MOS sandwich; IC design at low frequencies for TTL, CMOS, and analog circuitry. The course also includes a broad review of the theory/design/fabrication of monolithic, film, heterojunction, and high frequency semiconductor devices involving quantum dots/wires, mesoscopic devices, Rf Gunn effect, laser sources etc. for integrated optics, nanotechnology, and quantum computing. Students shall use advanced simulation tools for extensive numerical modeling of semiconductor devices and fabrication processes. Prerequisite: ECT 414. **(F;S;SS)**

ECT 635. Analysis and Design of Mechatronic Systems **Credit 3(1-4)**
This course deals with the principles of analyzing and designing mechatronics systems. This course includes a review of logic gates, microprocessor architecture, sensors and actuators, A/D and D/A conversion techniques, real-time multi-tasking programming concepts, and direct digital control implementation. The course includes "hands-on" experiences through several laboratory assignments and a final team project. Prerequisites: ECT 201, 312, 313. **(F;S;SS)**

ECT 640. Electronic Automated Testing Systems **Credit 3(2-2)**
This course addresses the fundamentals of electronic automated testing systems. Topics include: Production, reliability, and maintenance testing. Various types of Automated Test Equipment (ATE) are addressed, including Built in Test Equipment (BITE) and stand alone systems. Prerequisite: ECT 360. **(F;S;SS)**

ECT 645. Power Electronics I **Credit 3(2-2)**
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. Prerequisites: ECT 314 and 355 or graduate standing. **(F;S;SS)**

ECT 681. 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: ECT 355. **(F;S;SS)**

ECT 682. Controls and Applications of Electric Machines **Credit 3(3-0)**
This course will cover the dynamics and control of different applications of electric machines, such as DC machines, synchronous machines, polyphase induction machines and fractional horsepower machines. This course will investigate the dynamics and control of electric machines driven by electronic power converters. Prerequisite: ECT 355. **(F;S;SS)**

ECT 683. Electric Power Quality for the Digital Economy **Credit 3(3-0)**
This course will cover the causes, consequences and solutions of power quality problems that affect the operation of computerized processes and electronic systems. This course will discus the industry standards, monitoring techniques and economic consideration of power quality issues. Prerequisite: ECT 355. **(F;S;SS)**

ECT 684. Energy and Environmental Policy **Credit 3(3-0)**
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. Prerequisite: ECT 355. **(F;S;SS)**

ECT 685. Energy Power and the Environment **Credit 3(3-0)**
This course will cover the basic concepts of electric power generation, utilization, and power networks. How total energy consumption and the global economy, affects the environment will be studied. Prerequisite: ECT 355. **(F;S;SS)**

ECT 686. Energy Management and Environmental Impact in the Energy Market **Credit 3(3-0)**
The purpose of this course is to provide state-of-the-art education in the field of power generation and energy utilization in a deregulated competitive energy services market. Prerequisite: ECT 355. **(F;S;SS)**

ECT 690. Special Problems in Electronics and Computer Technology **Credit 3(3-0)**
This lecture course is used to introduce new topics in the field of electronics and computer technology. The subject matter will be identified prior to the beginning of the course. Prerequisite: Departmental approval. **(F;S;SS)**

ECT 695. Alternate 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. Also, this course will provide the background knowledge of the characteristics of direct conversion, electromechanical conversion, and storage devices used in alternate energy systems. This course will also cover power system issues associated with integration of small scale energy sources into the electricity grid will be fully investigated. Prerequisite: ECT 355 or departmental approval. **(F;S;SS)**

ECT 699. Independent Study in Electronics and Computer Technology **Credit 3(3-0)**
The student selects a problem (technical or managerial) in consultation with a faculty member in an area related to Electronics Technology or Computer Technology or Telecommunications or Networking. The student along with the faculty member defines the problem's objectives and a solution is pursued. Prerequisite: Graduate standing. **(F;S;SS)**

INFORMATION AND TELECOMMUNICATION TECHNOLOGY

ITT 236. Applied C Programming I **Credit 3(2-2)**
This course covers the study of programming language structure concepts for microcomputers. The course emphasizes programming in C and its application to software and hardware development for technological applications. Topics covered in the course include C operators, flow control statements, function, pointers and arrays, I/O structures and library routines. Prerequisite: ECT 201. **(F;S;SS)**

ITT 237. Applied C++ Programming I **Credit 3(2-2)**
This is an introductory course in computing in C++. The course places emphasis on algorithm development and problem solving. Particular elements include: careful and methodical development of C++ programs from specifications; documentation and style; appropriate use of control structures, data types and subprograms; data abstraction and verification; numeric and nonnumeric applications; introduction to object-oriented programming and design. Prerequisite: ECT 201. **(F;S;SS)**

ITT 238. Applied RPG Programming I **Credit 3(2-2)**
This course introduces computer programming using the Report Program Generator (RPG) programming language. Topics include input/output operations, sequence, selection, iteration, arithmetic operations, arrays/tables, and other related topics. Upon completion, students should be able to design, code, test, and debug RPG language programs. Prerequisite: ECT 201. **(F;S;SS)**

ITT 239. Applied Visual Basic Programming I **Credit 3(2-2)**
A course covering the fundamentals of the Windows GUI (Graphical User Interface) operating system and Visual Basic as a Windows-based application development language. This course will use practical problems to illustrate application-building techniques as well as take advantage of new capabilities of building applications in a graphical environment, such as building special-purpose, professional-looking applications. Topics include input/output operations, sequence, selection, iteration, arithmetic operations, arrays, forms, sequential files, and other related topics. Prerequisite: ECT 201. **(F;S;SS)**

ITT 240. Applied JAVA Programming **Credit 3(2-2)**
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: ECT 201. **(F;S;SS)**

ITT 300. Introduction to Project Management for Information Technology Professionals **Credit 3(2-2)**
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. Prerequisites: Sophomore standing. **(F;S;SS)**

ITT 301. Managing, Maintaining, and Troubleshooting Hardware **Credit 3(2-2)**
This course will introduce the student to the practical hardware aspects of personal computers. Topics include installation of hardware, configuration, troubleshooting, and networking. Prerequisites: ECT 213 and sophomore standing. **(F;S;SS)**

ITT 302. Managing, Maintaining, and Troubleshooting **Credit 3(2-2)**
This course will introduce the student to the practical software aspects of personal computers. Topics include the installation of operating systems, configuration, and troubleshooting, and basic networking. Prerequisite: ITT 301. **(F;S;SS)**

ITT 303. Introduction to High Performance Computing **Credit 3(2-2)**
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. Prerequisite: ECT 213. **(F;S;SS)**

ITT 304. High Performance Computing Architecture and System Administration **Credit 3(2-2)**
Topics covered in this course include: classification and management of high performance computing clusters. The course also includes an in-depth study of high performance system board components, memory management, supporting input and output devices, troubleshooting, and disaster recovery techniques. Prerequisite: ITT 303. **(F;S;SS)**

ITT 305. Foundations of Storage Technology **Credit 3(2-2)**
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. Prerequisite: ITT 301 or consent of chairperson. **(F;S;SS)**

ITT 306. Storage Networking Technology **Credit 3(2-2)**
This course provides an in-depth study of networked storage technologies including Storage Area Networks (SAN) and Networked Attached Storage (NAS) environments. Prerequisites: ITT 305 or consent of chairperson. **(F;S;SS)**

ITT 307. Storage Networking Management **Credit 3(2-2)**
This course provides an in-depth study of management and data recovery processes for networked storage devices and systems. Prerequisite: ITT 305 or consent of chairperson. **(F;S;SS)**

ITT 315. Network Security Applications for Information Technology Professionals **Credit 3(2-2)**
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. Prerequisites: Sophomore standing. **(F;S;SS)**

ITT 320. Telecommunications Management **Credits 3(2-2)**
This course addresses fundamental principles of telecommunications management, which includes network management and administration, the telecommunications marketplace, and the planning and evaluation of systems. The technology of modern telecommunications systems is also reviewed. Prerequisite: Junior Standing. **(F;S;SS)**

ITT 325. Computer Database Management **Credits 3(2-2)**
This course focuses exclusively on the design and system issues related to distributed database systems. Students will learn the usage of different design strategies for distributed databases, and they will study query processing techniques and algorithms as well as transaction management and concurrency control concepts used in such systems. Design and implementation issues related to multi-database systems also will be discussed. In addition, the course focuses on applying the techniques learned in the course to commercial database management systems. Prerequisite: None. **(F;S;SS)**

ITT 329. Computer Networking I **Credit 3(2-2)**
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. Prerequisites: ECT 212 and 213 or 299. **(F;S;SS)**

ITT 330. Computer Networking II **Credit 3(2-2)**
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. Prerequisite: ITT 329. **(F;S;SS)**

ITT 337. Applied C++ Programming II **Credit 3(2-2)**
This course is a continuation of ITT 237 using C++ with structured programming principles. The course will solve representative technology problems using advanced C++ commands, with a focus on: writing in object oriented style, computer control of input/output port control, stand-alone executable code, and library linking for various applications. Prerequisite: ITT 237. **(F;S;SS)**

ITT 338. Applied RPG Programming II **Credit 3(2-2)**
This course is a continuation of ITT 238 using RPG with structured programming principles. Emphasis is placed on advanced arrays/tables, file management/processing techniques, sub-programs, interactive processing, sort/merge routines, and libraries. Upon completion, students should be able to design, code, test, debug, and document programming solutions. Prerequisite: ITT 238. **(F;S;SS)**

ITT 339. Applied Visual BASIC Programming II **Credit 3(2-2)**
This course is a continuation of ITT 239. The topics of the course are designed to provide the Visual Basic student with knowledge of additional tools, advanced concepts, and code syntax to create Visual Basic programs that conform to the Windows standards. The intent is to provide the student with advance knowledge to create programs that meet the demand of today's information technology environment. Prerequisite: ITT 239. **(F;S;SS)**

ITT 340. Introduction to Mainframe Operations **Credit 3(2-2)**
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: Junior standing. **(F;S;SS)**

ITT 350. Introduction to Database 2 (DB2) Concepts **Credit 3(2-2)**
This course covers the concepts, approaches, and techniques for using the Database Management Systems (DBMS) included with the Multiple Virtual Storage (MVS) operating system. Prerequisite: Junior standing. **(F;S;SS)**

ITT 355. Network Servers **Credit 3(2-2)**
This course covers the activities and methods required to assure productive and reliable operation of network servers. Topics include planning, installing, configuring, and maintaining servers, including knowledge of server-level hardware implementations, operating systems, data storage subsystems, data recovery, and I/O subsystems. Upon completion, students should be able to configure and maintain a network server. Prerequisite: Junior standing. **(F;S;SS)**

ITT 385. Economic and Social Impacts of Information Technology **Credits 3(2-2)**
This course is designed to assess critically the institutional forces that shape and create the demand for information technology (IT). It will also discuss how the consumption of IT impacts the economy and society. This course will help participants think about how changing social and economic conditions determine what technologies are consumed and how they are consumed, who consumes them and where they are consumed. Prerequisite: Junior standing. **(F;S;SS)**

ITT 398. Junior Project **Credits 2 (0-4)**
Under the direction and guidance of departmental faculty, the student will perform independently selected laboratory experiments to reinforce concepts and experimental techniques learned in the first two years of study in the major. In addition, the student will build and test project(s). Prerequisite: Junior standing. **(F;S;SS)**

ITT 401. Introduction to Parallel Programming **Credit 3(2-2)**
This course 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. Prerequisite: ECT 201 or consent of instructor. **(F;S;SS)**

ITT 420. Introduction to Unix/Linx **Credit 3(2-2)**
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. Prerequisite: ECT 201. **(F;S;SS)**

ITT 423. Computer Systems Architecture **Credit 3(2-2)**
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: ECT 313. **(F;S;SS)**

ITT 430. Linux Systems Administration **Credit 3(2-2)**
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: ITT 420. **(F;S;SS)**

ITT 431. Advanced Programming Techniques with an OOP Language **Credit 3 (2-2)**
This course uses programming examples (employing an object-oriented programming language such as Visual C++ / J++ to introduce concepts in advanced data structures (stacks, queues, trees, graphs, hash tables, etc.) and algorithms (sorting,

searching, etc.). Object-oriented programming techniques are also detailed. Application to design of large scale programs and software engineering. Prerequisite: ECT 201. **(F;S;SS)**

ITT 598. Senior Project: An Information Technology Capstone Experience **Credit 3(0-6)**

Under the direction and guidance of departmental faculty, the student will perform independently selected information technology (IT) laboratory experiments to reinforce concepts and experimental techniques learned during the four years of study. In addition, the student will build and test a series of approved IT projects. Each IT project will be accompanied by a formal report on the project. Also, examinations will be given to test the student's understanding of basic concepts underlying the projects. Technical writing and IT project management skills will be stressed throughout the course. Prerequisite: Senior standing. **(F;S;SS)**

Undergraduate/Graduate

ITT 600. Project Management for Information Technology **Credit 3(3-0)**

This course delves into the unique challenges of managing information technology projects, and offers a road map to success. The course is specifically designed to address the skills inventory and performance outcomes that a student needs to be successful in today's volatile information technology market. Prerequisite: Senior standing. **(F;S;SS)**

ITT 601. Wireless Application Protocols **Credit 3(2-2)**

This course takes you through the basics of Wireless Application Protocols (WAPs), and provides all the information needed to create WAP pages using the Wireless Markup Language (WML). The course will include an introduction to WAP and WML, cards and decks, text formatting elements, navigational commands in WML, and WML variables. Prerequisites: ECT 201 and junior standing. **(F;S;SS)**

ITT 602. Architecture of Networked Storage Technology **Credit 3(2-2)**

This course exposes students to the architecture and administration of networked storage solutions. It will also equip students with the knowledge to understand and explain storage networking concepts, the storage networking market and technologies, and key storage applications. Prerequisites: Consent of instructor. **(F;S;SS)**

ITT 605. Principles of Computer Networking **Credit 3(2-2)**

This course explores all the hardware and software that drives local and Internet computing. Special emphasis is placed on connectivity and throughput. Prerequisite: ECT 313. **(F;S;SS)**

ITT 610. Digital Communications I **Credit 3(2-2)**

The class will investigate digital communications systems for various signals including audio, video and data. Topics include: sampling, quantization, multiplexing, coding, modems, various compression schemes, signal impairments, and various digital modulation schemes. Prerequisite: ECT 350. **(F;S;SS)**

ITT 611. Digital Communications II **Credit 3(2-2)**

This course is a continuation of ECT 610. Emphasis is placed on multimedia networks and their supporting platforms. Topics include audio and video standards and compression schemes, cable modems and xDSL schemes. Prerequisite: ECT 610 or departmental approval. **(F;S;SS)**

ITT 615. Networking Security Applications **Credit 3(2-2)**

This course explores security terms, 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. Prerequisite: ITT 605. **(F;S;SS)**

ITT 620. Telecommunications Management **Credit 3(2-2)**

This course addresses fundamental principles of telecommunications management, which includes network management and administration, the telecommunications marketplace, and the planning and evaluation of systems. The technology of modern telecommunications systems is also reviewed. Prerequisite: ECT 350. **(F;S;SS)**

ITT 625. Computer Database Management **Credit 3(2-2)**

This course focuses exclusively on the design and system issues related to distributed database systems. Students will learn the usage of different design strategies for distributed databases, and they will study query processing techniques and algorithms as well as transaction management and concurrency control concepts used in such systems. Design and implementation issues related to multidatabase systems also will be discussed. In addition, the course focuses on applying the techniques learned in course to commercial database management systems. Prerequisite: ITT 600. **(F;S;SS)**

ITT 629. Computer Networking I **Credit 3(2-2)**

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. Prerequisites: ECT 212 and 213, or 299. **(F;S;SS)**

ITT 630. Computer Networking II **Credit 3(1-4)**

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. Prerequisite: ITT 629. **(F;S;SS)**

ITT 634. Electronic Instrumentation for Remote Sensing Applications **Credit 3(2-2)**
This course will provide practical knowledge of the operation of electronics instruments used in the applications of telemetry, remote sensing and detection. Possible electronic systems that will be discussed include RADAR, SONAR, LIDAR, and SODAR. Prerequisite: ECT 350 or departmental approval. **(F;S;SS)**

ITT 635. Administration and Security of Wireless Local Area Network I **Credit 3(2-2)**
This course will introduce students to wireless network protocols, access modes, portable communications and computing devices, management tools, security solutions, and current industry best practices for managing wireless networks in a secure environment. Case studies will be used throughout the course. Prerequisite: Junior standing. **(F;S;SS)**

ITT 640. Administration and Security of Wireless Local Area Network II **Credit 3(2-2)**
A continuation of ITT 635, this course provides students with an in-depth understanding of the security vulnerabilities to wireless networks and their corresponding countermeasures. This course includes training on practical methods for designing, configuring, testing, and maintaining wireless networks appropriate to their organizations' operating requirements. Prerequisite: ITT 635 or 646. **(F;S;SS)**

ITT 645. Analysis and Troubleshooting of Wireless LAN Systems **Credit 3(1-4)**
This course presents an in-depth understanding of the frame structure of 802.11 frames, frame exchange processes between wireless nodes, analyzing security solutions for both effectiveness and weaknesses, analyzing performance in both pure and mixed-mode environments, and using analyzers for site surveying and intrusion detection. Prerequisite: ITT 635 or 646. **(F;S;SS)**

ITT 646. Wireless Computer Networking I **Credit 3(2-2)**
This course covers a broad range of wireless computer networking topics including Wi-Fi, Bluetooth, WiMAX, ZigBee, and infrared wireless technology. The course covers wireless technologies and standards, hardware and software installation, radio frequency (RF) fundamentals, and wireless applications support and security. Prerequisite: Junior standing. **(F;S;SS)**

ITT 650. Wireless Communication Systems I **Credit 3(2-2)**
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: ECT 350. **(F;S;SS)**

ITT 655. Optical Communication Systems I **Credit 3(2-2)**
This course covers free space and fiber optic technologies (including lasers, optical amplifiers and optical filters) with applications to high-speed long distance systems, local area networks and communication systems. Prerequisite: ECT 350. **(F;S;SS)**

ITT 660. Satellite and Personal Communication Systems **Credit 3(2-2)**
This course covers the theory and practice of satellite communications including: orbits, launchers, spacecraft link budgets, modulation techniques, coding, multiple access techniques, propagation effects and earth terminals. Prerequisite: ECT 350. **(F;S;SS)**

ITT 665. Wireless Geo-location Systems I **Credit 3(2-2)**
This course will describe the basic concepts and mechanics of Global Positioning Systems (GPS) and Inertial Navigation Systems (INS). Practical applications of GPS, INS and GPS/INS will be covered. Simple algebraic mathematical calculations will be completed. Prerequisite: ECT 350 or departmental approval. **(F;S;SS)**

ITT 670. Communication Circuit Development Laboratory I **Credit 3(1-4)**
This course studies advanced methods of analysis of communication circuits including oscillators, radio frequency amplifiers, matching networks, modulators, mixers, and detectors for HF through UHF frequency range using Y- and S-parameter methods. Prerequisite: ECT 350. **(F;S;SS)**

ITT 675. Video Communication Systems **Credit 3(2-2)**
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). Prerequisite: ECT 350. **(F;S;SS)**

ITT 680. Radio Wave and Optical Signal Propagation **Credit 3(2-2)**
This courses models the behavior of unguided electromagnetic and optical waves in the atmosphere, space, urban and indoor environments. The course will also discuss path, frequency and antenna selection for practical radio wave communication systems. Prerequisite: ECT 350. **(F;S;SS)**

ITT 684. Introduction to Optical Information Processing **Credit 3(2-2)**
This course covers modern wave optics including the application of Fourier transforms to image analysis, optical spatial filtering, and image processing. Prerequisite: ECT 350 or permission of the instructor. **(F;S;SS)**

ITT 685. Ethical issues in Information Technology **Credit 3(3-0)**
This course explores issues on the interface between information technology and society, with a special focus on ethical issues. Topics include ethical theory, privacy and security, spam, electronic commerce, the digital divide, open source software, medical informatics, bioinformatics, actor-network theory, ethnomethodology, and some neo-classical economics. Prerequisite: Senior or graduate standing. **(F;S;SS)**

ITT 688. Microwave and Radar Systems Analysis **Credit 3(2-2)**
This is an advanced course in microwave and radar systems analysis with application to airborne and navigation systems. Prerequisites: ECT 314 and 350. **(F;S;SS)**

ITT 689. Antenna Systems Technology **Credit 3(2-2)**
This course provides knowledge in general properties of antennas, the electromagnetic theory behind their operation, and an overview of different antenna systems. Equal weight is placed on the electromagnetic aspects important for antenna design and on systems aspects. Among the systems discussed are radar, cellular, and adaptive antenna systems. Prerequisite: ECT 350. **(F;S;SS)**

DIRECTORY OF FACULTY

Chafic Abu-Saba ..... **Adjunct Assistant Professor**
B.S., Notre Dame University; M.S., Ph.D, North Carolina A&T State University

Thomas Avery..... **Assistant Professor**
B.S., Hampton Institute; M.S., North Carolina A&T State University

DeWayne Brown..... **Associate Professor**
B.S., University of South Carolina; M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University

Larry Burton ..... **Associate Professor**
B.S., M.S., PhD., Duke University

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

Fereshteh Fatehi..... **Professor and Interim Chairperson**
B.S., Shiraz University; M.S., Ph.D., Montana State University

Walter Gilmore..... **Assistant Professor**
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Claude Hargrove ..... **Assistant Professor**
B.S., B.S., M.S., Ph.D., North Carolina State University

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Li-Shiang Tsay..... **Assistant Professor**
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Yili Tseng ..... **Associate Professor**
B.S., National Taiwan University; M.S., University of Florida; M.S., Ph.D., University of Central Florida

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Department of Graphic Communication Systems and Technological Studies

http://www.ncat.edu/~gcsts

Brenda S. Faison, Chairperson

OBJECTIVES

The major objective of the Department of Graphic Communication Systems and Technological Studies (GCSTS) is to provide quality competency-based instruction so that men and women will be prepared to enter the fields of graphic communication systems, technology education, trade and industrial education, and training and development for industry. In addition, the Department assists majors in developing those critical competencies in the sciences, communications, mathematics, and technical specialties essential to securing positions in related industrial, business and government careers.

DEGREES OFFERED

Graphic Communication Systems (Computer Aided Drafting and Design) – Bachelor of Science
Graphic Communication Systems (Integrated Internet Technologies) – Bachelor of Science
Graphic Communication Systems (Printing and Publishing) – Bachelor of Science
Technology Education (Technology Education, Teaching) – Bachelor of Science
Technology Education (Trade and Industry Education, Teaching) – Bachelor of Science

Technology Education (Training and Development for Industry) – Bachelor of Science
Technology Education (Technology Education, Teaching) – Master of Science*
Technology Education (Technology Education, Teaching) – Master of Art Teaching*
Technology Education (Trade and Industry Education, Teaching) –Master of Science*
Technology Education (Trade and Industry Education, Teaching) –Master of Art Teaching *
Technology Education (Training and Development for Industry) – Master of Science*
Technology Education (Workforce Development Director) – Master of Science*
**See the Graduate School Bulletin*

GENERAL PROGRAM REQUIREMENTS

Student admission to undergraduate degree programs in the Department of Graphic Communication Systems and Technological Studies is based on general admission requirements of the University.

Admission, retention, and state licensure of students in technology education, teaching and trade and industrial education, teaching concentrations are based on policies described in the School of Education section of the Bulletin. Trade and Industrial Education, Teaching Concentration majors may be required to complete up to 600 hours of internship in the area of technical specialty if they lack at least that amount of relevant, verifiable work experience in the specialty area. This is in addition to the courses posted on the program of study. However, this internship may be counted toward any free electives or technical electives.

Persons with technical preparation and interest in training and development for industry which does not require teacher licensure may pursue a bachelor's degree in the Department of Graphic Communication Systems and Technological Studies. Students pursuing this option will not be recommended to receive teacher licensure in North Carolina.

Community college and technical institute graduates and other transfer students may be admitted to undergraduate Graphic Communication Systems and Technological Studies programs with advanced classification by submitting credentials to the University Admissions Office for individual assessment. The maximum transfer credit from Associate Degree technical programs is 64 semester hours or approximately junior status. Students transferring to the Department of Graphic Communication Systems and Technological Studies from other disciplines must have a minimum of 2.0 grade point average.

DEPARTMENTAL REQUIREMENTS

Graphic Communication Systems: Students are required to complete 126 semester hours of University course work. A minimum of 30 semester hours must be completed in the concentration. A minimum grade of "C" must be earned in all major courses. Students must maintain a grade point average of 2.0 or better for all course work.

Technology Education: Technology Education, Teaching concentration. Students must complete 128 semester hours, which include general studies, professional education, major courses, second academic concentration, and electives. Included in the major sequence are technical electives. The grade point average in major courses must be 2.0 or better.

Students must get admitted to Teacher Education by the end of their sophomore year and have a grade point average of 2.8 or better. Students must develop and pass a Products of Teaching Portfolio and develop and pass a technology portfolio. Students must also be admitted to Student Teaching by passing exams and requirements specified by the School of Education. Other rules related to the School of Education also pertain to students in this concentration.

Technology Education: Trade and Industrial Education, Teaching concentration. Students must complete 128 semester hours, which include general studies, professional education, major courses, second academic concentration, and electives. Included in the major sequence are technical electives concentrated in one of the following seven optional cluster areas: Construction Industries, Drafting and Graphic Industries, Electronic Industries, Manufacturing Industries, Transportation Industries, Printing Industries, and Service Industries. The grade point average in major courses must be 2.0 or better.

Students must get admitted to Teacher Education by the end of their sophomore year and have a grade point average of 2.8 or better. Students must develop and pass a Products of Teaching Portfolio and develop and pass a technology portfolio. Students must also be admitted to Student Teaching by passing exams and requirements specified by the School of Education. Other rules related to the School of Education also pertain to students in this concentration.

Technology Education: Training and Development for Industry concentration. Students must complete 127 semester hours, which include general studies, major courses, and electives. Included in the major sequence are technical electives concentrated in one of the following seven optional cluster areas: Construction Industries, Drafting and Graphic Industries, Electronic Industries, Manufacturing Industries, Transportation Industries, Printing Industries, and Service Industries. The grade point average in major courses must be 2.0 or better. Students must also complete a portfolio.

For persons who possess prior technical transfer credits or work experience in recognized areas of trade and industrial education, further technical sub-options are available within the cluster areas above. Such students will pursue individualized programs tailored to meet their specific needs, provided the following conditions are satisfied:

1. The area selected for a technical concentration in the major must be recognized by the North Carolina State Department of Public Instruction for Trade and Industrial teacher certification.
2. The student must initially enter the program with advanced classification.
   * Persons holding an Associate Degree in the technical field may apply such transfer credits toward meeting

technical course requirements.

* Persons meeting University admission requirements desiring to substitute work/trade experience to meet technical course requirements in the field selected may receive college credit by satisfactory completion of a competency-based examination.

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 National Association for Industrial Technology (NAIT). The technology education programs are accredited by the National Council for Accreditation of Teacher Education (NCATE) and are approved by the North Carolina Department of Public Instruction (NCDPI).

CAREER OPPORTUNITIES

Graduates of the graphic communication systems program option have a variety of career options in management, production, design, or sales. A range of opportunities is available in photography, design and drafting, advertising, in-plant printing, publishing, animation, and geographic information systems.

Excellent employment opportunities exist for persons trained in technology education. Public schools (K-12), community colleges, technical institutes, colleges, and universities are in constant need of securing qualified teachers in technology education. Teaching positions continue to remain open for technology education specialists and shortages of personnel are reported in many states. Schools are experiencing major difficulty in locating competent persons to fill technology education vacancies.

In addition to teaching, many career opportunities exist for trade and industrial education and training and development for industry graduates. These include industrial-business enterprises, government agencies, rehabilitation and vocational therapy centers, private schools and recreational camps. Trade and industrial education and training and development for industry graduates are employed as training directors, managers, supervisors, engineering assistants, sales, and safety personnel.

REQUIRED MAJOR COURSES FOR GRAPHIC COMMUNICATION SYSTEMS

Depend upon the selected area of specialization (Please see list at the end of Curriculum Guide).

CURRICULUM GUIDE FOR GRAPHIC COMMUNICATION SYSTEMS
(Computer Aided Drafting and Design)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 120	3	UNST 130	3
MATH 111	4	MATH 112	4
UNST 100	1	UNST 140	3
GCS 121	3	CM 150	3
CM 100	3	GCS 122	3
HPED 125	1		16
	15		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 110	3	UNST Cluster Elective[1]	3
MFG 110	3	CHEM 100	3
PHYS 225	3	CHEM 110	1
PHYS 235	1	MFG 270	3
GCS 224	3	GCS 225 or 226	3
GCS 222	3	GCS 223	3
	16		16

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Elective[1]	3	UNST Cluster Elective[1]	3
CM 190	3	CM 215	3
GCS 321 or 324	3	GCS 322 or 325	3
MFG 373	3	GCS 328	3
HPED 114	1	HPED 214	1
GCS 327	3		16
	16		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
GCS 400	1	GCS 461[2]	3
BUAD 422	3	Free Elective	3
UNST Cluster Elective[1]	3	GCS 427	3
GCS 421	3	GCS 422 or Free Elective	3
GCS 428	3	GCS 429	3
Free Elective	3		15
	16		

Total Credit Hours: 126

[1] *University Cluster Theme Electives: Must choose one cluster and take course only in that cluster*

[2] *Capstone course for the curriculum.*

GCS Specialty Courses in Computer Aided Drafting and Design:

GCS 225, GCS 226, GCS 321, GCS 322, GCS 324, GCS 325, GCS 422

CURRICULUM GUIDE FOR GRAPHIC COMMUNICATION SYSTEMS
(Integrated Internet Technologies)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
GCS 100 / UNST 100	1	ENGL 101	3
ART Elective	2	ART Elective	2
GCS 181	3	ECT 101	3
MATH 111	4	MATH 112	4
UNST 110	3	UNST 120	3
	13		15

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
GCS 280	3	CHEM 100/110 or 106/116	4
PHYS 225/235	4	ECT 201	3
SPCH 250	3	GCS 285	3
TECH 101	3	GCS 286	3
UNST 130	3	HPED 200	2
	16	UNST 140	3
			18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Electives[2]	3	UNST Cluster Electives[2]	3
UNST Cluster Electives[2]	3	UNST Cluster Electives[2]	3
GCS 381	3	GCS 451	3
GCS/ ITT/BUED Specialty	3	GCS/ ITT/BUED Specialty	3
GCS/ ITT/BUED Specialty	3	GCS/ ITT/BUED Specialty	3
GCS/ ITT/BUED Specialty	3	GCS/ ITT/BUED Specialty	3
	18		18

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ACCT 203	3	OSH 201/393/CM 320	3
BUAD 422 or 430	3	BUAD 425	3
GCS 400	1	GCS 461[3]	3
GCS/ ITT/BUED Specialty	3	MFG 495	3
GCS/ ITT/BUED Specialty	3		12
PSYC 320 or 445	3		
	14		

Total Credit Hours: 126

[1] *Students must have 64 semester hours to enroll in BUAD 430.*

[2] *University Cluster Theme Electives: Must choose one cluster and take course only in that cluster*

[3] *Capstone course for the curriculum.*

GCS Specialty Courses in Integrated Internet Technologies:

GCS 380, GCS 382, GCS 385, GCS 386, GCS 387, GCS 480, BUED 444, BUED 624, ITT 240, ITT 325

CURRICULUM GUIDE FOR GRAPHIC COMMUNICATION SYSTEMS
(Printing and Publishing)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 120	3
UNST 110	3	ENGL 101	3
MATH 111	4	MATH 112	4
TECH 101	3	GCS 142	3
GCS 181	3	ART Elective	2
	14		15

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 225 & 235	4	CHEM 100/110 or 106/116	4
GCS 212	3	TECH 201	3
GCS 243	3	UNST 140	3
GCS 241	3	GCS 242	3
UNST 130	3	UNST Cluster Elective[2]	3
ART Elective	2		16
	18		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ACCT 203	3	GCS 451	3
OSH 201 or 393 or CM 320	3	GCS 344	3
GCS 342	3	GCS 345	3
GCS 343	3	GCS Specialty	3
UNST Cluster Elective[2]	3	UNST Cluster Elective[2]	3
	15	UNST Cluster Elective[2]	3
			18

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MFG 495	3	GCS 400	1
PSYC 320 or 445	3	GCS 442	3
BUAD 422 or 430[1]	3	GCS 461[3]	3
GCS 441	3	HPED 200	2
GCS Specialty	3	GCS 443	3
GCS Specialty	3		12
	18		

Total Credit Hours: 126

[1] *University Cluster Theme Electives: Must choose one cluster and take course only in that cluster*
[2] *Students must have 64 semester hours to enroll in BUAD 430.*
[3] *Capstone course for the curriculum.*

GCS Specialty Courses in Printing and Publishing:
GCS 121, GCS 122, GCS, 185, GCS 280, GCS 285, GCS 286, GCS 381, GCS 386

REQUIRED MAJOR COURSES FOR TECHNOLOGY EDUCATION
(Technology Education Teaching)

TECH 218	TECH 413	TECH 462
TECH 219	TECH 414	TECH 510
TECH 382	TECH 415	TECH 566
TECH 412	TECH 416	TECH 672

CURRICULUM GUIDE FOR TECHNOLOGY EDUCATION
(Technology Education Teaching)
With Secondary Academic Concentration (SAC) - Interdisciplinary Technology
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
FOLA 104	3	UNST 130	3
MATH 111	4	ENGL 101	3

UNST 110	3	MATH 112	4
TECH 101	3	TECH 102	3
UNST 120	3	UNST 140	3
UNST 100	1		16
	17		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Elective[1]	3	UNST Cluster Elective[1]	3
UNST Cluster Elective[1]	3	UNST Cluster Electives[1]	3
GCS 181	3	GCS 122	3
CUIN 301	2	ECT 299	3
TECH 205	3	BUED 334	3
CUIN 102	2	MFG 276	3
	16		18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
TECH 204	3	CUIN 436	2
GCS 211	3	TECH 211	3
SPED 350	3	TECH 312	3
CUIN 400	2	PHYS 225	3
CUIN 336	2	PHYS 235	1
HPED 200	2	TECH 203	3
	15		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
TECH 402	3	MFG 293	3
CUIN 624	3	TECH 401	3
TECH 206	3	CUIN 560	6
Natural Science	4		12
GCS 400	1		
Free Elective	3		
	17		

Total Credit Hours: 126

[1]*Universitiy Cluster Electives: Must choose one cluster and take courses only in that cluster.*

REQUIRED MAJOR COURSES FOR TECHNOLOGY EDUCATION
(Trade and Industrial Education Teaching)

TECH 218	TECH 462	TECH 566
TECH 382	TECH 510	TECH 672

Additional courses depend upon the selected area of specialization

CURRICULUM GUIDE FOR TECHNOLOGY EDUCATION
(Trade and Industrial Education Teaching)
With Second Academic Concentration (SAC) - Interdisciplinary Technology

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	TECH 102	3
FOLA 104	3	UNST 130	3
UNST 120	3	UNST 140	3
MATH 111	4	MATH 112	4
UNST 110	3	ENGL 101	3
TECH 101	3		16
	17		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Elective[1]	3	GCS 122	3
UNST Cluster Elective[1]	3	MFG 276	3
TECH 205	3	ECT 299	3
GCS 181	3	UNST Cluster Elective[1]	3
CUIN 102	2	BUED 334	3

CUIN 301	2	UNST Cluster Elective[1]	3
	16		18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
TECH 204	3	TECH 211	3
SPED 350	3	TECH 312	3
HPED 200	2	PHYS 225	3
GCS 211	3	PHYS 235	1
CUIN 400	2	CUIN 436	2
CUIN 336	2	TECH 203	3
	15	TECH Specialty	3
			18

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
TECH 402	3	MFG 293	3
GCS 400	1	TECH 401	3
CUIN 624	3	CUIN 560	6
TECH 206	3		12
TECH Specialty	3		
	13		

Total Credit Hours: 125

[1]*University Cluster Theme Electives: Must choose one cluster and take courses only in that cluster.*

REQUIRED MAJOR COURSES FOR TECHNOLOGY EDUCATION
(Training and Development for Industry)

TECH 218	TECH 462	TECH 566
TECH 382	TECH 510	TECH 672

Additional courses depend upon the selected area of specialization

CURRICULUM GUIDE FOR TECHNOLOGY EDUCATION
(Training and Development for Industry)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
UNST 110	3	MATH 112	4
UNST 120	3	ECT 299	3
MATH 111	4	UNST 140	3
TECH 111	3	UNST Cluster Elective[1]	3
UNST Cluster Elective[1]	3		16
	17		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Elective[1]	3	ECT 201	3
UNST Cluster Elective[1]	3	Specialty Elective	3
TECH 201	3	PSYC 320	3
PHYS 225	3	ECON 305	3
PHYS 235	1	ITT 329	3
Free Elective	3		15
	16		

JUNIOR YEAR

First Semester	*Credit*	Second Semester	Credit
GCS 382	3	GCS 385	2
BUAD 422	3	TECH 312	3
GCS 381	3	Technical Elective	3
GCS 380	3	GCS 386	3
Specialty Elective	3	TECH 314	3
TECH 313	3	Technical Elective	3
	18		17

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
GCS 400[2]	1	Specialty Elective	3
TECH 411	3	GCS 461	3
Free Elective	3	Free Elective	3
Specialty Elective	3	Specialty Elective	3
GCS 480	3		12
	13		

Total Credit Hours: 124

[1]*University Cluster Electives: Must choose one cluster and take courses only in that cluster.*

[2]*Capstone course for the curriculum.*

Proposed Selected Technical Specialization Areas
(15-21 hrs. required)

Construction Industries:

GCS 222, GCS 223, CM 215, CM 216, CM 317, CM 333, CM 412, CM 598

Computer-Aided Drafting/Design Industries:

GCS 323, 222, 335, 224, 223, 421, 428, 324, 327, 328, 611, 631, 632, 633, 429, 321, 422, 322, 644, 667, 668

Electronic Industries:

GCS 323, ECT 211, ECT 212, ECT 213, ECT 312, ECT 350, ECT 313, ECT 413, ECT 650

Manufacturing Industries:

MFG 191, MFG 472, MFG 474, MFG 475, MFG 480, MFG 481, MFG 491, MFG 495, MFG 596

Transportation Industries:

MFG 251, MFG 255, MFG 275, MFG 452, MFG 456, MFG 496

Printing and Publishing Industries:

GCS 185, GCS 241, GCS 243, GCS 280, GCS 331, GCS 285, GCS 242, GCS 381, GCS 286, GCS 342, GCS 442, GCS 441, GCS 601, GCS 635, GCS 480, GCS 386

***Service Industries*:**

as approved by advisor

COURSE DESCRIPTIONS IN GRAPHIC COMMUNICATION SYSTEMS AND TECHNOLOGICAL STUDIES

GCS 100. Graphic and Technology Education Freshmen Orientation **Credit 1(1-0)**

This course covers orientation to college academic life with consideration for program demands, learning techniques and resources.

GCS 120. Color Management **Credit 3(2-2)**

This course is a study of managing color for print production. It emphasizes theory of color, color models, color generations, color corrections, color matching, color separations, and color proofing. **(F;S)**

GCS 121. Computer Aided Design I **Credit 3(2-2)**

This course focuses on basic orthographic projection, sketching, dimensioning and drafting conventions, as related to the construction and manufacturing industries. It introduces drafting technology tools, practices and procedures. The student will develop skills in technical sketching and page layout. Computer aided design software applications will be introduced. **(F;S;SS)**

GCS 122. Computer Aided Design II **Credit 3(2-2)**

This course presents an opportunity for students to enhance technical ideas and concepts in a computer aided design environment. Emphasis is placed on the manipulation of software applications to interpret and produce working drawings. Skills and knowledge will be developed to graphically communicate resolutions to existing technical problems in fabricated and built environments. Prerequisite: GCS 121. **(F;S;SS)**

GCS 130. Graphic Communications Technology **Credit 3(2-2)**

Basic principles of graphic design, pre-press preparation, reproduction methods, and bindery operation are taught in a laboratory setting. Historical, socioeconomic, organizational and career opportunities in graphic communications and allied industries are investigated in reference to graphic communications, business and industries. Hands-on laboratory work will introduce students to the equipment and processes employed in the print production. Prerequisite: GCS 110. **(F;S;S)**

GCS 133. Introduction to Drafting Technology **Credit 3(2-2)**

Basic orthographic projection is emphasized. This course is an introduction to drafting technology tools and procedures. Other topics include lettering, geometric construction, pictorials, auxiliaries, sections, and dimensioning. **(F;S;SS)**

GCS 142. Printing Workflows and Processes **Credit 3 (2-2)**

This course introduces the student to the various software solutions and production techniques involved in the printing and publishing industry. Proper workflow and quality control instruments and techniques will be covered. Students will gain

experience in obtaining digital images suitable for print, image manipulation, art development, and page layout. Preflight and quality techniques involved in image output will be stressed. Prerequisite: GCS 181. **(S;SS)**

GCS 181. Introduction to Media Design **Credit 3(2-2)**

This course aims to enable students to build knowledge and literacy of media and publication design. It enables students to understand different forms of media as a communication tool. Students will learn how information and messages are communicated across media. This course will provide exploration of career opportunities in the media and publication industry. **(F;SS)**

GCS 185. Color Management **Credit 3(2-2)**

This course is a study of managing color for print production. It emphasizes theory of color, color models, color generations, color corrections, color matching, color separations, and color proofing. Prerequisite: GCS 181 or Consent of Instructor. **(S;SS)**

GCS 211. Evolution and Social Implications of Technology Education **Credit 3(3-0)**

This course is the study of technology systems. An investigation of past and present impact on the individual and society will take place. Potential of future change influenced by technological change and application is addressed through technological assessment and forecasting. **(F;S;SS)**

GCS 212. Technical Communication **Credit 3(3-0)**

This course is designed to develop the student's proficiency in researching, organizing, writing, and presenting documents in various areas of technology. Prerequisites: ENGL 101 or UNST 110 and Sophomore Standing. **(F;S;SS)**

GCS 222. Introduction to Architectural Design **Credit 3(2-2)**

Principles of planning residential structures and developing production-working drawings are stressed. Course topics include the design of floor plans, environmental system layouts (heating and air conditioning), and service system plans (plumbing and electrical). Additionally, issues concerning cost estimation, building codes, and general construction techniques will be introduced. Prerequisite: GCS 122. **(F;S;SS)**

GCS 223. Intermediate Architectural Design **Credit 3(2-2)**

This course deals with the planning of industrial, commercial and public buildings. Topics include construction and design principals, materials specifications and codes; complete plans (plot, landscaping, framing, electrical and mechanical equipment), details (reinforced concrete, timber and steel), advanced perspective rendering, analytical study of historical and contemporary architecture, materials and methods, and engineering. Prerequisite: GCS 222. **(S;SS)**

GCS 224. Solid Modeling I **Credit 3(2-2)**

This course addresses manipulation and analysis of data associated with the fabrication and functionality of machined parts. Students will integrate solid modeling principles to graphically communicate information about machined parts. Emphasis will be placed on the application and interpretation of dimensioning and tolerancing information. Prerequisite: GCS 122. **(F;S;SS)**

GCS 225. Solid Modeling II **Credit 3(2-2)**

This course provides opportunities to integrate assembly modeling principles to graphically communicate information about mechanical products. Students will analyze and evaluate the assembly and functionality of mechanical products using solid modeling applications. Attention will be given to advanced topics relevant to the application and interpretation of dimensioning and tolerancing will pertinent to manufactured products. Prerequisite: GCS 224. **(S;SS)**

GCS 226. Graphic Animation I **Credit 3(2-2)**

This is an introductory course that focuses on the creation and manipulation of computer generated geometric shapes. Topics include creation of 3D scenes, assignment of materials, lights and textures, key framing, rendering, and animation. Prerequisite: GCS 224 or Consent of Instructor. **(F;S;SS)**

GCS 241. Lithography I **Credit 3(2-2)**

This course will acquaint the student with the basic principles and practices in the layout and design of graphic communication products. Students will learn how layout and design integrate into the printing production process. Image capture and manipulation techniques will be explored, and students will be introduced to software to handle text, art and photographic images. Prerequisite: GCS 142. **(S;SS)**

GCS 242. Flexography I **Credit 3(2-2)**

This course is designed to develop proficiency in flexographic printing and design. Students will be introduced to flexographic layout, film preparation, plate exposing and mounting, presswork and converting. Flexographic package design will be explored and students will receive hands-on experience in designing die lines, and preparing graphics to meet customer requirements. Prerequisite: GCS 181. **(F;S;SS)**

GCS 243. Screen Printing Technology **Credit 3(2-2)**

This course provides broad and thorough knowledge and skills to transfer images through a stencil onto a substrate. Techniques of image design, screen preparation, screen exposing, and screenprinting will be studied. Students will gain hands-on laboratory experience in screen printing paper and textile substrates. Prerequisite: GCS 181. **(F;S;SS)**

GCS 327. Introduction to Geographic Information Systems **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. Prerequisite: Junior Standing or Consent of Instructor. **(F;SS)**

GCS 280. Photography **Credit 3(2-2)**
This course is designed to acquaint the beginner with the fundamental processes of photography. Historical evolution and modern uses of photography will be studied. Nomenclature, theory, and application in photo composition, imaging, and presentation methods will be explored. Each student is required to provide a camera. Laboratory work is required. Prerequisite: GCS 181 or Consent of Instructor. **(F;SS)**

GCS 285. Digital Image Editing **Credit 3(2-2)**
This course covers the use of digital graphic techniques to create and manipulate photographic and other raster graphic images. Digital imaging techniques through the use of photo manipulation software for web and print are explored. Prerequisite: GCS 181 or Consent of Instructor. **(S;SS)**

GCS 286. Technical Illustration **Credit 3(2-2)**
The principles of graphic design, including design process, color, type and art components are discussed. Techniques for representing visual ideas, editing paths, and exporting illustration artwork for print production and web design are explored. Prerequisite: GCS 181 or Consent of Instructor. **(S;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. Introduction to Machine Design **Credit 3(2-2)**
Lecture and laboratory work includes advanced machine drawings, and dimensions, tolerance of fasteners, analysis of motion and motion diagrams. The course includes welding and numerical control, bearings, couplings, gears, jigs and fixtures, and die design. Fundamentals of computer aided design are included. Prerequisite: GCS 225. **(F)**

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 328. Intermediate Geographic Information Systems **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 327. **(S;SS)**

GCS 342. Principles of Ink and Substrates **Credit 3(2-2)**
This course is a study of ink and paper. It includes manufacturing technology, properties, and applications of ink and paper as they relate to graphic communications. Prerequisite: GCS 241. **(F;S)**

GCS 343. Lithography II **Credit 3 (2-2)**
Color reproduction techniques as used in the lithographic printing industry will be covered. Students will design, impose, produce plates and print a multipage project using appropriate quality and preflight techniques. Color theory with practical application will be stressed. Press and finishing operations are integral to this course. Prerequisite: GCS 241. **(F;SS)**

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 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. Prerequisite: Junior Standing or Consent of Instructor. **(F;SS)**

GCS 381. Web Design for Graphic Communications **Credit 3(2-2)**
This course provides integration of graphic communications applications and streamlined workflow for students to design and develop Web sites. This course explores the fundamentals of web authoring for Internet and intranet use. Major

emphasis will be placed on interactive web site development. Prerequisite: Junior Standing or Consent of Instructor. **(F;SS)**

GCS 382. Multimedia and Videography I **Credit 3(2-2)**

This course provides an overview of the development and distribution of interactive multimedia. Students will get hands-on experience in using computers, digital video, digital cameras, scanners, the World Wide Web and authoring software. Emphasis will be placed on using these tools for learning and communication. The multimedia industry and careers opportunities will be examined. Prerequisite: Junior Standing or Consent of Instructor. **(F;SS)**

GCS 385. 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. Prerequisite: GCS 380. **(S;SS)**

GCS 386. Web Design for E-Commerce **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. Prerequisites: GCS 381 or Consent of Instructor. **(S;SS)**

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 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. Architectural Design III **Credit 3(2-2)**

Students will apply design skills and knowledge relevant to address cost implications in the building of environmentally and economically sound structures. Learners will integrate tools to calculate and evaluate costs and benefits of certification, as well as strategies to maximize resource selections. Prerequisite: GCS 223. **(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 328. **(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 set will affect on 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 441. Estimating in Graphic Communication **Credit 3(2-2)**

Cost estimating in graphic communications identifies components of imaging and printing technologies that constitute a manufactured product in the graphic industry. Variables within each of the components will be explored. Appropriate mathematical formulas will be introduced for pricing out production projects to improve cost controls, production techniques, and insure company profitability. Prerequisites: GCS 342. **(F;S;SS)**

GCS 442. Graphic Communication Production Management **Credit 3(2-2)**

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: GCS 441. **(S)**

GCS 443. Corrugated and Paperboard Packaging **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. Quality control techniques, color management and press requirements are emphasized. Prerequisite: GCS 344. **(F;S;SS)**

GCS 451. Cooperative Learning Experience I **Credit 3(3-0)**

This course is dedicated to providing opportunities for students to develop and apply skills and knowledge appropriate to be successful in a cooperate environment. The student must complete a minimum of 300 contact hours with a corporation relevant to major and career aspirations. A portfolio journaling the application of skills and knowledge is required. Prerequisite: Senior Standing or Consent of Department. **(F;S;SS)**

GCS 461. Senior Capstone for Graphic Communication Systems and Technological Studies **Credit 3(3-0)**
This course is dedicated to the demonstration and the assessment of the mastery of skills, knowledge and attitudes upon successful completion of a program of study relevant to communication, design and technological disciplines. Prerequisite: Senior Standing. **(F;S;SS)**

GCS 480. Web Design for Distance Education **Credit 3(2-2)**
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. Prerequisite: GCS 381 or Consent of Instructor. **(F;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 102. Technological Invention and Innovation **Credit 3(2-2)**
Students will collaborate to study and apply various problem solving models and techniques to invent or innovate a technological product. Students will learn about problem posing, patents, product license, legal documentation, and prototyping. Prerequisite: TECH 101. **(F;S)**

TECH 111. Introduction to Training and Development **Credit 3(3-0)**
This course provides an overview of the field of training and development. Students will learn about the various areas of specialization within the training and development field of study along with professional organizations and resources. **(F;S)**

TECH 201. Computer Applications for Technological Studies **Credit 3(3-0)**
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. Prerequisite: Sophomore Standing. **(S)**

TECH 203. Introduction to Construction Systems **Credit 3(2-2)**
This course is an introduction to the significance of the evolution of construction and construction systems, on human and societal development. An analysis of constructed items such as roadways, low and high-rise buildings, tunnels, bridges, dams, towers and other structures will take place. Specific emphasis will be placed on the construction process and systems that involve design, engineering, site preparation, foundations, superstructure, mechanical systems, clearing and finishing the structure. Hands on activities include modeling, developing prototypes, and problem solving using common construction materials and processes. Prerequisite: TECH 202. **(F;S)**

TECH 204. Introduction to Manufacturing Systems **Credit 3(2-2)**
This course is the study of manufacturing organization, product design, and production systems. Students will be involved in the design, organization, operation and evaluations of classroom manufacturing systems. The course is an essential component of the technology education teacher preparation. Prerequisite: TECH 202 **(F;S)**

TECH 205. Introduction to Communication Systems **Credit 3(2-2)**
This course is a study of communication systems model and its application in sending and receiving messages. Study and laboratory experience in planning and producing graphic an electronic generated messages to individual and mass audiences will be required. Prerequisite: TECH 202. **(F;S)**

TECH 206. Introduction to Transportation Systems **Credit 3(2-2)**
This course provides an introduction to the significance of the evolution of transportation and transportation systems on human and societal development. An analysis of the roles of land, air, water, space, and energy systems on rural, urban, and suburban lifestyles will take place. Hands-on activities include the development of models and prototypes of different modes of transportation and transportation systems. Prerequisite: TECH 202. **(F;S)**

TECH 207. Introduction to Biotechnology Systems **Credit 3(2-2)**
This course is an overview of genetic engineering, bioprocessing, and antibody production technologies. The focus is on inputs, productive processes, outputs, and impacts on people, the environment and the quality of life. This course is an essential component of technology education teacher preparation.. Prerequisite: TECH 101. **(F;S)**

TECH 211. Organization and Management of Technology Education **Credit 3(3-0)**
This course emphasizes the study of organizational systems and classroom organization impacting technology education. Prerequisite: TECH 102. **(F;S)**

TECH 312. Curriculum Development in Technological Studies **Credit 3(3-0)**
This course will cover the development of learning experiences and environments specific to adult learning programs. Emphasis will be placed on theory, principles, concepts, and philosophy of curriculum development for adult learners. Prerequisite: TECH 111. **(F;S)**

TECH 313. Instructional Methods and Techniques in Training & Development **Credit 3(3-0)**
This course will cover methods and techniques, common to training programs. This course places emphasis on delivery of training in the classroom and distance learning environments. Prerequisites: TECH 312. **(F;S)**

TECH 314. Evaluation and Assessment in Training & Development **Credit 3(3-0)**
This course will cover the application of various measuring and evaluation instruments used in the field of training and development. Students will learn how to indentify, use, and create valid and reliable evaluation instruments. Prerequisites: TECH 313. **(F;S)**

TECH 401. Research and Development in Technological Systems **Credit 3(2-2)**
This course is a synthesis course where the student researches problems relative to any of the four identified technological systems and develop solutions to the identified problems. The student also will explore the interrelationships among the four technological systems. Prerequisite: Senior Standing. **(F;S)**

TECH 402. Technology Education Teaching Methods **Credit 3(2-2)**
This course emphasizes the following: study of organization systems impacting technology education state, local, school district, community, professional. Classroom organization curriculum, physical facilities; classroom management including safety and liability; and personal management and record keeping.. Prerequisite: Consent of Instructor. **(F;S)**

TECH 411. Technological Program Planning **Credit 3 (3-0)**
This course covers principles and strategies for planning and implementing adult technical education programs. Emphasis will be placed on the implementation of instructional system design models. Prerequisite: TECH 314. **(F;S)**

Advanced Undergraduate and Graduate Courses

GCS 601. Advanced Flexographic Methods **Credit 3(2-2)**
This course is designed to develop advanced proficiency in process color flexographic printing. It includes the prediction of future markets, products, substrates, inks, solvents and industry standards for color processing. Students will gain hands-on experience in corrugated package design, prepress, printing, and converting techniques. Prerequisites GCS 416. **(F;S;S)**

GCS 610. Internship in Industry I **Credit 3(0-7)**
Students participate in an industrial setting during a semester in their major field of interest. They will be evaluated during the internship through a field diary of events and experiences. Three semester hours are the maximum to be earned during semester. **(F;S;SS)**

GCS 611. Internship in Industry II **Credit 3(0-7)**
Students participate in an industrial setting during a semester in their major field of interest. They will be evaluated on reports from industry and a field diary of events and experiences, three semester hours are the maximum to be earned during a semester. **(F;S;SS)**

GCS 631. Advanced Computer Aided Design **Credit 3(2-2)**
This course focuses on the development of knowledge and skills associated with solid modeling and the use of computer software to generate these models. Emphasis will also be placed on the creation of wire-frame and surface models. Analysis, fabrication and documentation of these models will be addressed. Prerequisite: GCS 234. **(F;S)**

GCS 632. Graphic Animation **Credit 3(2-2)**
This course deals with the creation and manipulation of computer generated geometric shapes and models. Topics include creation of 3D scenes, assignment of materials, lights and textures, keyframing, rendering, and animation. Prerequisite: GCS 234. **(F;S)**

GCS 633. Advanced Machine Design and Drafting **Credit 3(2-2)**
This course covers advanced 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 gaging, joining processes, modular tooling, and economics of design. Prerequisite: GCS 533. **(F;S)**

GCS 635. Advanced Principles of Graphic Communications Technology **Credit 3(2-2)**
Advanced principles in graphic reproduction will be studied as well as color applications, photographic applications, design and pre-press techniques. Technical experiences in reproduction methods and quality control will also be required. Prerequisite: GCS 130. **(F;S;S)**

GCS 637. Industrial and Customer Relations in Graphic Communications **Credits 3(2-2)**
This course focuses on industrial and customer relations within the field of graphic communications. Responsibilities and duties of the manager and his/her relationship to higher-level supervisors, subordinates, associates and customers are examined. Emphasis is placed on developing skills essential for persuasive communication. **(F;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 422. Architectural Technology and Sustainable Design **Credit 3(2-2)**
This course is a study of building technology and sustainable design. Emphasis is placed on designing buildings for energy efficiency using various materials and technology. Students will design a sustainable building and compete in local and state events. GCS 421 or Consent of Instructor. **(S)**

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 642. Advanced Package Printing Techniques **Credit 3(2-2)**
This course is designed to give students insight into the print production process for corrugated and paperboard packaging. Students will learn structure design techniques as well as graphic design for package products. Covered topics include: structural requirements, the die line, die making, graphic design requirements of corrugated, sample making, color management, plate requirements and press requirements.

GCS 644. Advanced Architectural Drafting and Design **Credit 3(2-2)**
This course covers advanced drafting and design techniques associated with the building industries. Topics include the development of working drawings, site plans, elevations, sections, and details in accordance with building codes. Upon completion the student should be able to plan and develop architectural drawings that comply with accepted architectural standards and procedures. Prerequisite: GCS 234. **(F;S)**

TECH 608. Study of Technology **Credit 3(2-2)**
This course emphasizes contemporary methods of developing problem-solving skills through the four technologically adaptive systems (communications, construction, manufacturing, transportation), mathematics and science. **(F;S)**

TECH 617. Introduction to Coordination of Industry and Education Partnerships **Credit 3(3-0)**
This course examines the interrelationship, organizational structure, and logistics of industry and education partnerships. Topics include establishing guidelines, developing networks, coordinating personnel, supervising participants, and evaluating performance. **(F;S;SS)**

TECH 618. Technological Education for Special Needs Students **Credit 3(3-0)**
Opportunities are provided for teachers, counselors, and administrators to improve their skills in working with disadvantaged/handicapped learners in technological education. Emphasis will be placed on motivational creative instructional strategies, discipline, drug awareness, and module development. **(F;S;SS)**

TECH 619. Construction Systems for Technological Education **Credit 3(2-2)**
The evolution of construction and construction systems on human and societal development will be discussed. Teaching strategies regarding construction systems including design, engineering, site preparation, foundations, superstructure, mechanical systems, and clearing and finishing the structure will be studied. Laboratory activities appropriate for secondary, post-secondary, and industrial settings will be included. **(F;S;SS)**

GCS 667. Independent Studies in Technological Education I **Credit 3(3-0)**
This course involves intensive study in the field of technological education under the direction of a faculty advisor. Prerequisite: Approval of graduate studies coordinator. **(F;S;SS)**

GCS 668. Independent Studies in Technological Education II **Credit 3(3-0)**
This course involves intensive inquiry in the field of technological education under the direction of a faculty advisor. Prerequisite: Approval of graduate studies coordinator. **(F;S;SS)**

TECH 620. Manufacturing Systems for Technological Education **Credit 3(2-2)**
This course will cover the organization, product design, and production systems associated with manufacturing. It will emphasize teaching strategies and curriculum development in relation to manufacturing systems. Laboratory activities appropriate for secondary, post-secondary, and industrial settings will be included. **(F;S;SS)**

TECH 621. Communication Systems for Technological Education **Credit 3(2-2)**
This course studies the communication systems model and its application to sending and receiving messages. Topics include planning and producing graphically and electronically generated messages to individual and mass audiences. Laboratory activities will be included appropriate for secondary, post-secondary, and industrial settings. **(F;S;SS)**

TECH 622. Transportation Systems for Technological Education **Credit 3(2-2)**
The significance of the evolution of transportation and transportation systems on human and societal development will be studied. Topics include the roles of land, air, water, space, and energy systems on rural, urban, and suburban lifestyles. Laboratory activities will be included appropriate for secondary, post-secondary, and industrial settings. **(F;S;SS)**

TECH 623. Research and Development in Technological Education **Credit 3(2-2)**
This is a synthesis course where students research problems relative to any one of the four technological systems (Communications, Transportation, Construction, Manufacturing) and develop solution(s) to the identified problem(s). The interrelationship among the four technological systems will be explored. Laboratory activities will be included appropriate for secondary, post-secondary, and industrial settings. **(F;S;SS)**

TECH 626. Curriculum Modification in Technological Education for Special Needs Populations Credit 3(3-0)
This course examines program modifications for disadvantaged/handicapped learners in technological education. Topics include curriculum adaptation, instructional planning, teaching strategies, media development, and performance assessment for special needs learners. **(F;S;SS)**

TECH 644. Occupational Exploration for Middle Grades Credit 3(3-0)
Designed for persons who teach or plan to teach middle grades occupational exploration programs. Emphasis will be placed on occupational exploration in the curriculum, sources and uses of occupational information, approaches to middle grades teaching, and philosophy and concepts of occupational education. **(F;S;SS)**

TECH 660. Career Development and Work-based Learning Credit 3(3-0)
This course is covers implementation strategies for various work-based learning programs that will prepare youth to enter the workplace. Emphasis will be placed on going beyond the classroom into the community to develop workplace knowledge and skills. **(F;S;SS)**

TECH 661. Workforce Development Program Planning and Management Credit 3(3-0)
This course covers principles and strategies of program planning and management for workforce development. Emphasis will be placed on scheduling, federal and state regulations, procedures, and special issues. **(F;S;SS)**

TECH 662. Technological Education Course Construction Credit 3(3-0)
Selecting, organizing, and integrating objectives, content, media and materials appropriate to technological courses will be discussed. Topics include strategies and techniques of designing and implementing group and individual teaching-learning activities, constructing teacher-made instructional aides and devices, and curriculum planning and design. **(F;S;SS)**

TECH 663. History and Philosophy of Technological Education Credit 3(3-0)
This course examines the chronological and philosophical development of technological education with special emphasis on its growth and function in American schools. **(F;S;SS)**

TECH 665. Middle Grades Industrial Laboratory Credit 3(3-0)
Course organization, teaching strategies, resource and facilities for teaching industrial technological career exploration in middle grades are stressed. Emphasis is on occupational clusters in manufacturing, construction, communication, transportation, fine arts, and public service. **(F;S;SS)**

TECH 666. Technological Education Teaching Methods and Internship Credit 4(3-2)
Technology education teaching methodology will be studied. Students will learn unit planning, lesson planning, group and individual teaching techniques, media development and use, testing and evaluating outcomes of learning. Students will also learn student behavior control, addressing diversity through teaching methods, laboratory management, teaching ethics, working with families, and teacher reflection on teaching and learning. Undergraduate students and MAT students who are currently teaching in the schools will participate in a 60 hour structured internship under the guidance of a master teacher. MAT licensure-only students not currently teaching in schools must participate in a 10-week, full-time internship, which fully engages the candidate in teaching and assessment of students. Prerequisites: Senior level standing. Admission to Teacher Education.

TECH 669. Safety in the Instructional Environment of Technological Education Credit 3(3-0)
This course examines the principles and techniques of organizing and supervising safety in technological education. Topics include instructional strategies, state and national laws, special hazards, color-coding, and accident analysis. **(F;S;SS)**

TECH 670. Introduction to Workplace Training and Development Credit 3 (3-0)
This course provides an overview of the field of training and development. Management concerns related to organizing, operating, and financing training and development programs are discussed. Roles common to practitioners across the broad field of human resource development are covered. Interpersonal perspectives and implications for the future are included. **(F;S;SS)**

TECH 671. Methods and Techniques of Workplace Training and Development Credit 3(3-0)
Emphasis is placed on the methods and techniques common to exemplary training programs in this course. Designing learning programs and selecting appropriate media methods and resources using sound theoretical framework are the goal. Evaluation of programs and instruction is discussed. Prerequisite: Approval of graduate coordinator. **(F;S;SS)**

TECH 672. Curriculum Development Using Microcomputers in Technological Education Credit 3(3-0)
This course will focus on the theory, principles, concepts, and philosophy of curriculum development. Topics include utilization of microcomputers, creation of learning activity packages, and integration of resources. **(F)**

TECH 682. Computer Applications for Education and Industrial Training Credit 3(2-2)
This course deals with strategies and techniques for the utilization of the computer for networking, videoconferencing, and distance learning. It also covers satellite and teleconferencing in addition to information services and the Internet as vehicles to assist in the educational process. **(F;S;SS)**

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Cynthia Carlton Thompson..... **Professor**
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Department of Manufacturing Systems

http://www.ncat.edu/~sot/mfg

Ji Y. Shen, Chairperson

OBJECTIVE

The Department of Manufacturing Systems is designed to prepare "management-oriented technical professionals" with practical knowledge, skills, and training to serve the manufacturing and motorsports enterprise system. Programs involve a study of materials, processes, machine-tool, instrumentation, and industrial management (e.g., inventory management, supply-chain management, production control, six sigma statistical quality control, computer integrated manufacturing, and automation). This includes preparing students with the ability to plan, organize and manage the production system, and integrate technical facilities and human resources to produce quality with optimum productivity.

DEGREES OFFERED

Manufacturing Systems – Bachelor of Science
Manufacturing Systems (Motorsports Technology) – Bachelor of Science
Manufacturing Systems (Industrial Management) – Bachelor of Science
Industrial Technology – Master of Science*
**See the Graduate School Bulletin*

GENERAL PROGRAM REQUIREMENTS

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

All North Carolina A&T State University students are required to complete 50 hours of service / experiential learning since Fall 2006. Student service / experiential learning hours will be monitored in conjunction with the Division of Student Affairs. Transfer students are not required to fulfill all 50 service learning hours. They are handled on a general formula: Sophomore transfers are required to complete (2/3) x 50 = 33 hours, and juniors to complete (1/3) x 50 = 17 hours.

DEPARTMENTAL REQUIREMENTS

All Manufacturing Systems, Motorsports, and Industrial Management concentrations/majors must complete 126 credit hours of University courses. A minimum of 58 credit hours must be completed in manufacturing specialization courses, which include 34 credit hours of manufacturing core courses. A minimum grade of "C" must be earned in all manufacturing (MFG) and Motorsports (MS) courses.

Graduates of technical institutes and community colleges who have earned the Associate Degree in technology areas may be admitted to the Manufacturing Systems program 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. The typical student in this program will be required to take at least 64 additional credit hours for graduation.

Any student transferring to the Department of Manufacturing Systems from other disciplines must have a minimum 2.2 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

The manufacturing systems program is accredited by the Association of Technology, Management, and Applied Engineering (ATMAE).

CAREER OPPORTUNITIES

Graduates of the manufacturing systems program are very successful in securing employment in industrial, manufacturing, and service areas. Positions typically include enterprise managers, production supervisors, manufacturing engineers, production engineers, automation engineer, manufacturing management, quality control, facilities planner, service management, motorsports marketing, pit-crew members, NASCAR related areas, etc.

Manufacturing Core courses (36 credit hours)

All students in the Department of Manufacturing Systems must take the following Manufacturing Core courses: MFG 110, MFG 121**,** MFG 191, MFG 202, MFG 270, MFG 276, MFG 293, MFG 301, MFG 373**,** MFG 495, MFG 500, MFG 575.

MANUFACTURING SPECIALIZATION COURSES

Manufacturing specialization courses may be chosen from the following four groups of manufacturing courses:

(1) Basic Manufacturing Courses:
MFG 100, MFG 110, MFG 121, MFG 191, MFG 201, MFG 202, MFG 293, MFG 300, MFG 301, MFG 380, MFG 451, MFG 497, MFG 500, MFG 599.

(2) Industrial Management Courses:
MFG 393, MFG 394, MFG 421 MFG 495, MFG 510, MFG 511, MFG 512, MFG 513, MFG 514, MFG 515, MFG 516, MFG 573, MFG 575.

(3) Industrial Automation Courses:
MFG 254, MFG 276, MFG 350, MFG 360, MFG 373, MFG 450, MFG 473, MFG 493, MFG 496, MFG 550, MFG 551.

(4) Industrial Materials and Material Processing Courses:
MFG 270, MFG 271, MFG 274, MFG 392, MFG 475, MFG 476, MFG 477, MFG 481, MFG 482, MFG 492, MFG 582, MFG 596.

REQUIRED MAJOR COURSES FOR MANUFACTURING SYSTEMS

MFG 100	MFG 471	MFG 495
MFG 191	MFG 472	MFG 500
MFG 270	MFG 491	MFG 511
MFG 276	MFG 493	MFG 610
MFG 293		

CURRICULUM GUIDE FOR MANUFACTURING SYSTEMS

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3	UNST Cluster (MATH 112)	3
UNST Cluster (MATH 111)	3	MFG 121	3
MFG 110	3	OSH 201	3

MFG 191	3		15
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 225 / 235	4	PHYS 226 / 236	4
UNST Cluster Theme Elective	3	UNST Cluster Theme Elective	3
CHEM 106 / 116	4	MFG 270	3
MFG 202	3	MFG 276	3
ECT 299	3	MFG 293	3
	17		16

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PSYC 320	3	MGMT 220	3
MFG 301	3	MFG 373	3
ACCT 203	3	MFG Specialization	6
MFG Specialization	6	Free Elective	3
Free Elective	2		15
	17		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MFG 495	3	MFG 515	3
MFG 514	3	MFG 575	3
MFG 516	3	MFG Specialization	6
MFG Specialization	6	MFG 500	3
	15		15

Total Credit Hours: 126

REQUIRED MAJOR COURSES FOR MANUFACTURING SYSTEMS (MOTORSPORTS TECHNOLOGY)
(21 credit hours)

MS 251	MS 275	MS 455
MS 252	MS 452	MS 456
MS 255		

CURRICULUM GUIDE MANUFACTURING SYSTEMS (MOTORSPORTS TECHNOLOGY)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3	MFG 293	3
MS 251	3	MFG 191	3
HPED 201	2	MATH 112	4
MATH 111	4		16
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elective	3	CHEM 106/116	4
UNST Cluster Theme Elective	3	UNST Cluster Theme Elective	3
MS 252	3	UNST Cluster Theme Elective	3
ECT 101	3	MS 255	3
GEEN 100	2	MFG 110	3
GCS 292	3	GEEN 103	2
	17		18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 225/235	4	PHYS 226/236	4
MFG 497	3	MFG 472	3
MFG 270	3	MS 456	3
MGMT 220	3	MFG 476	3
SPCH 250	3	ECON 305	3

	16		16

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MFG 498	3	MFG 500	3
MFG 575	3	MS 452	3
MS 455	3	MKTG 432	3
MKTG 430	3	MFG 493	3
MS 275	3		12
	15		

Total Credit Hours: 126

REQUIRED MAJOR COURSES FOR MANUFACTURING SYSTEMS (INDUSTRIAL MANAGEMENT) (21 credit hours):

MFG 510	MFG 513	MFG 515
MFG 511	MFG 514	MFG 516
MFG 512		

CURRICULUM GUIDE MANUFACTURING SYSTEMS (INDUSTRIAL MANAGEMENT)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
UNST 120	3	UNST Cluster (MATH 112)	3
UNST Cluster (MATH 111)	3	MFG 121	3
MFG 110	3	MGMT 220	3
MFG 191	3		15
	16		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PHYS 225 / 235	4	PHYS 226 / 236	4
UNST Cluster Theme Elective	3	UNST Cluster Theme Elective	3
CHEM 106 / 116	4	MFG 270	3
MFG 202	3	MFG 276	3
MFG 254	3	MFG 293	3
	17		16

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MFG 310	3	MFG 373	3
MFG 301	3	MFG 451	3
MFG 393	3	MFG 496	3
MFG Specialization	3	MFG 510	3
Free Elective	3	MFG 511	3
	15		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MFG 513	3	MFG 512	3
MFG 514	3	MFG 515	3
MFG 516	3	MFG 573	3
MFG 551	3	MFG 575	3
MFG 495	3	MFG 500	3
Free Elective	2		15
	17		

Total Credit Hours: 126

COURSE DESCRIPTIONS IN MANUFACTURING SYSTEMS

MFG 100. Orientation to Technology **Credit 1(1-0)**

An overview of the School of Technology and its programs are explained along with what is expected of majors, their preparation, and the opportunities available upon graduation. Basic concepts such as dependability, dedication, technical knowledge, communications, cooperativeness, self-motivation, and dressing for success are discussed. **(F;S)**

MFG 110. Blueprint Reading and Interpretation **Credit 3(1-4)**
This course trains students with the basic skills needed to read and interpret industrial blueprints. Emphases are measurement unit systems and their conversions, industrial blueprint production and interpretation, information tracing through blueprint title block and notes, and converting blueprint objects to marketable products through manufacturing sequencing. Fundamental skills will also be introduced, such as lettering, sketching, dimensioning and representing common geometrical entities with points, lines, planes, and solids, orthogonal projection, sectional and auxiliary views, oblique and isometric representation. **(F;S)**

MFG 121. Computing Technology **Credit 3 (2-2)**
This course is designed to provide basic computer knowledge and skills required in a typical manufacturing environment. Emphasis will be placed on the basics of computer structure and circuitry, software programming and applications in manufacturing process including ladder logic, materials requirement planning (MRP) and statistical process control (SPC). **(F;S)**

MFG 191. Introduction to Manufacturing Processes **Credit 3(2-2)**
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)**

MFG 201. Computer Aided Manufacturing **Credit 3(2-2)**
This course introduces the basic principles of graphic design and common tools utilized in product design and product manufacturing enterprises. Geometric dimensioning and tolerancing practices and procedures are emphasized. Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM) tools and techniques are presented. **(F;S;SS)**

MFG 202. Parametric Modeling **Credit 3(2-2)**
This course focuses on development of knowledge and skills associated with the parametric-based approach to modeling. Emphasis will be placed on the creation of part models and common downstream Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM) processes. Rapid prototyping and common production tooling and techniques are introduced. Prerequisite: MFG 201. **(F;S;SS)**

MFG 254. Automation Identification and Bar Coding **Credit 3(1-4)**
The science of measurement, inspection and bar coding through automation will be covered. **(F;S)**

MFG 270. Industrial Materials & Processes **Credit 3(2-2)**
This course emphasizes the nature, origin and the conversion into manufactured goods of metals, plastics, woods, ceramics, composites and synthetic materials. **(F;S)**

MFG 271. Metallic Material Processes **Credit 3(2-2)**
This course is a study of metallic material properties, fabricating equipment and methods utilized in the production of metallic products. **(F;S)**

MFG 274. Polymer Process **Credit 3(2-2)**
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;Summer)**

MFG 276. Introduction to PLC's and Robotics **Credit 3(1-4)**
This course introduces the basics of programmable logic controllers (PLC). It describes the components, functions, operation, methods of programming,, timers and counters and some applications of PLCs. **(F;S)**

MFG 293. Power Technology **Credit 3(1-4)**
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)**

MFG 300. Technology Seminar **Credit 2(2-0)**
This course is designed to review and acquaint students with the necessary skills to present themselves and their credentials to various groups. Video/oral presentations as well as written and computer generated graphic presentations will be made. Prerequisite: Sophomore Standing. **(F;S;Summer)**

MFG 301. Industrial Statistics and Probability **Credit 3(3-0)**
This course covers the standard introductory topics, including descriptive statistics, probability, confidence intervals, hypothesis tests, linear regression and basic techniques and methods to collect and analyze the industrial data. **(F;S;Summer)**

MFG 310. Human Resources in Manufacturing **Credit 3(3-0)**
This course introduces students to the current human resource issues in manufacturing industries. These include human resource needs in the new manufacturing environment involving steps in providing appropriate human resources, recruitment process, training, performance appraisal, legislation issues, and workforce diversity. Prerequisite: Sophomore Standing. **(F;S)**

MFG 350. Electronics Manufacturing Technology I **Credit 3(2-2)**
This course covers the basics in design and fabrication of electronic components. Topics include properties of materials and chemicals used in electronics manufacturing, passive and active devices, thin and thick film and IC technologies, crystal growth and water preparation and contamination control. Prerequisites: PHYS 252, MATH 111, ECT 299. **(F;S)**

MFG 360. Electronics Manufacturing Technology II **Credit 3(2-2)**
This course is a continuation of MFG 350 and covers topics such as devices and integrated circuit formation processes, ion implantation, photolithography, deposition, materialization, wafer testing and evaluation, through hole and surface mount components, and soldering techniques. Prerequisite: MFG 350. **(F;S)**

MFG 373. Numerically Controlled Machine-Tool Technology **Credit 3(2-2)**
Basic manufacturing processes with computer-numerically controlled (CNC) machine-tools will be covered. Course includes programming and machine language. Prerequisite: Junior Standing. **(F;S;Summer)**

MFG 380. Mechanical Design and Manufacturing Problems **Credit 3(2-2)**
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: Junior Standing. **(F;S; Summer)**

MFG 392. Statics for Technology Major **Credit 3(3-0)**
This course is a study of static equilibrium conditions and mechanical behavior of materials under loading. Applications are made in the area of bars, columns, joint pressure vessels, shafts and beams. Testing materials for measuring mechanical properties will be experienced. Prerequisite: Junior Standing. **(F;S;Summer)**

MFG 393. 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: Junior Standing or consent of the instructor. **(F;S;Summer)**

MFG 394. 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: Junior Standing or consent of the instructor. **(F;S;Summer)**

MFG 421. Manufacturing Decision Making **Credit 3(3-0)**
This course introduces the basic concept of the decision-making process in manufacturing industry. Different methods of quantitative analysis techniques will be discussed, including their application and interpretation in manufacturing industry. Prerequisite: Junior Standing. **(F;S;Summer)**

MFG 450. Electronic Components Packaging **Credit 3(2-2)**
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: MFG 360. **(F;S)**

MFG 451. Dimensional Metrology **Credit 3(2-2)**
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. **(F;S)**

MFG 473. Advanced CNC-Machine-Tool Technology **Credit 3(1-4)**
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. **(F;S)**

MFG 475. Ceramic Materials **Credit 3(2-2)**
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;Summer)**

MFG 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)**

MFG 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;Summer)**

MFG 481. Metallurgy **Credit 3(2-2)**
Metals, their properties, selection, and production are studied. Phase diagram, thermal treatment and strengthening mechanisms are discussed. Lab exercises will cover specimen preparations, metallography techniques, and microstructural analysis. **(F;S)**

MFG 482. Introduction to Non-Destructive Evaluation (NDE) Technology **Credit 3(2-2)**
This course provides an overview of the non-destructive evaluation technologies. The course introduces students to a wide spectrum of NDE technologies, such as the popular "big five" NDE technologies (liquid penetration, magnetic particle testing, x-ray radiography, ultrasonic testing, and eddy-current testing), some of the newly developed NDE technologies, and the application areas of different types of NDE technologies. Necessary theoretical background knowledge involving mechanical, electrical, magnetic, acoustical, and thermal principles behind various NDE technologies will also be reviewed. **(F;S;Summer)**

MFG 492. Mechanics of Materials for Technology Major **Credit 3(3-0)**
This course introduces the mechanical behavior of materials under loading. The concepts of stress and strain, and the relationship between external loads and materials deformation are presented. Applications are made in the area of bars, columns, joint pressure vessels, shafts and beams. Testing materials for measuring mechanical properties will be experienced. Prerequisite: MFG 392. **(F;S;Summer)**

MFG 493. Fundamentals of Dynamics and Kinematics for Technology Major **Credit 3(3-0)**
This course introduces various principles of kinematics and kinetics of particles and rigid bodies. Emphasis is placed on understanding and analyzing various mechanisms and their motion types. Newton's laws in various coordinator systems, and analysis of the relationship among displacement, velocity, acceleration, and the external load conditions, and how these principles should be used in industrial machines and motorsports vehicles. Prerequisite: MFG 392. **(F;S;Summer)**

MFG 495. Statistical Process/Quality Control **Credit 3(2-2)**
This course emphasizes a practical approach to quality control in industries. Includes quality and process improvement through measurement analysis and diagnosis utilizing basic concepts of statistics. **(F;S)**

MFG 496. Electro-Mechanical Control Systems **Credit 3(1-4)**
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. **(F;S)**

MFG 497. Cooperative Training in Industry I **Credit 3(3-0)**
Students must be in industry full time for one semester in their major field of work and complete any University co-op requirements. The student will be evaluated on reports from industry. The report will be in standard format. The hours earned will be credited towards required technical electives in the industrial technology curriculum. Three semester hours are the maximum to be earned under this arrangement in any one semester. Six semester hours are the maximum to be earned in the co-op arrangement in the Industrial Technology curriculum. **(F;S)**

MFG 498. Cooperative Training in Industry II **Credit 3(3-0)**
The description of this course is the same as MANU 497: Cooperative Training in Industry I, and is normally the second co-op experience of the student. **(F;S)**

MFG 500. Manufacturing Systems Capstone Class **Credit 3(3-0)**
This course is a comprehensive MFG required course for all manufacturing students before their graduation. This course is project oriented. The project may be chosen from all concentration areas within the department with all aspects of the manufacturing principles and practices implemented into a selected project. A final report must be completed and approved. Prerequisite: Senior standing. **(F;S;SS)**

MFG 510. 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: MFG 495. **(F;S)**

MFG 511. Lean Manufacturing **Credit 3(3-0)**
This course introduces manufacturing students to the concept of lean manufacturing, and how lean manufacturing system can facilitate continuous improvement in quality and productivity. This includes the pull method of work flow, consistent quality, small lot size, uniform workstation loads, standardized components and work methods. Other concepts include close supplier ties, flexible work force, line flows, automation, preventive maintenance, and just-in-time (JIT) philosophy. Prerequisite: Senior Standing. **(F;S)**

MFG 512. 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. Prerequisite: Senior Standing. **(F;S)**

MFG 513. 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)**

MFG 514. 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: MFG 495. **(F;S;SS)**

MFG 515. 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)**

MFG 516. Manufacturing Execution System **Credit 3(3-0)**
This course introduces students to the Manufacturing Execution System (MES) functionalities including machines start-up procedures, product-making process, parts measurements and inventory availability. Prerequisite: Junior Standing. **(F;S;SS)**

MFG 550. Thermal and Vibration Analysis and Testing of Electronic Components **Credit 3(3-0)**
This course covers topics in electronic components testing including failure mode, overheating, thermal stress and vibration analysis. Environmental stress screening including thermal and vibration cycling will also be studied. Prerequisite: Senior Standing. **(F;S)**

MFG 551. Introduction to Industrial Robotics **Credit 3(2-2)**
This course introduces the main components of industrial robots. Topics include: classifications, geometry, safety, power sources, drive systems, work envelope and ISO Standards. Prerequisite: Senior Standing. **(F;S)**

MFG 573. 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: Senior Standing. **(F;S)**

MFG 575. Manufacturing 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 or consent of the instructor. **(F;S;Summer)**

MFG 581. Non-Destructive Evaluation (NDE) Technology I **Credit 3(3-0)**
This course presents the popular "big five" NDE technologies (liquid penetration, magnetic particle tecting, x-ray radiography, ultrasonic testing, and eddy-current testing). For each of these technologies, a series of topics will be discussed; physical principles, testing procedures, application areas, equipment, instruments, data acquisitions, data analysis, flaw indication, advantages and limitations. Prerequisite: Junior Standing. **(F;S)**

MFG 592. Non-Destructive Evaluation (NDE) Technology II **Credit 3 (2-2)**
This course introduces the newly developed NDE technologies, such as acoustic emission techniques, magnetic flux leakage techniques, radiographic and microwave techniques. For each of technique, a series of topics covering physical principles, testing procedures, data collection and analysis, and applications will be introduced. Prerequisite: MFG 581. **(F;S)**

MFG 596. Automated Manufacturing **Credit 3(1-4)**
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)**

MFG 599. 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. **(F;S)**

COURSE DESCRIPTIONS IN MOTORSPORTS

MS 251. Introduction to Motorsports **Credit 3(1-4)**
This course provides an overview of the various types of vehicles, venues and sanctioning bodies of motorsports. Students study the rules, regulations, and point systems governing various classes of racing. This course will also cover the components and functions of motorsport facilities. **(F;S)**

MS 252. Performance Engine Preparation **Credit 3(2-2)**
This course is a study of the principles of the internal combustion engine and the assembly, maintenance and the maximization of high-performance internal combustion engines. **(F;S)**

MS 255. Automotive Power Transmission **Credit 3(2-2)**
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. **(F;S)**

MS 275. Motorsports Performance Technology **Credit 3(2-2)**
This course is a study of the chemistry of combustion, fuel systems, and exhaust systems. The requirements and specifications for bodies, engines, chassis, drivelines and safety equipment in various racing classes also will be studied. **(F;S)**

MS 452. Motorsports Management **Credit 3(2-2)**
This course is designed to prepare students to operate successful motorsports team. The course will cover racing team structure and personnel, business start-up, public relations, marketing, sponsorship allocation and securing, budgeting and finance. **(F;S)**

MS 455. Motorsports Data Acquisition and Controls **Credit 3(1-4)**
This course is a study of the various types of gauges, sensors, control systems, and actuators used in the control and acquisition of vehicle data. **(F;S)**

MS 456. Vehicle Dynamics & Control **Credit 3(1-4)**
In this course students will study high-performance vehicle handling as it directly relates to chassis, suspension components, springs and shocks, tires and the overall race set up. This course provides an in-depth study of the causes and effects of system changes as they relate to the race car set up. **(F;S)**

DIRECTORY OF FACULTY

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Thurman M. Exum ..... **Adjunct Instructor**
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Hany K. Nakhla ..... **Associate Professor**
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Zhaoqiong (Julie) Qin ..... **Associate Professor**
B.S., Southwest Jiaotong University, M.S., Southwest Jiaotong University, Ph.D., New Jersey Institute of Technology

Ji Y. Shen ..... **Associate Professor and Chairperson**
B.S., Northwestern Polytec University; M.S., Nanjing Aeronautical University; Ph.D., Old Dominion University

Earnest L. Walker ..... **Professor and Associate Dean**
B.S., University of Arkansas, Pine Bluff; M.S., University of Arkansas, Fayetteville; Ph.D., Southern Illinois University

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COLLEGE OF ENGINEERING

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Winser Alexander, Interim Dean
Sanjiv Sarin, Associate Dean
Leotis Parrish, Assistant Dean for Student Development

The College of Engineering consists of six academic departments: Civil Architectural and Environmental Engineering, Chemical and Bioengineering, Computer Science, Electrical and Computer Engineering, Industrial and Systems Engineering, and Mechanical Engineering. These departments together offer eleven Bachelor of Science, seven Master of Science and four Doctor of Philosophy degree programs. These include Bachelor of Science degrees in architectural; biological, chemical; civil; computer; electrical; geomatics; industrial and systems; interdisciplinary general and mechanical engineering and computer science. In addition, Master of Science degrees in chemical engineering, civil engineering, computational science and engineering, electrical engineering, industrial & systems engineering, mechanical engineering, and computer science, and Doctor of Philosophy degrees in electrical, industrial & systems and mechanical engineering and computational science and engineering are available.

The College of Engineering at North Carolina A&T State University is the nation's leading producer of African American engineers at the undergraduate and graduate levels. Approximately one-third of the students are women. The college ranks fourth in the nation in the percentage of women graduates.

ACCREDITATION

The Bachelor of Science degrees in architectural; biological, chemical; civil; computer; electrical; industrial and systems; and mechanical engineering are accredited by the Engineering Accreditation Commission of the Accreditation

Board for Engineering and Technology (ABET). The Computer Science program is accredited by the Computing Accreditation Commission of the Computer Science Accreditation Commission of ABET.

DEGREES OFFERED

Architectural Engineering – 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
Geomatics – Bachelor of Science
Industrial and Systems Engineering – Bachelor of Science
Interdisciplinary General Engineering – Bachelor of Science
Mechanical Engineering – Bachelor of Science
Chemical Engineering – Master of Science*
Civil Engineering – Master of Science*
Computer Science – Master of Science*
Computational Science and Engineering – Master of Science*
Electrical Engineering – Master of Science*
Industrial and Systems Engineering – Master of Science*
Mechanical Engineering – Master of Science*
Electrical Engineering – Doctor of Philosophy*
Industrial and Systems Engineering – Doctor of Philosophy*
Mechanical Engineering – Doctor of Philosophy*
Computational Science and Engineering – Doctor of Philosophy*
**See the Graduate School Bulletin*

MISSION

The mission of the College of Engineering (COE) is to be an international model for developing quality educational programs responsive to the diverse needs of society's future engineers and computer scientists; to encourage interdisciplinary research programs to cultivate strategic partnerships; and to create outreach programs that serve the local, national and international community.

ADMISSION

Admission into the college of engineering is coordinated through the University's Office of Admissions. Admission decisions are based on SAT or ACT scores, and High School GPA. For admission to all undergraduate programs in the college of engineering, the applicant must present the following minimum units of high school credit:

1. English – 4 units emphasizing grammar, composition and literature
2. Science – 3 units (including at least one unit in a biological or life science, one unit in a physical science, and one unit in Chemistry. At least one unit should have a laboratory component.)
3. Mathematics – 4 units (including Algebra I, Algebra II, Geometry, and an additional unit beyond Algebra II - e.g., Trigonometry, Math Analysis, etc.). Students entering with a deficiency in mathematics must begin with Pre-Engineering Mathematics, which is not counted towards the required semester hours for graduation. In this case the normal mathematics sequence is shifted one semester.
4. Social Sciences – 2 units (including at least one unit in United States History)
5. Foreign Language – 2 units are recommended in one foreign language.
6. Electives – 3 units (no more than 2 units in vocational subjects and 2 units in the disciplines of Music and Physical Education)

Transfer students are accepted into the college of engineering if the applicant has a minimum 2.5 GPA if transferring from an accredited engineering program, or a minimum 3.0 GPA if transferring from other programs.

TRANSFER CREDIT EVALUATION

Students are advised to receive prior approval from their academic advisor and department chairperson for courses to be considered for transfer credit from other colleges and universities. The Office of Admissions may recommend a preliminary award of transfer credits. However, the authority and responsibility for the final decision for approval of transfer credits rests with the academic departments.

ADVISING

All students will be assigned an academic advisor. Students are expected to meet their advisor for help with the following issues:

- 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 University and ABET category requirements
- Helping students to understand the degree to which they must assume responsibility for their program planning
- Providing vocational and career guidance
- Referring students to appropriate individuals and offices when further assistance is needed.

MATHEMATICS AND CHEMISTRY PLACEMENT

Admitted (conditionally or unconditionally) 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. Otherwise the student will be required to first take MATH 110 or 111. Chemistry proficiency can be demonstrated through acceptable scores on High School Chemistry, AP Chemistry, or Chemistry Placement Test. Otherwise the student will be required to first take CHEM 099.

ACADEMIC PROGRESSION POLICIES

The following policies apply to all engineering programs in the college of engineering and specifically refer to courses designated as Engineering Fundamentals (EF) courses. EF courses include Mathematics and Science courses required of each engineering major as well as several introductory engineering and engineering science courses that are part of the Fundamentals of Engineering examination and include the following courses:

- CAAE 100
- CAAE 331
- CAAE 332
- CAAE 334
- CAAE 362
- CHEM 106
- CHEM 107
- CHEN 300
- CHEN 310
- ELEN 440
- ELEN 200
- GEEN 100
- INEN 260
- INEN 270
- MATH 123
- MATH 131
- MATH 132
- MATH 224
- MATH 231
- MATH 431
- MEEN 260
- MEEN 313
- MEEN 335
- MEEN 336
- MEEN 337
- MEEN 413
- MEEN 416
- MEEN 441
- PHYS 241
- PHYS 242

Minimum C Grade Policy

When an engineering program requires students to take any of the listed EF courses, students will be required to obtain a minimum grade of "C" in each such course to meet graduation requirements. Furthermore, a minimum grade of "C" on any such course will be required to satisfy prerequisite requirements of subsequent courses. This applies both to courses that are explicitly required and those that are recommended as elective courses. Individual programs may have additional courses (identified as Gateway courses or otherwise) that also require a minimum C grade. Please refer to the requirements of each program stated in this bulletin or in the program handbook available from the academic advisor or the department chairperson.

Maximum attempts

A student may attempt the following three EF courses only twice: MATH 131, CHEM 106, and PHYS 241. If a student is unable to pass any of these courses in two graded attempts, he/she will be dismissed from engineering.

Except for MATH 131, CHEM 106, and PHYS 241, a student may attempt an EF course at most three (3) times. If a student is unable to pass a required EF course within three graded attampts, he/she will be dismissed from engineering.

Attendance Policy

The college of engineering abides by the university's policy on attendance that is explained elsewhere in this Bulletin. The University is committed to the principle that regular and punctual class attendance is essential to the students' optimum scholastic achievement. An absence, excused or unexcused, does not relieve the student of any course requirement. Attendance is required and punctuality is expected! A student is responsible for all the work, including tests and written work, of all class meetings.

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 any course if the proper prerequisites are not satisfied. Any prerequisite waivers must be formally 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 Civil, Architectural and Environmental Engineering

http://www.eng.ncat.edu/dept/caae

Sameer Hamoush, Chairperson

DEGREES OFFERED

Architectural Engineering – Bachelor of Science
Civil Engineering – Bachelor of Science
Geomatics – Bachelor of Science
Civil Engineering – Master of Science*

** See the Graduate School Bulletin. This degree program includes Architectural Engineering and Biological Engineering options.*

PROGRESSION REQUIREMENTS

CAAE students are required to take an FE or FLS -style exam at the end of their Freshman, Sophomore, and Junior years. Those who do not pass are strongly encouraged to enroll in the appropriate CAAE or GEOM Fundamentals Review courses that will be offered in the Fall Semester. The exam will be given again at the end of the review course. Students will not be permitted to enroll in additional CAAE or GEOM courses until they pass the exam. All CAAE students are encouraged to take the FE or FLS exam.

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. They will:

1. be assigned progressively increasing technical responsibility by their supervisor.
2. be recognized for their interdisciplinary perspective to problem-solving and for their teamwork and leadership skills.
3. be active in a professional society and be involved in continuing education, making progress towards professional registration.
4. contribute to society and to the diversity of their company and their profession by actively mentoring new engineering graduates.

PROGRAM REQUIREMENTS

The Architectural Engineering major must complete 127 credit hours following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements. Included in the 127 semester hours are 6 semester hours of architectural engineering courses selected from one of four optional blocks – Structures, Energy and Building Environmental Systems, Construction Engineering, and Architectural Design & City and Urban Planning. To be eligible to enroll in advanced architectural design courses, a student must (a) have an accumulated GPA of 2.65 for unconditional enrollment, (2) have completed all prerequisites, and (3) be of senior standing. A student, with a GPA below 2.65, may petition the Departmental Design Committee for permission to enroll in Design III. The petition must be reviewed by the Design Committee and approved by the department before the student will be allowed to enroll in Design III.

ACCREDITATION

The undergraduate program in Architectural Engineering, leading to the Bachelor of Science in Architectural Engineering (BSAE) degree, is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC-ABET).

CAREER OPPORTUNITIES

Completion of the architectural engineering program provides training for a career in the engineering profession as related to the engineering design and construction of building systems. Training in architectural engineering prepares graduates to pursue a professional career in engineering practice or business. Graduates are also employed in offices of professional engineers engaged in building systems design which include the design of structural, mechanical, lighting, and electrical systems for buildings. In addition, graduates are employed as engineers in the offices of professionals engaged in engineering systems design for architectural projects. Architectural engineering graduates also have opportunities for careers with construction firms and building materials manufacturers where their architectural engineering training is a significant asset.

DUAL DEGREE IN CIVIL ENGINEERING

Some Architectural Engineering graduates may decide to pursue careers in areas that are traditionally Civil Engineering. Employment with the NC Department of Transportation is one example. For these students, a dual degree in Architectural Engineering and Civil Engineering will enhance their opportunities for career advancement. Since the two curricula are very similar, it is possible for an Architectural Engineering student to earn a second degree in Civil Engineering by completing two additional semesters of coursework.

REQUIRED MAJOR COURSES IN ARCHITECTURAL ENGINEERING PROGRAM

AREN 231	AREN 586	CAAE 335
AREN 363	GEEN 100	CAAE 362
AREN 364	GEEN 161	CAAE 363
AREN 382	CAAE 101	CAAE 401
AREN 415	CAAE 325	CAAE 404
AREN 444	CAAE 330	CAAE 481
AREN 448	CAAE 331	CAAE 482
AREN 483	CAAE 332	CAAE 530
AREN 585	CAAE 334	

CURRICULUM GUIDE FOR ARCHITECTURAL ENGINEERING PROGRAM

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
GEEN 100	2	UNST 120	3
CHEM 116	1	MATH 132	4
MATH 131	4	PHYS 241	3
UNST 100	1	PHYS 251	1
UNST 110	3	UNST 130	3
CHEM 106	3	CAAE 101	2
	14	GEEN 120	0
			16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MATH 231	4	MATH 431	3
CAAE 331	3	GEEN 161	2
PHYS 242	3	CAAE 334	3
PHYS 252	1	CAAE 332	3
INEN 260	2	UNST Cluster Theme Elective	3
UNST 140	3	UNST Cluster Theme Elective	3
	16		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
AREN 382	3	CAAE 404	3
MEEN 441	3	AREN 483	3
CAAE 362	3	CAAE 530	3
CAAE 335 Lab	1	AREN 364	3
AREN 448	3	AREN 363	1
AREN 444	1	CAAE 325	3

CAAE 330	3		16
CAAE 401	0		
	17		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
AREN 585	3	AREN 586	3
CAAE 481	3	CAAE 482	3
Technical Electives	3	AREN 415	2
AREN Option Block	3	ECEN 440	3
UNST Cluster Theme Elective	3	AREN Option Block	3
UNST Cluster Theme Elective	3		14
	18		

Total Credit Hours: 128

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

To properly fulfill the Mission, the educational objectives of the Bachelor of Science program in Civil Engineering are the following:

1. Graduates will be gainfully employed as civil engineers with designations of, at least, *Engineer Intern*s and will demonstrate the ability to work productively in the main areas of civil engineering.
2. Graduates will demonstrate expertise in a primary area of civil engineering and the ability to function effectively on intra-disciplinary and multi-disciplinary teams or be in the process of completing post-baccalaureate studies or expanding their proficiency in civil engineering.
3. Graduates will continue to learn and adapt to changing technologies, procedures and concepts in civil engineering.
4. Graduates will demonstrate that they possess the skills and knowledge necessary to function effectively in roles of leadership and service in the communities where they will live and work, and that they are contributing to the welfare, quality of life, protection, and advancement of the community.

PROGRAM REQUIREMENTS

The Civil Engineering major must complete 128 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.

REQUIRED MAJOR COURSES IN CIVIL ENGINEERING PROGRAM

GEEN 100	CAAE 340	CIEN 335
GEEN 161	CAAE 363	CIEN 350
CAAE 101	CAAE 404	CIEN 366
CAAE 202	CAAE 530	CIEN 380
CAAE 204	CAAE 536	CIEN 481

CAAE 302	CIEN 310	CIEN 510
CAAE 325	CIEN 311	CIEN 520
CAAE 331	CIEN 320	CIEN 550
CAAE 332	CIEN 321	CIEN 598
CAAE 334	CIEN 330	CIEN 599

CURRICULUM GUIDE FOR CIVIL ENGINEERING PROGRAM

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MATH 131	4	MATH 132	4
CHEM 106	3	PHYS 241	3
CHEM 116	1	PHYS 251	1
GEEN 100	2	CAAE 101	2
UNST 110	3	UNST 120	3
UNST 100	1	UNST 130	3
	14	GEEN 120	0
			16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MATH 231	4	MATH 431	3
GEEN 161	2	UNST Cluster Theme Elective	3
CAAE 331	3	UNST Cluster Theme Elective	3
PHYS 242	3	CAAE 334	3
PHYS 252	1	CAAE 332	3
UNST 140	3	INEN 260	2
	16		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CIEN 350	3	CIEN 310	3
CAAE 204	3	CIEN 311	1
CAAE 330	3	CAAE 364	3
CAAE 335	1	CAAE 530	3
CAAE 325	3	CIEN 320	3
CAAE 363 Lab	3	CIEN 321	1
CAAE 362	3	CAAE 404	3
CAAE 401	0		17
	17		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CAAE 481	3	CIEN 550	3
CAAE 536	3	CIEN 599	2
UNST Cluster Theme Elective	3	CIEN Design Electives	3
CIEN 510	3	MEEN 441	3
CIEN 598	1	CIEN 520	3
CIEN 380	1		14
UNST Cluster Theme Elective	3		
	17		

Total Credit Hours: 128

GEOMATICS PROGRAM

MISSION

The mission of the Bachelor of Science program in Geomatics is to provide an educational program attuned to the unique abilities of 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.

EDUCATIONAL OBJECTIVES

To properly fulfill the Mission, the educational objectives of the Bachelor of Science program in Geomatics are the following:

1. Graduates will be gainfully employed in the area of Geomatics and will have passed the Fundamentals of Land Surveying exam.

2. Graduate will have the knowledge and skills to meet the educational requirements to become a professional licensed surveyor in North Carolina.
3. Graduates will continue to learn and adapt to changing technologies, procedures and concepts in Geomatics.
4. Graduates will demonstrate that they possess 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 productive in the area of Geomatics contributing to the welfare, quality of life, protection, and advancement of the community.

PROGRAM REQUIREMENTS

The Geomatics major must complete 124 credit hours following the approved program curriculum. Majors must also satisfy all University requirements.

CAREER OPPORTUNITIES

According to the U.S. Department of Labor, geospatial technology is listed as one of the three most important emerging career fields in 2004. Geomatics is an integral component of geospatial technology and career options are expected to expand rapidly in the next decade. Graduates in geomatics should command excellent starting salaries. Jobs available to those completing their degrees in this area include: land surveyor, mapping technologist, remote sensing specialist, photogrammetrist, cartographer/digital mapping specialist, geospatial technologist, GIS analyst/specialist, GIS programmer/developer, project manager, surveying and mapping specialist, geodetic engineer, geomatics engineer, GPS specialist, cadastral surveyor, and image analyst. Some jobs involve a high level of geospatial technology and computer use and are indoors but a lot of job opportunities involve a great deal of fieldwork and working outdoors. Graduates may work in private practice, government, or in industry. Most geomatics-related companies are smaller firms. Most private surveying firms have less than 10 employees and provide specific services, project support equipment, or data (mostly geospatial). Excellent opportunities exist for entrepreneurs to own private firms and licensure is highly recommended.

REQUIRED MAJOR COURSES IN GEOMATICS PROGRAM

GEEN 100	GEOM 270	GEOM 441
GEEN 161	GEOM 300	GEOM 450
CAAE 101	GEOM 307	GEOM 460
CAAE 204	GEOM 320	GEOM 470
CAAE 481	GEOM 340	GEOM 471
CIEN 380	GEOM 350	GEOM 520
CIEN 366	GEOM 360	GEOM 598
GEOM 205	GEOM 400	GEOM 599
GEOM 210		

CURRICULUM GUIDE FOR GEOMATICS PROGRAM

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 120	3
UNST 110	3	UNST 130	3
GEEN 100	2	MATH 132	4
MATH 131	4	CAAE 101	2
CHEM 106	3	PHYS 241	3
CHEM 116	1	PHYS 251	1
	14	GEEN 120	0
			16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CAAE 204	3	UNST Cluster Theme Elective	3
GEOM 210	3	UNST Cluster Theme Elective	3
PHYS 242	3	GEEN 161	2
PHYS 252	1	MATH 450	3
Technical Elective	3	GEOM 205	4
UNST 140	3	Technical Elective	3
CIEN 380	1		18
	17		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
GEOM 340	3	GEOM 441	3
GEOM 307	4	GEOM 360	3
GEOM 270	3	GEOM 350	3

CIEN 366	3	GEOM 320	3
UNST Cluster Theme Elective	3	Technical Elective	3
	16		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Tecnical Elective	3	GEOM 599	4
GEOM 470	3	Business / Law Elective	3
GEOM 460	3	GEOM 471	1
GEOM 598	1	GEOM 400	1
UNST Cluster Theme Elective	3	GEOM 520	3
INEN 260	2		12
	15		

Total Credit Hours: 124

COURSE DESCRIPTIONS IN CIVIL, ARCHITECTURAL, ENVIRONMENTAL, AND GEOMATICS ENGINEERING

CAAE 100. Fundamentals of Civil, Architectural, and Agricultural Engineering **Credit 2(2-0)**
This course gives an overview of the three engineering professions housed within the CAAE department. The topics include careers in these engineering fields, professional registration, application of math to engineering, engineering design process as it applies to each program, units and measuring including both US and metric, written and oral communications, and an introduction to word processing, presentation software, and spreadsheets. **(F;S)**

CAAE 101. Graphics in CAAE **Credit 2(0-4)**
This course is critical to the development of visualization skills, which are important in engineering. Covered by the course are hand drawing skills including drafting, freehand sketching, perspective sketching, and lettering. Visualization skills are developed by stressing freehand techniques. Drafting skills will include plans, elevations, details, scaling, and units (US and Metric) and will relate to the three professions housed in the department. In addition to orthographic projections, oblique and isometric drawings will be taught. A brief introduction to computer graphics package such as AutoCAD will also be presented. **(F;S)**

CAAE 102. Fundamentals of Computer Applications for Civil, Architectural, and Agricultural Engineering **Credit 2(0-4)**
This course introduces the student to computer hardware and software and to basic operating systems. Spread sheet programs and other computational packages, such as MathCAD, are introduced and applied to the solution of practical engineering problems. Programming and algorithms are introduced as well as the Visual Basic language. **(F;S)**

CAAE 202. Sophomore Colloquium **Credit 0(0-1)**
This colloquium assists students in their preparation for the End-of-Year exam required for CAAE Sophomores. Topics covered include: Math, Chemistry, Statics, Dynamics, and Strength of Materials. The course is pass/fail. Prerequisite: None. **(SS)**

CAAE 204. Fundamentals of Surveying **Credit 3(2-3)**
This course covers the theory and practice of plane, boundary, and topographic surveying instruments, theory of measurements, differential and profile leveling, traverse calculations, and topographical surveying and mapping. An introduction to horizontal and vertical roadway layout, site planning and development, and an overview of Geographic Information Systems and Global Posting Systems is also included. Prerequisite: MATH 102 or consent of instructor. **(F;S)**

CAAE 215. Computer Aided Design **Credit 2(0-4)**
This course provides an introduction to a computer based design/drawing application such as AutoCAD. The student will learn how to use computers to develop 2D presentation drawings. Prerequisites: CAAE 102 and CAAE major or consent of the instructor. **(F;SS)**

CAAE 302. Junior Colloquium **Credit 0(0-1)**
This colloquium assists students in their preparation for the End-of-Year exam required for CAAE Juniors. Topics covered include: Math, Chemistry, Statics, Dynamics, and Strength of Materials, Thermodynamics, Fluid Mechanics, Electrcial Circuits, Engineering Economics. The course is pass/fail. Prerequisite: None. **(SS)**

CAAE 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: CAAE 332. **(F;S)**

CAAE 330. Construction Materials **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: CAAE 204 and CAAE 332. **(F)**

CAAE 331. 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 and PHYS 241. **(F;S)**

CAAE 332. 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: CAAE 331 and MATH 132. **(F;S)**

CAAE 334. Engineering Mechanics II **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 CAAE 331. **(F;S)**

CAAE 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: CAAE 332. Corequisites: CIEN 330 **(F)**

CAAE 340. Numerical Methods, Systems, and Economic Decision Analysis **Credit 3(3-0)**
This course covers linear algebra, matrix theory, manipulation of polynomials, interpolation, differentiation, integration, optimization (via Linear Programming) and economic decision analysis. Computational methods for the solution of mathematical problems are presented. Prerequisite: MATH 231. Corequisite: MATH 431. **(F;S)**

CAAE 350. Junior Fundamentals Review Seminar **Credit 1(0-2)**
This course will provide a review of the math, science, and engineering science concepts covered on the CAAE Junior Competency Exam. The course will culminate in re-examination using the CAAE Junior Competency Exam. The course is pass/fail. Prerequisite: Consent of department chairperson. **(SS)**

CAAE 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: CAAE 331 and MATH 231. **(F;S)**

CAAE 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: CAAE 362 or consent of instructor. **(F;S)**

CAAE 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)**

CAAE 401. Engineering Topics Review II **Credit 0(0-2)**
This course is a review course for students taking the Fundamentals of Engineering Exam. **(F;S)**

CAAE 404. Applications of Statistics, Reliability and Decision Theory in Civil Engineering **Credit 2(2-0)**
This course will introduce the students to probability theory and statistics. Reliability theory and Decision analyses are introduced. The course will incorporate simplified examples of applications of decision analysis, modeling of system response, and system reliability in the different areas of the civil 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. Prerequisites: Senior standing. **(S)**

CAAE 480. Geospatial Data Concepts and Applications **Credit 3(3-0)**
This course provides a broad overview of the geospatial data, its acquisition, use and maintenance for various types of applications. It includes the integration of geographic information systems (GIS), the global positioning system (GPS),

photogrammetry, and remote sensing and image analysis. GIS, GPS, airborne and satellite imagery, and the use of applicable software and equipment are also covered. Prerequisites: BOIE 216, GEOM 310 or consent of instructor. **(F;S)**

CAAE 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. **(DEMAND)**

CAAE 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: CAAE 481. **(S)**

CAAE 500. General Engineering Topics Review **Credit 1(0-3)**

The 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/Corequisite: Senior standing in architectural engineering, civil engineering, or agricultural engineering. **(F;S;SS on DEMAND)**

CAAE 501. Engineering Topics Review II **Credit 0(0-1)**

This course is the final review for students taking the Fundamentals of Engineering Exam. Prerequisite: CAAE 500. **(S)**

CAAE 530. 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: CAAE 332. Corequisite: CAAE 325. **(F;S)**

CAAE 536. Reinforced Concrete **Credit 3(3-0)**

This course is a continuation of AREN 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. Prerequisites: CAAE 530 and senior standing or consent of instructor. **(F;S)**

CAAE 550. Construction Engineering & Management **Credit 3(3-0)**

This course is an introduction to engineering project development project, with a particular emphasis on project systems integration and process execution and engineered building and structures program management. To introduce the students to concept of project management, students will be introduced to the construction project process, legal relationships and project control and cost implications. Prerequisites: AREN 231, senior standing or consent or instructor. **(F;S)**

CAAE 598. 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)**

CAAE 599. 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)**

ARCHITECTURAL ENGINEERING

AREN 112. History of American Architecture **Credit 3(3-0)**

This course is an illustrated lecture course. It provides an analytical study of the major architectural and engineering developments that have shaped the American-built environment from the arrival of the Europeans to the present. **(F)**

AREN 221. Building Sanitation and Fire Protection **Credit 3(3-0)**

This course is the study of the following: waste water, water supply and distribution; plumbing systems and fixtures; soil, water and venting systems; pipe sizing fire protection systems for buildings and pumps, sprinklers, gravity and pressure vessels, and controls. Lecture-problems course. **(S)**

AREN 231. Materials and Methods of Construction **Credit 3(3-0)**

This course will introduce the student to the use of construction materials in buildings. An evaluation of both the function and form of the major building systems such as walls, floors and roofs will be presented. **(F)**

AREN 326. Structural Engineering Laboratory **Credit 1(0-2)**

This laboratory course will introduce the student to laboratory methods in experimental structural analysis and tests to reinforce structural behavior. Prerequisite: CAAE 332. Corequisite: CAAE 325. **(F;S)**

AREN 361. Heating, Ventilation, and Air Conditioning Principles **Credit 2(2-0)**

This course is the study of the basic concepts of energy and building systems design. The course covers the subjects of psychrometrics and human comfort in buildings. The topics include heat transfer functions, heating loads, cooling loads, and the refrigeration cycle. Prerequisites: MATH 131 and PHYS 242. Corequisite: AREN 363. **(S)**

AREN 363. HVAC Principles / Systems Laboratory **Credit 1(0-2)**
This laboratory provides hands on experiences that supplement the topics presented in AREN 364. Corequisite: AREN 364. **(S;F)**

AREN 364. HVAC Principles and Systems **Credit 3(3-0)**
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: MATH 131, PHYS 242, Corequisite AREN 363. **(F;S)**

AREN 382. Architectural Design I **Credit 3(0-6)**
The student is introduced to the basic fundamentals of design, which includes space relationships, form, and visible structure. The course includes perspective drawing, plans, elevations, sections, shades, and shadows. Prerequisites: AREN 231, 221, MATH 132, MEEN 335, and junior standing. **(F)**

AREN 415. Advanced CAD Applications for Architectural Engineers **Credit 1(0-2)**
This course provides an application of advanced CAD applications to the Architectural Engineering profession. Topics include 2D projections and rotations into 3D space; development of 3D presentation drawings and 3D modeling. Prerequisites: CAAE 215, AREN majors or consent of the instructor. **(F;S)**

AREN 442. Fundamentals of Illuminating Engineering **Credit 2(2-0)**
A study of the basic principles of illumination, lighting concepts, analysis, design, and the application of these principles to luminous environments. Topics include physics of light, vision, and visibility, units and terminology, light sources, numerical methods, and the application of these principles to lighting design. Prerequisites: PHYS 242, AREN major or consent of the instructor. Corequisite: AREN 444. **(F)**

AREN 444. 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 448. **(F;S)**

AREN 445. Electrical Systems for Buildings **Credit 2(2-0)**
This course includes the analysis and design of electrical systems utilizing the National Electrical Code. The topics include basic circuits, ac and dc single phase, three-phase power, transients, capacitance and inductance, branch circuits, panelboards, motors, and electrical distribution in buildings. The course also covers design topics of system sizing, overcurrent protection, and voltage drop as they apply to electrical systems design for a building. Prerequisites: MATH 132 and PHYS 242, AREN major or consent of the instructor. Corequisite: AREN 447. **(S)**

AREN 447. Electrical Systems for Buildings Laboratory **Credit 1(0-2)**
This laboratory provides hands on experiences that supplement the topics presented in AREN 445. Corequisite: AREN 445. **(F;S)**

AREN 448. 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. Prerequisites: MATH 132, PHYS 142. **(F;S)**

AREN 462. Heating, Ventilation, and Air Conditioning Systems **Credit 2(2-0)**
This course includes heating, ventilating, and central air conditioning system components, all air and water systems, and packaged systems. It covers the introduction to air-side and water-side system design concepts, space air diffusion, and energy recovery systems. Prerequisites: AREN 361, AREN major or consent of the instructor. Corequisite: AREN 464. **(F)**

AREN 464. HVAC Systems Laboratory **Credit 1(0-2)**
This laboratory provides hands on experiences that supplement the topics presented in AREN 462. Corequisite: AREN 462. **(F;S)**

AREN 483. 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 542. Lighting Applications **Credit 3(0-6)**
This course applies the principles of lighting design to the engineering of lighting systems. It also develops methodology for solving problems in both interior and exterior lighting. **(DEMAND)**

AREN 545. Electrical Systems for Buildings II **Credit 3(3-0)**
This course is a continuation of AREN-542. It covers the design of safe and reliable electrical distribution systems for commercial and industrial buildings. The topics included are circuit protection, feeder and branch circuit design, and fault analysis. Prerequisite AREN 448.

AREN 550. Engineering Project Management **Credit 3(3-0)**
This course is an introduction to engineering project management, with particular emphasis placed on the planning and control of the engineering design of buildings. Topics covered include estimating, contracts, planning, resource leveling, and project control. Manual and automated methods will be addressed. Prerequisites: AREN 231, senior standing or consent or instructor. **(F;S)**

AREN 554. Facilities Management **Credit 3(3-0)**
This course deals with long range and master planning for facilities, including space forecasting, project management, and post occupancy evaluation. **(DEMAND)**

AREN 562. HVAC Systems Design **Credit 3(3-0)**
This course addresses the design methodology, sizing, and selection techniques of pumps, fans, heat-exchanges, and air washers, cooling towers and terminal units. Duct and pipe design methods are covered. Primary and secondary hydronic systems are covered, including system air-control techniques. Design projects are required. Prerequisite: AREN 364 and Senior standing. **(DEMAND)**

AREN 570. Energy and the Environment **Credit 3(3-0)**
The course includes readings and discussions about energy, its origins, supply, transportation and use. The effect of fossil fuels on the environment and environmental protection regulations are discussed. Renewable energy and the impact of energy costs on economic growth are investigated. Prerequisite Senior standing or Consent of Instructor. **(DEMAND)**

AREN 572. Energy Conservation in Buildings **Credit 3(3-0)**
The energy use patterns in schools and hospitals are studied in terms of the relevant IES and ASHRAE Standards. The course presents various utility rate structures and energy auditing techniques along with the effect of operation and maintenance on the building energy use. Various retrofit options and computerized energy management systems are investigated culminating in design projects. Prerequisite: AREN 364, AREN 448, or Consent of instructor.

AREN 575. Energy Management for Buildings **Credit 3(3-0)**
This course involves the study of renewable and nonrenewable energy sources for buildings, energy estimating methods (manual and automated) optimizing building envelop design and comparative energy requirements for various HVAC systems. The student utilizes the solar energy F-chart method and design of efficient lighting and electrical systems to solve design problems. Topics include Energy Management and Control Systems (EMCS) waste heat recovery, energy audit procedures for existing buildings, life cycle cost and techniques. Prerequisite: Senior Standing or Consent of Instructor.

AREN 582. Architectural Design III **Credit 3(0-6)**
This course presents a series of problems for study of space analysis, space organization, form and function. The student learns how to integrate the architectural and the structural components. The course introduces the student to computer-aided drafting and design. Prerequisite:AREN 483, MEEN 336, Senior standing.

AREN 585. Senior Project I- Design Development **Credit 3(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 221, 361, 382, CAAE 530, AREN 442, and 445 or consent of chairperson. Corequisite: AREN 462. **(F)**

AREN 586. 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 221, AREN 361, AREN 382,CAAE 530, AREN 442, AREN 445 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)**

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: CAAE 100, CIEN 101 **(F;S)**

CIEN 310. Environmental Engineering **Credit 3(3-0)**

This course provides an introduction to environmental pollution. Topics include physical, chemical and biological water quality parameters, water purification processes in natural systems, air pollution and solid waste management, and general design of waste control systems. Prerequisite: Junior standing. **(F;S)**

CIEN 311. Environmental Engineering Laboratory **Credit 1(0-3)**

This course provides selected experiments on the measurement of environmental pollutants. Topics include use of microscope, Gram stain, conform analysis, pH, alkalinity, hardness, DO, BOD, and control of microorganisms. Corequisite: CIEN 310. **(F)**

CIEN 320. Geotechnical Engineering **Credit 3(3-0)**

This course introduces the following topics: engineering mechanics and properties of soils, stresses and settlements in soils, earth pressures on structures, stability of slopes and embankments, and fundamentals of foundation selection and design. Prerequisites: CIEN 366 and CAAE 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: CAAE 362 and 363. Corequisite: CIEN 320. **(S)**

CIEN 330. Construction Materials **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. Prerequisites: CIEN 204 and MEEN 336. **(F)**

CIEN 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. Prerequisite: CAAE 332. Corequisite: CIEN 330. **(F)**

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: CAAE 204. **(S)**

CIEN 366. Hydraulics and Hydrology **Credits 3(2-2)**

This is an integrated course in basic hydraulics and hydrologic applications. Topics include fluid statics, the continuity, momentum, and energy equations, friction, headloss, pressurized and open channel flow, rainfall, abstractions, travel time, runoff, municipal regulations, stormwater sewer design, and stormwater management design. Prerequisites: MATH 132 and PHYS 226. **(F;S;SS)**

CIEN 380. Civil Engineering Land CAD **Credits1(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. Prerequisites: CAAE 101. **(F;S)**

CIEN 400. Civil Engineering Systems Design **Credit 3(2-2)**

This course emphasizes a team solution of 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 tools is required. Prerequisites: Senior standing in Civil Engineering and at least (1) of: CIEN 510, CIEN 520, CIEN 522, CIEN 550, CIEN 560, CAAE 530, CAAE 536. **(F;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 ethics and professionalism. Each student prepares and presents to the class an original paper on a topic of engineering importance. Prerequisite: Senior standing. **(F)**

CIEN 404. Applications of Statistics, Reliability and Decision Theory in Civil Engineering **Credit 2(2-0)**

This course will introduce the students to probability theory and statistics. Reliability theory and Decision analyses are introduced. The course will incorporate simplified examples of applications of decision analysis, modeling of system response, and system reliability in the different areas of the civil engineering curriculum. The use of common statistical tools in the selection of design parameters will be presented. Prerequisites: Senior standing. **(S)**

CIEN 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 460. Water Resources Engineering **Credit 3(3-0)**
This course is the study of the application of hydrologic and hydraulic principles in the analysis and design of water resources systems. Topics include hydraulic structures, system economics, water law, irrigation, hydroelectric power, navigation, flood control, and water resources planning. Prerequisite: CIEN 360. **(DEMAND)**

CIEN 480. Construction Engineering **Credit 3(3-0)**
This course is an introduction to construction engineering emphasizing heavy and highway construction; organization of construction industry; construction equipment, methods, and management; safety and environmental health in construction; and project planning and scheduling. Prerequisite: Senior standing. **(DEMAND)**

CIEN 482. Construction Project **Credit 3(1-4)**
This course provides an integrated approach by student teams to designing, estimating, planning, scheduling and management of construction projects. Prerequisite: CIEN 480. **(DEMAND)**

CIEN 510. Environmental Engineering Design **Credit 3(3-0)**
This course defines the analysis and design of water and wastewater treatment systems. Topics included in the course are analysis and functional design of physical, chemical and biological treatment processes, pump stations, and sludge treatment processes. CIEN 310. **(S)**

CIEN 520. 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 522. Foundation Design **Credit 3(3-0)**
This course emphasizes the design of foundations for structural systems using geotechnical analysis and subsurface explorations. Designs considered include shallow and deep foundations, retaining structures, earth slope stability systems, and soil and site improvements. Prerequisite: CIEN 320. **(DEMAND)**

CIEN 540. Structural Engineering Design **Credit 3(3-0)**
This course will introduce the student to the design of reinforced concrete, steel, and timber structures. Consideration will be given to simple structural systems as designed for each material. Prerequisite: CIEN 340. **(S)**

CIEN 550. Transportation Design **Credit 3(3-0)**
This course introduces students to the transportation design process through a series of comprehensive transportation design projects. Emphasis is placed on the utilization of existing facilities and creation of efficient new facilities through transportation systems management techniques. Energy, environment, mobility and community impacts are considered as measures of effectiveness in the design process. Prerequisite: CIEN 350. **(F)**

CIEN 560. Water Resources Engineering Design **Credit 3(2-2)**
This course involves the application of hydrologic and hydraulic principles in the analysis and design of water resources systems. The measurement of ground water parameters and general water quality parameters is covered. Topics covered include water supply and distribution, reservoirs, water law, hydroelectric power, flood control, water resources planning and development, and storm water drainage. The use of HEC-RAS software for flood plain modeling is introduced. Prerequisites: CIEN 366 or equivalent; and CAAE 363. **(F;S)**

CIEN 570. Construction Design **Credit 3(3-0)**
This course covers construction engineering design applications in the construction of buildings, highways, and other civil and industrial facilities. Emphasized materials include Portland cement concrete mix design and asphalt cement mix design. Construction problem solutions include crane selection, positioning, and loading; scheduling of construction materials and personnel; and computer aided design and construction management. Prerequisites: CIEN 330, CIEN 335, CAAE 325, and CIEN 341. Corequisites: CIEN 320 and 321. **(DEMAND)**

CIEN 598. 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, CAAE 530, 536. **(F;S)**

CIEN 599. Civil Engineering Systems Design II (Capstone) **Credit 2(0-4)**
This is the capstone design course for the Civil Engineering program. Team solution, working with inter/intra-disciplinary sub-teams, and professional-level team presentation and reporting are emphasized. A comprehensive final report with professional-quality drawings and a presentation to a panel of faculty and local professionals is required. Prerequisite: CIEN 598. **(F;S)**

GEOMATICS

GEOM 202. Geomatics Sophomore Colloquium **Credits 0(0-0)**

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. **(S)**

GEOM 205. Surveying II **Credits 4(3-3)**

This course introduces route surveying and roadway planning and layout. Topics include simple, compound, reverse, spiral, and vertical curves, geometric design and layout of roadways, planning of cross-sections and grade lines, mass diagrams and super elevation calculations. Upon completion, students should be able to calculate and layout highway curves; prepare roadway plans, profiles and sections; and perform slope staking. Prerequisite: CAAE 204. **(F;S;SS)**

GEOM 206. Surveying III **Credits 3(3-0)**

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: CAAE 204. **(F;S;SS)**

GEOM 210. Cartography **Credits 3(3-0)**

This course will examine the evolution of cartography by presenting both traditional and computer-based cartographic techniques. Cartographic methods, design, and basic map reading and interpretation will be examined. Professional quality maps that adhere to basic cartographic principles involving projections, graphic design and layout, data symbolization, and mapping theory will be produced. **(F;S;SS)**

GEOM 270. Land Survey Systems **Credits 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: CAAE 204. **(F;S;SS)**

GEOM 302. Geomatics Junior Colloquium **Credits 0(0-0)**

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. **(S)**

GEOM 307. Automated Surveying and Mapping **Credits 4(3-3)**

This course covers the procedures necessary for data collection and dissemination of field-to-finish projects. Topics covered include the use of hardware and software for surveying and mapping computations and drafting, data storage and output from automated devices used in surveying, and the use of total stations and electronic field data collection systems. Prerequisite: GEOM 205. **(F;S;SS)**

GEOM 310. Geographic Information Systems in Geomatics **Credits 3(3-0)**

This course introduces the capabilities, concepts, applications and issues of a Geographic Information System as it relates to areas within Geomatics. Topics include existing sources of data, metadata and representations in GIS, the relationship of CAD-generated data and its incorporation into a GIS, land information system, generation and use of new data through GPS, static surveys, photogrammetry and remote sensing, spatial and attribute data, spatial data processing, and spatial analysis. Prerequisites: CIEN 280, CAAE 204. **(F;S;SS)**

GEOM 320. Introduction to Photogrammetry **Credits 3(3-0)**

This is an introductory course in metric and interpretive photogrammetry. Topics covered include the fundamental principles of photography and imaging, cameras and other imaging devices, coordinate systems and image measurements, vertical photographs, stereoscopic viewing and parallax, tilted photographs, and the role of planimetric mapping in GIS. Material on interpretive photogrammetry will include land use and cover mapping, color infrared photography, the use of multiple images, and satellite and radar mapping. Prerequisites: MATH 131, PHYS 241, CAAE 204. **(F;S;SS)**

GEOM 340. Adjustment Computations I **Credits 4(3-2)**

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: CAAE 204. **(F;S;SS)**

GEOM 300. Internship **Credits 1(1-0)**

The 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, AutoCAD office work, photogrammetry, or remote sensing. Prerequisites: CAAE 204, CIEN 280, GEOM 205, 270. **(F;S;SS)**

GEOM 350. Subdivision Design **Credits 3(3-0)**

General concepts governing land development will be examined including the analysis of soil, topography, geometry, environmental impact, aesthetic and economic principles in land planning. The permitting process at local, state and federal levels will be discussed, as well as the applicable federal, state, and municipal platting regulations. Ethical considerations for land planning will also be discussed. A plat and a subdivision design including appropriate infrastructure will be completed. Prerequisites: CIEN 280, GEOM 206, Corequisite: CIEN 366. **(F;S;SS)**

GEOM 360. Geodesy and Map Projections **Credits 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: CAAE 204, MATH 131. **(F;S;SS)**

GEOM 400. Fundamentals of Land Surveying Review **Credits 1(1-0)**

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 or civil engineering. **(F;S;SS)**

GEOM 441. Adjustment Computations II **Credits 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. Prerequisites: GEOM 340, MATH 450. **(F;S;SS)**

GEOM 450. Subdivision Design **Credits 3(3-0)**

General concepts governing land development will be examined including the analysis of soil, topography, geometry, environmental impact, aesthetic and economic principles in land planning. The permitting process at local, state and federal levels will be discussed, as well as the applicable federal, state, and municipal platting regulations. Ethical considerations for land planning will also be discussed. A plat and a subdivision design including appropriate infrastructure will be completed. Prerequisites: CIEN 280, GEOM 206, Corequisite: CIEN 366. **(F;S;SS)**

GEOM 460. Satellite Positioning Systems **Credits 3(3-0)**

The course covers precise point positioning as it applies to surveying using the Global Positioning System (GPS) and other satellite positioning systems. Types of GPS equipment, their uses and limitations will be discussed. Mission planning and network design for GPS surveys will be covered as well as baseline processing, network adjustment and data management. Real time kinematic (RTK) GPS will be applied to topographic, boundary, and construction surveys. Prerequisites: GEOM 360, 340. **(F;S;SS)**

GEOM 470. Boundary and Legal Principles **Credits 3(3-0)**

This course will apply boundary survey and legal principles to approximately three realistic projects. For each project, students will write a proposal and contract, prepare cost estimates, research conveyances and legal issues, analyze field and record evidence; and perform boundary computations and analysis. In addition students will prepare a plat, property description, and survey report that conform to standards of practice; perform quality assurance; and invoice the completed project. Prerequisites: GEOM 270. **(F;S;SS)**

GEOM 471. Professionalism and Ethics **Credits 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 student will gain experience in working through actual problems. Prerequisites: Senior standing. **(F;S;SS)**

GEOM 474. Real Estate Law **Credits 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: 470. **(F;S;SS)**

GEOM 520. Analytical Photogrammetry **Credits 3(3-0)**

This is an advanced course in photogrammetry and remote sensing and it emphasizes the metric aspects of remote sensing. Topics include analytical photogrammetry, mapping and data collection using stereoscopic plotting equipment, digital imaging and processing, elements of Softcopy photogrammetry, establishment of ground control and project planning, aerotriangulation, terrestrial and close range photogrammetry, and photogrammetric applications in GIS. Prerequisites: GEOM 320, 360, MATH 450. **(F;S;SS)**

GEOM 550. Land Information Systems and Management **Credits 3(2-2)**

This course will use a GIS as a decision support tool in the collection and analysis of land information data and management. Topics include spatial modeling, data structure and management issues, legal issues of GIS and land information management, case studies, and application projects. Prerequisites: GEOM 206, 270, 310. **(F;S;SS)**

GEOM 560. Applied Geodetic Measurements **Credits 3(3-0)**
This course will consist of advanced topics in geometric geodesy and map projections and an introduction to physical geodesy. Advanced geometric geodetic computations and the programming of map projection transformations are covered. The geoid will be studied and the computation of ellipsoid, orthometric, and geoid heights and their application will be examined. Geodetic Height Modernization and its implications in surveying and engineering will be explored. Prerequisites: GEOM 310, 360, 320. **(F;S;SS)**

GEOM 598. Senior Project I **Credits 1(2-0)**
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: GEOM 450 or CAAE 654. Corequisites: GEOM 460 and 470. **(F;S;SS)**

GEOM 599. Senior Project II **Credits 4(2-4)**
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. Prerequisite: GEOM 598. **(F;S;SS)**

DIRECTORY OF FACULTY

Taher Abu-Lebdeh.....**Assistant Professor**
B.S., M.S., Yarmouk University, Jordan; Ph.D., Louisiana State University; Professional Engineer

Ronnie S. Bailey.....**Associate Professor**
B.A., Howard University; M.U.P., University of Wisconsin

Shoou-Yuh Chang..... **Professor and DOE Samuel Massie Chair**
B.S., M.S., National Taiwan University; M.S., University of North Carolina at Chapel Hill; Ph.D., University of Illinois at Urbana-Champaign; Professional Engineer

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Robert Powell.....**Assistant Professor**
B.S., Stanford University; M.Arch., M.I.T.

Peter Rojeski, Jr......**Professor and Coordinator, Architectural Engineering**
B.S., Clarkson College of Technology; M.S., Ph.D., Cornell University; Professional Engineer

M. Reza Salami..... **Professor**
B.S., M.E., Virginia Polytechnic Institute and State University; Ph.D., University of Arizona; Professional Engineer

Harmohindar Singh..... **Professor of Architectural and Mechanical Engineering and Director, Center for Energy Research and Training**
B.Sc., M.Sc., Punjab University; M.S., Ph.D., Wayne State University; Professional Engineer

Department of Chemical and Bioengineering

http://www.eng.ncat.edu/dept/bmen

Leonard Uitenham, Chairperson

DEGREES OFFERED

Biological Engineering – Bachelor of Science
Chemical Engineering – Bachelor of Science
Chemical Engineering – Master of Science*
** See the Graduate School Bulletin*

COOPERATIVE EDUCATION PROGRAM

Participation in Cooperative Education (Co-op) is highly recommended for students in the Department of Chemical and Bioengineering. The program is an effective means of providing industrially relevant experience beyond that which can be accomplished in the classroom. Participation in the program serves not only as a form of financial aid for students, but also provides them an advantage in seeking full-time employment opportunities. To facilitate student participation in the program, most department courses required for graduation are offered at least twice per year with some also offered in the summer.

At least three semesters of work are required alternating with academic semesters. After qualifying for the Co-op Program your first year (GPA above 2.8), you continue to be eligible to remain in the program by maintaining satisfactory academic (GPA above 2.8) and work records. Please refer to the program handbook for the Chemical Engineering program offered in the department for information on specific co-op policies as well as typical co-op employers and locations.

BIOLOGICAL ENGINEERING PROGRAM

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

Our graduates will:

1. Demonstrate the ability to work productively as Biological Engineers or to pursue graduate education.
2. Have the skills to actively lead or participate on multi-disciplinary teams.
3. Be active in professional societies, engage in continuing education, and progress towards professional registration.
4. Contribute to society and to the diversity of the workforce in their company and in their profession by actively recruiting and mentoring for these organizations.

PROGRAM REQUIREMENTS

The Biological Engineering major must complete 128 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 engineering design, management, research, consulting, sales, teaching, and product development, governmental agencies (federal and state), industries and foreign services.

REQUIRED MAJOR COURSES FOR BIOLOGICAL ENGINEERING

BIOE 330	CAAE 101	CAAE 501
BIOE 360	CAAE 102	MEEN 416
BIOE 400	CAAE 202	MEEN 441
BIOE 422	CAAE 204	CHEN 200
BIOE 423	CAAE 331	CHEN 310
BIOE 424	CAAE 332	CHEN 311
BIOE 432	CAAE 334	CHEN 320
BIOE 440	CAAE 362	CHEN 400
BIOE 501	CAAE 500	
BIOE 502		

A grade of "C" or better must be obtained in all the above required courses.

CURRICULUM GUIDE FOR BIOLOGICAL ENGINEERING
(BIOPROCESS ENGINEERING OPTION)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
NARS 100 / UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
CHEM 106**	3	UNST 120	3
CHEM 116	1	MATH 132**	4
MATH 131**	4	PHYS 241**	3
GEEN 100	2	PHYS 251	1
	14	GEEN 120	0
			17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CAAE 331**	3	CAAE 332**	3
MATH 231**	4	CAAE 334**	3
PHYS 242 **	3	MATH 431**	3
PHYS 252	1	BIOL 221	4
BIOL 101	4	Cluster Theme Elective	3
CHEM 107**	3	CHEN 202	0
	18	GEEN 161	2
			18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEN 200	4	CHEN 320	3
CAAE 362 / MEEN 416	3	CHEN 400	3
MEEN 441 / CHEN 310	3	BIOE 330	4
Cluster Theme Elective	3	CHEM 221	3
BIOE 320	3	CHEM 223	2
	16	CHEN 302	0
			15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Statistics Elective	3	CHEN 311	3
BIOE 422	3	BIOE 423	3
INEN 260	2	BIOE 502	2
Cluster Theme Elective	3	BIOE Elective	3
Cluster Theme Elective	3	ELEN 440	3
BIOE 501	1	CHEN 501	0
CHEN 500	1		14
	16		

Total Credit Hours: 128

**If the student passes the Fundamentals of Engineering Exam in the fall of senior year, the student will be exempt from taking CAAE 501*
***A grade of "C" is required.*

CURRICULUM GUIDE FOR BIOLOGICAL ENGINEERING
(NATURAL RESOURCES ENGINEERING OPTION)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
NARS 100 / UNST100	1	UNST 140	3
UNST 110	3	UNST 120	3
CHEM 106**	3	MATH 132**	4
CHEM 116	1	PHYS 241**	3
MATH 131**	4	PHYS 251	1
GEEN 100	2	CAAE 101	2
	14	GEEN 120	0
			16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CAAE 331	3	CAAE 332**	3

MATH 231	4	CAAE 334**	3
PHYS 242	3	MATH 431**	3
PHYS 252	1	BIOL 221	4
BIOL 101	4	CAAE 102	2
CHEM 107**	3	UNST 130	3
	18	CAAE 202	0
			18

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CAAE 204	3	BIOE 360 / CAAE 364	3
CAAE 362 / MEEN 416	3	BIOE 432 / SLSC 632	3
MEEN 441	3	BIOE 330	4
Cluster Theme Elective	3	Cluster Theme Elective	3
BIOE 440	3	Cluster Theme Elective	3
CIEN 380	1	CAAE 302	0
	16		16

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Statistics Elective	3	BIOE 424	3
BIOE 400	3	BIOE 423	3
INEN 360	2	BIOE 502	2
EASC 622	3	BIOE Elective	2
Cluster Theme Elective	3	ELEN 440	3
BIOE 501	1	CAAE 501[3]	0
CAAE 500	1		14
	16		

Total Credit Hours: 128

**If the student passes the Fundamentals of Engineering Exam in the fall of senior year, the student will be exempt from taking CAAE 501*
***A grade of "C" is required.*

CHEMICAL ENGINEERING PROGRAM

MISSION

The mission of the Bachelor of Science program in Chemical 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 any other supportive student services to facilitate their growth and success in the academic and professional communities.

EDUCATIONAL OBJECTIVES

The following are the current educational objectives of the BSChE Program. After graduating from the program, the graduates will:

1. Perform effectively in a chemical engineering related position in industry or in graduate/professional schools.
2. Demonstrate teamwork and leadership skills in using interdisciplinary approaches for solving problems.
3. Be active in their communities and professional societies.
4. Enhance their professional credentials through life long learning.

PROGRAM REQUIREMENTS

The chemical engineering major must complete 127 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 the Accreditation Board for Engineering and Technology (EAC-ABET).

CAREER OPPORTUNITIES

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, which are also founded in chemistry and biology. Chemical engineers are primarily concerned with processes and equipment in which material changes in composition or state. Chemical engineers often become employed by a company which manufactures a variety

of chemical products, including plastics, forest products, gasoline, food, textile fibers, and pharmaceuticals. Chemical engineers also find career opportunities in the fabrication of microelectronic devices, the control of industrial and municipal wastes, and the application of biological science to produce chemicals from biomass through genetic engineering. The assignments given to chemical engineers can be highly diverse, 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 that is recommended for students with advanced placement is a dual degree in Chemistry.

REQUIRED MAJOR COURSES IN CHEMICAL ENGINEERING PROGRAM

CHEN 200	CHEN 312	CHEN 408
CHEN 208	CHEN 318	CHEN 410
CHEN 209	CHEN 320	CHEN 422
CHEN 220	CHEN 325	CHEN 430
CHEN 300	CHEN 330	CHEN 440
CHEN 308	CHEN 340	CHEN 450
CHEN 309	CHEN 400	CHEN 501

CURRICULUM GUIDE FOR CHEMICAL ENGINEERING PROGRAM

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 120	3
UNST 110	3	UNST 130	3
GEEN 100	2	UNST 140	3
GEEN 110	0	MATH 132	4
CHEM 106	3	PHYS 241	3
CHEM 116	1	PHYS 251	1
MATH 131	4	GEEN 120	0
	14		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Cluster Theme Elective	3	Cluster Theme Elective	3
CHEN 200	4	CHEN 209	0
CHEN 208	0	CHEN 220	3
CHEM 107	3	CHEN 318	2
CHEM 117	1	MATH 431	3
MATH 231	4	CHEM 221	3
MEEN 260	2	CHEM 223	2
	17		16

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Cluster Theme Elective	3	Cluster Theme Elective	3
CHEN 300	3	CHEN 309	0
CHEN 308	0	CHEN 320	3
CHEN 312	4	CHEN 325	1
PHYS 242	3	CHEN 330	2
PHYS 252	1	CHEN 340	3
CHEM 441	3	MEEN 313	3
	17		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
CHEN 400	3	CHEN 440	3
CHEN 408	0	CHEN 450	1
CHEN 410	2	CHEN Elective	3
CHEN 422	3	CHEN Elective	3

CHEN 430	3	Advanced CHEM Elective	3
CHEN 501	1	ECEN 440	3
Advanced CHEM Elective	3		16
	15		

Total Credit Hours: 127

COURSE DESCRIPTIONS IN CHEMICAL AND BIOENGINEERING PROGRAMS

MCEN 310. Introduction to Biological Applications of Engineering **Credits 3(3-0)**

This course is an introduction to the application of engineering principles and methods to problems in medicine, the integration of engineering with biology, and the emerging industrial opportunities. Examples from a variety of engineering disciplines will be provided. The ethical concerns associated with some emerging life science applications will be explored. Lab experiments will be utilized in the course to provide hands-on experience with life science concepts. Prerequisites: CHEM 106, MATH 431 and PHYS 242 (all with a grade of "C" or higher). **(S)**

MCEN 550. Cooperative Industrial Experience in Engineering **Credits 3(3-0)**

This course is a supervised learning experience in a specified private or governmental 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. Prerequisites: Senior standing in engineering and permission of instructor. **(F;S)**

BIOENGINEERING

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 216. Geographic Information Systems **Credit 3(1-4)**

This course introduces Geographic Information System (GIS) concepts and applications. GIS theory is presented, and hands-on exercises are used to demonstrate the application and use of GIS in agriculture, arts and sciences, health, political sciences, engineering, technology, and other disciplines. **(F;S)**

BIOE 330. Engineering Systems Analysis and Design **Credit 4(2-4)**

This course introduces the analysis and the design of engineering systems. Concepts, methods, and procedures associated with the engineering design process are studied. Specific topics include project management; customer need identification; team behavior; concept generation and evaluation; embodiment design; modeling and simulation; finite element analysis software; material selection; engineering statistics; and legal and ethical issues in design. Prerequisites: CAAE 332 or MEEN 336 or equivalent. **(F;S)**

BIOE 360. General Hydrology **Credit 3(2-2)**

This course is an introduction to the study of surface and subsurface hydrology. Topics include hydrologic cycle, rainfall-runoff relationships, precipitation measurements and hydrographs, unit hydrograph analysis, flood routing, planning and design of runoff/detention systems, and computer applications in hydrology. Prerequisites: CAAE 362 or MEEN416.(F;S;S)

BIOE 400. Soil and Water Engineering I **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: CAAE 364 or equivalent. **(F;S;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: CAAE 332 or MEEN 336 or equivalent. **(F;S;S)**

BIOE 404. Structures and The Environment **Credit 3(1-4)**

This course covers the fundamentals of timber-framed building design and construction. Topics include, selection of materials, design of foundations, beams and columns, reinforced concrete, and environmental considerations, such as temperature, humidity, condensation, and ventilation. Prerequisite: CAAE 332 or MEEN 336 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 330 or equivalent. **(F;S;S)**

BIOE 423. Fundamentals of Renewable Energy Systems **Credit 3(2-2)**
This course discusses the production, utilization, and system design for energy in food and agricultural productions. Specific topics include: biogas, biomass, solar energy, energy analysis, conservation and management, and electric power supply and motor control. Energy production through photosynthesis and energy flow in biological systems are studied. Prerequisite: MEEN 441 or CHEN 310 and BIOL 221 or equivalents. **(F;S;S)**

BIOE 424. Water Resources Engineering **Credit 3(2-2)**
This course emphasizes the analysis and design of water resources systems. Topics include water resources planning and development, hydraulic structures, introduction to aquifer analysis and contamination, well development, pump evaluation and selection, water quality, best management practices, total maximum daily load, water laws, detention and retention ponds, wastewater management, and remediation. Prerequisite: CAAE 364 or equivalent. **(F;S,;S)**

BIOE 432. Physical and Engineering Properties of Soil **Credit 3(2-2)**
This course involves a study of fundamental principles of laws which govern the movement or behavior of water and air in soils. The impact of soil physical and biological properties on drainage and irrigation design are discussed. Discussion will also include stream restoration, compaction and mechanics of soil materials. Prerequisite: CAAE 364 or equivalent. **(F;S;S)**

BIOE 440. Engineering Properties of Biological Materials **Credit 3(2-2)**
This course covers engineering properties of plant and animal materials. Specific topics include structure and composition of plant and animal materials, elastic and viscoelastic properties, food rheology and thermal properties, aerodynamic and hydrodynamic properties, and electromagnetic properties. Prerequisites: BIOL 101 or equivalent; CAAE 332 or and MEEN 336 or equivalent. **(F;S;S)**

BIOE 501. Engineering Design I **Credit 1(1-0)**
In this course, each student identifies a design project, defines the problem, collects all required resources and databases and outline the work plan. This project integrates design concepts from previous courses. Prerequisite: BIOE 330. **(F;S;S)**

BIOE 502. Engineering Design II **Credit 2(2-0)**
In this course students complete the work plan established in BIOE 501. Prerequisite: BIOE 501. **(F;S;S)**

BIOE 505. Selected topics in Biological Engineering **Credit 3(3-0)**
An in-depth lecture course covering several advanced topics in Biological Engineering. Topics are selected to match student interest and faculty expertise. A specific course description will be made available at the time such a course is offered. Prerequisite: Senior standing in Biological Engineering. **(F;S;S)**

BIOE 510. Independent Study in Biological Engineering **Credit 1-3(0-6)**
An independent study course is completed on a single topic in Biological Engineering/ Topics are selected to fit the mutual interests of students and faculty advisor. The study includes the design of an apparatus, a process, or a procedure. Final written report and an oral presentation of the work are required. Prerequisites: Permission of Instructor **(F;S;S)**

BIOE 522. Food Engineering **Credit 2(2-2)**
The general engineering principles of solids, fluids, and process equipment are discussed. Topics include energy, heat, enthalpy, pyschrometrics, heat and mass transfer, drying and refrigeration of food products. Prerequisite: CHEM 107. **(F;S;S)**

CHEMICAL ENGINEERING

CHEN 200. Chemical Process Principles **Credits 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 208/209. Chemical Engineering Sophomore Colloquium I & II **Credits 0 (0-0)**
Topics of interest to sophomores majoring in chemical engineering are presented and discussed. Topics include advising, retention, scholarships, curriculum, AIChE, coop, industrial internships, career planning, contemporary issues in chemical engineering and gaining stakeholder input from students. The course also provides a forum for students to interact with CHEN faculty and the Department Chair. Prerequisites: Sophomore standing in CHEN. **[CHEN 208 (F); CHEN 209 (S)]**

CHEN 220. Analytical Methods in Engineering **Credits 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) and course equivalent to MEEN 210. **(F;S;SS)**

CHEN 300. Fluid Mechanics **Credits 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), and course equivalent to MEEN 416. **(F;S;SS)**

CHEN 308/309. Chemical Engineering Junior Colloquium I & II **Credits 0(0-0)**

Topics of interest to juniors majoring in chemical engineering are presented and discussed. Topics include advising, retention, scholarships, curriculum, AIChE, coop, industrial internships, career planning, contemporary issues in chemical engineering and gaining stakeholder input from students. The course also provides a forum for students to interact with CHEN faculty and the Department Chair. Prerequisite: Junior standing in CHEN. **[CHEN 308 (F); CHEN 309 (S)]**

CHEN 310. Fundamentals of Thermodynamics **Credits 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) and course equivalent to MEEN 441. **(F;S;SS)**

CHEN 311. Thermodynamics of Chemical and Phase Equilibria **Credits 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 **Credits 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). **(F;S;SS)**

CHEN 318. Analysis of Chemical Process Data **Credits 2(1-2)**

The course introduces contemporary computational methods and tools for designing experiments and analysis of data. 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 higher grade). **(F;S;SS)**

CHEN 320. Heat Transfer **Credits 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), and course equivalent to MEEN 562. **(F;S;SS)**

CHEN 325. Introduction to Chemical Process Simulation **Credits 1(0-2)**

The course is an introduction to the use of a chemical process simulator. Computer-aided mass and energy balances are emphasized. Ideal models for mixing, reaction and separation are used. Students learn to prepare process streams to feed the above processing operations. Students are introduced to computer-aided thermodynamic property analysis for pure and multi-component systems. Students study vapor-liquid and liquid-liquid equilibrium using various thermodynamic models. Currently, the ASPEN PLUS simulation package is used. Prerequisites: CHEN 200 (with C or higher grade), Corequisite: CHEN 312 **(F;S;SS)**

CHEN 330. Chemical Engineering Laboratory I **Credits 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 318, Corequisite: CHEN 320. **(F;S)**

CHEN 340. Process Dynamics and Control **Credits 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 310. Corequisite: CHEN 320. **(S)**

CHEN 400. Mass Transfer Operations **Credits 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 408. Chemical Engineering Senior Colloquium **Credits 0(0-0)**

Topics of interest to first semester seniors majoring in chemical engineering are presented and discussed. This course provides monthly meetings to present and discuss topics of interest to seniors majoring in chemical engineering. Topics include advising, retention, scholarships, curriculum, AIChE, coop, industrial internships, career planning, contemporary issues in chemical engineering and gaining stakeholder input from students. The course also provides a forum for students to interact with CHEN faculty and the department chairperson. Prerequisite: Senior standing in CHEN. **(F)**

CHEN 410. Chemical Engineering Laboratory II **Credits 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 422. Chemical Reaction Engineering **Credits 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 430. Process Design I **Credits 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 440. Process Design II **Credits 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 450. Chemical Engineering Topics Review **Credits 1(1-2)**

This course reviews all of the CHEN topics in the BS program. The course prepares the student to pass the CHEN comprehensive exam and the CHEN specified part of the fundamentals of engineering exam. Senior standing in chemical engineering. **(F;S)**

CHEN 501. General Engineering Topics Review **Credits 1(0-3)**

The 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. Senior Standing in chemical engineering. **(F;S;SS)**

CHEN 505. Selected Topics in Chemical Engineering **Credits 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 courses. **(F;S)**

CHEN 506. Introduction to Biochemical Engineering **Credits 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 508. Introduction to Bioseparations **Credits 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 510. Independent Study in Chemical Engineering **Credits 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 515. Overview of Energy and Fuels **Credits 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 522. Introduction to Green Engineering **Credits 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), mesocale (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 525. Basic Food Process Engineering **Credits 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 535. Introduction to Process Scaleup **Credits 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 540. Computer-Aided Process Design **Credits 3(3-0)**
Computer models of varying complexity are used to simulate the behavior of many unit-operations. Students complete computer-aided mass and energy balances for complete chemical plants. Selecting the best computer model for each process step is stressed. Simulation of the computer-aided design of a chemical process is included. Students learn to retrieve and plot physical property, thermodynamic and VLE data. Currently, the ASPEN PLUS simulation package is used. Prerequisite: Senior standing in CHEN or consent of instructor. **(F;S;SS)**

CHEN 545. Introduction to Environmental Remediation **Credits 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 555. Engineering Applications of Nanostructured Materials **Credits 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 560. Selected Topics in Chemical Engineering **Credits 3(3-0)**
This course consists of selected chemical engineering topics of interest to students and faculty. The topics will be defined in the course syllabus at the time when the course is offered. Prerequisite: Senior standing in CHEN or consent of instructor. **(F;S;SS)**

CHEN 564. Nuclear Fluid Mechanics and Heat Transfer **Credits 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 565. Introduction to Polymer Science and Engineering **Credits 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 570. Introduction to Solids Processing and Particle Technology **Credits 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 574. Interdisciplinary Design **Credits 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 pro9ject 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)**

DIRECTORY OF FACULTY

Yusuf G. Adewuyi ..... **Professor**
B.S., Ohio University; M.S., Ph.D., University of Iowa

Godfrey A. Gayle..... **Professor**
B.S., North Carolina A&T State University; M.S., Ph.D., North Carolina State University

Shamsuddin Ilias ..... **Research Professor**
B.S., Bangladesh University of Engineering and Technology, Dhaka; M.S., University of Petroleum and Minerals; Ph.D., Queen's University; Professional Engineer

Vinayak N. Kabadi..... **Professor**
B.S., Bombay University; M.S., State University of New York; Ph.D., Pennsylvania State University

Franklin G. King ..... **Professor**
B.S., Pennsylvania State University; M.S., Kansas State University; M.Ed., Howard University; D.Sc., Stevens Institute of Technology

Jianzhong Lou ..... **Professor**
B.S., M.S., Zhejian Institute of Technology; M.S., Ph.D., University of Utah

Stephanie Luster-Teasley..... **Assistant Professor of Civil and Chemical Engineering**
B.S., North Carolina A&T State University; Ph.D., Michigan State University

Richard Phillips..... **Adjunct Associate Professor**
B.S., Iowa State University; M.S., North Carolina State University; Professional Engineer

Manuel R. Reyes..... **Associate Professor**
B.S., M.S., University of the Philippines at Los Banos; M. Phil., Cranfield Institute of Technology; Ph.D., Louisiana State University

Kenneth L. Roberts..... **Associate Professor**
B.Ch.E., M.S., Georgia Institute of Technology, Ph.D., University of South Carolina

Abolghasem Shahbazi..... **Professor**
B.S., University of Tabriz; M.S., University of California at Davis; Ph.D., Pennsylvania State University (EIT)

Gary B. Tatterson..... **Professor**
B.S., University of Pittsburgh; M.S., Ph.D., Ohio State University; Professional Engineer

Leonard C. Uitenham ..... **Professor and Chairperson**
B.S., M.S., Ph.D., Case Western Reserve University

Lijun Wang..... **Associate Professor**
B.S., Zhengzhou University; M.Sc., South China University of Technology; Ph.D., National University of Ireland, Dublin

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Department of Computer Science

http://www.eng.ncat.edu/dept/cs

Gerry Vernon Dozier, Chairperson

DEGREES OFFERED

Computer Science – Bachelor of Science
Computer Science – Masters of Science*
** See Graduate School Bulletin*

MISSION

The mission of the Bachelor of Science Program in Computer Science is to provide the opportunity for its students to acquire the educational background necessary to pursue professional careers in the wide variety of positions in which Computer Science is required, or to continue their education toward advanced degrees in computer science. The primary purpose of the Department is to teach theory, abstraction, and design related to the field of computer science.

EDUCATIONAL OBJECTIVES

The educational objectives of the Computer Science Undergraduate Program are that each graduate of the program should be able to:

1. Perform effectively in a computer science related position in industry.
2. Perform effectively in graduate programs where an undergraduate degree in computer science is required.
3. Communicate ideas and interact effectively with others to accomplish desire goals.

EDUCATIONAL OUTCOMES

The Computer Science Program enables students to achieve the following outcomes by the time of graduation:

a. An ability to apply knowledge of computing and mathematics appropriate to the discipline.
b. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
c. An ability to design, implement and evaluate a computer-based system, process, component, or program to meet desired needs.
d. An ability to function effectively on teams to accomplish a common goal.
e. An understanding of professional, ethical, and social responsibilities.
f. An ability to communicate effectively.
g. An ability to analyze the impact of computing on individuals, organizations, and society, including ethical, legal, security, and global policy issues.
h. Recognition of the need for and an ability to engage in continuing professional development.
i. An ability to use current techniques, skills, and tools necessary for computing practice.
j. An ability to apply mathematical foundations, algorithmic principles and computer theory in modeling and design of computer-based systems.
k. An ability to design and development principles in construction go software systems of varying complexity.
l. An understanding of the basics of computer hardware and how software interacts with computer hardware.

PROGRAM REQUIREMENTS

The Computer Science major must complete 124 credit hours following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements. Included in the 124 semester hours are 55 hours in Computer Science courses and 23 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.

REQUIRED MAJOR COURSES IN COMPUTER SCIENCE

COMP 200	COMP 370	COMP 476
COMP 201	COMP 375	COMP 510
COMP 280	COMP 385	COMP 596
COMP 285	COMP 390	COMP 200
COMP 300	COMP 400	GEEN 110
COMP 301	COMP 401	GEEN 120
COMP 360	COMP 450	GEEN 163
COMP 365	COMP 467	GEEN 165

CURRICULUM GUIDE FOR COMPUTER SCIENCE

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
GEEN 110	0	GEEN 120	0
GEEN 101 or GEEN 100	2	GEEN 163	3
MATH 131	4	MATH 132	4
UNST 100	1	UNST 120	3
UNST 110	3	UNST 130	3
CHEM 106	3	UNST 140	3
CHEM 116	1		16
	14		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
COMP 200	0	COMP 201	0
COMP 180	3	COMP 280	3

GEEN 165	4	Approved Statistics Elective	3
MATH 431	3	Approved Science Elective	4
Cluster Theme Elective	3	Cluster Theme Elective	3
Cluster Them Elective	3	Cluster Theme Elective	3
	16		16

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
COMP 300	0	COMP 301	0
COMP 285	3	COMP 322	3
COMP 375	3	COMP 360	3
Approved Mathematics Elective	3	COMP 365	3
Approved Science Elective	4	COMP 450	3
COMP 467	3	ENGL 331	3
	16		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
COMP 400	0	COMP 401	0
COMP 385	3	COMP 596	3
COMP 390	3	Approved COMP Elective	3
COMP 476	3	Approved COMP Elective	3
COMP 510	3	Approved Business Elective	3
Approved COMP Elective	3	Free Elective	4
	15		16

Total Credit Hours: 124

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: GEEN 101, 163, and 165, COMP 180, 280, 285, 360, 365, 375, 385, 390, 450, 467, 476, 510, and 596, MATH 131

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 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: MATH110 or MATH131. **(F;S;SS)**

COMP 200. Computer Science Colloquium 3 **Credit 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)**

COMP 201. Computer Science Colloquium 4 **Credit 0**

This course provides the student with exposure to current issues in computer science. Colloquium speakers shall include visitors and faculty. Prerequisite: Sophomore standing. **(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: GEEN 165 and MATH 123. **(F;S;SS)**

COMP 285. Design and Analysis of Computer Algorithms **Credit 3(3-0)**
This course covers analysis of efficient algorithms for sorting, searching, dynamic structure manipulation, path-finding, fast multiplication, and other problems. It introduces algorithmic techniques such as recursion, divide-and-conquer, and dynamic programming. It develops the following tools for algorithmic analysis: correctness proofs, algorithm synthesis, and discusses issues in non-computability. The course also overviews non-deterministic algorithms, and develops techniques to classify computationally hard problems. The concept of non-deterministic polynomial (NP)-completeness is introduced, and basic issues related to NP-completeness are discussed. Prerequisites: COMP 280, MATH 223 and 131. **(F;S;SS)**

COMP 300. Computer Science Colloquium 5 **Credit 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)**

COMP 301. Computer Science Colloquium 6 **Credit 0**
This course provides the student with exposure to current issues in computer science. Colloquium speakers shall include visitors and faculty. Prerequisite: Junior standing. **(S)**

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: COMP280 **(F;S;SS)**

COMP 321. Computer System Security **Credits 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: COMP285. **(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 285. **(F;S;SS)**

COMP 360. Programming Languages **Credit 3(3-0)**
This course focuses on formal specification of programming languages, including definition of syntax and semantics: simple statements including precedence, infix, prefix, and postfix notations. It highlights global properties of algorithmic languages including sequence control, data structure implementation, scoping, storage management, grouping of statements, binding time, sub-routines, co-routines, and tasks. Prerequisite: COMP 285. **(F;S)**

COMP 363. Object Oriented Programming **Credit 3(3-0)**
This is a course in object oriented program development. The main topics include encapsulation, polymorphism, inheritance, debugging and performance tuning. Prerequisite: COMP 280. **(F;S)**

COMP 365. Programming Methodologies & Concepts **Credit 3(3-0)**
This course covers advanced programming techniques in order to enhance the student's knowledge and experience in programming. This course includes techniques dealing with advanced object oriented programming, human computer interaction, computer graphics and current programming trends. This course will also cover AI techniques such as search strategies and knowledge representation. Prerequisite: COMP 285. **(F;S;SS)**

COMP 368. Object-Oriented Software Development **Credits 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 370. Introduction to Computer Architecture **Credit 3(3-0)**
This course teaches techniques for design and optimization of combinatorial logic circuits, flipflops, counters, registers and arithmetic concepts necessary to understand computer logic. Additional topics include assembly language programming, interrupt handling, and data representation. Prerequisite: COMP 280. **(F;S)**

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 370. **(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. Prerequisite: ENGL 331. **(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 of advisor. **(F;S)**

COMP 400. Computer Science Colloquium 7 **Credit 0**
This course provides the student with exposure to current issues in computer science. Colloquium speakers shall include visitors and faculty. Prerequisite: Senior standing. **(F)**

COMP 401. Computer Science Colloquium 8 **Credit 0**
This course provides the student with exposure to current issues in computer science. Colloquium speakers shall include visitors and faculty. Prerequisite: Senior standing. **(S)**

COMP 420. Applied Network Security **Credits 3(3-0)**
This course covers network security concepts and various network security practices and solutions. Topics include cryptography, Public Key Infrastructure (PKI), taxonomy of various attack methods, firewalls, intrusion detection and prevention, Internet Protocol (IP) security, and web security. Prerequisite: COMP 285. **(F;S;SS)**

COMP 421. Security Management for Information Systems **Credits 3(3-0)**
This course covers in-depth examination of topics in the management of information systems security including access control systems & methodology, risk management, business continuity and disaster recovery planning, legal and ethical issues in information system security, computer operations security, physical security, and information security maintenance. Prerequisite: COMP 285. **(F;S;SS)**

COMP 440. Game Design **Credits 3(3-0)**
This course will provide an introduction to current techniques used in game design. Topics will include game engines, game mechanics, autonomous game agents, and multi-player games. Prerequisite: COMP 340. **(F;S;SS)**

COMP 445. An Introduction to Artificial Intelligence **Credit 3(3-0)**
This course is an introduction to the theory of artificial intelligence and a survey of artificial intelligence application areas. It covers the foundational concepts related to knowledge representation and search strategies. An artificial intelligence language is presented to give programming experience in implementing basic artificial intelligence concepts. Some of the applications areas that are discussed include: game playing, expert systems, theorem proving, natural language understanding, machine learning, planning, and robotics. Prerequisites: COMP 285 and MATH 223. (**DEMAND)**

COMP 450. Operating Systems **Credit 3(3-0)**
This is an introduction to the theory and practice of operating system design and implementation. Algorithmic techniques are presented for implementing process management, storage management, processor management, file systems, security, distributed systems, performance evaluation, and real time systems. Prerequisite: COMP 375. **(F;S)**

COMP 467. 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 476. Networked Computer Systems **Credit 3(3-0)**
This course presents an overview of the technology, architecture and software used by systems of network-connected computers. The course will cover data transmission, local area network architecture, network protocols, internetworking, security, and World Wide Web technology. Students will write programs that run concurrently on multiple computers. Prerequisite: COMP 375. **(F;S)**

COMP 490. Program Design and Analysis in Ada **Credit 3(3-0)**
This course presents a comprehensive overview of the Ada programming language: Data types, program and software design using libraries, private types, generics, exception handling, and parallel processing. Prerequisite: COMP 285. **(DEMAND)**

COMP 510. Software Engineering **Credits 3(3-0)**
This course is an introduction to the principles underlying software specification, implementation, validation, and management. It addresses application of software engineering concepts to large software systems. Team effort is emphasized throughout the course. Prerequisite: COMP 360. **(F;S)**

COMP 567. Introduction to Data Mining **Credits 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 590. Special Topics in Computer Science **Credit 3(3-0)**
This course permits the exploration of advanced topics pertinent to student's program of study in a seminar setting. Prerequisite: Permission of advisor. **(DEMAND)**

COMP 595. Senior Project I **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 596, giving the student the opportunity to work on a project of significant size. Students taking this course must take COMP 596. Prerequisite: COMP 285. Corequisite: COMP 510. **(F;S;SS)**

COMP 596. Senior Project II **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 595 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 510. **(F;S;SS)**

DIRECTORY OF FACULTY

Shearon A. Brown ..... **Adjunct Associate Professor**
B.S., M.S., North Carolina A&T State University; M.S., University of Illinois

Edward Carr ..... **Adjunct Assistant Professor**
B.S., Wingate University; M.S., Western Carolina University; M.S., North Carolina A&T State University

Bullock, Gina ..... **Adjunct Assistant Professor**
B.S. Shaw University, M.S., North Carolina A&T State University

Bryant, Kelvin ..... **Adjunct Assistant Professor**
B.S., M.S., Ph.D., North Carolina State University

Gerry Dozier ..... **Professor and Chairperson**
B.S., Northeastern Illinois University, M.S., Ph.D., North Carolina State University

Edmundson Effort ..... **Adjunct Assistant Professor**
M.S., 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

Yaohang Li ..... **Associate Professor**
B.S., South China University of Technology, M.S., Ph.D., Florida State University

Kenneth A. Williams ..... **Associate Professor**
B.S., M.S., Michigan Technological University; Ph.D., University of Minnesota

Jinsheng Xu ..... **Associate Professor**
B.S. Nanjing University, M.S. Beijing University, Ph.D., Michigan State University

Huiming Anna Yu ..... **Professor**
B.S., Xiamen University; M.S., Hefei Polytechnic University; Ph.D., Stevens Institute of Technology

Xiaohong Dorothy Yuan ..... **Associate Professor**
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

http://www.ece.ncat.edu

John C. Kelly, Jr., Chairperson

DEGREES OFFERED

Electrical Engineering – Bachelor of Science
Computer Engineering – Bachelor of Science
Electrical Engineering – Master of Science*
Electrical Engineering – Doctor of Philosophy*
**See the Graduate School Bulletin*

COOPERATIVE EDUCATION PROGRAM IN ELECTRICAL AND COMPUTER ENGINEERING

Participation in Cooperative Education (Co-op) is highly recommended for students in the Department of Electrical and Computer Engineering. The Co-op program is an effective means of providing industrially relevant experiences beyond what can easily be accomplished in the classroom. Participation in the Co-op program serves both as a form of financial aid for students and provides them an advantage in seeking full-time employment opportunities. To facilitate student participation in the Co-op program, most department courses required for graduation are offered twice per year. Please refer to the undergraduate student handbooks for the Electrical Engineering and Computer Engineering programs for information on specific Co-op policies.

ELECTRICAL ENGINEERING PROGRAM
MISSION

The mission of the Bachelor of Science program in Electrical Engineering is to educate our students with the knowledge and skills relevant to the practice of electrical engineering, to instill in them the desire for continuing education, and to maintain a supportive environment for the students, faculty and staff.

EDUCATIONAL OBJECTIVES

Graduates of the Electrical Engineering program will:

1. Be employed in the electrical engineering profession or continue with graduate education.
2. Demonstrate teamwork and leadership skills in solving interdisciplinary problems
3. Be active in their communities and professional societies.
4. Enhance their professional development through life-long learning.

PROGRAM REQUIREMENTS

The electrical engineering major must complete 125 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.

REQUIRED MAJOR COURSES IN ELECTRICAL ENGINEERING

ECEN 200	ECEN 320	ECEN 433
ECEN 201	ECEN 327	ECEN 460
ECEN 202	ECEN 328	ECEN 466
ECEN 300	ECEN 356	ECEN 510
ECEN 301	ECEN 400	ECEN 598
ECEN 302	ECEN 425	ECEN 599
ECEN 306	ECEN 427	

CURRICULUM GUIDE FOR ELECTRICAL ENGINEERING
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
MATH 131	4	UNST 120	3
CHEM 106	3	MATH 132	4
CHEM 116	1	PHYS 241	3

GEEN 100	2	PHYS 251	1
GEEN 110	0	GEEN 120	0
	14		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Cluster Theme Elective	3	MATH 231	4
GEEN 160	2	PHYS 242	3
GEEN 161	2	PHYS 252	1
MATH 431	3	ECEN 300	3
MATH 450	3	ECEN 306	2
ECEN 200	3	ECEN 327	3
ECEN 201	0	ECEN 328	1
	16	ECEN 202	0
			17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Cluster Theme Elective	3	Cluster Theme Elective	3
Cluster Theme Elective	3	ECEN 425	3
INEN 260	2	ECEN 427	3
ECEN 356	3	ECEN 433	1
ECEN 320	3	ECEN 460	3
ECEN 400	3	ECEN 466	1
ECEN 301	0	ECEN 510	3
	17	ECEN 302	0
			17

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ECEN 598[e]	3	ECEN 599[e]	3
ECEN 5xx Tech. Elective III	3	ECEN 5xx Tech. Elective III	3
ECEN 5xx Tech. Elective III	3	ECEN 4xx Tech. Elective I	3
ECEN 4xx Tech. Elective I	3	Technical Elective II	3
MEEN 313	3		12
	15		

Total Credit Hours: 125

a. The UNST core requires 12 credit hours of Theme-based courses. All Foundation Courses (or their equivalent) must be completed before taking Theme-based courses. Students will be required to select one cluster theme and take 12 credit hours within the same theme.

COMPUTER ENGINEERING PROGRAM

MISSION

The mission of the Bachelor of Science program in Computer Engineering is to educate our students with the knowledge and skills relevant to the practice of computer engineering, to instill in them the desire for continuing education, and to maintain a supportive environment for the students, faculty and staff.

EDUCATIONAL OBJECTIVES

Graduates of the Computer Engineering program will:

1. Be employed in the computer engineering profession or continue with graduate education.
2. Demonstrate teamwork and leadership skills in solving interdisciplinary problems
3. Be active in their communities and professional societies.
4. Enhance their professional development through life-long learning.

PROGRAM REQUIREMENTS

The computer engineering major must complete 125 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.

REQUIRED MAJOR COURSES IN COMPUTER ENGINEERING

ECEN 200	ECEN 327	ECEN 433
ECEN 201	ECEN 328	ECEN 598
ECEN 202	ECEN 356	ECEN 599
ECEN 227	ECEN 375	COMP 280
ECEN 300	ECEN 400	COMP 285
ECEN 301	ECEN 423	COMP 450
ECEN 302	ECEN 427	COMP 476
ECEN 306	ECEN 429	COMP 510
ECEN 320		

CURRICULUM GUIDE FOR COMPUTER ENGINEERING

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 130	3
UNST 110	3	UNST 140	3
MATH 131	4	UNST 120	3
CHEM 106	3	MATH 132	4
CHEM 116	1	GEEN 163	3
GEEN 100	2	GEEN 120	0
GEEN 110	0		16
	14		

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
GEEN 165	4	MATH 231	4
PHYS 241	3	PHYS 242	3
PHYS 251	1	PHYS 252	1
ECEN 227	3	ECEN 327	3
MATH 431	3	ECEN 328	1
ECEN 200	3	COMP 280	3
ECEN 201	0	ECEN 202	0
	17		15

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Cluster Theme Elective	3	Cluster Theme Elective	3
Cluster Theme Elective	3	Cluster Theme Elective	3
ECEN 427	3	ECEN 320	3
ECEN 433	1	ECEN 423	3
ECEN 300	3	ECEN 429	1
ECEN 306	2	ECEN 375	3
COMP 285	3	ECEN 302	0
ECEN 301	0		16
	18		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
ECEN 5xx Tech. Elective III [a]	3	ECEN 5xx Tech. Elective III	3
COMP 450	3	ECEN 5xx Tech. Elective III	3
ECEN 356	3	COMP 476	2
ECEN 400	3	COMP 510	3
ECEN 598	3	ECEN 599 [c]	3
	15		14

Total Credit Hours: 125

a. Three (3) Technical Elective III

COURSE DESCRIPTIONS IN ELECTRICAL AND COMPUTER ENGINEERING

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. Corequisite: MATH 431. **(F;S;SS)**

ECEN 201. Sophomore Colloquium I **Credit 0 (1-0)**
This course provides the students with exposure to current issues in Electrical Engineering.
ECEN 202. Sophomore Colloquium II **Credit 0 (1-0)**
This course provides the students with exposure to current issues in Electrical Engineering.
ECEN 227. Introduction to Finite Automata and Discrete Math **Credit 3 (3-0)**
This course is an introduction to applied discrete mathematics. Topics include set theory, introduction to logic, functions, recursion, relations, Boolean algebra, applications of elementary graph theory, trees and applications, and mathematical techniques for algorithm analysis.
ECEN 300. Electric Circuit Analysis II **Credit 3 (3-0)**
This course is a continuation of ECEN 200. It covers sinusoidal steady state solutions to linear circuits in the time and frequency domain. Laplace transforms, transfer functions, Fourier series, Bode plots, passive and active filters, transformers, two-port circuits, and polyphase circuits will also be covered. Prerequisite: ECEN 200 and MATH 431.
ECEN 301. Junior Colloquium I **Credit 0 (1-0)**
This course provides the students with exposure to current issues in Electrical Engineering.
ECEN 302. Junior Colloquium II **Credit 0 (1-0)**
This course provides the students with exposure to current issues in Electrical Engineering.
ECEN 306. Circuits and Systems Laboratory **Credit 2 (1-3)**
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. Corequisite: ECEN 300.
ECEN 320. Electronics I **Credit 3 (3-0)**
This course is an introduction to electronic circuit design. It covers basic amplifiers, diode circuits, dc biasing and mid-frequency response of bipolar junction transistor (BJT) and field effect transistor (FET) amplifiers. The terminal behavior, and linear and nonlinear modeling of these devices are emphasized. Prerequisite: ECEN 200. **(F;S)**
ECEN 327. Digital Logic **Credit 3 (3-0)**
This course involves the study of fundamental combinational and sequential logic circuit analysis/design. Combinational concepts covered include Boolean algebra, k-maps, basic logic gates, and small/medium scale integrated circuits. Sequential concepts covered include basic latches/flip-flops, counters, memory registers, and basic synchronous systems. **(F;S)**
ECEN 328. Digital Logic Laboratory **Credit 1 (0-3)**
This course deals with the implementation of basic combinational and sequential logic systems. Small and Medium scale integrated circuits utilized in addition to Programmable logic devices. Corequisite: ECEN 327. **(F;S)**
ECEN 356. Stochastic Processes and Random Variables **Credit 3 (3-0)**
This course covers sample space and events, conditional probabilities, independent events, Bayes formula, discrete random variables, expectation of random variables, expectation of random variables, joint distribution, conditional expectation, Markov chains stationary processes, ergodicity, correlation and power spectrum of stationary processes, and Gausssian processes. Prerequisite: MATH 132. **(S)**
ECEN 375. Computer Architecture and Organization **Credit 3(3-0)**
This course covers the design, organization and architecture of computer systems. Topics include central processing unit architecture, instruction set architecture, instruction level parallelism, microcode, system interconnections, memory systems, input/output systems; interrupt handling, peripherals and communications networks. Prerequisite: ECEN227 and ECEN327.
ECEN 400. Linear Systems And Signals **Credit 3(3-0)**
This course is a continuation of ECEN 300 that covers the time-domain and Fourier analysis of discrete-time signal and discrete-time systems, state-space analysis, frequency response, digital filter design and introduction to discrete signal processing techniques. Prerequisite: ECEN 300. **(F;S)**
ECEN 410. Linear Control Systems **Credit 3(3-0)**
Introduction to control theory course that includes: control system modeling and representation, features of feedback control systems, state space representation, time domain analysis, root locus, and design compensation. Prerequisite: ECEN 400. **(S)**
ECEN 423. Introduction to Digital Systems **Credit 3(3-0)**
This course exposes the students to principles, techniques, and applications of modern digital systems. Design and analysis techniques for combinational and sequential circuits will be discussed. In particular, students will be exposed to: digital system top-down design and analysis, timing, power and performance issues in digital circuits. In addition, the student will be exposed to the Very High Speed Integrated Circuit Hardware Description Language (VHDL)-based system analysis and synthesis, hardware-software co-design, data-flow models, and digital system primitives. Prerequisite: ECEN 327. **(S)**
ECEN 425. Introduction to Electromagnetics **Credit 3(3-0)**
A study of electromagnetic concepts and effects using vector analysis. Prerequisite: MATH 231. **(F;S)**

ECEN 427. Introduction To Microprocessors **Credit 3(3-0)**
This course introduces the fundamentals of microprocessors, microcomputers, and microcontrollers. Both software and hardware concepts are dealt with. Software concepts include assembly language, machine code, flowcharts, and development/debugging techniques. Hardware concepts included communication ports, interrupts, memory, and common microcontroller subsystems. Prerequisite: ECEN 327. **(F;S)**

ECEN 429. Introduction to Digital Systems Laboratory **Credit 1(0-3)**
This lab gives students experience in applying the concepts learned in the accompanying class to build actual circuits. Lab experiments include writing applications using a hardware description language (HDL) and observing simulated results. Labs also include the use of Field Programmable Gate Arrays (FPGA) for building circuits described in the HDL. Prerequisite: ECEN 327 and ECEN 328. Corequisite: ECEN 423. **(S)**

ECEN 430. Power Systems, Energy Conversion And Electric Machinery **Credit 3(3-0)**
Study of the electric power system as an interconnection of energy conversion and transmission devices; electric machinery; energy and power; and operation of a power system. Prerequisites: ECEN 300 and 425. **(F;S)**

ECEN 433. Microprocessors Laboratory **Credit 1(0-3)**
This course provides practical experience in microprocessor hardware and software, interfacing, and applications. Microprocessor evaluation boards and simulators are utilized throughout the course. Prerequisite: ECEN 328. Corequisite: ECEN 427. **(F;S)**

ECEN 436. Power Systems, Energy Conversion And Electric Machinery Laboratory **Credit 1(0-3)**
A study of power circuits and the behavior of motors and generators by laboratory experimentation. Prerequisite: ECEN 306. Corequisite: ECEN 430. **(F;S)**

ECEN 440. Electrical Circuits and Systems **Credit 3(3-0)**
This course covers power and energy concepts; basic R, RC, RL, and RLC circuits; three phase circuits; ideal transformers; diodes and ideal op amp circuits; and logic circuits. The Laplace transform method will be introduced and used to solve circuit problems. Prerequisites: MATH 431 and PHYS 242.

ECEN 449. Introduction to Communication Systems **Credit 3(3-0)**
This course covers the fundamental principles of modulation theory including amplitude, single- and double-sideband, frequency, phase, pulse amplitude, pulse duration, pulse code modulation methods; and their applications to communication systems with random signals and noise. Prerequisite: ECEN 400. Corequisite: INEN 270.

ECEN 450. Principles of Electromagnetic Waves **Credit 3(3-0)**
This course emphasizes the following: the basic postulates of electromagnetism; the integral laws of free space; the differential laws in free space; static fields; and time varying fields. Prerequisite: ECEN 425. **(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 459. Digital and Data Communications **Credit 3(3-0)**
This course is an introduction to digital and data communications. The fundamental theory and applications of modem communication systems are discussed, including a general overview of the data communications area, telephone systems, channel coding, concept of data link protocols, interface standard, modems, multiplexing, multiple access and ISDN. Prerequisite: ECEN 400. **(F)**

ECEN 460. Electronics II **Credit 3(3-0)**
This course is a continuation of Electronics I. It covers the frequency response of single-stage and multi-stage transistors amplifiers, power amplifiers and the basics of analog integrated circuits. Prerequisite: ECEN 320. **(F;S)**

ECEN 466. Electronics II Laboratory **Credit 1(0-3)**
This course includes design and analysis of semiconductor electronic circuits using discrete and integrated circuits. Emphasis is on design and experimental verification of amplifiers switching circuits, etc. using linear active devices. Prerequisite: ECEN 306. Corequisite: ECEN 460. **(F;S)**

ECEN 470. Properties of Materials for Electrical Engineering **Credit 3(3-0)**
The effects of atomic, molecular, and crystal structure on the electrical and physical properties of conducting, insulating and semiconductor materials used in electrical engineering. Prerequisite: ECEN 425. **(F)**

ECEN 475. Applied Engineering Analysis **Credit 3(3-0)**
This course will cover application of linear algebra, complex variable, and discrete mathematics in solving engineering problems. Prerequisites: MATH 231, 431. **(F;S)**

ECEN 506. Introduction to Digital Electronics Integrated Circuits **Credit 3(3-0)**
This course covers analysis, design and applications of basic digital integrated circuits. Prerequisite: ECEN 320.

ECEN 508. Introduction to Analog Electronics Integrated Circuits **Credit 3(3-0)**
This course covers the analysis, design and implementation of selected analog integrated circuits. Prerequisite: ECEN

460. **(F)**

ECEN 510. Linear Control Systems **Credit 3(3-0)**

This course is an introduction to automatic control theory. It covers control components, development of block diagrams for control systems, analysis, and computer simulations based on time and s domain. Three design methods: Bode-plot, root-locus, and pole placement are discussed. Models may be chosen by minimizing quadratic performance index, ITAE or by computer simulation. Prerequisite: ECEN 400. **(F)**

ECEN 525. 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.

ECEN 545. Digital Signal Processing **Credit 3(3-0)**

This course covers the fundamental theory and application of digital signal processing including time and transform domain analysis and various digital filter design methods. Prerequisite: ECEN 400. **(F)**

ECEN 547. Introduction to Telecommunication Networks **Credit 3(3-0)**

This course covers the fundamental concepts of telecommunication networks. The architecture, technology, operation, and application of telecommunication networks are discussed including design and analysis of networks for voice, data, and video applications. Prerequisite: ECEN 400. **(F;S)**

ECEN 570. Properties of Materials of Electrical Engineering **Credit 3(3-0)**

This course provides a study of the atomic, molecular and crystalline properties of solids as conducting, insulating and semiconducting and magnetic materials in Electrical Engineering. The emphasis is on electrical, electronic and magnetic properties and applications. Mechanical, thermal and optical properties are also studied in the electrical engineering context. Prerequisite: ECEN 425. **(S)**

ECEN 585. 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 586. 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)**

ECEN 598. Senior Design Project I **Credit 3(2-3)**

This is part one of a two-part capstone design course for the undergraduate electrical and computer engineering programs. Topics covered include the design process as applied to electrical and computer systems, application of technical design tools, and application of professional skills. Teamwork, technical writing, communications, and project management are stressed throughout the semester. Prerequisites: ECEN 433 and 466 or consent of instructor. **(F;S)**

ECEN 599. Senior Design Project II **Credit 3(1-6)**

This is a continuation of ECEN598, 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: ECEN598. **(F;S)**

DIRECTORY OF FACULTY

Ali Abul-Fadl ..... **Associate Professor**
B.S., M.S., Ph.D., University of Idaho

Winser E. Alexander ..... **Professor and Interim Dean**
B.S. North Carolina A&T State University, M.S., Ph.D. University of New Mexico

Marwan Bikdash ..... **Professor**
B.S., M.S., Ph.D., Virginia Polytechnic Institute

Eric A. Cheek, Sr. ..... **Adjunct Associate Professor**
B.S. Carnegie-Mellon University; M.S., Ph.D. Howard University

Ward J. Collis ..... **Emeritus Associate Professor**
B.S., M.S., Northwestern University; Ph.D., The Ohio State University

Numan Dogan ..... **Professor**
B.S., Karadeniz Technical University, M.S., Polytechnic Institute of New York, Ph.D., University of Michigan

Christopher Doss ..... **Associate Professor**
B.S.E.E., M.S.E.E., Ph.D., North Carolina State University

William Edmonson ..... **Professor**
B.S., GMI; M.S., Georgia Tech; Ph.D., North Carolina State University

Gregory C. Gilmore ..... **Adjunct Instructor**
B.S. North Carolina State University; M.S., Georgia Institute of Technology

Corey Graves ..... **Associate Professor**
B.S.E.E., M.S.E.E., North Carolina A&T University; Ph.D., North Carolina State University

Abdollah Homaifar ..... **Duke Energy Eminent Professor**
B.S., M.S., State University of New York-Stony Brook; Ph.D., University of Alabama
Shanthi Iyer ..... **Research Professor**
B.S., M.S., Delhi University; Ph.D., Indian Institute of Technology
John C. Kelly, Jr. ..... **Associate Professor and Chairperson**
B.S., Ph.D., University of Delaware
Jung Kim ..... **Professor**
B.S., Yonsei University, M.S., Ph.D., North Carolina State University
Gary Lebby ..... **Research Professor**
B.S., M.S., University of South Carolina, Ph.D., Clemson University
Clinton Lee ..... **Associate Professor**
B.S., California Institute of Technology; M.S., North Carolina A&T State University; Ph.D., North Carolina State University
Robert Li ..... **Professor**
B.S., Duke University; M.S., Purdue University; Ph.D., University of Kansas
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
David Olson ..... **Associate Professor**
B.S., M.E., Michigan Technological University; Ph.D., University of Utah
Alvernon Walker ..... **Associate Professor**
B.S.E.E., M.S.E.E., North Carolina A&T University; Ph.D., North Carolina State University
Zhijian Xie ..... **Assistant Professor**
B.S., M.S. University of Science and Technology of China, Ph.D. Princeton University
Chung Yu ..... **Professor**
B.Eng., McGill University; M.S., Ph.D., The Ohio State University

Department of Industrial and Systems Engineering

http://www.eng.ncat.edu/dept/isen

Paul M. Stanfield, Chairperson

DEGREES OFFERED

Industrial and Systems Engineering – Bachelor of Science
Interdisciplinary General Engineering – Bachelor of Science
Industrial and Systems Engineering – Master of Science*
Industrial and Systems Engineering – Doctor of Philosophy*
**See Graduate School Bulletin*

MISSION

The mission of the Bachelor of Science in Industrial and Systems Engineering program at North Carolina A&T State University is to provide educational experiences in an environment that allows students to have a sense of belonging and purpose. The educational experiences are designed to produce competent industrial and systems engineers who will serve the business and government needs with their expertise in designing, improving and installing integrated systems of people, materials, information, equipment and energy.

EDUCATIONAL OBJECTIVES

The BSISE Program Objectives are established by the faculty of the industrial and systems engineering department. In determining these objectives, the stakeholders of the BSISE Program are consulted at least once every three years. Furthermore, the objectives are verified for consistency with the mission, goals and objectives of the University and the College of Engineering. The objectives of the BSISE Program are to produce graduates who:

1. Perform both technically and professionally for a variety of employers in the manufacturing and service industries.
2. Use information technology tools and systems engineering methods.
3. Function in interdisciplinary, culturally and/or globally diverse teams.
4. Contribute to their communities, the profession of industrial and systems engineering, and the University and its constituents.
5. Engage in proactive, continuous, and life long learning including the pursuit of graduate studies.

PROGRAM REQUIREMENTS

The Industrial and Systems Engineering major must complete 125 credit hours following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements.

ACCREDITATION

The undergraduate program in Industrial and Systems Engineering, leading to the Bachelor of Science in Industrial and Systems Engineering (BSISE) degree, is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC-ABET).

CAREER OPPORTUNITIES

Industrial and systems engineering is one of the major engineering fields in the United States with a significant need. Starting salaries for industrial and systems engineers are competitive with those of electrical, mechanical, and chemical engineering. Due to the education industrial and systems engineers receive and the type of experience they gain in industry, they often switch to management careers in five to ten years following graduation.

REQUIRED MAJOR COURSES IN INDUSTRIAL AND SYSTEMS ENGINEERING

INEN 246	INEN 430	INEN 380
INEN 255	INEN 435	INEN 389
INEN 361	INEN 455	INEN 415
INEN 370	INEN 465	INEN 446
INEN 289	INEN 471	INEN 489
INEN 324	INEN 472	INEN 595
INEN 425	INEN 475	INEN 500

CURRICULUM GUIDE FOR INDUSTRIAL AND SYSTEMS ENGINEERING

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 120	3
UNST 110	3	UNST 130	3
CHEM 106	3	GEEN 162	2
CHEM 116	1	PHYS 241	3
GEEN 100	2	PHYS 251	1
GEEN 110	0	GEEN 120	0
MATH 131	4	MATH 132	4
	14		16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 140	3	Cluster Theme Elective	3
INEN 102	2	INEN 255	3
INEN 246	3	INEN 289	1
MATH 431	3	MATH 231	4
PHYS 242	3	INEN 380	3
PHYS 252	1	Cluster Theme Elective	3
	15		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Cluster Theme Elective	3	Cluster Theme Elective	3
INEN 430	3	INEN 324	3
INEN 361	3	INEN 389	1
INEN 370	3	INEN 435	3
INEN 471	2	INEN 465	3
MEEN 313	3	INEN 472	2
	17		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
INEN 425	3	MEEN 260	2
INEN 455	3	INEN 446	3
INEN 415	3	INEN 489	1
INEN 475	3	INEN 595	3
ECEN 440	3	INEN Elective	3
INEN 500	1	INEN Elective	3
	16		15

Total Credit Hours: 125

INTERDISCIPLINARY GENERAL ENGINEERING PROGRAM

MISSION

The mission of the Interdisciplinary General Engineering program is to prepare technically qualified engineers who are trained to work in interdisciplinary settings in a fast changing workplace. The program is flexible to meet the changing needs of the diverse students entering the University and is intended for the student whose interests and abilities would be best served by a course of study that builds on several engineering and non-engineering disciplines, rather than focusing on a single engineering discipline.

EDUCATIONAL OBJECTIVES

The objectives of the IGEN Program are to produce graduates who:

1. Perform both technically and professionally for a variety of employers in the manufacturing and service industries as well as in non-engineering careers.
2. Function well in interdisciplinary teams.
3. Contribute to their communities, their profession, and the University and its constituents.
4. Engage in life long learning including the pursuit of graduate studies.
5. Demonstrate ability to enter graduate and professional programs in management, medicine, law, engineering and other areas

PROGRAM REQUIREMENTS

The IGEN major must complete 124 credit hours following the approved departmental curriculum. Majors must also satisfy all University and College of Engineering requirements.

CAREER OPPORTUNITIES

While traditional engineering careers will be available to graduates of the proposed program, it is particularly suited for students who will enter non-traditional engineering careers such as sales, engineering management, patent law, technical service support, human resources, teaching, entrepreneurship, and industrial design. It is also expected to appeal to students who plan to further enhance their educational preparation by entering professional and graduate programs in interdisciplinary engineering fields such as biomedical, energy and environmental engineering as well as other professions such as law, medicine, teaching and business management.

REQUIRED MAJOR COURSES IN INTERDISCIPLINARY GENERAL ENGINEERING

GEEN 100	INEN 246	CAAE 331/MEEN 335
GEEN 110	INEN 260	ECEN 440
GEEN 120	INEN 370	MEEN 260
GEEN 161	INEN 595	MEEN 441

CURRICULUM GUIDE FOR INTERDISCIPLINARY GENERAL ENGINEERING

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 120	3
UNST 110	3	UNST 130	3
CHEM 106	3	PHYS 241	3
CHEM 116	1	PHYS 251	1
GEEN 100	2	GEEN 161	2
GEEN 110	0	GEEN 120	0
MATH 131	4	MATH 132	4
	14		16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 140	3	UNST Cluster Theme Elective	3
MEEN 260	2	UNST Cluster Theme Elective	3
Concentration Elective[2]	3	MATH 431	3
MATH 231	4	INEN 370	3
PHYS 242	3	Concentration Elective[2]	3
PHYS 252	1		15
	16		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST Cluster Theme Elective	3	UNST Cluster Theme Elective	3

ECEN 440	3	Engineering Elective[1]	3
CAAE 331/MEEN 335	3	Engineering Elective[1]	3
INEN 260	2	Engineering Elective[1]	3
MEEN 441	3	Concentration Elective[2]	3
INEN 246	3		15
	17		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Engineering Elective[1]	3	INEN 495	3
Engineering Elective[1]	3	Engineering Elective[1]	3
Engineering Elective[1]	3	Engineering Elective[1]	3
Engineering Elective[1]	4	Concentration Elective[2]	3
Concentration Elective[2]	3	Concentration Elective[2]	3
	16		15

Total Credit Hours: 124

Note 1: Engineering Electives

Select 28 credit hours from the following list:

Course Number and Description	**Credits**
AGEN 403 Power and Machinery	3
AGEN 523 Biological and Agricultural Energy Systems	3
AREN 231 Materials and Methods of Construction	3
CAAE 204 Surveying and Site Analysis	3
CAAE 332/MEEN 336 Engg. Solid Mechanics I (Strength of Materials)	3
CAAE 334/MEEN 337 Engineering Mechanics II (Dynamics)	2
CAAE 362/MEEN 416/CHEN 300 Engineering Fluid Mechanics	3
CAAE 363 Engineering Fluid Mechanics and Hydraulics Laboratory	1
CAAE 364 Engineering Hydrology	3
CAAE 500 General Engg Topics Review	1
CHEN 320/MEEN 562 Heat Transfer	3
CIEN 310 Environmental Engineering	3
CIEN 350 Transportation Engineering	3
CIEN 510 Environmental Engineering Design	3
CIEN 550 Transportation Design	3
CIEN 560 Water Resources Engineering Design	3
ELEN 327 Digital Logic	3
ELEN 328 Digital Logic Lab	1
ELEN 427 Intro. to Microprocessors	3
ELEN 433 Microprocessor Lab	1
INEN 289 Engineering Teams and Leadership	1
INEN 425 Quality Assurance	3
INEN 446 Automation and Prod. Systems	3
INEN 380 Info. Technology for Ind. Engg	3
INEN 389 Systems Engineering	1
INEN 324 Computer Aided Design and Manufacturing	3
INEN 489 Professionalism and Ethics for Engineers	1
MCEN 310/AGEN 440 Engg. Prop. of Bio. Materials	3

- Prerequisites for elective courses must be understood and respected.

Note 2: Concentration Electives

Select courses from any one of the concentrations as given below.

Teaching Licensure:

Take CUIN 102 Introduction to Teacher Education I (2 credits) and at least 16 additional credit hours from the following list:

Course Number and Description	**Credits**
CUIN 301 Philosophical and Sociological Foundation	2
CUIN 400 Psychological Foundations of Education	3

CUIN 436 Evaluation and Assessment	3
CUIN 500 Principles and Curriculum in Secondary School	3
CUIN 529 Methods of Teaching Mathematics	3
CUIN 535 Methods of Teaching Science	4
CUIN 560 Student Teaching	6
MATH 242 College Geometry	3

- This concentration is a part of an engineering program.
- Prerequisites for elective courses must be understood and respected.
- Students pursuing this concentration will need to maintain a 2.8 GPA, pass Praxis I and Praxis II, be admitted to the teacher education program and complete student teaching.

Business Studies:

Take BUAD 220 Business Environment (3 credits) and at least 15 additional credit hours from the following list:

Course Number and Description	**Credits**
ACCT 221 Principles of Accounting I	3
ACCT 222 Principles of Accounting II	3
BUAD 422 Management Concepts	3
BUAD 430 Marketing Concepts	3
BUAD 453 Business Finance	3
BUAD 361 Legal Environment of Business	3
ECON 200 Principles of Economics (Micro)	3
ECON 201 Principles of Economics (Macro)	3

- This concentration is a part of an engineering program.
- Prerequisites for elective courses must be understood and respected.

Energy and Environment Studies:

Take CIEN 212 Fundamental Principles in Environmental Engineering (3 credits) and at least 15 additional credit hours from the following list:

Course Number and Description	**Credits**
AGEN 523 Bio. and Agri. Energy Systems	3
CIEN 310 Environmental Engineering	3
CIEN 416 Solid Waste Management	3
CIEN 510 Environmental Engineering Design	3

- This concentration is a part of an engineering program.
- Prerequisites for elective courses must be understood and respected.

Biochemical Studies:

Take BIOL 101 Concepts of Biology (4 credits) and at least 14 additional credit hours from the following list:

Course Number and Description	**Credits**
BIOL 220 Basic Microbiology	4
BIOL 371 Human Anatomy and Physiology	4
BIOL 401 Molecular Biology	4
BIOL 466 Principles of Genetics	3
CHEM 107 General Chemistry VII	3
CHEM 221 Organic Chemistry I	3
CHEM 222 Organic Chemistry II	3
CHEM 451 Biotechniques in Biochemistry	3
MCEN 310/AGEN 440 Engg. Prop. of Bio. Materials	3

- This concentration is a part of an engineering program.
- Prerequisites for elective courses must be understood and respected.

International Studies:

Take at least six (6) credit hours of a Foreign Language beyond the elementary level for a total of twelve (12) hours in one language. Take at least six (6) additional credit hours from the following list:

Course Number and Description	**Credits**
GEOG 210 World Regional Geography	3
GEOG 322 Economic Geography	3

HIST 313 Perspectives on Globalization	3
HIST 321 Cultural History, Ethnicity & Ethnographic Collections	3
HIST 332 The Modern Middle East	3
HIST 409 Modern Europe Since 1815	3
HIST 412 Modernization in Africa from 1920 to Present	3
HIST 431 History of the Far East to 1800	3
HIST 433 United State-East Asian Relations	3
HIST 435 Global History Since 1945	3
HIST 451 Russian History	3
PHIL 265 World Religions	3
POLI 444 International Relations	3
POLI 445 Problems of Contemporary Africa	3
POLI 446 Politics of the Americas	3
SOCI 300 Topics in Cultural Anthropology	3

- This concentration is a part of an engineering program.
- Prerequisites for elective courses must be understood and respected.

Students selecting the International Studies concentration may select courses and international experiences that qualifies them for the Global Studies Certificate. Please contact the Global Studies Certificate Coordinator in the Office of International Programs.

COURSE DESCRIPTIONS IN GENERAL ENGINEERING AND INDUSTRIAL AND SYSTEMS ENGINEERING

General Engineering

GEEN 100. Engineering Design and Ethics **Credit 2(2-0)**
This course introduces students to engineering and computer science disciplines and functions, professional licensure, the Fundamentals of Engineering exam, code of ethics, safety, the design process, creative thinking, teamwork, and technical writing. A case study on ethics and the application of the design process through a team project are required. **(F;S;SS)**

GEEN 103. Computers in Engineering **Credit 2(1-2)**
Students will use engineering and mathematical computer applications to solve engineering problems. Students will solve numerical problems and learn to use the computer for engineering design. **(F;S;SS)**

GEEN 110. Colloquium I **Credit 0(1-0)**
Contemporary issues, corporate information sessions, campus resources, information literacy, and professional society activities will be discussed. This is the first of two freshman colloquia. **(F;S)**

GEEN 120. Colloquium II **Credit 0(1-0)**
Contemporary issues, corporate information sessions, campus resources, information literacy, and professional society activities will be discussed. This is the second of two freshman colloquia. **(F;S)**

GEEN 160. Computer Programming in C++ for Engineers **Credit 2(2-2)**
This is an introductory course in C++ computer programming for engineering students. Problem solving techniques and coding algorithms will be stressed. Students will write programs for such tasks as engineering decision-making and numerical computation. Material relevant to the Fundamentals of Engineering exam will be covered. **(F;S;SS)**

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. **(F;S;SS)**

GEEN 162. Computer Programming in VisualBasic for Engineers **Credit 2(0-4)**
This course introduces computer programming using VisualBasic. Topics include flow chart construction and interpretation, procedural control flow, user and application interface development, and spreadsheets. **(F)**

GEEN 163. Introduction to Computer Programming **Credit 3(2-2)**
This is an introductory course in computer programming for students in computer oriented fields. Problem solving techniques and coding algorithms will be stressed. Students will learn to write programs in an object oriented language. **(F;S;SS)**

GEEN 164. Engineering Programming II **Credit 1(0-2)**
This is an independent study formatted course to prepare engineering students to take further computer courses. Students will write programs in an object-oriented programming language. **(F;S;SS)**

GEEN 165. Computer Program Design **Credit 4(3-2)**
This is a second course in computer programming. Students will learn to write advanced programs in an objected-oriented programming language. **(F;S;SS)**

INDUSTRIAL ENGINEERING

INEN 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.

INEN 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.

INEN 255. Methods Engineering **Credit 3(2-2)**

This courses 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: INEN 246.

INEN 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: MATH 131.

INEN 289. Engineering Teams and Leadership **Credit 1(1-0)**

This course covers industrial relations and organizational structures, project management, teamwork, inter-personal skills, and leadership in an engineering organization. A freshman level assessment will be administered. Prerequisites: GEEN 100 and UNST 110.

INEN 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: INEN 246.

INEN 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: MATH 131.

INEN 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.

INEN 380. Information Technology for Industrial 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. The role of computers in industrial and systems engineering is stressed. Prerequisite: GEEN 162.

INEN 389. Systems Approaches for Industrial Engineers **Credit 1(1-0)**

This course introduces current techniques for systems design, analysis and improvement. A sophomore level assessment is administered. Prerequisite: Junior standing.

INEN 415. Discrete Event Simulation **Credit 3(3-0)**

Concepts of random variate generation, Monte Carlo and discrete event simulation will be introduced. Simulation languages are introduced in this course. One general simulation language is taught in depth. The use of simulation modeling in design and improvement of production and service is emphasized. Industrial Engineering design projects will be required. Prerequisites: INEN 380, and senior standing.

INEN 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: INEN 370.

INEN 430. Deterministic Operations Research **Credit 3(3-0)**

Deterministic models of operations research are discussed with special emphasis on linear programming. Topics covered include formulation and computer solution of mathematical programs, simplex algorithm, transportation problem, and network flow. Prerequisite: MATH 431.

INEN 435. Stochastic Operations Research **Credit 3(3-0)**
This course introduces the concepts of probabilistic operations research models and solution techniques. Specific topics covered include Poisson process, Markov chains, queuing models and their applications, decision and risk analysis, and dynamic programming. Prerequisites: INEN 370 and MATH 431.

INEN 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: INEN 324.

INEN 455. Production Control **Credit 3(3-0)**
This course introduces the concepts of demand forecasting, aggregate production planning, inventory control, project planning, line balancing and job scheduling. Relationships with demand-driven methods, enterprise resource planning, and supply chain management are covered. Prerequisites: INEN 430.

INEN 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: INEN 255.

INEN 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.

INEN 472. Cognitive Human Factors Engineering **Credit 2(1-2)**
This course introduces elements of cognitive human factors. Topics include human sensation and perception, cognition, information processing, attention, signal detection theory, mental workload, and decision-making. Lab projects are required. Prerequisite: Junior standing.

INEN 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: INEN 370.

INEN 489. Professionalism and Ethics for 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. A junior level assessment will be administered. Prerequisites: Senior standing.

INEN 500. General Engineering Topics Review **Credit 1(0-2)**
The course includes the review of material included in the Fundamentals of Engineering (FE) exam. Prerequisite: Senior standing as IE major.

INEN 501. Fundamentals of Engineering Preparation for Industrial Engineers **Credit 1(0-2)**
The course prepares industrial engineering students to take the Fundamentals of Engineering examination. Prerequisites: INEN 500.

INEN 518. Total Quality Improvement **Credit 3(3-0)**
This course provides a systematic engineering approach to understanding the philosophy and application of Total Quality Improvement (TQI). It also introduces students to Continuous Improvement (CI) techniques used by management as a means of improving engineering processes in order to become and remain competitive in the global marketplace. The CI techniques and concepts in this course include strategic planning, benchmarking, ISO 9000, teamwork, customer satisfaction, employee involvement, quality tools, and business process reengineering. Design projects are required. Prerequisites: Senior Standing.

INEN 528. 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. Prerequisites: INEN 425.

INEN 535. 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. Prerequisites: INEN 465.

INEN 548. 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. Prerequisites: INEN 471.

INEN 550. Systems Integration **Credit 3(3-0)**
This course covers applications and case studies that address cost, human factors, energy, information, and materials as it applies to the design of production and service systems. Group work will be emphasized. Selection of appropriate analytical, computational and experimental techniques will be required. Prerequisites: INEN 465, 471, 472, and senior standing. A design project is required.

INEN 553. 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.

INEN 558. 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 leadship, planning, scheduling, budgeting, and control. Project management software is utilized. Prerequisites: Senior Standing.

INEN 585. Special Topics in Industrial Engineering **Credit 3(3-0)**
This course will cover selected industrial engineering topics of interest to senior-level undergraduate students. The topics will be selected before the beginning of the course and will be pertinent to the programs of the students enrolled.
Prerequisites: Senior Standing as ISE major.

INEN 595. Design Projects in Industrial Engineering **Credit 3(0-6)**
This course requires students to work on a real-life design project from industry. The project requires students to analyze, design, and recommend through economic justification the best design alternative. A final report and an oral presentation are required. Students demonstrate the feasibility of their designs in terms of safety, aesthetics, reliability, cost, social and ethical values. This course is only open to ISE majors. Prerequisite: Senior standing as IE major, INEN 361, 430, 465, 471, 415.

DIRECTORY OF FACULTY

Lauren Davis.....**Assistant Professor**
B.S., Rochester Institute of Technology; M.S., Rensselaer Polytechnic Institute; Ph.D., North Carolina State University

Salil Desai.....**Associate Professor**
B.S., University of Mumbai; M.S., Ph.D., University of Pittsburgh

Xiaochun Jiang.....**Associate Professor**
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B.S., Weber State University; M.S., Ph.D., Oklahoma State University

Department of Mechanical Engineering

http://www.eng.ncat.edu/dept/mcen

Samuel Owusu-Ofori, Interim Chairperson

DEGREES OFFERED

Mechanical Engineering – Bachelor of Science
Mechanical Engineering – Master of Science*
Mechanical Engineering – Doctor of Philosophy*
** See the Graduate School Bulletin*

MISSION

The mission of the Bachelor of Science program in Mechanical Engineering is to prepare its students for the broad practice of mechanical engineering and for graduate education in mechanical engineering and the many related fields such as materials engineering and aerospace engineering.

EDUCATIONAL OBJECTIVES

The following are the current educational objectives of the Bachelor of Science in Mechanical Engineering Program. After graduating from the program, the graduates will:

1. Perform effectively in a mechanical engineering related position in industry or in graduate/professional schools.
2. Demonstrate teamwork and leadership skills in using interdisciplinary approaches for solving problems.
3. Become active in their communities and professional societies.
4. Enhance their professional credentials through life-long learning.

PROGRAM REQUIREMENTS

The Mechanical Engineering major must complete 126 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 a quality education that will allow immediate entry into industry, government, private practice or graduate work. The largest proportion of graduates enter into industrial positions classified under the following general headings: design, testing, development, production, research, technical marketing, and technical management. Career opportunities for mechanical engineers are possibly the most diverse of the engineering discipline.

REQUIRED MAJOR COURSES IN MECHANICAL ENGINEERING

MEEN 104	MEEN 407	MEEN 462
MEEN 210	MEEN 416	MEEN 474
MEEN 305	MEEN 440	MEEN 475
MEEN 360	MEEN 441	MEEN 501
MEEN 335	MEEN 442	MEEN 572
MEEN 336	MEEN 445	MEEN 573
MEEN 337	MEEN 446	MEEN 574
MEEN 405	MEEN 460	

CURRICULUM GUIDE FOR MECHANICAL ENGINEERING

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 120	3
UNST 110	3	UNST 130	3
MATH 131	4	UNST 140	3
GEEN 100	2	MATH 132	4
GEEN 110[1,2]	0	PHYS 241	3

CHEM 106	3	PHYS 251	1
CHEM 116	1	GEEN 120[1,2]	0
	14		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Cluster Theme Elective	3	Cluster Theme Elective	3
MATH 231	4	PHYS 242	3
MEEN 104	2	PHYS 252	1
MEEN 210	3	INEN 370	3
MEEN 335	3	MEEN 305	1
MEEN 360	3	MEEN 336	3
	18	MEEN 337	3
			17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Cluster Theme Elective	*3*	ECEN 440	3
MATH 431	3	MEEN 405	1
INEN 260	2	MEEN 440	3
MEEN 416	3	MEEN 442	3
MEEN 441	3	MEEN 462	3
MEEN 446	3	MEEN 474	3
	17		16

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Cluster Theme Elective	3	MEEN 407	1
MEEN 445	3	MEEN 460	3
MEEN 475	3	MEEN 504/572[3]	1
MEEN 501	1	MEEN 574	3
MEEN 573	3	MEEN Elective	3
	13	MEEN Elective	3
			14

Total Credit Hours: 126

[1] *MEEN students should take Section 5 of the colloqium courses.*

[2] *Transfer students from other engineering programs may be exempt from these colloquium courses.*

[3] *Students preparing for the FE Exam will take MEEN MEEN 504 instead of MEEN 572*

REQUIRED MAJOR COURSES IN MECHANICAL ENGINEERING (AEROSPACE OPTION)

MEEN 104	MEEN 407	MEEN 462
MEEN 210	MEEN 415	MEEN 474
MEEN 305	MEEN 440	MEEN 475
MEEN 360	MEEN 441	MEEN 501
MEEN 335	MEEN 476	MEEN 572
MEEN 336	MEEN 445	MEEN 573
MEEN 337	MEEN 446	MEEN 580
MEEN 477	MEEN 460	

CURRICULUM GUIDE FOR MECHANICAL ENGINEERING (AEROSPACE OPTION)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
UNST 100	1	UNST 120	3
UNST 110	3	UNST 130	3
MATH 131	4	UNST 140	3
GEEN 100	2	MATH 132	4
GEEN 110[1,2]	0	PHYS 241	3
CHEM 106	3	PHYS 251	1
CHEM 116	1	GEEN 120[1,2]	0
	14		17

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Cluster Theme Elective	3	Cluster Theme Elective	3
MATH 231	4	PHYS 242	3
MEEN 104	2	PHYS 252	1
MEEN 210	3	INEN 370	3
MEEN 335	3	MEEN 305	1
MEEN 360	3	MEEN 336	3
	18	MEEN 337	3
			17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Cluster Theme Elective	3	ECEN 440	3
MATH 431	3	MEEN 440	3
INEN 260	2	MEEN 462	3
MEEN 415	3	MEEN 474	3
MEEN 441	3	MEEN 476	3
MEEN 446	3	MEEN 477	1
	17		16

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
Cluster Theme Elective	3	MEEN 407	1
MEEN 445	3	MEEN 460	3
MEEN 475	3	MEEN 504/572[3]	1
MEEN 501	1	MEEN 580	3
MEEN 573	3	MEEN Elective	3
	13	MEEN Elective	3
			14

Total Credit Hours: 126

[1] *MEEN students should take Section 5 of the colloqium courses.*

[2] *Transfer students from other engineering programs may be exempt from these colloquium courses.*

[3] *Students preparing for the FE Exam take MEEN 504 instead of MEEN 572*

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 210. Analytical Methods in Engineering **Credit 3(3-0)**

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 (C or higher grade). **(F;S)**

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 305. 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 360. **(F;S)**

MEEN 313. 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)**

MEEN 335. Mechanics I, Statics **Credit 3(2-2)**

Basic vector concepts of force, moment of a force; analytical and graphical techniques in the analysis of force and moment; conditions of equilibrium in frames, trusses, machine members under static loads; laws of friction; distributed

forces, determination of centroid, mass center, area and mass moment of inertia. Prerequisites: MATH 131, PHYS 241. **(F;S;SS)**

MEEN 336. Strength of Materials **Credit 3(2-2)**

This course covers the analysis of stress and strain; stress-strain relation; applications; torsional and flexural loadings; flexural deflections; combined loading; columns. Prerequisite: MEEN 335. **(F;S;SS)**

MEEN 337. 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 335 and MATH 231. **(F;S;SS)**

MEEN 360. Fundamentals of Materials Science **Credit 3(3-0)**

This course explores the relationships between the structure of materials and their properties and performance. Topics include atomic structure and chemical bonding, crystal structure, defects, failures, basic characterization, phase diagrams and phase transformations, physical properties including mechanical, electrical, optical, magnetic and chemical. Emerging advanced materials, such as multifunctional polymers, biomaterials, composites, and nano-materials will be discussed. Prerequisites: CHEM 106 and MATH 131. **(F;S)**

MEEN 405. 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 416, MEEN 441. **(F;S)**

MEEN 407. 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. Prerequisites: MEEN 440. **(F;S)**

MEEN 415. 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, MEEN 337. **(F)**

MEEN 416. 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 440. 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, 337, MATH 431; **(F;S)**

MEEN 441. 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, CHEM 106. **(F;S;SS)**

MEEN 442. 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. Prerequisite: MEEN 441 and MATH 231. **(F;S)**

MEEN 445. 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. Prerequisite: MEEN 440. **(F;S)**

MEEN 446. 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 360 and 336. **(F;S)**

MEEN 460. 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 360. **(F;S)**

MEEN 462. 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 416 (or 415), 441, MATH 431. **(F;S:SS)**

MEEN 474. 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 336. **(F;S)**

MEEN 475. Computer-Aided Design of Machine Elements **Credit 3(3-0)**
This course covers the principles and current practices of machine element design, including solid modeling and finite element analysis. Prerequisite: MEEN 440 and 474. **(F)**

MEEN 476. 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 415, MEEN 441 and MATH 231. **(F;S)**

MEEN 477. 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 415. **(F;S)**

MEEN 501. General Engineering Topics Review **Credit 1(0-3)**
This course reviews the engineering topics normally covered in the General Engineering sections of the Fundamentals of Engineering Examination. The course emphasizes extensive problem solving and helps students prepare for the FE exam. Prerequisite: Senior standing. **(F)**

MEEN 504. Mechanical Engineering Topics Review **Credit 3(3-0)**
This course reviews the mechanical engineering topics normally covered in the discipline specific section of the Fundamentals of Engineering Examination. The course is intended for senior students preparing for the FE Exam. Prerequisites: MEEN 501 and Consent of Instructor. **(F;S)**

MEEN 513. Composite Materials **Credit 3(2-2)**
This course introduces manufacturing of fiber reinforced polymer composites and its mechanical characterization with an introduction of 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 360 and MEEN 336. **(F;S)**

MEEN 520. 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. Prerequisites: MEEN 441. **(F;S)**

MEEN 530. Fundamentals of Nanoscience and Engineering **Credit 3(3-0)**
This course offers perspectives 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. Prerequisites: MEEN 460. **(F;S)**

MEEN 544. 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. Prerequisites: Permission of department and faculty member as an advisor. **(DEMAND)**

MEEN 545. 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. Prerequisites: MEEN 360 and MEEN 474. **(F;S)**

MEEN 546. 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. Prerequisites: MEEN 446 or equivalent, MEEN 474, MATH 231. **(F;S)**

MEEN 547. 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 440. **(F;S)**

MEEN 551. 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 474. **(F;S)**

MEEN 557. 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 462 and INEN 260. **(F;S)**

MEEN 563. 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. Prerequisites: MEEN 462. **(F;S)**

MEEN 567. Environmental Control **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. Prerequisites: MEEN 462. **(F;S)**

MEEN 570. 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: MEEN462 **(F;S)**

MEEN 571. Turbomachinery **Credit 3(3-0)**
This course covers the application of the cascade method to turbomachines; 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 462 **(F;S)**

MEEN 572. Mechanical Engineering Seminar **Credit 1(1-0)**
This weekly seminar course utilizes invited speakers to address such topics as resume preparation, interviewing, ethics and professional registration, as well as technical topics presented by graduate students and faculty researchers. Prerequisite: senior standing in mechanical engineering. **(F)**

MEEN 573. Mechanical Engineering Senior Project I **Credit 3(2-2)**
This is the first part of the senior capstone design course. Lectures include design methodologies, ethics, and professional practice. Team design projects begin in MEEN 573 and are continued during the following semester in MEEN574 or MEEN 580. Oral and written reports are required. Prerequisites: MEEN 442 (or MEEN 476), 474. **(F)**

MEEN 574. Mechanical Engineering Senior Project II **Credit 3(0-6)**
This is second part of the senior capstone design course. Work continues on the design project begun in MEEN 573. Written and oral progress and final design reports are required. Prerequisite: MEEN 573 and MEEN 446. **(S)**

MEEN 578. 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 flight are analyzed as well as calculation of vehicle take off and landing distance, range and endurance. Prerequisites: MATH 231 and MEEN 337. **(DEMAND)**

MEEN 580. Aerospace Senior Project **Credit 3(0-6)**
This is the capstone design course for the aerospace option. This course requires the synthesis of knowledge acquired in previous courses and the application of this knowledge to the design of an aircraft. Written and oral progress and final design reports are required. Prerequisites: MEEN 573 and MEEN 476. **(F;S)**

MEEN 585. Special Topics **Credit 3(3-0)**
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. Prerequisites: Senior Standing. **(F;S)**

MEEN 596. 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)**

DIRECTORY OF FACULTY

Daniel Acree..... **Adjunct Assistant Professor**
B.S., M.S., North Carolina A&T State University

Jerome Antonio ..... **Visiting Professor**
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B.S., Saugor University; DMIT, Madras Institute of Technology; M.S., Oklahoma State University; Ph.D., Pennsylvania State University

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Kunigal N. Shivakumar .....**Research Professor and Director of Center of Aviation Safety**
B.E., Bangalore University; M.E., Ph.D., Indian Institute of Science

Harmohindar Singh ..... **Professor of Architectural and Mechanical Enigneering and Director, Center for Energy Research and Training**
B.Sc., M.Sc., Punjab University; M.S., Ph.D., Wayne State University; Professional Engineer

Mannur Sundaresan ..... **Professor**
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Cindy Waters.....**Adjunct Associate Professor**
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Sun Yi..... **Assistant Professor**
B.S., Seoul National University; M.S., Ph.D., University of Michigan-Ann Arbor

SCHOOL OF NURSING

http://son.ncat.edu/

Patricia A. Chamings, Interim Dean

The School of Nursing offers a program leading to the Bachelor of Science Degree in Nursing. The school is organized into lower and upper divisions. The first two academic years or lower division of the program encompasses core

requirements of the University and foundation courses for the major. The upper division or last two academic years are largely devoted to nursing courses.

MISSION

The School of Nursing will provide an environment of academic excellence, scholarly inquiry and civility to prepare nurses for entry into a professional evidence-based practice through the use of information technology and clinical experiential learning to deliver quality patient-centered care, regionally, nationally, and globally.

CURRICULUM PURPOSE

The purpose of the baccalaureate program in nursing at North Carolina Agricultural and Technical State University is to prepare a nurse generalist for beginning professional practice. A special emphasis is the preparation of minority nurses. The program provides a body of knowledge derived from liberal arts, biological, physical, behavioral sciences, and nursing. The program provides the foundation for advanced preparation in nursing and life-long learning. The graduate will contribute to the advancement of the nursing profession through the use of research and management skills.

PHILOSOPHY OF THE SCHOOL OF NURSING

The philosophy of the School of Nursing depicts a holistic system that conceptually involves human beings, the environment, health, the healthcare system, professional nursing, and baccalaureate nursing education.

We view **human beings** as unique, biopsychosocial spiritual individuals who have worth and value. A synergistic relationship exists between the individual and the environment. Human beings have unlimited potential and possibilities, although their abilities may be restricted. Human beings have the potential to adapt to internal and external stimuli, and to create change in themselves and the world. We view human beings holistically, as diverse individuals with the potential for growth and wellness across the lifespan. They vary in their capacity to learn, assume responsibility for their behavior, and in their ability to participate in health care activities.

We believe **the environment** consists of internal and external conditions, circumstances, and influences affecting individuals, families, groups, and communities. Human beings respond to environmental stimuli and those responses are exhibited as adaptive modes.

We believe that **health** is a dynamic state of wholeness, affected by internal and external environments and is influenced by individual and cultural beliefs. Healing is the process of moving toward a higher level of wellness.

We believe **the healthcare system** is a diverse, interrelated entity that is changing due to the utilization of informatics, advances in technology, and health-promoting discoveries. The system has political and socioeconomic elements in addition to the variety of health-care settings, the various providers, and the culturally diverse populations who are served. Human beings should have access to resources that promote, maintain, and restore health, and prevent illness. The health system requires that the nurse engage in critical reflection and ethical deliberation.

We believe that **professional nursing** is an art and a science. It is a changing, interactive, evidence-based practice discipline. Nursing is based on the synthesis of liberal education, scientific and professional knowledge, clinical and cognitive skills, and the value system of the nurse. Nurses engage in a healing relationship with human beings. They assume the roles of learner, practitioner, teacher, collaborator, leader, manager, and client advocate, which includes the application of quality improvement principles. The professional nurse designs and provides interventions for individuals, families, and communities. The nursing process is the systematic method used to direct patient-centered nursing care and make clinical judgments in a variety of settings. Steps in the nursing process are assessment, analysis, planning, implementation, and evaluation.

We believe research expands the theoretical and practice basis of nursing as it continues to emerge as a profession. Nursing research is the application of scientific methods to the study of client problems that can be resolved through nursing intervention. We further believe that the baccalaureate graduate in nursing is prepared to critique and use research in evidence-based nursing practice.

We believe the professional nurse is prepared to assume a leadership role in community as well as professional life. The professional nurse demonstrates leadership through advocacy, interdisciplinary collaboration, and active participation in professional organizations and the community.

We believe the bachelor's degree is the first professional degree in nursing, which prepares the nurse for entry into practice. **Baccalaureate nursing education** is a synthesis of learning from the liberal arts, sciences, and nursing. Baccalaureate education provides a foundation where the student finds a sense of identification, belonging, responsibility, and achievement in preparation for roles of leadership and service. Baccalaureate education encourages synthesis of knowledge and the effective use of analytical and communications skills. The body of knowledge for nursing is derived from nursing theories, research, and clinical practice. Baccalaureate nursing education provides a base for the understanding of human beings, the cultivation of intellectual and technological skills, the examination of the learner's values and beliefs, and the understanding of and respect for the values of others in a multicultural society. We believe that teaching and learning is an interactive process that occurs in a variety of settings. This process involves cognitive, psychomotor and affective domains of learning. Students learn in a variety of ways and learning takes place best when students are actively involved in the process and share responsibility for the learning. The curriculum employs flexible

approaches to meet the needs of learners. Baccalaureate education provides the student with a relevant knowledge base along with clinical and professional skills that provide a basis for clinical judgment. Baccalaureate nursing education provides the basis for graduate preparation in nursing and establishes a foundation for life-long learning.

PROGRAM OBJECTIVES

The following objectives of the Nursing Program at North Carolina Agricultural and Technical State University are designed to provide learning experiences that will assist nursing students to:

1. Assimilate knowledge from the physical, biological, psychosocial, the liberal arts, nursing theories, as a foundation to provide evidence-based care to clients in a global society.
2. Utilize critical thinking skills in applying the nursing process to provide patient-centered care.
3. Develop professional values that encompass ethical reasoning, accountability, responsibility, integrity, and collaboration that create an environment where knowledge is created and shared.
4. Assume the role of client advocate, teacher, facilitator, collaborator, and coordinator with other health care professionals and consumers to improve delivery of health care to meet health needs of society.
5. Serve as a catalyst with inter-professional and diverse teams for creative and collaborative strategies to address local, national, political, and global health priorities.
6. Demonstrate commitment to personal and professional growth through lifelong learning
7. Utilize technology to enhance interpersonal development, communication, inter-professional teamwork, and patient outcomes.
8. Develop leaders with management abilities to advance the use of evidence as a basis for the practice of professional nursing.

ACCREDITATION AND MEMBERSHIPS

The program offered by the School of Nursing is approved by the North Carolina Board of Nursing, 3724 National Dr., Koger Center Office Complex, Camden Building, Suite 201, Raleigh, NC 27612, (919) 782-3211, www.ncbon.com; email@ncbon.com. The School of Nursing is accredited by the National League for Nursing Accrediting Commission (NLNAC) Baccalaureate and Higher Degree Programs in Nursing, 61 Broadway, New York, NY 10006, (800) 669-1656, www.nlnac.org.

The School of Nursing is an agency member of the National League for Nursing (NLN), the American Association of Colleges of Nursing, and the Southern Regional Education Board Council on Collegiate Education for Nursing. The School of Nursing is a member of Sigma Theta Tau International Nursing Honor Society.

GENERAL PROGRAM REQUIREMENTS

All School of Nursing policies supersede University policy. Pre-nursing majors are required to purchase Lab coats, nursing emblems, and nametags for the spring semester of the sophomore year. Students are required to secure liability insurance annually through the School of Nursing. A criminal background check is required prior to enrolling in upper division and drug screening is required each year by August 1st. Proof of tuberculosis skin test, other immunizations, and CPR certification must be submitted annually. To maintain enrollment in clinical all required information must be submitted by the deadline. Attendance is mandatory for theory and clinical courses. Students are responsible for transportation to clinical agencies, which may be outside of the Greensboro area. Health agencies in Guilford and surrounding counties work collaboratively with the School of Nursing to provide clinical learning experiences for students.

Students are required to take nationally normed tests throughout the curriculum and to achieve satisfactory scores on such tests. In the last semester of the curriculum, students are required to take comprehensive exams and to make satisfactory scores prior to graduation.

The School of Nursing believes that the professional development of a nursing student is essential. Based on this belief, students are required to be in attendance for Founder's Day, Honors Convocation, Capping and Pinning, Sigma Theta Tau activities and other events designated by the dean as related to the professional nature of nursing. A total of 127-128 credit hours are required for graduation with a Bachelor of Science in Nursing degree (64 credit hours of nursing courses and 63 credit hours of non-nursing courses). A minimum of 36 credit hours must be earned at North Carolina Agricultural and Technical State University. 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).

DEPARTMENTAL REQUIREMENTS

I. Admission Criteria for Pre-Nursing Majors

Freshmen and transfer students admitted into the university, as pre-nursing majors must meet the following criteria: (Licensed nurses see Section III).

A. In-state students must have a combined Scholastic Aptitude Test (SAT) score of "800" and a cumulative grade point average of "3.0" or better. Out-of-state students must have a combined SAT score of 950 and a cumulative grade point average of "3.0" or better. An ACT equivalent is acceptable in lieu of SAT.

B. If criterion "A" above is not met, a student who meets university requirements may enroll at the University. If a student completes the first year courses of the nursing curriculum with a cumulative grade point average of **2.8**, the student may be admitted as a pre-nursing major.

Students must complete Biological Science 100, Chemistry 104, and 114 with a minimum grade of "C" before enrolling in sophomore level nursing courses. Prior to enrolling in NURS 350 or 351 students must have completed BIOL 361with a grade of "C" or better.

Transfer students admitted into the university, as pre-nursing majors must meet the following criteria:

1. Overall cumulative grade point average of 2.8 or above from transfer institution.
2. Completion of the following courses with a grade of "C" or better;

CHEM (4)	BIOL (4)	STAT (3)
ENGL (6)	MATH (3)	

3. Nursing and science courses 5 years or older will not be accepted for transfer. However, all courses and documents will be evaluated on an individual basis.

II. Admission into the Nursing Major (Upper Division)

Students are formally admitted into the School of Nursing at the junior level. All pre-nursing students must meet the published admission criteria to be considered for admission into the School of Nursing at the upper division level.

A. Completion of physical and biological science courses with a grade of "C" or better.

BIOL 100 (4)	CHEM 104 (3)	CHEM 114 (1) LAB
BIOL 220 (4)	BIOL 361 (4)	

B. Completion of the following additional prerequisites with a grade of "C" or better.

MATH 101/111 (3)	STAT (3)	ENGL 101/UNST 130 (3)
ENGL 100/UNST 110 (3)	UNST 120 (3)	FCS 260 (3)
PSYC 320 (3)	FCS 357 (3)	

C. Completion of the following prerequisite nursing courses with a grade of "C" (77) or better.

NURS 100/UNST 100 (1)	NURS 300 (3)	NURS 351 (2)
NURS 320(2)	NURS 350 (3)	

Admission to the University does not guarantee acceptance in the nursing major. Admission into the School of Nursing is competitive. The School of Nursing reserves the right to evaluate all academic transcripts of applicants to the upper division. Students enrolled in the upper division must meet agency requirements for criminal background reviews, drug screening as well as other requirements. (i.e. H_1N_1 and regular flu shots).

III. Admission Criteria for Registered Nurses and Licensed Practical/Vocational Nursing Students

Students must meet requirements for admission to the University prior to bring admitted to the BSN mobility option

A. Registered nurses who meet criteria for admission to the University are accepted as pre-nursing transfer students. Presentation of a current unrestricted North Carolina license is required for licensed nurses admitted as majors into the nursing program. Several courses in the junior level nursing curriculum may be met by challenge examination, completion of course work or transfer of credit. Registered and Licensed Practical/Vocational nurse students must follow progression requirements and meet graduation requirements.

IV. Progression Requirements

1. Courses in the nursing major must be completed in the sequence of the designed curriculum.
2. All nursing courses required in the nursing major must be completed with achievement of "C" (77).
3. Once admitted to the upper division, the student must maintain at least a "C" average to continue progression in the program.
4. A student who withdraws from any upper division course must re-apply to the upper division and meet the current criteria for admission.
5. A student earning more than one grade of "D," "F," or "WF" in a nursing or science course will be unable to continue in the nursing major.

V. Readmission Requirements

Eligibility for consideration of readmission to the nursing major is dependent upon adherence to current School of Nursing requirements.

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. Some possible opportunities include institutions such as hospitals, public health agencies, clinics, military services, home health, and extended care facilities.

POLICY CHANGE

Policies and procedures are subject to change. Notification of change(s) will be made with a thirty day posted notice.

POLICY REGARDING PHYSICAL OR EMOTIONAL HEALTH

Students seeking admission to the University must have a physical examination before enrollment.

The School of Nursing reserves the right to dismiss a student from the program who (1) presents with problems in physical or emotional health which do not respond to appropriate treatment and/or counseling within a reasonable period of time and (2) demonstrates behavior which conflicts with safety essential to nursing. Students who are dismissed will be afforded due process.

REQUIRED MAJOR COURSES FOR NURSING

NURS 100/UNST 100	NURS 300	NURS 310
NURS 320	NURS 350	NURS 351
NURS 390	NURS 400	NURS 405
NURS 412	NURS 414	NURS 416
NURS 418	NURS 500	NURS 510
NURS 513	NURS 514	NURS 518
NURS 520	NURS 524	

A grade of 77% must be earned in all of the above courses.

CURRICULUM GUIDE FOR NURSING
(Option: Generic)
FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MATH 101 or MATH 111	3-4	UNST 130	3
UNST 110	3	UNST 140	3
BIOL 100	4	CHEM 104	3
HPED	1	CHEM 114	1
UNST 120	3	Statistics Course*	3
NURS 100	1	FCS 260	3
	15-16		16

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
HPED Elective	1	NURS 350	3
UNST Cluster Theme	3	NURS 351	2
UNST Cluster Theme	3	BIOL 220	4
PSYCH 320	3	FCS 357	3
BIOL 361	4	PSYC 434	3
NURS 300	3	NURS 320	2
	17		17

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
NURS 400	7	NURS 418	5
NURS 405	3	NURS 412	5
NURS 414	3	NURS 416	2
NURS 310	2	UNST Cluster Theme	3
	18		15

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
NURS 500	5	NURS 510	6
NURS 514	8	NURS 518	3
NURS 520	2	NURS 524	2
	15	NURS 513	3
			14

Total Credit Hours: 127-128

**NURS 524 & 520 could be taken either semester.*

**Any 3 hour statistics course may be taken.*

Must take 12 hours in one theme cluster (Health, Lifestyles & Society recommended).

RN-BSN OPTION GENERAL INFORMATION

The goal of the RN Option is to provide the registered nurse student an opportunity to obtain a Bachelor of Science in Nursing degree. The program is designed to graduate nurses who will function in a variety of settings, provide leadership with managerial skills, use applied research, and be prepared for graduate nursing education.

A total of 127 semester hours of credit are required for graduation. The same admission and progression criteria for the generic student apply to the RN student.

CREDIT BY EXAMINATION
RN STUDENTS

The registered nurse student can receive credit by examination for:

I. General education courses (CLEP exam) (15 credit hours).
62 credit hours of the general education requirements may be taken at NC A&T or transferred to the University. However, no more than 80 credit hours may be transferred from other institutions.

II. The School of Nursing awards the enrolled RN student 41 credit hours for previous RN Licensure upon successful completion of the NLN Comprehensive Nursing Achievement Examination. Knowledge and skills are validated through course work in the BSN completion option.

The NLN Comprehensive Nursing Achievement Examination covers the following:

Courses		**Credit Hours**
Foundations of Nursing	NURS 300, 350, 351	8
Care of the Adult Client	NURS 400, 514	15
Care of the Client with Mental Disorder	NURS 412	5
Care of the Child, Care of the Child-Bearing Family	NURS 418, 500	10
Integration and Application of Nursing Practice	NURS 518	3
		41

III. An approved Health Assessment Course is equivalent to: NURS 320 (2)
NURS 390 (3) may be offered in fall or spring semesters.

CURRICULUM GUIDE FOR NURSING
(Option: Registered Nurse)

FRESHMAN YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
MATH 101	3	STAT	3
ENGL 100/UNST 110	3	UNST 130	3
BIOL 100	4	UNST 140	3
UNST 120	3	CHEM 104	3
PHED	1	CHEM 114	1
	14	PHED	1
			14

SOPHOMORE YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
BIOL 220	4	FCS 260	3
PSYC 320	3	NURS 320	2
BIOL 361	4	NURS 390 (RN)	3
UNST Cluster	3		8
	14		

JUNIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
PSYC 434	3	UNST Cluster	3
FCS 357	3	UNST Cluster	3
NURS 414	3	NURS 416	2
NURS 405	3		8
	12		

SENIOR YEAR

First Semester	*Credit*	*Second Semester*	*Credit*
NURS 520	2	NURS 510	3
UNST Cluster	3	NURS 511	3
	5	NURS 513	3
		NURS 524	2
			11

Total Credit Hours: 127

IV. A total of two credit hours of physical education are required.

V. A foreign language is a suggested elective for those planning to attend graduate school.

LICENSED PRACTICAL NURSE (LPN) GENERAL INFORMATION

The LPN- BSN Option provides an opportunity for the student to complete the educational requirements for a Bachelor of Science in Nursing degree in a flexible, supportive environment. LPNs are admitted to the University as transfer students. Individualized counseling for course selection is provided prior to admission. The overall goal of the LPN option is to graduate nurses who will function in a variety of settings, provide leadership with managerial skills, use applied research, and be prepared for graduate nursing education.

Credit by Examination
LPN Students

LPNs can receive credit by examination for the following:

I. General Education Courses (Clep Exam) (15 Credit Hours).

II.* NLN Challenge Examinations:
Foundations of Nursing Equivalent to:
NURS 300 (3)
NURS 350 (3)
NURS 351 (2)

III.* An approved Health Assessment Course is equivalent to:
NURS 320 (2).

*A total of ten (10) nursing credit hours may be earned.

ACCELERATED OPTION FOR SECOND (2ND) DEGREE STUDENTS

Students with a bachelor's degree who wish to pursue nursing must complete pre-requisites for the major, have at least a 3.0 grade point average from initial degree program and complete all of the requirements for admission (see page x). The Accelerated Option is offered in course blocks, moves rapidly and students spend from 27-32 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.

PREREQUISITE COURSES INCLUDE (23 credits):

Abnormal Psychology (Psych 434) or Introduction to Psychology (PSYC 320) – 3 credits
General Chemistry & Lab (CHEM 104 and 114) – 4 credits
Human Anatomy & Physiology (BIOL 361) – 4 credits
Basic Microbiology (BIOL 220) – 4 credits
Introduction to Nutrition (FCS 357) – 3 credits
Growth & Development (FCS 260) – 3 credits

CURRICULUM GUIDE FOR NURSING

(Accelerated Option for Second (2nd) Degree Students)

Spring Semester	*Credit*	*Summer (1st and 2nd Sessions)*	*Credit*
NURS 325	5	NURS 413	4
NURS 414	3	NURS 419	4
NURS 320	2	NURS 501	4
NURS 405	3	NURS 520	2
NURS 400	7		14
NURS 416	2		
	22		
Fall Semester	*Credit*		
NURS 514	8		
NURS 511	4		
NURS 524	2		
NURS 513	3		
NURS 518	3		
	20		

COURSE DESCRIPTIONS IN NURSING

NURS 100. Nursing Orientation **Credit 1(1-0)**
This course will emphasize the role of the University Studies (UNST) program and present a broad overview of the curriculum structure and its rationale. The seminar will introduce students to a variety of interdisciplinary themes within the UNST program. Introductory discussions on critical thinking, communication skills, civic engagement, diversity, ethics, wellness, and healthy lifestyles will be included. **(F;SS)**

NURS 258. Introduction To Forensic Health Studies **Credit 3(3-0)**
This course will provide a foundational overview for students understanding of forensic health science as it applies and interfaces with the legal and health care system. The course will also assist students from various disciplines in analyzing the foundation for ethical decision making with respect to the law and the forensics in multiple areas of practice. **(F;S;SS)**

NURS 300. Foundations of Professional Nursing I **Credit 3(2-2)**
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. There is a laboratory component where skills are practiced and competency demonstrated. Corequisite: BIOL 361. **(F)**

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. **(F;S)**

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. **(F;S)**

NURS 306. HealthCare 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. **(F;S)**

NURS 310. Exploring Medical Language **Credit 2(2-0)**
This course is an overview of the prefixes, suffixes, and root words of medical terms used in patient-centered care. Emphasis is placed on building a working medical vocabulary based on body systems for those in interdisciplinary health-related professions. The meaning, pronunciation, and spelling of medical terms are included. Prerequisites: NURS 300. **(S)**

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: UNST 110, UNST 120. **(F;S)**

NURS 320. Health Assessment **Credit 2(1-2)**
The course prepares the student to perform health and physical assessments using a holistic approach that is patient centered. Students will have opportunities to practice physical assessment techniques and to make clinical judgments in a laboratory and/or clinical center. Prerequisites: NURS 300, BIOL 361. **(S)**

NURS 350. Foundations of Professional Nursing II **Credit 3(3-0)**
This course continues to introduce fundamental concepts of professional evidence-based nursing practice. Concepts and skills related to physiological and psychosocial responses in illness and wellness are presented. Course content includes, but is not limited to, care planning/ concept mapping, stress/adaptation, life span development, pharmacology, teaching/learning, and quality improvement. Prerequisites: NURS 300 and BIOL 361. Corequisites: NURS 320 and 351. **(S)**

NURS 351. Foundations of Professional Nursing II Practicum **Credit 2(0-2-3)**
This course continues to introduce fundamental concepts of professional evidence-based nursing practice. Concepts and skills related to psychosocial responses in illness and wellness are presented. Skills are practiced and competency is demonstrated in laboratory and clinical settings which provide the basis for patient centered nursing care. Prerequisites: NURS 300 Corequisites: NURS 320 and 350. **(S)**

NURS 390. Transition Into Baccalaureate Nursing **Credit 3(3-0)**
This course is designed to facilitate the transition of the RN, LPN, or military BSN completion student into the baccalaureate nursing program. The philosophy, objectives, and policies of the University and School of Nursing are discussed. Empahsis is placed on the use of critical thinking and the nursing process as the basis for patient-centered professional practice within the context of an interdisciplinary health care team. Prerequisite: Admission as a RN/BSN, LPN, or military completion student. **(F;S)**

NURS 400. Adult Health I **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 in interdisciplinary teams and employ evidence-based practice to provide quality patient-centered care. Prerequisites: Admission to the upper division of nursing. **(F)**

NURS 405. Pharmacology in Nursing **Credit 3(3-0)**
This course examines the nurse's role in medication administration and usage. The course will also increase the student's knowledge of categories of medications and their effects upon various populations. It will enable the student to determine

and evaluate the educational and patient care goals regarding medication administration. The student will learn to use information technology to stay current with new drugs and collaborate with interdisciplinary teams to ensure quality patient centered care. Prerequisites: NURS 350. **(F;S)**

NURS 412. Psychiatric Mental Health Nursing **Credit 5(3-0-6)**

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 student the opportunity to construct and implement a therapeutic plan of care based on patient needs. Prerequisite: NURS 400. **(S)**

NURS 414. Pathophysiology **Credit 3(3-0**)

This 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: BIOL 361. **(F;S)**

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 of all populations in the USA and select countries worldwide. Students will be able to compare the major public health concerns in the United States to those in other countries. Prerequisites: Junior Standing in the University. **(F;S)**

NURS 416. Nursing Seminar **Credit 2(2-0)**

This course examines current issues and trends influencing nursing and healthcare, including the changes in social and cultural attitudes of society. The role of the nurse is examined through the presentation of topics important to nursing that incorporate the concepts of evidence-based care and information technology. **(S)**

NURS 418. Nursing Care of the Childbearing Family and Women's Health **Credit 5(3-0-6)**

This course focuses on the concepts of theories essential in providing nursing care to childbearing families, newborns, and women. Incorporated into the course are methods of adaptation to physiological stressors inherent in this group of patients. In the clinical portion of the course the student will learn to work with interdisciplinary teams and employ evidence-based practice and informatics to provide quality patient-centered care. Prerequisite: NURS 400. **(S)**

NURS 500. Pediatric Nursing **Credit 5(3-0-6)**

This course focuses on the development of professional knowledge and specialized skill 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 thinking skills related to the nursing care of infants, children, adolescents and their families. Prerequisite: NURS 412. **(F)**

NURS 510. Community Health Nursing **Credit 6(3-0-9)**

This course is designed to provide students with the skills to critically analyze and focus on providing patient, family, and aggregate centered care in the community. Students will work with interdisciplinary teams and use sociological and epidemiological frameworks to explore community health nursing roles in a variety of settings. Prerequisite: NURS 500. **(S)**

NURS 513. 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 in interdisciplinary teams using leadership skills and evidence-based practice. Clinical learning experiences take place in a variety of healthcare settings. Prerequisite: NURS 514. **(F;S)**

NURS 514. 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. Students provide patient centered nursing care to adults experiencing complex acute and chronic illnesses in interdisciplinary health care settings. Prerequisite: NURS 412. **(F)**

NURS 516. Independent Study **Credit (1-3, 0)**

This course is designed to provide a unique experience that offers the nursing student an opportunity to creatively demonstrate learning objectives within the framework of a holistic, patient centered curriculum. Faculty facilitate learning through collaboration with students. Prerequisites: NURS 350 and 351. Prior Permission Required. **(F;S)**

NURS 518. Integration and Application of Nursing Practice **Credit 3(3-0)**

This course combines synthesis, integration, and application of knowledge required for entry into nursing practice. Students apply critical thinking, problem solving and test taking skills necessary to plan safe and effective patient-centered care. Prerequisites: Senior standing and consent of instructor. **(S)**

NURS 520. Management & Leadership in Health Care Organizations **Credit 2(2-0)**

This course is designed to study leadership and management theories and concepts in nursing and organizational behavior. Management of both the health care team and groups of patients is emphasized by educating participants to deliver patient-centered care as members of an interdisciplinary team. Evidence-based practice, quality improvement approaches and informatics are also emphasized. Prerequisites: NURS 412. **(F)**

NURS 524. Nursing Research **Credit 2(2-0)**

This course introduces students to the research process. Quantitative and qualitative methods will be discussed. Emphasis will be placed on understanding and utilizing evidence-based research findings that have implications for current and

future professional nursing practice. The student will use informatics to analyze and communicate nursing research. Prerequisites: Senior standing and consent of instructor. **(F;S)**

****Elective *Cluster**

DIRECTORY OF FACULTY

Cathy Badgett ..... **Clinical Assistant Professor**
R.N., B.S.N., North Carolina Central University; M.S.N., University of North Carolina at Greensboro

Sandra Blackstock ..... **Clinical Assistant Professor**
R.N., B.S.N., M.S.Ed., North Carolina A&T State University; M.S.N., Ph.D., University of North Carolina at Greensboro

Terrell Bryan ..... **Clinical Assistant Professor**
R.N., ADN, Guilford Technical Community College; B.S.N., North Carolina A&T State University; M.S.N., University of North Carolina at Greensboro

Patricia A. Chamings ..... **Professor and Interim Dean**
Diploma, Orange Memorial Hospital School of Nursing; B.S.N., M.N., University of Florida College of Nursing; Ph.D., George Peabody College for Teachers (Vanderbilt University)

Pamella Chavis ..... **Clinical Assistant Professor**
R.N., B.S.N, North Carolina A&T State University; M.S.N., University of North Carolina at Greensboro

Crystal Cody-Connor ..... **Clinical Instructor**
R.N., B.S.N, North Carolina A&T State University; M.S.N., GNP, University of North Carolina at Greensboro; Ph.D., Hampton University

Lorri Davis-Dick ..... **Clinical Assistant Professor**
R.N., B.S.N., North Carolina A&T State University; M.S.N., University of Phoenix

Charlotte Evans ..... **Clinical Instructor**
R.N., B.S.N., Avila College; M.S.N., Witchita State University

Diane Fesler-Birch ..... **Assistant Professor**
R.N., Diploma, Little Company of Mary Hospital School of Nursing; B.S., College of St. Francis; B.S.N., Illinois Benedictine College; M.S.N., DePaul University; PhD., Loyola University

Bonnie Fields ..... **Assistant Professor**
R.N., B.S.N., UNC-Chapel Hill; Ph.D., University of Pennsylvania

Pandora Goode ..... **Clinical Instructor**
R.N., B.S.N., North Carolina A&T State University; M.S.N., Winston-Salem State University

Patricia Kelley ..... **Clinical Instructor**
R.N., B.S.N**.,** Winton Salem State University; M.S.N., University of Phoenix

Patricia Price Lea ..... **Associate Professor**
R.N.C., B.S.N., Winston Salem State University; M.S.N., University of North Carolina at Chapel Hill; M.S.Ed., North Carolina A&T State University; Ph.D., Wayne State University

***Wanda Martin** ..... **Clinical Instructor**
R.N., B.S.N., North Carolina A&T Stat University; M.P.H., University of North Carolina at Chapel Hill

Yvonne McKoy ..... **Assistant Professor**
R.N., B.S.N., North Carolina A&T State University; M.S.N., East Carolina University; Ph.D., Florida State University

Frostenia Milner ..... **Clinical Associate Professor**
R.N., B.S.N., North Carolina A&T State University; M.S.N., University of North Carolina at Greensboro

Debra Neblett ..... **Clinical Instructor**
R.N., B.S.N., University of North Carolina at Greensboro; M.S.N., University of North Carolina at Chapel Hill

Zula Price ..... **Clinical Assistant Professor**
R.N., B.S.N., North Carolina A&T State University; M.S.N., University of North Carolina at Greensboro

Gwennlla Quick ..... **Clinical Associate Professor**
R.N., B.S.N., North Carolina A&T State University; M.S.N., The Catholic University of America

Schenita Randolph ..... **Clinical Assistant Professor**
R.N., B.S.N., North Carolina A&T State University; M.P.H., University of North Carolina at Chapel Hill

LaToya Rogers ..... **Clinical Assistant Professor**
R.N., B.S.N., North Carolina A&T State University; M.S.N., University of North Carolina at Greensboro

Christina Saunders ..... **Clinical Instructor**
R.N., B.S. N., M.S.N., University of North Carolina at Greensboro

Nancy Scroggs ..... **Adjunct Assistant Professor**
R.N., B.S.N., Western Carolina University; M.S.N., University of North Carolina at Greensboro

Patricia Shelton ..... **Associate Professor**
R.N., B.S.N., North Carolina A&T State University; M.S.N., University of North Carolina at Greensboro; Ph.D., University of South Carolina at Columbia

Catherine Sykes ..... **Clinical Assistant Professor**
R.N., B.S.N., University of North Carolina at Greensboro; M.S.N., University of Maryland at Baltimore
Jean Ann Trull ..... **Clinical Instructor**
R.N., Diploma, Presbyterian Hospital; B.S.N., M.S.N., University of North Carolina at Greensboro
Mary Uzochukwu ..... **Instructor**
A.S.S., Southeast Community College; B.S., M.S., North Carolina A&T State University
Arlina Williams ..... **Adjunct Clinical Instructor**
R.N., B.S.N., North Carolina A&T State University; M.S.N., Kean University
Wanda Williamson ..... **Clinical Assistant Professor**
R.N., A.D.N., Rockingham Community College; B.S.N., North Carolina A&T State University, M.S.N., University of North Carolina at Greensboro
*Part-Time

CENTER FOR ACADEMIC EXCELLENCE

http://www.ncat.edu/~cae

Tracey D. Ford, Director
Regina B. Artis, Assistant Director

OBJECTIVES

The objectives of The Center for Academic Excellence are:

- To serve as the university's central academic advising unit that provides academic guidance and support services such as tutoring, supplemental instruction, and developmental mathematics and reading courses.
- To collaborate with academic and student affairs departments to provide a cohesive network of support services aimed to increase student academic achievement.
- To develop and implement strategies designed to increase retention rates of all freshmen and sophomores.

GOALS

The goals of the Center for Academic Excellence are:

1. To increase the retention and graduation of students admitted to the University;
2. To provide intensive quality academic advising and academic support services that foster academic success;
3. To assist students in their transition to the university;
4. To prepare undeclared students for their prospective majors;
5. To provide students on academic probation a support network that will assist them in obtaining good academic standing;
6. To enhance students' reading and mathematics skills.

COURSES WITH DESCRIPTION

FRST 098. Basic Reading **Credit 2**
This course is designed to develop reading proficiency through the study of a variety of reading levels: basic, literal, and critical. Specific emphasis is placed on developing comprehension, increasing vocabulary, and enhancing thinking skills while improving basic study habits.

MATH 099. Intermediate Mathematics **Credit 3**
This course provides elementary properties of real numbers and basic algebra through solving of quadratic equations by various means. Students are assigned to this course based on their math placement exam score. Students whose major curriculum includes Math 101 or Math 111 are also required to take this course.

SCS 099. Strategies for Academic Success **Credit 0**
This course is designed to equip the probationary student with essential competencies for academic success by maximizing the students' potential to become independent thinkers and self directed and successful learners. This course focuses on time management, utilization of university resources, development of quality study practices, prioritization of academic and social activities, adjustment to the university environment, and acceptance of responsibility for personal academic success.

CREDIT

Credit is given for math and reading courses taken in The Center for Academic Excellence, however, no quality points are received toward the completion of a degree.

DIRECTORY OF FACULTY

Edna Adams-Fulton, B.S., University of North Carolina at Greensboro; M.S., North Carolina A&T State University; Ed.D., University of Phoenix
Regina Brooks Artis, B.S., University of North Carolina at Greensboro; M.S., North Carolina A&T State University

Caryn Atwater, B.S., Long Island University; M.S., Tufts University
Torrey Burden, B.S., University of North Carolina at Greensboro; M.S., North Carolina A&T State University
Kashonda Bynum, B.S., M.S., North Carolina A&T State University
Marissa Dick, B.S., Shaw University; M.S., North Carolina A&T State University
Titilayo Evans, B.A., M.A., North Carolina A&T State University
Daniel Ferguson, B.S., South Carolina State University; M.Ed., Clemson University
Tammy Ford, B.S., University of Georgia; M.A. Piedmont College
Tracey D. Ford, B.S., Norfolk State University; M.S., Howard University; Ed.D., University of Georgia
William Gill, B.S., University of Richmond; M.A., Hampton University
C. Renee Hall, B.A., M.A. North Carolina A&T State University
Faith Hunter, B.S., North Carolina State University; M.Ed., University of North Carolina at Greensboro
P. Brandon Johnson, B.A., North Carolina A&T State University; M.A., University of Georgia
Melinda Lee, B.S., Elizabeth City State University; M.S., American InterContinental University
Kim Manley, B.S., M.A., North Carolina A&T State University
Jason Moore, B.A., Elon University; M.S., University of Georgia
Jerald Neely, B.A., M.A., Western Michigan University
Juanita Painter, B.S., M.A., Norfolk State University
Antonio Perry, B.A., M.A., University of South Florida
Leslie Rowls, B.S., University of West Alabama; M.A., University of North Carolina at Greensboro
Ahira Smith, B.S., Kentucky State University; M.Ed., Bowling Green State University
Jawana Southerland, B.A., M.A., North Carolina A&T State University
Donald Tonkins, B.A., North Carolina A&T State University; M.P.A., University of North Carolina at Greensboro
Mary Westmoreland, B.A., M.A., North Carolina A&T State University
Angela White, B.S., University of North Carolina Chapel Hill; M.S., North Carolina A&T State University

DEPARTMENT OF MILITARY SCIENCE AND LEADERSHIP (MISC)

www.ncat.edu/~rotc

LTC Eric Handy, Professor

OBJECTIVE

The objective of the Army Reserve Officers' Training Corps (ROTC) is to train, motivate and prepare selected students with potential to serve as Commissioned Officers in the Regular Army, Army Reserve or the Army National Guard. The program is designed to provide an understanding of the fundamental concepts and principles of military art and science and to develop leadership and managerial potential in the student. A strong sense of personal integrity, honor, and individual responsibility, and an appreciation of the requirements for national security are instilled in all students. Attainment of these objectives will prepare students for commissioning and will establish a sound basis for their future professional development and effective performance in the Army or civilian life.

Enrollment in the Department of Military Science courses is open to all students attending a college or university in the Greater Greensboro Consortium **(Bennett College, Elon University, Greensboro College, Guilford College, High Point University, North Carolina A&T State University, and University of North Carolina at Greensboro).** The Army ROTC program offers elective courses for undergraduate and graduate students leading to a commission in the United States Army. Students may compete for four-year, three-year, and two-year scholarships. The program also offers nursing scholarships on a competitive basis as a Partnership in Nursing Education **(PNE)** school. For more information, contact the Army ROTC Department in Campbell Hall, (336) 334-7588.

DEGREES OFFERED

Upon graduation, students may have achieved four accomplishments:

- Bachelors of Science or Arts in student's chosen major
- Graduate degree in student's discipline
- Commission as a 2nd Lieutenant in the United States Army, Army Reserves or the National Guard
- Minor in Leadership (pending implementation for Fall 08)

GENERAL PROGRAM REQUIREMENTS

The ROTC program is divided into a basic course, which is normally taken during the freshman and sophomore years, and an advanced course, which is taken during the junior and senior years. The admission of students to the ROTC program is based upon the general admission requirements of the University as they pertain to a full-time student.

DEPARTMENT REQUIREMENTS

The programs of instruction for Army ROTC include a four-year program and a two-year program. The four-year program consists of the two-year basic course, the two-year advanced course, and the Leadership Development and

Assessment Course (LDAC). The two-year program encompasses a Leaders Training Course, the two-year advanced course and LDAC.

Basic Course: The basic course consist of two distinct components, the classroom introduction to the Army Profession and Officership of the Military Science and Leadership (MISC) 1 year, and the experiential examination of leadership, decision-making, and group process of the MISC II year. By the end of the Basic Course, cadets should possess a basic understanding of the unique aspects of the officer corps, fundamentals of leadership and decision-making, the Army's institutional values, and principles of individual fitness and a healthy lifestyle.

NOTE: Students may join the ROTC program at any time during the MISC I or MISC II year. The minimum ROTC participation, leading to a commission, is the Advanced Course (MISC III and MISC IV years and the Leader Development and Assessment Course (LDAC). Credit for the basic course can be obtained by successfully completing Military Science & Leadership 101, 102, 201, 202. A leadership laboratory must be taken concurrently each semester with the class. Prior service in the Armed Forces, completion of Basic Combat Training, or completion of the Leader's Training Course can be used to obtain appropriate credit for the basic course.

Advanced Course: The advanced course is designed to produce officers for the active Army as well as the Reserve Components. Entry into the advanced course is on a best qualified basis. The student must possess qualifications for becoming an effective Army officer. Applicants must attain and maintain a minimum G.P.A. of 2.0, (scholarship applicants must have a 2.5 G.P.A. and after being awarded the scholarship, must maintain a 2.0 G.P.A.) in order to validate their academic eligibility for participation in the program. The applicants must have a minimum of two years of academic work remaining at the educational institution in a curriculum leading to either a baccalaureate or advanced degree in a recognized academic field of study. In addition, each student must successfully complete the Leadership Development and Assessment Course the summer following completion of their MISC III year. Applicants must also pass an Army medical examination. The following courses are required for completion of the advanced course: Military Science & Leadership 301, 302, 401, 402. The leadership laboratory must also be taken each semester.

Two Year Program: This program is designed for sophomore and junior students transferring to a 4-year institution who have not taken ROTC. In lieu of the basic course, students are required to attend Leaders Training Course at Fort Knox in the summer of their sophomore year. The advanced course, which leads to an officer commission, is the same for students in either the four-year program or the two-year program.

CAREER OPPORTUNITIES

Successful completion of the ROTC program qualifies a student for a commission as a Second Lieutenant in one of the following branches of the Army: Adjutant General's Corps, Armor, Infantry, Military Police Corps, Military Intelligence, Ordnance Corps, Quartermaster Corps, Signal Corps, Medical Service Corps, Corps of Engineers, Finance Corps, Aviation, Field Artillery, Air Defense Artillery, Transportation Corps and Army Nurse Corps. Special requirements and/or additional training is required for commissioning in the Medical Corps, Army Medical Specialist Corps, Veterinarian Corps, Chaplain Corps, and the Judge Advocate General's Corps.

FINANCIAL AID

A subsistence fee ranging between $350.00 and $500.00 per month is paid to advanced course and scholarship cadets during the entire normal academic year while participating in Army ROTC. Four, three and two year scholarships are available. Details on scholarships are published by the Department of the Army and by the Military Science Department. In addition to the subsistence fee, the scholarship pays tuition, laboratory fees, book cost and certain supplies within the limits of the scholarship award.

COURSES WITH DESCRIPTION IN MILITARY SCIENCE AND LEADERSHIP

MISC 101. Foundations of Officership **Credit 1**

This course introduces students to the personal challenges and competencies that are critical for effective leadership. Students learn how the personal development of life skills such as critical thinking, goal setting, time management, physical fitness, and stress management relate to leadership, officership, and the Army profession. **(F)**

MISC 102. Basic Leadership **Credit 1**

This course overviews leadership fundamentals such as setting direction, problem-solving, listening, presenting briefs, providing feedback, and using effective writing skills. Students explore dimensions of leadership values, attributes, skills, and actions in the context of practical, hands-on, and interactive exercises. **(S)**

MISC 105/107. Leadership Laboratory * **Credit 1**

This course is in conjunction with each of the aforementioned M.S. level classes in the basic course. It is a period which supplements and reinforces, through practical application, the fundamentals taught in each of the Military Science classes. This course is a progressive leading experience designed to produce effective and efficient Second Lieutenants for the United States Army. MISC 105 **(F)** MISC 107 **(S)**

MISC 201. Innovative Team Leadership **Credit 2**

This course explores the dimensions of creative and innovative tactical leadership strategies and styles by examining team dynamics and two historical leadership theories that form the basis of the Army leadership framework (trait and behavior

theories). Students practice aspects of personal motivation and team building in the context of planning, executing, and assessing team exercises and participating in leadership labs.**(F)**

MISC 202. Foundations of Tactical Leadership **Credit 2**

This course examines the challenges of leading tactical teams in the complex contemporary operating environment (COE). The course highlights dimensions of terrain analysis, patrolling, and operation orders. Further study of the theoretical basis of the Army leadership framework explores the dynamics of adaptive leadership in the context of military operations. **(S)**

MISC 205/207. Leadership Laboratory * **Credit 1**

This course is in conjunction with each of the aforementioned M.S. level classes in the basic course. It is a period which supplements and reinforces, through practical application, the fundamentals taught in each of the Military Science classes. This course is a progressive leading experience designed to produce effective and efficient Second Lieutenants for the United States Army. MISC 205 **(F)**; MISC 207 **(S)**

MISC 301. Adaptive Tactical Leadership **Credit 3**

This course challenges cadets to study, practice, and evaluate adaptive leadership skills as they are presented with challenging scenarios related to squad tactical operations. Cadets receive systematic and specific feedback on their leadership attributes and actions. Based on such feedback, as well as their own self-evaluations, cadets continue to develop their leadership and critical thinking abilities. **(F)**

MISC 302. Leadership in Changing Environments **Credit 3**

This course uses increasingly intense situational leadership challenges to build cadet awareness and skills in leading tactical operations up to platoon level. Cadets review aspects of combat, stability, and support operations. They also conduct military briefings and develop proficiency in garrison operation orders. **(S)**

MISC 305/307. Leadership Laboratory* **Credit 1**

This course is in conjunction with each of the aforementioned M.S. level classes in the advanced course. It is a period which supplements and reinforces, through practical application, the fundamentals taught in each of the Military Science classes. Leadership Lab is a progressive leading experience designed to produce effective and efficient Second Lieutenants for the United States Army. MISC 305 **(F);** MISC 307 **(S)**

MISC 401. Developing Adaptive Leaders **Credit 3**

This course develops cadet proficiency in planning, executing, and assessing complex operations, functioning as a member of a staff, and providing performance feedback to subordinates. Cadets assess risk, make ethical decisions, and lead fellow ROTC cadets. Lessons on military justice and personnel processes prepare cadets to make the transition to Army officers. **(F)**

MISC 402. Leadership in a Complex World **Credit 3**

This course explores the dynamics of leading in the complex situations of current military operations in the contemporary operating environment (COE). Cadets examine differences in customs and courtesies, military law, principles of war, and rules of engagement in the face of international terrorism. They also explore aspects of interacting with non-government organizations, civilians on the battlefield, and host nation support. **(S)**

MISC 405/407. Leadership Laboratory* **Credit 1**

This course is in conjunction with each of the aforementioned M.S. level classes in the advanced course. It is a period which supplements and reinforces, through practical application, the fundamentals taught in each of the Military Science classes. This course is a progressive leading experience designed to produce effective and efficient Second Lieutenants for the United States Army. MISC 405 **(F);** MISC 407 **(S)**

MISC 206. Leaders Training Course (Internship Program) **Credit 4**

This course serves as an alternate means of entry into the ROTC advanced course, in lieu of the basic course requirements. This course consists of 6 weeks of training at Fort Knox, KY conducted the summer prior to entering the MISCIII year. Training consists of Army History, Role and Mission, Map Reading/Land Navigation, Rifle Marksmanship, Basic Leadership Techniques, Physical Training/Marches, Individual and Unit Tactics, Communications,. First Aid, Drill, Parades and Ceremonies, Military Courtesy, and Traditions. **(Summer) (SS)**

MISC 306. Leadership Development and Assessment Course (Internship) **Credit 4**

Normally taken the summer following the MISCIII year. The training is conducted at Ft Lewis Washington. This training provides cadets with practical experience in leadership, Military Training, small unit tactics, weapons qualifications, and communications. This internship is six weeks in duration. **(Summer) (SS)**

MISC 308. Nurse Summer Training Program (NSTP) (Internship) **Credit 4**

Normally taken the summer following junior year. The Nurse Summer Training Program is a voluntary, two-(2) week program for nurse cadets, which provides opportunities to develop and practice leadership skills in both field and clinical environments. The program's primary focus is to provide nurse cadets experiences utilizing military, leadership, clinical nursing, administrative, and interpersonal skills. Academic credit hours may be granted for NURS 513.

MISC 406. Airborne Training+ (Internship) **Credit 3**

This course consists of 3 weeks of intensive airborne training to include physical conditioning, landing techniques, parachute safety, simulated jumps, procedure in and around aircraft, and five (5) combat jumps from an Air Force aircraft flying at 1250 feet. **(Summer) (SS)**

MISC 409. Cadet Troop Leader Training + (Internship) **Credit 3**

This course consists of three weeks training with an active duty Army unit. Students who participate are assigned to a unit and spend three weeks with a Second Lieutenant, Platoon Leader. The course is designed to familiarize students with the duties and responsibilities of Second Lieutenants in the Army. Students are assigned duties as Platoon Leaders and receive an evaluation at the end of training. The training is available to students enrolled in Military Science 300 level courses and is offered as part of the summer training program.

** Denotes subject that must be taken every semester.*

+ Optional training on a selected basis.

DIRECTORY OF FACULTY

Patrick Anding, MAJ, LG ..... **Assistant Professor**
B.S., Elizabeth City State University

Judith Cannon, MAJ, SC..... **Assistant Professor**
B.S., North Carolina A&T State University

Eric D. Handy, LTC, AD ..... **Professor**
B.S., United States Military Academy at West Point ; M.M.S., Marine Command and Staff College

Adrianna Laboy, LTC LG..... **Assistant Professor**
B.A., University of Puerto Rico

Stephen Thompson, MAJ, QM..... **Assistant Professor**
B.A., Virginia Commonwealth University

DEPARTMENT OF AEROSPACE STUDIES

http://www.ncat.edu/~afrotc

Lt. Col. Robert Payne, Jr., 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). 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 commisioning into the USAF. The four-year program can be modified for students up until the beginning of the spring semester of a students sophomore year.

The AFROTC Program begins with the General Military Course. As freshmen or sophomores, students normally attend a one-hour class and a two-hour Leadership Laboratory each week in addition to two one-hour physical training sessions. The freshman course is a survey course designed to introduce students to the USAF and provides an overview of the basic characteristics, missions, and organization of the Air Force. The sophomore course is designed to examine the general aspects of air and space power through a historical perspective; utilizing this perspective, the course covers a time period from the first balloons and dirigibles to the space-age global positioning systems of the Persian Gulf War. Students who compete favorably for the award of Professional Officer Corps (POC) status will attend a four-week summer Field Training Program, at Maxwell Air Force Base, AL, to give them a firsthand look at the Air Force environment.

During the junior and senior years, students begin and complete the POC Program, which is designed to equip them with the tools and strategies they will use on active duty. The junior year begins a study of leadership, management fundamentals, professional knowledge, Air Force personnel and evaluation systems, leadership ethics, and communication skills required of a Second Lieutenant in the USAF. Seniors examine the national security process, regional studies, advanced leadership ethics, and Air Force doctrine. Special topics of interest in the senior curriculum focus on the military as a profession, officership, military justice, civilian control of the military, preparation for active duty, and current issues affecting military professionalism. Leadership Laboratory puts the knowledge obtained and skills developed in the classroom into practical application. Depending on classification (freshman through senior) and contractural obligation to the USAF, the qualified student will receive a monthly, non-taxable stipend of between $300 and $500.

When one successfully completes the AFROTC Program and receives a degree, he/she is then commissioned as a Second Lieutenant and serves a minimum of four years in the Air Force. Everyone enters the Air Force in a specific career field, usually correlating to their field of study, which is subject to the needs of the Air Force. There are many exciting career fields for active duty officers including Engineering, Medical, Legal, Nursing, Transportation and Logistics, and Aviation (i.e., pilot and navigator).

For more information on the AFROTC Program, you may contact any instructor or the Unit Admissions Officer in the Department of Aerospace Studies, Campbell Hall, telephone (336) 334-7707, or view the AFROTC/DET 605 Website at www.ncat.edu/~afrotc.

PROGRAM REQUIREMENTS

The requirements for entry into the program are as follows:

- Must be a full-time student of NC A&T SU, a Greensboro Consortium Institution, Winston-Salem State University or Wake Forest University
- Must be at least 14 years old to participate and at least 17 to receive a scholarship; if entering into the two-year program, must be at least 18 years old or have the consent of a legal guardian
- 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 2.5 academic years remaining (undergraduate, graduate, or combination)
- Must be able to complete all commissioning requirements in accordance with the following:
  - Rated (pilot or combat systems officer): commissioned before reaching the age of 29
  - Scholarship applicants: be less than 31 years old as of December 31 of the year you will commission
  - Tech, non-tech and non-rated: commissioned by age 30 (waiverable up to age 35)

UNIFORMS

All cadets will receive two ROTC uniforms. 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. In addition, the university will provide free room and board for a limited number of four-year scholarship recipients. Details on scholarships may be obtained by contacting the Unit Admissions Officer in the Department of Aerospace Studies.

GENERAL MILITARY COURSE

AERO 121. Foundations of the USAF I **Credit 1(1-0)**
This course introduces the students to the USAF. It includes a study of the foundations of officership, mission and organization of the Air Force, US military customs, courtesies, rank structure and Air Force Core Values. **(F)**

AERO 122. Foundations of the USAF II **Credit 1(1-0)**
This course is a continuation of AERO 121. Featured topics include Air Force organization and command structure, communication skills application and structure of the Department of Defense. **(S)**

AERO 131. General Military Course Leadership Laboratory I **Credit 1(0-3)**
This course puts into practice the Air Force customs and courtesies, drill and ceremonies, and leadership techniques learned during the associated class. In addition, one hour of physical training, beginning at 6:00 a.m., two times per week, is mandatory. This course must be taken in conjunction with AERO 121. **(F)**

AERO 132. General Military Course Leadership Laboratory II **Credit 1(0-3)**
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 asscoiated class. Provides more detailed information about the Air Force and career opportunities available. In addition, one hour of physical training, beginning at 6:00 a.m., two times per week, is mandatory.Must be taken in conjunction with AERO 122. **(S)**

AERO 221. Air Power History I **Credit 1(1-0)**
This course is designed to examine the general aspects of air and space power through a historical perspective. Historical examples are provided to extrapolate the development of Air Force capabilities and missions to demonstrate the evolution of what has become today's USAF air and space power. **(F)**

AERO 222. Air Power History II **Credit 1(1-0)**
This course is a continuation of AERO 221 and further examines the aspects of air and space power through a historical perspective but incorporates most recent world events and how they pertain to the capabilities and missions of the USAF. **(S)**

AERO 231. General Military Course Leadership Laboratory III **Credit 1(0-3)**
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. In addition, one hour of physical training, beginning at 6:00 a.m., two times per week, is mandatory. Must be taken in conjunction with AERO 221. **(F)**

AERO 232. General Military Course Leadership Laboratory IV **Credit 1(0-3)**
This course continues the application of Air Force customs and courtesies, and leadership training. In addition, one hour of physical training, beginning at 6:00 a.m., two times per week, is mandatory. This course must be taken in conjunction with AERO 222. **(S)**

PROFESSIONAL OFFICER COURSE

AERO 321. Leadership Studies I **Credit 3(3-0)**

This course is a study of leadership, management fundamentals, and professional knowledge, leadership ethics, and communication skills required of a junior officer in the United States Air Force. Case studies are used to examine Air Force leadership and management situations as a means of demonstrating and exercising practical application of the concepts being studied. **(F)**

AERO 322. Leadership Studies II **Credit 3(3-0)**

This course is a continuation of AERO 321. Studies of teambuilding 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(0-3)**

This course provides advanced leadership experiences in training and command activities. This gives the advanced students the opportunity to apply leadership and management principles and techniques. In addition, one hour of physical training, beginning at 6:00 a.m., two times per week, is mandatory. This course must be taken in conjunction with AERO 321. **(F)**

AERO 332. Professional Officer Course Leadership Laboratory II **Credit 1(0-3)**

This course is a continuation of AERO 331. It gives students an opportunity to develop personal leadership and management concepts through participation in advanced leadership experiences. In addition, one hour of physical training, beginning at 6:00 a.m., two times per week, is mandatory. This course must be taken in conjunction with AERO 322. **(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(0-3)**

This course is designed to develop each student's leadership potential and serve as an orientation to active duty. Students are involved in the planning, organizing, coordinating, directing, and controlling of military activities in the cadet corps. In addition, one hour of physical training, beginning at 6:00 a.m., two times per week, is mandatory. This course must be taken in conjunction with AERO 421. **(F)**

AERO 432. Professional Officer Course Leadership Laboratory IV **Credit 1(0-3)**

This course is a continuation of AERO 431. It provides the students with practical command and staff leadership experiences through their performance of various tasks within the framework of an organized cadet corps. In addition, one hour of physical training, beginning at 6:00 a.m., two times per week, is mandatory. This course must be taken in conjunction with AERO 422. **(S)**

CURRICULUM GUIDE FOR AIR FORCE RESERVE OFFICER TRAINING CORPS CADETS

General Military Course

Freshman Year

Fall Semester	*Credit*	*Spring Semester*	*Credit*
AERO 121	1	AERO 122	1
AERO 131	1	AERO 132	1
	2		2

Sophomore Year

Fall Semester	*Credit*	*Spring Semester*	*Credit*
AERO 221	1	AERO 222	1
AERO 231	1	AERO 232	1
	2		2

Professional Officer Course

Junior Year

Fall Semester	*Credit*	*Spring Semester*	*Credit*
AERO 321	3	AERO 322	3
AERO 331	1	AERO 332	1
	4		4

Senior Year

Fall Semester	*Credit*	*Spring Semester*	*Credit*

AERO 421[1]	3	AERO 422[1]	3
AERO 431	1	AERO 432	1
	4		4

[1]*AERO 421 and 422 may be used to fulfill some University Studies requirement.*

DIRECTORY OF FACULTY

Maj. John Cudar ..... **Assistant Professor**
B.S., The Citadel; MBA, California Coast University
Capt. Kory Knowles ..... **Assistant Professor**
B.S., Colorado Christian University
Lt. Col. Robert Payne, Jr. ..... **Professor**
B.S., University of South Alabama; M.S., Air Force Institute of Technology

WASTE MANAGEMENT INSTITUTE

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 social sciences, engineering, technology, and law/policy. The following academic units are involved in environmental and waste management activities: Animal Science, Agricultural Education, Agricultural Economics, Architectural Engineering, Biology, Business Administration, Curriculum and Instruction, Chemical Engineering, Chemistry, Computer Science, Civil Engineering, Electrical Engineering, Economics, Graphic Communications, History, Human Environment & Family Science, Industrial Engineering, Construction Management & Safety, Mechanical Engineering, Natural Resources and Environmental Design (Agricultural and Engineering Systems Engineering, Environmental Science, Landscape Architecture, Plant Science and Soil Science), Mathematics, Nursing, Political Science, Physics, Psychology, Sociology and Social Work. Additionally, the Waste Management Institute administers an Undergraduate and Graduate Certificate Programs. The Waste Management Certificate "highlights" the training of A&T students in Environmental Security and Waste Management Issues and also complements 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.
(2) Graduate students
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.

COURSES IN WASTE MANAGEMENT

WMI 333. Waste Management Capstone Seminar I **Credits 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 current literature, research, and the consulting activities in environmental industry.

WMI 617. Environmental Ethics & Philosophy **Credits 2(2-0)**
This course introduces students to the interdisciplinary nature of ethics and philosophy of waste management and covers the waste management ethics and philosophy of natural sciences, physical sciences, social sciences, humanities, engineering, technology, and economics in an integrated manner. Students are introduced to topics in waste management ethics and philosophy that enhance their critical thinking and problem-solving skills needed in post-academic endeavors.

WMI 629. Hazmat Training **Credits 3(1-4)**
Students are introduced to regulations, toxicology, monitoring, chemistry, site characterization, safety plan, sampling, spill, control and emergency response. Emphasis is placed on 29 CFR 1910.120 OSHA regulations and other applicable standards. Students will receive a 40-hour Hazmat Training Certificate upon completion of this course in addition to a course grade.

Web address: www.ncat.edu/~wmi for courses, enrollment, application for certificate, etc). Note that courses do not include prerequisites and must be approved by Academic Advisors and the Director of the Interdisciplinary Waste Management Institute. The Waste Management Institute office is located in the Carver Hall 261.

THE SCHOOL OF GRADUATE STUDIES

http://www.ncat.edu/~gradsch/

Graduate education at North Carolina Agricultural and Technical State University was authorized by the North Carolina State Legislature in 1939. The authorization provided for graduate training in agriculture, applied science and allied areas of study. An extension of the graduate program, approved by the General Assembly of North Carolina in 1957, provided for enlargement of the program to include teacher education as well as such other programs of a professional or occupational nature as might be approved by the State Board of Higher Education.

OVERVIEW

The School of Graduate Studies coordinates and administers advanced course offerings in departments within the School of Agriculture and Environmental Sciences, the College of Arts and Sciences, the School of Business and Economics, the School of Education, the College of Engineering, and the School of Technology. It has an integrated and multicultural faculty and student body which welcomes students from all over the world and offers advanced study for qualified individuals who wish to improve their competency for careers in professions related to agriculture, humanities, education, science, and technology. North Carolina A&T graduate students: (1) acquire special competence in one or multiple fields of knowledge; (2) further develop their ability to think independently and constructively; (3) develop and demonstrate the ability to collect, organize, evaluate, and report facts, enabling them to make a scholarly contribution to knowledge about their discipline; and (4) make new application and adaptation of existing knowledge so as to contribute to their professions and to humankind. Such study of information, techniques, and skills is provided through curricula leading to the Master of Science, the Master of Arts, the Master of Education, Master of Social Work, Master of Science in Industrial Technology or the Doctor of Philosophy degree. In addition the School of Graduate Studies offers institutes and workshops designed for those who are not candidates for a higher degree.

North Carolina Agricultural and Technical State University offers graduate level interdisciplinary programs which allows graduate students to draw expertise and resources from multiple disciplines across the university. The interdisciplinary programs offered are a Master of Science and a PhD in Computational Science and Engineering as well as Ph.D. Programs, Energy and Environmental Studies and Leadership Studies. These merged disciplines offer students an opportunities for specialization in the areas of leadership, economics, environment, engineering and technology. Students undertake rigorous research and internships while enjoying a close interaction with scientists, engineers and professionals in other fields.

DEGREES GRANTED

The School of Graduate Studies at North Carolina A&T State University offers the following degrees:

DOCTOR OF PHILOSOPHY (Ph.D.)

College of Engineering

- Electrical Engineering
- Industrial Engineering
- Mechanical Engineering
- Computational Science and Engineering*
- Energy and Environmental Systems (General)*
- Energy and Environmental Systems (Atmospheric Sciences)*
- Energy and Environmental Systems (Sustainable Bio Products)*
- Energy and Environmental Systems (Energy and Environmental Systems and Economics)*

School of Education

- Leadership Studies*

School of Technology

- Technology Management *(Consortium Degree Program w/ University of Indiana)*

***** Interdisciplinary

MASTER OF ARTS (M.A.)

College of Arts and Sciences

- English and African American Literature

MASTER OF ARTS IN TEACHING (M.A.T.)

School of Education

- Biology Education
- Business Education (7-12)
- Chemistry Education
- Child Development, Early Ed, and Family Studies (Birth-Kindergarten)
- Elementary Education (K-6)

- English Education
- Family and Consumer Sciences Education
- History Education
- Human Performance and Leisure Study (K-12)
- Mathematics Education
- Special Education (K-12)
- Technology Education (9-12)
- Trade and Industrial Education (9-12)
- Training and Development for Industry

MASTER OF SCHOOL ADMINISTRATION (M.S.A.)

School of Education

- School Administration

MASTER OF ART IN EDUCATION (M.A.Ed.)

School of Education

- Reading Education
- Elementary Education

MASTER OF SCIENCE (M.S.)

School of Agriculture and Environmental Sciences

- Agricultural Economics
- Agricultural Education (Professional Licensure)
- Agricultural Education (Professional Service)
- Animal Health Science
- Food and Nutritional Science
- Plant and Soil Science

College of Arts and Sciences

- Biology
- Chemistry
- English, Secondary Education
- History, Secondary Education
- Mathematics, Applied
- Mathematics, Secondary Education
- Physics

School of Education

- Adult Education
- Counselor Education
- Physical Education
- Human Resources (Agency Counseling)
- Human Resources (Rehabilitation Counseling)
- Instructional Technology

College of Engineering

- Chemical Engineering
- Civil Engineering
- Computer Science
- Electrical Engineering
- Industrial Engineering
- Mechanical Engineering

School of Technology

- Information Technology
- Technology Education (Technology Education, Teaching)
- Technology Education (Trade and Industrial Education, Teaching)
- Technology Education (Training and Development for Industry)
- Technology Education (Workforce Development Director)

MASTER OF SCIENCE IN INDUSTRIAL TECHNOLOGY (M.S.I.T.)

School of Technology

- Industrial Technology (Construction Management)
- Industrial Technology (Electronics and Computer Technology)

- Industrial Technology (Environmental and Occupational Safety and Health)
- Industrial Technology (Graphic Communication Systems)
- Industrial Technology (Information Technology)
- Industrial Technology (Manufacturing Systems)
- Industrial Technology (Occupational Safety and Health)

MASTER OF SCIENCE IN MANAGEMENT (M.S.M.)

School of Business and Economics

- Management (Human Resources Management)
- Management (Management Information Systems)
- Management (Transportation and Business Logistics)

MASTER OF SOCIAL WORK

College of Arts and Sciences

- Social Work *(Joint Degree with University of North Carolina Greensboro)*

ADMISSION TO GRADUATE STUDIES ADMISSION TO MASTER'S DEGREE PROGRAMS

Applicants to a master's degree program must have earned a bachelor's degree from a four-year accredited college. Application forms must be submitted to the Graduate Studies Office with two official transcripts of previous undergraduate and graduate studies, a letter of intent, and three recommendations. Applicants seeking a graduate degree may be admitted to graduate studies unconditionally or provisionally. Individuals who do not wish to pursue a graduate degree may apply as a Post Baccalaureate Studies (PBS) student. International applicants should refer to the Graduate Catalog for specific information regarding graduate admission for international students.

UNCONDITIONAL ADMISSION

To qualify for unconditional admission to a master's degree program, an applicant must have earned a minimal over-all undergraduate grade point average of 2.6 on a 4 point system (or 2.0 on a 3 point system). However, programs may require a 3.0 grade point average on a 4.0 scale; therefore, individuals interested in applying should check department specific criteria in the *Graduate Catalog* to ascertain the minimum grade point average required. In addition, a student seeking a degree in Agricultural Education, Elementary Education, Technology Education, Secondary Education, or Reading Education must possess, or be qualified to possess, a Class A Teaching License in the area of concentration. –See certification exception for Vocational-Industrial Education (post-secondary/private industry).

PROVISIONAL ADMISSION

An applicant may be admitted to the master's degree program for graduate study on a provisional basis if (1) the earned baccalaureate degree is from a non-accredited institution or (2) the record of undergraduate preparation reveals deficiencies that can be removed near the beginning of graduate study and/or (3) final documents are still needed. A student admitted provisionally may be required to pass examinations to demonstrate knowledge in specified areas, to take specified undergraduate courses to improve his/her background, or to demonstrate competence for graduate work by earning no grades below "B" in the first nine hours of graduate work at this institution.

POSTBACCALAUREATE (PBS)

Students not seeking a to be admitted to a graduate program at A&T may be allowed to take courses for self-improvement or for certificate renewal if said students meet standard School of Graduate Studies entrance requirements. If a student subsequently wishes to pursue a degree program, he/she must complete the full admission process. The School of Graduate Studies reserves the right to refuse to accept towards a degree program credits which the candidate earned while enrolled as a PBS student; in no circumstances may the student apply towards a degree program more than twelve semester hours earned as a PBS student.

ADMISSION TO DOCTORAL PROGRAMS

Applicants to doctoral programs must submit completed application forms with official transcripts of all previous undergraduate and graduate studies and an official copy of their GRE/GMAT test scores. Other admission criteria are outlined below under the following headings: unconditional admission and provisional admission. Transcripts submitted to the School of Graduate Studies become part of the permanent record and cannot be released to another institution, employer, or to the student. All College of Engineering programs, Electrical Engineering, Industrial and Systems Engineering, and Mechanical Engineering allow BS graduates with an earned GPA of 3.5 or higher to apply directly to the Ph.D. program. Applicants should contact the respective engineering department for more information on this option. International applicants should refer to the Graduate Catalog for specific information regarding graduate admission for international students.

UNCONDITIONAL ADMISSION

Unconditional admission is offered to applicants who satisfy all general School of Graduate Studies requirements. In addition, they must have an earned Bachelor of Science and Master of Science degree in the appropriate discipline and a

3.5 grade point average in their Master of Science program. Graduate Record Examination (GRE) scores are required. Test of English as a Foreign Language (TOEFL) is required for international students.

PROVISIONAL ADMISSION

Provisional admission is offered to applicants who meet all conditions except the 3.5 grade point average in the Master of Science degree. Provisional students must convert to unconditional admission on a timely basis by achieving a 3.5 average on graduate coursework when the ninth credit is completed.

JOINT DOCTORAL PROGRAM WITH INDIANA STATE UNIVERSITY

North Carolina A&T State University School of Technology and Indiana State University School of Technology offers jointly a doctor of philosophy consortium degree program in Technology. The specializations, program requirements, and admissions requirements are listed below.

Specializations are:

- Construction Management
- Digital Communications
- Human Resource Development and Training
- Manufacturing Systems
- Quality Systems

PROGRAM REQUIREMENT

The Ph.D. in Technology Management consists of a minimum of 90 hours of course work and research at the post baccalaureate level. Included is course work in a general technology core, a research core, a technical specialization, an internship, a residency requirement, and a dissertation.

Admission Requirements

Admission to the program is based on students meeting the following standards. The qualitative standards identified below reflect the minimum necessary for admission but does not ensure admittance.

- Bachelor's degree from an accredited university with a minimum undergraduate grade point average of 3.0 on a 4.0 scale.
- Minimum graduate grade point average of 3.5 on a 4.0 scale.
- Graduate Record Examination minimum scores of 500 on the verbal, quantitative, and analytical general tests.
- Five letters of recommendation.
- Employer validation of 2000 hours of occupational experience related to a technical specialization.
- Written statement including reasons for selecting the program, specialization, and goals upon graduation.
- Completion and mailing of application to the School of Graduate Studies, Indiana State University or completion of the application on-line at: www.indstate.edu/grad/applications.html.

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