Graduate School Catalog | 2014-15

North Carolina Agricultural and Technical State University

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Graduate Catalog 2014-2015

The Graduate School

North Carolina Agricultural and Technical State University
1601 East Market Street
Greensboro, North Carolina 27411

www.ncat.edu/grad

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Nanoscience and Nanoengineering, Joint School	336-217-5177
Nursing, School	336-334-7751
Technology, School	336-334-7567
Student Union	336-334-7571
Summer School	336-334-7810
Transcripts	336-334-7595
Treasurer's Office	336-334-7721
Veterans Services	336-334-7765
Writing Center	336-334-7764

Table of Contents

Introduction

Welcome to the Graduate School Catalog! The Graduate School exemplifies North Carolina A&T State University's tradition of excellence in learning, discovery and engagement. We are proud of our unique approach to the graduate enterprise that comprises the combined efforts of an intercultural faculty and staff, a diverse student population, and an unparalleled research and learning experience. Our alumni are leading thinkers and innovators in a variety of fields, seeking to improve life for all in the 21st century and beyond.

In 2014, the US News and World Report published its rankings that included the following A&T programs: Industrial and Systems Engineering was ranked 75th; the master's in Social Work (joint with UNCG) was ranked 104th; and the online master's program in Information Technology was ranked 18th.

In the 2013 ranking of national universities by Washington Monthly magazine, North Carolina A&T State University has been ranked No. 33 overall and No. 2 in the category of social mobility. Washington Monthly rates schools overall based on their contribution to the public good in three categories: social mobility – recruiting and graduating low-income students; research – producing cutting-edge scholarship and PhDs; and service – encouraging students to give something back to their country.

Our state of the art research centers and facilities include the NASA Center for Aviation Safety, the NSF Engineering Research Center for Revolutionizing Metallic Biomaterials, the NOAA-Interdisciplinary Scientific Environmental Technology Center, the Center for Post-Harvest Technologies, the Interdisciplinary Center for Entrepreneurship and E-Business and the recently established Joint School for Nanoscience and Nanoengineering.

NC A&T offers a variety of financial assistance options for graduate study. We currently offer 45 master's concentrations through 30 degree programs and 11 doctoral concentrations through 9 degree programs, as well as a number of certificate programs in collaboration with the following schools and colleges: School of Agriculture and Environmental Sciences, College of Arts and Sciences, School of Business and Economics, School of Education, College of Engineering, School of Technology, and the Joint School of Nanoscience and Nanoengineering. Details regarding all our programs of study are provided in this catalog.

We invite you to explore the catalog as well as our website for more information on our academic programs, research opportunities, admission processes, and financial assistance. Please don't hesitate to call us at 336-285-2366 or email us at grad@ncat.edu if you have any questions.

Best wishes.

Sanjiv Sarin, PhD PE
Dean, The Graduate School
North Carolina Agricultural and Technical State University

Academic Calendar

The University Calendar is subject to periodic revision. The updated academic calendars are available at http://www.ncat.edu/registrar-office/academic-calendar/index.html.

Catalog Policies and Disclaimers

The *North Carolina Agricultural and Technical University Graduate Catalog* contains academic policies and regulations that relate to graduate courses, graduate degree programs and graduate certificate programs. The Graduate School staff will be responsible for interpreting policies and regulations stated in the Catalog as needed.

The University reserves the right to change any of the rules and regulations of the University at any time, including those relating to admission, instruction, and graduation. The University also reserves the right to withdraw curricula and specific courses, alter course content, change the calendar, and to impose or increase tuition and fees.

The requirements specified in this *Catalog* apply to students who commence their studies at North Carolina A&T State University during the 2012-2013 academic year and who remain in continuous enrollment at the institution until they graduate. If requirements are changed, students may elect to comply with the new requirements or to remain under the requirements by which they are governed at the time of the change. A student who elects to comply with the requirements of a newer catalog must do so by declaring such intent in writing at least one semester prior to graduation. This declaration must be approved by the academic department and the Graduate School.

Students who change their program of study are bound by the requirements of their new program of study that are in effect the semester they officially begin studies in the new program. Furthermore, students who are readmitted to the University are bound by the program and degree requirements in force at the time of readmission.

Student's Responsibility

Each student is responsible for the timely completion of his or her academic program, for familiarity with the *Catalog*, for maintaining good academic standing, and for meeting all other degree requirements. Students are expected to assume academic and financial responsibility for the courses in which they enroll. While the student's advisor should be consulted regularly, the final responsibility remains that of the student.

A student is also required to have knowledge of and observe all regulations pertaining to campus life and student behavior. Each student is expected to participate in campus and community life in a manner that will reflect credibly upon the student and the University. All students are expected to abide by the Student Handbook.

Email is the official form of communication at the University; students are responsible for checking their ncat.edu email regularly. Students are expected to also maintain their contact information including mailing address and telephone number with the Office of the Registrar.

The University of North Carolina

The University of North Carolina is a multi-campus state university that encompasses 16 such institutions, as well as the NC School of Science and Mathematics, the nation's first public residential high school for gifted students. Chartered by the North Carolina General Assembly in 1789, the University of North Carolina 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.

Additional institutions of higher education, diverse in origin and purpose, began to win sponsorship from the General Assembly beginning as early as 1877. Five were historically black institutions, and another was founded to educate American Indians. Some began as high schools. Several were created to prepare teachers for the public schools. Others had a technological emphasis. One is a training school for performing artists.

The 1931 session of the 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 Women'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 legislation was passed bringing into the University of North Carolina the state's ten remaining public senior institutions, each of which had until then been legally separate: Appalachian State University, East Carolina University, Elizabeth City State University, Fayetteville State University, North Carolina Agricultural and Technical State University, North Carolina Central University, the North Carolina School of the Arts (now the University of North Carolina School of the Arts), Pembroke State University (now the University of North Carolina at Pembroke), Western Carolina University, and Winston-Salem State University. In 1985 the NC School of Science and Mathematics was declared an affiliated school of the University; in July 2007 NCSSM by legislative action became a constituent institution of the University of North Carolina. All the schools and universities welcome students of both sexes and all races.

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 UNC campuses 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 university has a Board of Trustees consisting of eight members elected by the Board of Governors, four appointed by the governor, and the president of the student body, who serves *ex officio*. (The UNC School of the Arts has two additional *ex officio* members; and the NC School of Science and Mathematics has a 27-member board as required by law.) Each Board of Trustees holds extensive powers over academic and other operations of its campus on delegation from the Board of Governors.

In addition to its teaching role, the University of North Carolina has a long-standing commitment to public service. The UNC Center for Public Television, the UNC Health Care System, the cooperative extension and research services, nine area health education centers, and myriad other University programs and facilities reap social and economic benefits for the state and its people.

Mission

The mission of the University is shaped in large measure by the constitutional and statutory mandates by which public higher education is established and maintained. Article IX of the Constitution of the State declares:

> Sec. 8. Higher education. The General Assembly shall maintain a public system of higher education, comprising The University of North Carolina and such other institutions of higher education as the General Assembly may deem wise.
>
> Sec. 9. Benefits of public institutions of higher education. The General Assembly shall provide that the benefits of The University of North Carolina and other public institutions of higher education, as far as practicable, be extended to the people of the State free of expense.

This constitutional mandate for a public system of higher education is effected by Chapters 115 and 116 of the General Statutes. Chapter 115A, enacted in 1963, provides for a statewide network of community and technical colleges and institutes which offer two-year college transfer and technical and vocational programs. Chapter 116 of the statutes, as amended by the General Assembly effective July 1, 1972, provides in Section 3 that:

The board of trustees of the University of North Carolina is hereby redesignated, effective July 1, 1972, as the 'Board of Governors of the University of North Carolina.' The Board of Governors shall be known and distinguished by the name of 'the University of North Carolina' and shall continue as a body politic and corporate and by that name shall have perpetual succession and a common seal.

Section 4 of the statute provides for the University of North Carolina to be composed of the 16 public senior institutions in the state.

The Higher Education Reorganization Act of 1971, which placed those 16 institutions under one governing board, asserted the basic objectives and purposes for the University of North Carolina: to foster the development of a well-planned and coordinated system of higher education, to improve the quality of education, to extend its benefits, and to encourage an economical use of the state's resources.

Central to the process of strategic planning is the clarification of the overall mission of the University as a whole and the role and scope of the constituent institutions within that overall mission. As a part of the comprehensive mission review of 1992, the Board of Governors adopted a general mission statement for the University. This statement, with minor modifications, was given statutory status in 1995 when the General Assembly amended Chapter 116-1 of the General Statutes to include the following as the official mission statement of the University of North Carolina:

The University of North Carolina is a public, multi-campus university dedicated to the service of North Carolina and its people. It encompasses the 16 diverse constituent institutions and other educational, research, and public service organizations. Each shares in the overall mission of the University. That mission is to discover, create, transmit, and apply knowledge to address the needs of individuals and society. This mission is accomplished through instruction, which communicates the knowledge and values and imparts the skills necessary for individuals to lead responsible, productive, and personally satisfying lives; through research, scholarship, and creative activities, which advance knowledge and enhance the educational process; and through

public service, which contributes to the solution of societal problems and enriches the quality of life in the State. In the fulfillment of this mission, the University shall seek an efficient use of available resources to ensure the highest quality in its service to the citizens of the State. Teaching and learning constitute the primary service that the University renders to society. Teaching, or instruction, is the primary responsibility of each of the constituent institutions. The relative importance of research and public service, which enhance teaching and learning, varies among the constituent institutions, depending on their overall missions.

Board of Governors

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North Carolina A&T State University

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 banded 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 it to university status. 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, doctoral research institution located in Greensboro, N.C., on 200 beautiful acres. 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 programs, 45 master's programs, and 11 doctoral programs. 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 Graduate School.

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 nanobio applications research.

The University has advanced to the forefront in the area of research. For the fiscal year 2011-12, A&T has generated over $55 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).

Mission

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

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James Ryan, *Dean, Joint School of Nanoscience and Nanoengineering*
Inez Tuck, *Dean, School of Nursing*
Benjamin Uwakweh, *Dean, School of Technology*

Nondiscrimination Policy

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.

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 Graduate School

Graduate education at North Carolina Agricultural and Technical State University was authorized by the North Carolina State Legislature in 1939. The authorization provided for training in agriculture, technology, applied sciences, and other approved areas of study. An extension of the graduate program approved by the General Assembly of North Carolina in 1957 provided for enlargement of the curriculum to include teacher education, as well as such other programs of a professional or occupational nature as might be approved by the North Carolina Board of Higher Education.

On July 1, 1967, the Legislature of North Carolina approved regional university status for the institution and renamed it North Carolina Agricultural and Technical State University. The University awarded its first master's degree in 1941 to Woodland Ellroy Hall. Since that time, over 8,000 students have received advanced graduate degrees from the University. A significant number of master's graduates have gone on to earn doctoral degrees in their chosen disciplines, either at North Carolina A&T or at other universities.

The Graduate School has an integrated and intercultural faculty and student body and beckons students from all over the world. It coordinates and administers advanced course offerings in departments within the 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, the Joint School of Nanoscience and Nanoengineering, and the School of Technology. Curricula leading to the Master of Science, the Master of Arts, the Master of Education, Master of School Administration, Master of Social Work, and the Doctor of Philosophy degree are offered in a variety of disciplines.

The Graduate School provides a foundation of knowledge and techniques for those who wish to enhance their career options or to continue their education in doctoral programs. While studying at this university, it is expected that graduate students will (i) acquire special competence in their chosen fields; (2) further develop their ability to think independently and constructively; (3) develop and demonstrate the ability to collect, organize, evaluate, create, and report facts that will enable them to make a scholarly contribution to knowledge about their discipline; and (4) apply new and existing knowledge so as to contribute to their professions and to humankind.

In 1994, the first doctoral programs were authorized at North Carolina A&T State University in the Electrical Engineering and Mechanical Engineering disciplines. The first set of doctoral students enrolled the same year. The University granted its first Ph.D degrees to Sidney Llewellyn Bryson (Electrical Engineering), Alfred L. Burress (Electrical Engineering) and Christopher Grace (Mechanical Engineering) in 1999. The PhD in Industrial and Systems Engineering was added in 2000. In 2001, Electrical Engineering student Yaxi Shen became the first female to receive the PhD degree. In 2003, Tracie Jamison (Electrical Engineering) and Mary Murdock (Mechanical Engineering) became the first African American females as well as the first Title III HBGI Fellows to receive doctoral degrees. In 2005, two interdisciplinary PhD programs in Energy and Environment Systems and in Leadership Studies were added. The PhD in Computational Science and Engineering was established in 2010. The UNC Board of Governors approved the establishment of the PhD in Nanoengineering in 2011. The PhD in Rehabilitation Counseling was established in 2013. A year later, the PhD in Computer Science was approved in

2014. Currently, 300 doctoral students are enrolled at the university; over 60% are in STEM disciplines. Since the establishment of its first doctoral programs, the university has awarded over 270 doctoral degrees. The University awarded 29 doctoral degrees in the 2012-13 academic year; over 85% were in STEM disciplines.

In 2004, based on its production of doctoral degrees and research, North Carolina A&T qualified for Doctoral Research University status established by the Carnegie Foundation. This status was formally approved by The University of North Carolina Board of Governors.

Fourteen persons have served as dean of the Graduate School since its beginning in 1939. They are Dr. Wadaran L. Kennedy (1939-1951), Dr. Frederick A. Williams (1951-1961), Dr. George C. Royal (1961-1965), Mr. J. Niel Armstrong (1965-1966), Dr. Darwin Turner (1966-1969), Dr. Albert W. Spruill, (1970-1993), Dr. Meada Gibbs (1993-1996), Dr. Charles Williams (1996-1997), Dr. Melvin N. Johnson (1997), Dr. Thoyd Melton (1998-2000), Dr. Kenneth H. Murray (2000-2006), Dr. Thomas Hassell (2006-2006), Dr. William J. Craft (2007 -2009), Dr. Kenneth Murray (2009-2009), Dr. Alan Letton (2010 - 2011), Dr. Sanjiv Sarin (2011-present).

Graduate Council

The Graduate School Council is responsible for formulating all academic policies and regulations affecting graduate students, graduate courses, and graduate curricula. The council consists of faculty, students and administrative representatives from graduate programs. The Dean of the Graduate School serves as chairperson of the Council.

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

Degree and Certificate Programs Offered

The Graduate School at North Carolina A&T State University offers the following degree and certificate programs:

Doctoral Degrees

- Ph.D. Computational Science and Engineering
- Ph.D. Computer Science
- Ph.D. Electrical Engineering
- Ph.D. Energy and Environmental Systems with concentrations in:
  - Atmospheric Sciences
  - Sustainable Bio Products
  - Energy and Environmental Sciences and Economics
- Ph.D. Industrial and Systems Engineering
- Ph.D. Leadership Studies
- Ph.D. Mechanical Engineering
- Ph.D. Nanoengineering
- Ph.D. Rehabilitation Counseling and Rehabilitation Counselor Education

Masters Degrees

- MA English and African American Literature
- MAEd Elementary Education
- MAEd Reading Education
- MAT Master of Arts in Teaching with concentrations in:
  - Biology Education
  - Business Education
  - Chemistry Education
  - Child Development: Early Education & Family Studies Birth-K
  - Elementary Education
  - English Education
  - Family and Consumer Sciences Education
  - History Education
  - Math Education

    - Physical Education
    - Special Education
    - Technology Education
- MS Adult Education
- MS Agricultural Education* with concentrations in:
    - Professional Licensure
    - Professional Service
- MS Agricultural and Environmental Systems with concentrations in:
    - Integrated Animal Health Systems
    - Agribusiness & Food Industry Management
    - Natural Resources and Environmental Systems
- MS Applied Mathematics
- MS Bioengineering
- MS Biology
- MS Chemical Engineering
- MS Chemistry
- MS Civil Engineering
- MS Computational Science and Engineering
- MS Computer Science
- MS Electrical Engineering
- MS Food and Nutritional Science
- MS Industrial and Systems Engineering
- MS Information Technology *
- MS Instructional Technology *
- MS Management with concentrations in:
    - Accounting
    - Human Resource Management
    - Supply Chain Systems
- MS Mechanical Engineering
- MS Mental Health Counseling with concentrations in:
    - Mental Health Counseling - Clinical
    - Mental Health Counseling - Rehabilitation
- MS Nanoengineering
- MS Health and Physical Education with concentration in:
    - Sports Administration
- MS Physics
- MS School Counseling
- MS Technology Management
- MSA School Administration
- MSW Social Work (Joint with UNCG)

Post Baccalaureate Certificate Programs

- Community College Teaching
- Family and Consumer Sciences
- Supply Chain Management

Post Masters Certificate Programs

- Advanced Waste Management
- Marriage and Family Counseling

- Rehabilitation Counseling and Behavioral Addiction
- Rehabilitation Psychology and Behavioral Medicine
- School Administration
- Vocational Evaluation and Work Adjustment

* Available online

Expenses and Financial Assistance

North Carolina A&T State University is a publicly supported institution. Tuition and other required student fees meet only a part of the total cost of education of students enrolled. For each full-time student enrolled in an institution of the University of North Carolina, the State of North Carolina appropriates significant amount of public funds.

Tuition and Fees

Tuition rates are based on whether or not the student is a resident of North Carolina. Tuition rates for non-residents are significantly higher than that for a resident. Tuition and fees for Distance Education students are billed separately. Furthermore, student enrolling in courses in summer courses are billed at the Summer School rates.

Tuition and fees are subject to change without prior notice. For an updated listing of tuition and fees, see the University Treasurer's website at http://www.ncat.edu/divisions/business-and-finance/comptroller/treasurer/tuition-and-fees/index.html.

North Carolina A&T State University provides billing statements electronically through its Online Payments system. Students and Authorized Users will receive an email notification each time that a new billing statement is available. Payments must be submitted by the scheduled due date to avoid cancellation of classes.

Auditing Courses

A part-time student must pay all fees, including tuition, which would be charged to a student taking the course for credit. A full-time student is not required to pay additional fees for auditing. A change from credit registration to audit will not be permitted after late registration ends. An auditor is not required to participate in class discussions, prepare assignments, or take examinations.

Indebtedness to the University

A student may not be permitted to attend classes or final examinations after the due date of any unpaid obligation. If special financial arrangements have been made, failure to comply with these arrangements as stipulated will result in the student forfeiting his/her privilege to receive special financial arrangements for deferments in the future.

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

Diplomas and transcripts are withheld until the student has paid in full all fees and charges due to the University.

Refunds

A student is entitled to a refund when the account is overpaid and a credit balance is created. A student must officially withdraw from courses and, as appropriate, withdraw from the University by the posted deadline to avoid academic or financial responsibility. A student who withdraws from the University may be entitled to a partial refund of tuition and fees based on date of withdrawal; the refund schedule is available from the Treasurer's office.

Students who are awarded Federal Financial Aid and choose to withdraw will also be subject to the "Return of Title IV Funds Policy". In such cases, the Financial Aid office recalculates eligibility of Title IV funds. This may result in an unpaid balance due to the university. For details, students are referred to the Financial Aid office.

Veterans

Meeting the needs of students who receive educational benefits from the U.S. Department of Veteran Affairs is a high priority for the Office of Veteran and Disability Support Services at North Carolina A&T State University.

Our Veteran Support Services office is committed to providing services and educational benefit programs for all eligible enrolled U.S. Veterans, National Guardsmen, Reservist and their eligible dependents. Students receiving veterans benefits are advised to consult the Veteran Support Services office or visit their website at http://www.ncat.edu/student-affairs/student-services/ovdss/veteran/veterans-support.html.

Full time Faculty and Employees

All permanent employees who are regularly scheduled to work at least 30 hours each week, and have met their probationary period, are eligible to participate in the Tuition Waiver Program (TWP). The purpose of the TWP is to provide an opportunity for eligible employees to take a course and have the tuition and fees waived at North Carolina A&T State University or any of the other 15 constituent institutions of the University of North Carolina. Participation is voluntary. Tuition waiver is allowed for an academic year of fall semester, spring semester, and the summer sessions that follow, or courses taken as distance education. During the period from the fall semester through the second session of summer school, no more than two (2) waivers or two (2) classes may be approved. The Treasurer's Office should be consulted for more information.

Residence Status for Tuition Purposes

The basis for determining tuition charge is whether a student is a resident or a non-resident for tuition purposes. Initial classification as either a resident or non-resident for tuition purpose is based on information provided on the application for admission. If a student chooses to petition a reclassification of his or her residence status for tuition purposes they must complete and submit the Residence and Tuition Status Application along with all required supporting documentation to the Office of Undergraduate Admissions no later than 10th day of the term for which they wish to be considered.

Residency decisions are based on North Carolina statutes (G.S. 116-143.1). The residency classification officer reviews each application on an individual basis using the guidelines provided within these statutes. Additional information regarding residency may be found in the North Carolina State Residence Classification Manual available at http://www.northcarolina.edu/legal/residence/committee/manual/Residence_Manual_Aug_2010.pdf.

Residence and domicile. 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 (exactly 365 days) immediately prior to classification. Thus, there is a distinction between legal residence and residence for tuition purposes. Furthermore, twelve months' (exactly 365 days) 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, non-domiciliary 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 insure 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 his 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 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, while stationed in and concurrently living in North Carolina, may be charged a tuition rate lower than the out-of-state tuition rate to the extent that the total of entitlements for applicable tuition costs available from the federal government, plus certain amounts based under a statutory formula upon the in-state tuition rate, is a sum less than the out-of-state tuition rate for the pertinent enrollment. 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.

Grace Period. If a person (1) has been a bona fide legal resident, (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 end 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 12-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/she is treated as a new student by the institution to which he/she is transferring and must be assigned an initial residence status classification for tuition purposes.

Financial Assistance for Graduate Students

Graduate students are eligible for Assistantships, Stipends, Scholarships, Work Study, Loans and some Grants.

Financial aid is awarded to assist students in paying for the cost of an education. Students may apply for need-based and some non-need-based financial aid by completing the Free Application for Federal Student Aid (FAFSA). Students should complete this form immediately after January 1. There is no processing fee and all graduate students are encouraged to complete the application. Students can submit the FAFSA on the Web (http://www.fafsa.ed.gov) or mail the form to the Federal Processing Center. North Carolina A&T State University school code is **002905**. The University's priority deadline for receipt of the FAFSA is **March 15th**; however, students who miss the deadline are still encouraged to complete and mail the FAFSA as soon as possible.

A financial aid award will not be offered until a student is admitted to the University. Therefore, it is important that the admission procedure be completed as soon as possible. A student enrolled as a "Post-baccalaureate Studies (PBS)" student is not eligible to receive Federal and State financial aid unless enrolled in a Teacher Certification Program. All students must re-apply for financial assistance each academic year and separately for summer school.

Scholarships and Fellowships

The majority of scholarships and fellowships at NC A&T State University are awarded through the academic department. Students are strongly urged to contact their academic department for additional scholarship information. Students receiving an outside scholarship should forward a copy of the notice to the Student Financial Aid Office. The scholarship will be included in the student's award and may cause an adjustment to the current award package. All scholarship checks should be made payable to North Carolina A&T State University and mailed to the Treasurer's Office. The check should include the student's name and social security number.

Federal Work Study

The Federal Work-Study program provides students with an opportunity to work part-time to assist with educational costs. The program consists of jobs on and off campus for community service opportunities. Eligible students must be enrolled at least part-time, eligible to receive federal aid and have demonstrated financial need as determined by the FAFSA application. For more information, students are referred to the Financial Aid office and to their website at http://www.ncat.edu/admissions/financial-aid/aid/fed-wk-stdy-prog.html.

Loans

The Financial Aid Office awards funds through the Federal Direct Loan Program to Graduate Students. This is a loan and must be repaid with interest.

Federal Direct Stafford Loans are low-interest loans for students to help pay for the cost of a student's college education. The lender is the U.S. Department of Education. There are two types of loans: Subsidized and Unsubsidized.

Subsidized Stafford Loan is a need based loan. The Federal Government pays the interest while enrolled in school. The Financial Aid Office will determine if the student is eligible for this loan based on information reported on the FAFSA.

Unsubsidized Stafford Loan is a non-need based loan. The student is responsible for paying the interest while enrolled in school. The Financial Aid Office will determine if you are eligible for this loan based on information reported on the FAFSA.

A student may be awarded either loan or a combination of each loan for the academic year. The Financial Aid office will advise the student on the maximum loan eligibility for the academic year.

Students are notified of the amount of aid received through the award notification. The award notification indicates the gross amount of the loan for the fall and spring semester and/or summer sessions. The student's account and bill indicate the actual amount received. For more information on the terms and conditions of federal loan programs, students are advised to consult the Financial Aid office and their website at http://www.ncat.edu/admissions/financial-aid/aid/loans/sub-vs-unsub.html.

Graduate Assistantships

A. Definitions

Graduate assistants (GAs) are full-time graduate students employed on a part-time basis (up to 20 hours, 0.50 FTE) by North Carolina A&T State University (A&T). A graduate assistant receives an assistantship for services rendered to the university. Graduate assistantships are available to graduate students who: have been admitted to a graduate degree program at A&T, maintain full time status, are in good academic standing, and are making satisfactory progress toward their degrees. A graduate assistantship is a form of apprenticeship and contributes to the student's professional development. Its primary purpose is to assist students in strengthening and successfully completing their academic program. It should include activities that are relevant to each student's program of study and contribute to the university's teaching, research/creative activity, or service efforts. Therefore, an assistantship necessitates periodic assessment and feedback regarding a student's performance. The three types of graduate assistantships are described below.

A.1. Graduate Teaching Assistants (GTAs) support the instructional mission of the university. They are expected to work 5-20 hours per week and are involved only in undergraduate instruction. Qualified GTAs perform instructional duties in their area of expertise. Based on their academic qualifications, GTAs may be asked to work outside their home departments. A&T faculty members oversee all GTA duties.

General duties include:

- Instruction in a classroom setting;
- Instruction in recitation sections;
- Conducting help sessions and holding office hours to advise students with class assignments;
- Assisting with laboratory setup;
- Proctoring examinations;
- Grading papers, exams, laboratory reports, and homework; and
- Other duties pertaining to the instructional mission of A&T.

A.2. Graduate Research Assistants (GRAs) support the research mission of the university. GRAs are expected to work 10 to 20 hours per week. They conduct research in an area relevant to their major course of study under the direction of a faculty member. The research normally supports the faculty advisor's research and is supported by external funding. The research work generally leads to the student's thesis or dissertation. Research assistants supported through a research grant/contract assist faculty members in the completion of contracted research. They may be required to also contribute in the preparation of reports for continuing projects and proposals for new grants.

General duties include:

- Setting up research laboratories and experiments;
- Performing experiments, calculations, and analyzing the results; and disseminating new knowledge orally or in written publications;
- Reflecting on the state of the field and proposing new research problems;
- Attending conferences to present results and collaborate with other researchers;
- Training and supervising less experienced research personnel;
- Publishing research results in conferences, journal papers and research reports; and
- Assisting in preparation of new proposals.

A.3. Graduate Administrative Assistants (GAAs) perform administrative responsibilities to support the operations of various university functions. Their duties may be unrelated directly to teaching or research. GAAs may be employed in academic and non-academic settings to provide staff, office and general duties.
A reference to "Graduate Assistant" or to "GAs" includes members of all three types of assistantships or any one type, unless stated to the contrary.

B. Eligibility

B.1. Graduate Teaching Assistants

A student is eligible to hold a Graduate Teaching Assistant (GTA) position if a student is enrolled full time in that semester, is in good academic standing, and has a cumulative Grade Point Average (GPA) of 3.0 or higher on all graduate courses. A Graduate Teaching appointment may also be determined by additional criteria including communication skills and adequate preparation in the subject area. Graduate Teaching assistants are evaluated every semester to maintain their assistantship

B.2. Graduate Research Assistants

Eligibility for Graduate Research Assistantship (GRA) is established by the director/principal investigator and/or the academic department. The recipients of research assistantships will be selected by the faculty member who directs the laboratory or research project. Preference will be given to students who demonstrate qualifications for the position as demonstrated by (a) completion of courses related to the topic of the research, (b) prior research experience, or (c) research interests consistent with the project. Preference may also be given to doctoral students.

B.3. Graduate Assistants near completion

Graduate students who have completed their course work requirements and are working on their thesis or dissertation with less than a full-time course load may be eligible for teaching and research assistantship in their final semester. Generally a master's student is expected to graduate within 2 years and a doctoral student is expected to graduate within 4 years of the beginning of his/her graduate course work for that degree.

B.4. Non-resident Alien Students

In accordance with federal immigration laws, international students may not exceed 50 % FTE appointments and must not work more than 20 hours per week.

B-5. Eligibility exclusions

Students in the following categories may not receive a graduate assistantship appointment:

- Non-degree seeking or transient students;
- Non-resident alien students whose immigration status does not allow employment in the United States; and
- Undergraduate students.

C. Appointment and termination

C.1. Appointment period

All assistantships are generally made for an academic year (9 months). A separate appointment for summer term can be made depending on the source and availability of funding and approval of the supervisor.

C.2. Notification of appointment

Notification of awards should be in the form of a contract (the template will be created by the Graduate School) from the academic unit, and should state that the appointment is contingent upon approval by the appropriate budget official, dean and provost, and/or continuation of funding. The notification letter should contain information about the appointment period, compensation, expected duties, teaching and research load, review and renewal procedures, and tuition waivers if any.

C.3. Renewal and Reappointments

Students must reapply for each additional year of graduate assistantship support. Continuation of graduate assistantship support from year-to-year or semester-to-semester is not guaranteed. Renewal of support is based on a number of factors including: (a) satisfactory progress toward degree completion, (b) satisfactory completion of prior assistantship responsibilities, and (c) availability of resources.

C.4. Termination

A Graduate Assistantship may be terminated before the expiration of its designated term due to loss of funding, for cause, for academic delinquency, by written notice, and by voluntary mutual agreement.

- *Loss of Funding*. A graduate assistantship may be terminated due to a loss, reduction, or reallocation in appropriation, grant, contract, gift, or other funds with which to support the appointment.
- *Cause*. The following are examples of sufficient cause for removal: incompetence, inefficiency, wanton carelessness or neglect of duty, violation of research ethics, violation of safety protocols, insubordination, and repeated or extended absence.
- *Academic Delinquency*. Not making satisfactory academic progress toward a degree or is otherwise not in good academic standing.
- *Voluntary Agreement*. With the agreement of the University, an appointment may be terminated by the voluntary written resignation of the GA.

C.5. Appeals

The Assistantship & Fellowship Committee of the Graduate Council considers appeals of termination of Graduate Assistantships.

Before filing an appeal, a graduate student is expected to attempt to resolve the termination issue with the hiring faculty member and/or department chairperson and dean of the academic unit in which the assistantship is assigned. A graduate student who is unable to resolve issues with the hiring faculty member and/or department chairperson has thirty (30) calendar days from the date of termination, or thirty (30) calendar days after the adverse decision at the department or school/college level to file an appeal with the dean of the Graduate School. Graduate students are responsible for submitting a written appeal with the required documentation to the dean of the Graduate School so that they are postmarked or hand-delivered by the deadline date. If a request for appeal is not postmarked or hand-delivered by this deadline, it will not be considered. The decisions of the Assistantship & Fellowship Committee are final and do not set precedent; each case is considered on its own facts and merits.

C.6. Payment options
Payment will be made monthly through direct deposit

D. Compensation

D.1. Pay scale
Graduate Assistantships are based on degree level (Master's or Doctoral), progression in the graduate program, and academic discipline. Pay rates may vary by student experience, funding source, discipline, and responsibilities of the appointment. The University will set the minimum and maximum salary scale for all categories of assistantships. The salaries will be competitive and ensure fairness.

Departments should monitor their pay practices for consistency to ensure that individuals are paid in accordance with the published pay scales.

D.2. Tuition Remission
A Graduate Assistant may be eligible for tuition remission or reduction, as well as payment of required fees. The funds associated with GTA tuition remission are allocated to the academic schools and colleges. Allocation to individual students is managed by the schools/colleges.

E. Evaluation

Each department is responsible for determining procedures for review and evaluation of graduate assistants and for informing GAs of these procedures. The process of evaluation may vary by departments, and may include written assessment of work by an individual faculty member, classroom visitation by designated faculty members, and written student evaluations. The results of reviews and evaluations should be discussed with the GA concerned.

F. Orientation Workshop

- All teaching assistants are required to attend instructional workshops during the week before classes began in the fall or spring semester. There will be a mandatory training program for new international teaching assistants.
- Before assuming teaching assistant duties that require contact with students, a non-native, non-primary-English-speaking graduate student must be certified as proficient in oral and written English.
- Graduate Research Assistants are required to receive lab safety training (laser safety, chemical hazard safety, etc.) before working in any lab. Graduate Research Assistants will also receive training in research ethics, intellectual property rights, publications and patent policy.

G. Administration

A graduate assistantship represents financial support to qualified graduate students to allow them to provide services to the university while continuing to focus their effort on completing their degree programs. All assistantships must be recommended by a senior university administrator (member of the Chancellor's Cabinet or a Dean). All assistantships must be funded from approved university accounts with adequate funding in the assistantship line item. Personal funds cannot be used to support assistantships.

The Graduate School will administer all assistantships and will be responsible for post audit reports to track and monitor compliance with these policies, adherence to fiscal regulations, etc.

H. Code of Conduct

A Graduate Assistant's teaching, research, and administrative activities are subject to the ethical precepts and codes of the academic profession, the laws of the State of North Carolina regarding its employees, the laws of the United States, and University policies governing institutional obligations. Violation of any of these requirements constitutes a basis for disciplinary action in accordance with procedures set forth in the University's policies. In

their interactions with students, faculty, and all other members of the university community, GAs are expected to conduct themselves with professionalism, ethics, sensitivity and thoughtfulness.

Academic Policies and Regulations

Graduate Admissions

Graduate education is intended to develop specialized skills, knowledge and expertise in a particular discipline. Therefore the graduate admission process is designed to collect credentials regarding the applicant's academic preparation, intellectual ability, experience, and motivation to undertake a rigorous academic program of study. Admission of graduate students is the responsibility of the Dean of the Graduate School with the advice and assistance of the Graduate Council and of the graduate faculty members of the departments, programs, and curricula authorized to offer graduate degree programs. The application materials for each prospective student receive individual attention and are reviewed by the Graduate Coordinator and/or program committee within the intended program to identify whether the applicant's background matches the intended program of study. Graduate applications for admission are referred to the intended program's faculty for a recommendation on admission. The program coordinator submits a recommendation based on a holistic review of each application. This review includes academic qualifications, applicant's interest and experience relative to the program, and the capacity of the program. After receiving a recommendation from the program coordinator, the Graduate School reviews the application file to ensure that the appropriate procedures have been followed. This process ensures that all applications to graduate degree programs undergo two levels of review prior to an admission decision. Applicants who are offered admission will be selected on the basis of the University's analysis of the applicant's qualifications for satisfactory performance in the specific college, school, department, curriculum, or other program to which the applicant seeks admission. Admission to the University also requires satisfactory evaluation of campus safety related responses.

NCA&T considers all applications for graduate admissions without regard to race, ethnicity, color, gender, gender identity, sexual orientation, national origin, disability, veteran's status, age, religion, or creed.

1. Types of Admission: Students are admitted to the Graduate School in three categories: unconditional, conditional, or non-degree seeking. The minimum criteria for each type of admission are listed below. However, satisfying minimum admission requirements does not guarantee admission. Admissions decisions are based on a competitive evaluation and may be limited for such reasons as capacity constraints. Specific requirements for admission to each graduate program may be more restrictive and are subject to change.

2. Unconditional Admission: Unconditional admission may be granted to an applicant who possesses:
   a. A bachelor's degree from an accredited four-year college or university as determined by a regional accrediting agency, or from selected international colleges/universities including three-year colleges and universities in Europe participating in the Bologna Process;
   b. Satisfactory cumulative Grade Point Average (GPA) in previous college work. A graduate degree, or at least 12 credit hours of graduate coursework taken post-baccalaureate while in graduate status, may supersede the undergraduate record in evaluating credentials for admission;
   c. Satisfactory evaluation of standardized test scores, recommendation letters, application essay, and other factors as specified by the intended program of study; and
   d. English language proficiency.

3. Conditional Admission: Conditional admission may be granted when the Graduate School determines the student has not met the requirements for unconditional admission. This may be due to the lack of accreditation of the prior college/university, minimal relevance of previous education/degree to proposed program of study, or lack of academic strength as demonstrated by previous GPA or test scores. Conditionally admitted students will be subject to admission conditions that may include one or more of the following:

a. Pass examinations to demonstrate knowledge in specified areas;
b. Take specified undergraduate and/or graduate courses to improve his/her background. This will increase the total credit hours required beyond what is published in the catalog;
c. Conditionally admitted students will be dismissed without a probationary period if the conditions placed on their admission have not been met within the prescribed time period.

4. Satisfying conditional admission status: The Graduate School grants full graduate standing when all requirements of the conditional admission are met. All admission conditions must be satisfied during the first twelve (12) attempted credit hours. The student must also maintain a satisfactory academic record (3.0 GPA) on all course work taken in a graduate classification.

5. Non-Degree Seeking or Post Baccalaureate Studies (PBS) admission is available for those who want to take courses for personal enrichment, professional growth, or certification requirements. However, at the discretion of the academic department, PBS students may apply up to twelve (12) credit hours to any certificate or degree program to which they are admitted in the future, subject to the Graduate Transfer Credits policy. Some academic departments restrict their courses to degree-seeking students only. Admission as a PBS student requires an application, application fee and undergraduate degree transcript. The PBS option is not available to international students on F-1 visa. Furthermore, all forms of financial assistance including federal financial aid are not available for PBS students.

6. Admission of Current Non-Degree Seeking (PBS) Students to Degree Programs: Students who are currently or have previously been enrolled as non-degree seeking students (PBS) and wish to obtain a graduate degree must formally apply to the graduate program with a new application, application fee and required documentation.

7. Deferral of Admission: An admitted student may submit a written request to the Graduate School to defer admission to a future semester. Admission deferrals may be requested for a maximum of one year. The Graduate School must approve this request. A student's admission may be rescinded if the student does not enroll in the semester in which he/she received admission and does not receive approval of deferral.

8. Readmission: A student must reapply for admission if his/her enrollment has been terminated for any reason including non-compliance with the continuous registration policy. A student must also reapply if he/she does not enroll in the semester for which he/she was admitted and has not received a deferral of admission. In such cases, the student must submit the complete application packet including the application fee as if applying for the first time. However application materials submitted within one year prior to readmission may be transferred to the new application.

9. Application deadlines: Two types of deadlines apply as follows.
   a. Priority Deadline is the date by which complete applications must be submitted to receive priority review for merit based graduate awards and for admission to space constrained graduate programs. Applications received after the priority deadline will be given consideration based on availability of funds and/or space in the program.
   b. General Deadline is the date by which all application materials including original documents must be received by the Graduate School for admission decision. Some academic programs have earlier deadlines, in which case the complete application must be submitted by the posted departmental deadline.

10. Application Requirements: All applicants must apply using the online admission portal that is accessible from the Graduate School's website. The application and admission process consists of a departmental evaluation based on the application, recommendation letters and unofficial copies of transcripts and other materials followed by a final review of all original documents by the Graduate School. All programs

require the graduate admission application, application fee, transcripts, personal statement and recommendation letters. Most programs also require graduate test scores. Some programs have additional requirements such as an on-campus interview. The Graduate School maintains program specific requirements. All documents submitted to the Graduate School will be retained and will not be returned to the applicant nor released to a third party, except as legally required. A general list of application documents is set out below.

a. Application for admission to the Graduate School;
b. Application fee;
c. Official academic transcripts from previously attended colleges and universities. International transcripts may require an external evaluation as determined by the Graduate School. Applicants who enrolled at North Carolina A&T State University after 1988 are not required to submit their original North Carolina A&T transcript;
d. Recommendation letters;
e. Standardized graduate test scores as appropriate for intended program. The scores must be officially issued and current (no more than five years old);
f. Personal statement of interest in the program, as required;
g. All applicants are required to demonstrate proficiency in English. Applicants receiving any degree from an accredited U.S. college or university or from a college or university located in a country with English as an official language and the language of instruction in higher education (a list of countries is maintained by the Graduate School) will not require additional documentation. Otherwise, a satisfactory TOEFL (http://www.ets.org/toefl), IELTS (http://www.ielts.org) or PTE Academic (http://pearsonpte.com/PTEAcademic/Pages/home.aspx) score is required. TOEFL, IELTS and PTE Academic scores must be officially issued and are reportable for a period of two years from the date of the exam;
h. Satisfactory criminal background check if requested by the Graduate School;
i. International applicants are required to provide A&T with verification that the required funds are available to support the proposed program of study by submitting the Financial Guarantee Form to the International Students and Scholars Office. The applicant must also provide information regarding current visa status;
j. Additional requirements as specified by the academic program.

Graduate Admissions Appeals

An applicant to any graduate program who has been denied admission may appeal the University's decision but only on the grounds that the denial was based on a violation of the University's published admission policy or that it resulted from a material procedural error in the admissions process. The appeal must be in writing, must set forth with specificity the grounds for the appeal, and must be submitted to the Dean of the Graduate School within 30 days after the appellant has received the letter communicating the University's decision.

Upon receipt of the appeal, the Graduate School Dean will consider the recommendations of the Admissions Committee of the Graduate Council and will communicate his or her decision in writing to the applicant-appellant within thirty (30) calendar days of receipt of the appeal. The Dean may consult the appropriate program coordinator, department chair and/or academic school/college Dean in arriving at a conclusion. If the Graduate School Dean's decision is in favor of the applicant, the applicant will be admitted to the next available term. After hearing the Dean's decision, the applicant may appeal to the university Provost within two weeks of receiving the decision.

Appeals must be received prior to the term for which the applicant is seeking admission. If there is insufficient time to complete the appeal process before the beginning of the term for which the applicant seeks admission, the Dean of the Graduate School may decline to review the appeal.

Enrollment, Residence, Leave and Withdrawal

1. **Full time enrollment**: A graduate student is considered to be enrolled full-time when registered for a minimum of nine (9) semester credit hours during a regular fall/spring semester. If a student is full time in the previous spring semester and is registered for the following fall semester, he/she is considered to be full time in the summer. Otherwise, a student is considered to be enrolled full-time in each summer session if he/she is registered for a minimum of six (6) credit hours. During the semester of graduation, registration in any number of credit hours will be considered full-time enrollment. Students seeking federal financial aid must adhere to the enrollment requirements prescribed by the University's financial aid office.

2. **Maximum Course Load**: No more than 15 credit hours may be taken in any fall or spring semester and no more than seven (7) credit hours may be taken in any summer session without the written permission of the graduate program coordinator and/or department chair and the dean of the Graduate School.

3. **Residence Requirement**: The residence requirement for a graduate program is met when a student has earned at least 60% of the required degree credits for his or her program through enrollment in courses offered by North Carolina A&T State University. If the program is offered as part of a consortium, then a student should earn at least 60% of the required degree credit for his or her program through enrollment in courses offered by A&T or any of the universities in the consortium.

4. **Continuous Enrollment/Registration**: Graduate students must continue to register each semester (except summer terms) until all degree requirements are completed. Students must be enrolled at A&T during the semester of graduation.

5. **Leave of Absence**: In special circumstances, a student in good academic standing may request a leave of absence from his/her program of study. The student must notify the graduate program coordinator, department chair and Dean of the Graduate School. The request should be made at least one month prior to the semester involved. The request should be endorsed by the student's graduate advisory committee, program coordinator and/or department chair, and the Graduate School. The time that the student spends on an approved leave of absence will be included in the maximum time allowed to complete the degree.

6. **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. The forms must be completed and submitted to the Office of the Registrar. 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.

Graduation Requirements

1. **Graduation and commencement**: Graduate students will be awarded their degrees or certificates on four official graduation dates each year: June, August, December and May. These dates coincide with the end of the fall and spring semesters and twice during the summer session. Formal commencement exercises are held at the end of the spring and fall semesters. Any student who graduates during summer sessions is eligible to participate in the December commencement. Students must be enrolled in the semester in which they apply for graduation.

2. **Student's responsibility to know university policies and regulations**: It is each student's responsibility to be knowledgeable of the published academic regulations and requirements set forth in the Graduate

Catalog, its revisions, university policies and regulations, and specific requirements of the academic programs. The student is also responsible for compliance with announcements published by the department, Graduate School, Registrar, Provost and other university offices. Lack of knowledge of regulations and requirements does not excuse the student from complying with academic regulations and meeting the requirements.

3. **Graduate Catalog and applicable program requirements**: The Graduate Catalog provides general information only and does not constitute an irrevocable contractual agreement between a student and North Carolina A&T State University. A student may expect to earn a degree in accordance with the requirements of the curriculum described in the official Graduate Catalog in effect when he or she first enters the university, or in any subsequent catalog published while he or she is a student. The student may elect to follow a newer catalog with the approval of his/her department chair. However, the time limitation for graduation as indicated later in this policy will not be extended. The specific curricular requirements are stated in the student's Plan of Study. The University reserves the right to make changes in curricula, degree requirements, course offerings, or academic regulations at any time when, in the judgment of the graduate faculty, the Chancellor, and/or the Board of Trustees, such changes are in the best interest of the students and the University. When that occurs, the revised catalog will apply to new students**.**

4. **Plan of Study**: All graduate students are required to file a Plan of Study by the end of the second semester after admission to a program of study. Failure to submit the Plan of Study will prevent the student from enrolling in classes for his/her third semester. The Plan of Study is established in consultation with the advisor, graduate coordinator and/or department chair. The Plan of Study is based on the Graduate Catalog requirements but may be structured to meet the specific needs of the student. The Plan of Study may be amended at any time before the student applies for graduation with the approval of the advisor, graduate coordinator and/or department chair. A student's Plan of Study must be approved by his/her advisor and chairperson. Responsibility for meeting all academic requirements for a selected program rests with the student.

5. **Graduation requirements**: Students must be in good academic standing and meet all requirements as specified on the Plan of Study with an overall Grade Point Average of 3.00 or higher. Students must be enrolled in the semester in which they apply for graduation.

6. **Change of Program**: After a student has been admitted to a degree program, he/she may petition to change degree programs using the appropriate form available from the Graduate School. The completed form must be approved by the Department Chairs of the old and new programs. The petition to change programs must include a new Plan of Study for the new program and should be submitted and approved prior to the start of the effective semester. A student who petitions successfully for transfer to a new degree program must complete the new program requirements in force at the time of the change of program. Any courses credited from the old program must meet the time frame requirements for completion of the new program. This process of changing programs only applies to changing from one program to another in a related discipline at the same degree level. It cannot be used to change academic status or degree level.

7. **Time Limitations**: The master's degree program must be completed within six (6) successive calendar years. Doctoral programs must be completed within ten (10) successive calendar years. Normally, this time limit will apply even if a student changes his/her program of study. When the program of study is interrupted because the student has been drafted into the armed services, the time limit shall be extended for the length of time the student has been on active duty, if the candidate resumes graduate work no later than one year following his/her release from military service. A student may petition for an extension of the time limits under extenuating circumstances, for example, a long term illness.

8. **Application for Graduation and Graduation Clearance**: A student must be enrolled in the semester that he/she applies to graduate. Students intending to graduate must apply for graduation by the posted deadline and comply with all graduation requirements.

The University requires a non-refundable $60 Graduation Fee when applying for graduation. The application for graduation must be made by the posted deadline (see for example, University Academic Calendar). Students who fail to apply by the application deadline may apply for graduation by the extended deadline on payment of an additional $20 late fee. The University cannot ensure that the names of late filing applicants will appear in the Commencement Program. The fee is assessed for students once the first step is completed.

Completing the Online Graduation Application
Click the "apply for graduation" link on the Graduate School's website to enter your information on the online application form. Once you submit (register) your application, you will receive an email confirmation of your online application for graduation. Please keep this email for your records. You are not required to print the application. The Graduate School will forward your application to your academic department for electronic signatures. The graduation application must be approved by the academic advisor and department chairperson before the Graduate School's approval.

Eligibility
In order to be eligible for graduation, you must meet the following requirements. Applications will not be processed if the requirements have not been met:

- Be officially enrolled for the term in which you intend to graduate
- Students admitted provisionally must be approved for unconditional status
- Have an earned cumulative GPA 3.0 or above
- Pay required tuition and fees and any other pending payments
- Submit your Plan of Study
- Submit Transfer of Credit requests (if applicable). Transfer of credit approvals must be completed prior to the semester of graduation
- Submit the Report of Doctoral Dissertation Committee or Thesis Committee (as appropriate)
- Resolve prior semester incomplete grades (this does not apply to IP grades for thesis and dissertation students)

Additional Information

- The student's diploma will be mailed to the address provided on the graduation application.
- Regalia and other academic paraphernalia is ordered from the University Bookstore. For information on ordering contact them by phone at (336) 334 - 7593 or visit them online at http://www.ncat.edu/divisions/business-and-finance/aux-services/bookstore/.
- If a student who applied for graduation will not be able to complete degree requirements in the current semester, then the student must take steps to withdraw the graduation application in order to enroll for the next semester. The student will need to enroll in the semester he/she plans to graduate, reapply for graduation, and pay the graduation fee again.

Course Numbering

Lower Division Courses
100-199 level courses are intended primarily for freshmen. Upper division students may enroll in these courses. Graduate students may enroll in these courses with their advisor's approval, but they are not available for graduate credit.

200-299 level courses are intended primarily for sophomores. Certain classes are closed to freshmen who lack the designated prerequisites or whose majors are outside the unit offering the course. This information is available in

the *Undergraduate Bulletin*, or from the student's academic advisor. Upper division students may enroll in these courses. Graduate students may enroll in these courses with their advisor's approval, but they are not available for graduate credit.

Upper Division Courses
300-399 level courses are intended primarily for juniors. Prerequisites and other restrictions should be noted before registration. Graduate students may enroll in these courses with their advisor's approval, but they are not available for graduate credit.

400-499 level courses are intended primarily for seniors and include capstone courses, study abroad, etc. Prerequisites and other restrictions should be noted before registration. Graduate students may enroll in these courses with their advisor's approval, but they are not available for graduate credit.

If undergraduate and graduate courses need to be co-listed, then this can occur between 400- and 600-level courses. Undergraduates may take 600-level courses with senior status and a minimum 3.25 GPA or above.

Graduate Courses
600-699 courses are master's level courses open to all graduate students. Undergraduate students may take these with senior status and a minimum 3.25 GPA or above, or in special cases as part of an accelerated bachelors-master's program.

700-799 courses are master's level courses open to all graduate students.

800-899 courses are doctoral level courses open to all graduate students.

900-999 courses are doctoral level courses open only to doctoral students.

Each graded and non-graded course will be assigned to a faculty member. In particular, non-graded courses such as Special Topics, Seminar, Independent Study, Thesis, and Dissertation will associate a separate section with each faculty member.

Course Prefixes
Prefixes will contain no more than four alpha characters. Departments should consult with the University Registrar when establishing courses which will require a course prefix other than the departmental abbreviations.

Course Suffixes
Assign suffixes for respective sections of: D = Distance Learning, H = Honors, G = General Education, L = Labs; S = Service Learning, and other special courses.

Graduate Grades and Grade Point Average

1. A student's performance in a course must be evaluated resulting in a course grade by the instructor of record assigned to the course. The only exception is when the instructor is not available due to illness or termination from employment.

2. A request for a change of grade must be initiated by the instructor of record assigned to the particular course. The request must be approved by the instructor's department chair and dean. The only exception to an instructor's involvement in seeking a change of grade is when a grade appeal results in a change of grade. In this event, the department chair or dean shall request the change of grade

3. The registrar will email the instructor and department chair (or dean if there is no department chair) to confirm that the change of grade originated from the instructor who signed the change of grade form.

4. Each instructor who assigns grades has the responsibility to implement grading procedures that are fair and equitable, and to provide a reasonable evaluation of the student's performance in the course. The instructor is expected to inform all students at the beginning of the semester of the means to be used to determine grades in each course or section. This information must be included in the instructor's course syllabus.

5. Types of grades. The following grades may be awarded in graduate courses.

   5.1 Graded courses: This section provides a list of all grades that may be awarded for graded courses, that is, courses that are taken both for credit and for a letter grade. Letter grades A, A-, B+, B, B-, C+, C and F correspond to a specified grade point value. The student's Grade Point Average (GPA) is calculated by adding quality points for all courses where the quality points for a course equal the grade point value times semester credit hours. Some grades do not have associated quality points and are not included in GPA calculation.

   a. A (Excellent); 4.0 points
   b. A-; 3.7 points
   c. B+; 3.3 points
   d. B (Average); 3.0 points
   e. B-; 2.7 points
   f. C+; 2.3 points
   g. C (Below average); 2.0 points
   h. F (Failure); 0 points
   i. AU (Audit); not included in GPA
   j. I (Incomplete);not included in GPA
   k. CR (Transfer Credit); not included in GPA
   l. CE (Credit by Examination); not included in GPA
   m. W (Withdrawal Voluntary); not included in GPA
   n. WM (Withdrawal, Medical); not included in GPA
   o. WA (Withdrawal, Administrative); not included in GPA

   5.2 Non-Graded courses: The following grades may be awarded for courses that are taken for credit only. The grade for a credit-only course will have no effect on the student's grade point average.

   a. S (Satisfactory)
   b. U (Unsatisfactory)

6. All courses taken, irrespective of grade, are included in calculating attempted credit hours. Furthermore, all courses in which a grade of C or higher or a grade of S is earned are included in calculating earned credit hours.

7. Graduate Credit: Only courses numbered 600 or higher can be counted toward completion of graduate degrees or certificate programs. Grades for courses taken for graduate credit while an undergraduate at North Carolina A&T State University, in Post Baccalaureate Studies (PBS) classification, or transferred from other universities must have a grade of "B" or better to be transferred. "B-" is not a "B" or better.

8. GPA: To determine the Grade Point Average for a term, first determine the total quality points earned in the term by multiplying the number of grade points awarded for each course by the

course's assigned number of semester credit hours and add the resulting quality points earned for each course in the term. Then divide the total quality points earned in the term by the number of semester credit hours attempted (for courses that award letter grades) in the term. The following rules apply in calculating graduate student GPA.

a. All courses numbered 600 or higher taken in a graduate classification or for graduate credit as an undergraduate are included in the graduate GPA.
b. When students repeat a graduate course, all grades including the last grade will be utilized to calculate the cumulative graduate average.

9. Incomplete and IP Grades: Students cannot graduate with an "I" grade on their transcript. "I" grades must be resolved during the next semester after taking the course. Otherwise, a grade of "F" or "U" will be automatically assigned. When a grade of "I" converts to "F", this may result in an action of probation or dismissal for the semester in which the conversion takes place, even if the student is not registered for the semester in which it converted.

10. Courses with a Satisfactory/Unsatisfactory grades do not impact GPA. However, a required course with a S/U grade must be completed with a grade of S. A student with a grade of U in a required course will not be permitted to graduate.

11. Change of Grade: A change of grade, if any, must be made within one year from the date the original grade was received.

12. Course Repetition: Graduate courses may be repeated only with the permission of the student's graduate program coordinator and/or department chair and approval of the Dean of Graduate Studies. Degree credit for repeated courses will be given only once, but the grade assigned for each enrollment shall be permanently recorded. Both the original grade and the grade received in the repetition will be used in calculating the overall GPA.

    A student may not repeat a course in which "C" or above was earned. A student may repeat a required course in which "F" or "U" was earned. A student may not repeat the course more than once. If a student fails a second time, he/she may be dismissed from the degree program. All hours attempted in graduate courses and all grade points earned are included in the computation of the cumulative average of a graduate student.

13. Failure to meet course requirements: A student who stops attending a course and/or fails to meet course requirements without officially withdrawing from the course may be assigned a grade of "F" or "U".

14. Failing to withdraw by deadline: 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 receiving an "F" or "U" for each course in which he or she was enrolled during the semester in question.

Graduate Transfer Credits

This policy applies to course credits transferred from other institutions. The University is not obligated to accept any courses for transfer credit. However, provided the student meets the residency requirement, the graduate program coordinator and/or department chair may recommend up to 40% of the required credit hours for a degree program at North Carolina A&T State University be accepted for transfer credit from another institution, subject to approval by the Dean of the Graduate School. The limitations on transfer credits are as follows:

1. For a course to be transferred, it must have been earned at a regionally accredited, or otherwise approved, university with a grade of "B" or higher ("B-" is not equivalent to a "B".). Courses that have been graded on a Pass/Fail or Satisfactory/Unsatisfactory basis will not be accepted for transfer.

   Although the credit for a course may transfer, the grade will not be used to calculate the cumulative Grade Point Average (GPA) at North Carolina A&T State University except when the course is a consortium course. The number of semester credit hours transferred from courses taken in a quarter system will be two-thirds of the quarter hours.

2. With the approval of the academic department and the Graduate School, graduate level credit hours may be credited to a graduate program at NCA&T provided the total number of credit hours transferred do not exceed 40% of the total degree requirements at NCA&T. Credit hours transferred may not have been used to fulfill requirements of any previous earned degree at another institution. However, subject to approval by the academic department and the Graduate School, up to 24 credit hours of graded course work from a previous earned master's degree may be approved for transfer credit towards a post-baccalaureate doctoral program.

3. A maximum of 12 credit hours taken while a student is in non-degree seeking or Post Baccalaureate Studies (PBS) status may be credited to a degree program.

4. The request must include an official copy of the transcript and published course descriptions along with the request.

5. Transferred courses must be graduate-level courses relevant to the graduate degree being sought. Each graduate program will recommend transfer credits based on an evaluation of the course description and whether the course was taken within the last five years.

Academic Eligibility

1. **Good academic standing**: To maintain good academic standing and to meet the requirements for graduation, a student must demonstrate acceptable performance in course work after being admitted to a graduate program. This requires a minimum cumulative Grade Point Average (GPA) of 3.00 or higher in all graduate course work.

   Furthermore, good academic standing requires satisfactory progress in the overall graduate program. The student's advisor or graduate advisory committee may render judgments as to whether satisfactory progress is being made toward the degree, taking into account all aspects of academic performance and promise, not necessarily course work alone. Departments may recommend termination of a student's graduate status at any time if the student is not making satisfactory progress toward the degree. Examples of unsatisfactory progress may include, but are not limited to, inadequate GPA, inadequate research and/or research skills, failure to obtain satisfactory grades in required courses for the program, or failing the candidacy, comprehensive, or final oral examination.

2. **Academic Probation**: Any student who has either (i) attempted 18 or fewer credit hours and received a semester GPA of less than 3.0 or (ii) attempted more than 18 credit hours and received less than a 3.0 cumulative GPA will be placed on academic probation.
   - A student on academic probation with 18 or fewer attempted credit hours will be required to earn a semester GPA of 3.0 or higher by the end of the next regular (non-summer) semester to return to good academic standing

- A student on academic probation with more than 18 attempted hours will be required to improve his/her cumulative GPA to 3.0 or higher by the end of the next regular (non-summer) semester to return to good academic standing.
- Students on academic probation may not enroll in more than 9 semester credit hours.

3. **Dismissal**: A student who is placed on probation after attempting 18 credit hours and who fails to improve his/her cumulative GPA to 3.0 or higher by the end of the probationary period, that is, by the end of the next regular (non-summer) semester, will be dismissed.

   Departments may also recommend dismissal of a student at any time if a student:
   - is conditionally admitted and fails to meet the conditions of his/her admission;
   - is not making satisfactory progress toward the degree, for example, inadequate progress on research projects, failure to obtain satisfactory grades in required courses, or failing the candidacy, comprehensive, or final oral examination;
   - receives an "F" grade in a required course;
   - fails to maintain continuous registration without an approved leave of absence;
   - fails to complete program requirements in the maximum allowed time for the degree; or
   - is guilty of ethical misconduct or violates the North Carolina A&T State University's Student Handbook.

4. **Readmission after Academic Dismissal**: A student who is dismissed for academic reasons will be eligible to submit a new application for admission to a degree or certificate program after one academic year and may be admitted only upon the recommendation of the major department chair or graduate coordinator and with the approval of the Dean of the Graduate School.

5. **Appeals**: An academically dismissed student may appeal the decision according to the process outlined in the Graduate Student Appeals policy.

Thesis, Dissertation and Comprehensive Exam

1. **Theses and dissertations**: A thesis or dissertation presents the results of the student's original investigation in the field of major interest. It must represent a contribution to knowledge, be adequately supported by data and be written in a manner consistent with the highest standards of scholarship. In programs where a thesis or dissertation is required, the student must comply with the specific regulations of his/her program and the general requirements of the Graduate School listed below.
   a. Thesis/dissertation topic must be approved by the thesis/dissertation advisory committee.
   b. Students whose research involves human subjects, animals, biohazards, or radiation must have their research proposals approved by the appropriate compliance committee before beginning their research.
   c. Copies of the thesis/dissertation must be presented by the student to his or her faculty advisor for review by the examining committee no later than one week prior to the defense of the thesis/dissertation.
   d. A student may defend the thesis or dissertation no more than twice. The results of the defense must be submitted by the department to the Graduate School within 24 hours.
   e. After the thesis or dissertation has been successfully defended, the student must submit the approved thesis/dissertation to the Graduate School according to the published guidelines.
   f. Prior to or at the time of submission, the student must complete and sign the Non-Exclusive Distribution Agreement granting North Carolina A&T State University a limited, nonexclusive, royalty-free, license to reproduce the thesis or dissertation in electronic form and make it available to the general public at no charge, subject to the embargo choice/publishing restrictions of the

student. This form should be delivered to the Graduate School along with the original copy of the signature page bearing signatures of committee chair, department chair and/or dean of the school.

2. **Advisor**: All graduate students must have a graduate advisor who is a member of the Graduate Faculty.

3. **Graduate Committee**: The advisory committee for a master's thesis is composed of at least three members of the Graduate Faculty. The student's advisor serves as chair or co-chair of the committee. The advisory committee for a doctoral dissertation is composed of at least four members of the Graduate Faculty. The graduate advisor serves as chair or co-chair of the committee

4. **Comprehensive Exams**: Students enrolled in a graduate program may be tested by a comprehensive examination to determine the student's knowledge and skills in a general subject area or a concentration. The comprehensive examination date will be announced by the departmental graduate committee chairperson at the beginning of the semester. This examination will be administered to the enrolled student by an examining committee of the department.
    a. Eligibility to sit for the examination will be determined by the departmental graduate committee and the results of the examination will be forwarded to the Graduate School no later than 30 days prior to the end of the semester.
    b. Students may only take the comprehensive examination twice. After the second failure, the student may be dismissed from their academic program.

Graduate Courses, Credits and Curriculum

Semester Credit Hour: The unit of academic work is the semester credit hour defined as one 50-minute lecture period (or at least two periods of laboratory or field work) per week throughout one fifteen week semester. Summer sessions are shorter in duration; however, the contact hours each week are increased proportionately. Online or blended courses will have the same learning outcomes as those delivered in traditional classroom instruction. Because learning in online and blended courses may not be quantified in terms class meeting time, emphasis is placed upon evidence of student learning.

Degree program: A comprehensive course of study in a given disciplinary area identified by a unique CIP (Classification of Instructional Programs) code that leads to a master's or doctoral degree. The Registrar will maintain a unique major code for each degree program. Curriculum requests for all graduate degree program should be submitted to the Graduate Council, the Teacher Education Council (if teaching licensure option is included), and then to the Faculty Senate for approval. Students are formally admitted to a degree program. The name of the degree and the discipline appears on the student's plan of study, diploma and transcript.

Concentration: A graduate degree program may offer concentrations within the major field of study that reflect areas of specialization. A concentration within a degree program is defined by a coordinated set of courses representing a minimum of 18 credit hours. All concentrations within a degree program share a common core consisting of at least 9 credit hours. Furthermore, all concentrations require the same total credit hours for graduation. The Registrar will maintain a unique major code for each concentration within a degree program. Curriculum requests for all graduate degree concentrations should be submitted to the Graduate Council, the Teacher Education Council (if teaching licensure option is included), and then to the Faculty Senate for approval. Students are formally admitted to a concentration within a degree program. The name of the concentration appears on the student's plan of study and transcript, but not on the diploma.

Option: Options represent various pathways for a student to complete a degree program. All options will require the same total credit hours for graduation. Curriculum requests for all options within a graduate degree program should be submitted to the Graduate Council, the Teacher Education Council (if teaching licensure option is

included), and then to the Faculty Senate for approval. A student is not admitted into an option. The option appears on the student's plan of study, but neither on the transcript nor the diploma.

Minimum credit hours for degree programs: The following minimum graduate credit hours are required for each type of graduate program. Individual programs may require a higher number of credit hours to fulfill disciplinary accreditation requirements.

a. Masters programs: 30 credit hours beyond bachelor's degree
    i. 24 credit hours of graded course work and 6 credit hours for thesis, or
    ii. 27 credit hours of graded course work and 3 credit hours for project, or
    iii. 30 credit hours of graded course work
b. Doctoral programs: 72 credit hours beyond bachelor's degree or 48 credit hours beyond the master's degree.
    i. 36 credit hours of graded graduate course work
    ii. 12 credit hours of dissertation research

Comprehensive Assessments: Graduate programs may require students to successfully complete a comprehensive assessment. The assessment may include a comprehensive examination (written and/or oral), a research project, thesis, dissertation, capstone course, portfolio, internship, field experience and/or equivalent. For details, students are referred to program/department handbooks.

Graduate Certificate Programs

Certificate: A non-degree program that requires at least 12 credits. A graduate certificate program may be Post-Baccalaureate (if admission is offered after completion of a bachelor's degree) or Post-Master's (if admission is offered after completion of a master's degree). The catalog information should clearly indicate whether a certificate is a (i) stand-alone certificate, (ii) add-on certificate to a complementary degree program or (iii) a continuing education/professional development certificate. The Registrar will maintain a unique code for each certificate program. Curriculum requests for all PB (Post-Baccalaureate) and PM (Post-Master's) certificate programs should be submitted to the Graduate Council, the Teacher Education Council (if teaching licensure option is included), and then to the Faculty Senate for approval. The name of the certificate appears on the transcript. A student may be admitted independently to a stand-alone certificate program or to a continuing education/professional development certificate program. However, an add-on certificate can only be pursued after admission to a degree program.

Post-baccalaureate and post-masters certificate programs are designed to provide specialized graduate level training in a focused area. The minimal criteria are:

- All courses comprising the certificate program must be at a level acceptable for graduate credit, i.e. a course numbered at 600 or higher.
- The minimum number of semester credit hours required for a certificate may vary from program to program, but must consist of at least 12 semester credit hours.
- Courses required by the certificate program must be taught by members of the graduate faculty.
- Admission requirements of the School of Graduate Studies must be met by an applicant.
- A student may be admitted to the School of Graduate Studies for a certificate program without being admitted to a degree program. A student may subsequently apply for admission to a degree program for which the certificate credit hours constitutes some portion of total requirements**,** subject to the Graduate Transfer Credits policy.

Graduate Double Majors, Dual Degrees and Joint Degree Programs

Double Majors
A graduate student enrolled as a double major may earn two degrees at North Carolina A&T State University by enrolling concurrently in two separate but related programs of study, both at the master's level. Note that a master's degree student continuing on for a Ph.D. is not considered a double degree major.

Double degree programs must balance structural efficiency with individual program integrity. At least 18 credit hours must be unique to each program. Students in double degree programs will have to comply with the requirements of both degree programs as stated in the double degree agreement.

A student must apply to and be accepted by both programs before officially beginning the double degree program. In a practical sense, this means that a student should either be accepted by both programs at the same time or be accepted to the second program by the end of the second semester in the first degree program. Double degrees will not be awarded after the curricular requirements for both programs have already been met without initial application.

Double degree proposals must be approved by the proposing departments and schools/colleges. In addition to the sharing of courses, proposal materials should include: a description of the participating units/degrees, an overview of the existing academic course of studies, the rationale and demand for the new double major, guidelines for academic eligibility and meeting the School of Graduate Studies regulations, and any other supporting materials to assist with a thorough review of the request. A letter of support from the chair or director of each participating unit stating faculty support must also accompany the proposal.

Dual Degree Programs
Dual degree programs are those in which a student may enroll concurrently in two degree programs offered in two different academic units at two institutions, both at the master's level.

At least 18 credit hours must be unique to each program. Students in dual degree programs will have to comply with the requirements of both degree programs as stated in the dual degree agreement.

A student must apply to and be accepted by both programs before officially beginning the dual degree program. In a practical sense, this means that a student should either be accepted by both programs at the same time or be accepted to the second program by the end of the second semester in the first program. Dual degrees will not be awarded after the curricular requirements for both programs have already been met without initial application.

Dual degree proposals must be approved by the proposing departments and schools/colleges and their respective institutions. Dual degree programs are also subject to approval by SACS. In addition to the sharing of courses, proposal materials should include: a description of the participating units/degrees, an overview of the existing academic course of studies, the rationale and demand for the new dual degree, the structure and resource support for the new dual degree, guidelines for academic eligibility and meeting the School of Graduate Studies regulations, and any other supporting materials to assist with a thorough review of the request. A letter of support from the chair or director of each participating unit stating faculty support must also accompany the proposal.

Joint Degree Programs
Joint degree programs are those from which a single degree is awarded by two or more institutions participating in a joint degree program. A joint degree will carry the name of each participating institution on a student's diploma.

The development of a joint degree program must follow respective institutional processes for the approval of new degree programs at each participating institution before being submitted to the UNC Board of Governors for approval. Information regarding UNC System policies on joint degrees may be found at: http://intranet.northcarolina.edu/docs/legal/policymanual/400.1.1.pdf. Joint degree programs are also subject to approval by SACS.

Accelerated Bachelors Masters Program

1. Introduction: The Accelerated Bachelor's/Master's (ABM) degree program allows an undergraduate student at North Carolina A&T State University an opportunity to complete the requirements for both the bachelor's and master's degrees at an accelerated pace. A student accepted into the ABM program will be permitted, as an undergraduate student, to take up to 12 credit hours of graduate courses that may also be used to satisfy requirements for his/her undergraduate degree. This will allow a student to complete a master's degree in the same field within approximately 18 months of completing the bachelor's degree.

2. Establishing an ABM Program
   a. Process: Prior to admission of any student into the ABM degree program, the program must be developed by the department/program and school/college and approved by the Graduate Council, the dean of the school/college offering the undergraduate program, the dean of the Graduate School, the Faculty Senate, and the Provost.
   b. Sponsorship: The same department or program that awards the bachelor's degree must sponsor the master's degree (ABM). This does not preclude a master's degree in interdisciplinary graduate programs in which the sponsoring department participates, nor acceptance of the student in a closely related field, if the department granting the graduate degree recommends admission to the Graduate School.

3. Acceptance into the ABM Program: A student accepted into the ABM program has approval to pursue the ABM degree option. Acceptance is not a guarantee of admission into the Graduate School. Acceptance into the ABM program is contingent on meeting the following eligibility requirements:
   a. A student must have completed between 75 and 90 credit hours in his/her undergraduate program, including credit hours earned from advanced placement.
   b. A transfer student must have completed a minimum of two semesters (24 credit hours) as a full-time A&T student in addition to the 75 to 90 earned hours as stated above.
   c. A student must have a minimum cumulative Grade Point Average (GPA) of 3.25 on a 4 point scale.

4. Application to the ABM Program: A prospective student who meets the eligibility requirements for the ABM program must set up a meeting with his/her undergraduate advisor and the graduate program coordinator to develop a Plan of Study for her/his bachelor's and master's degree programs. Before acceptance into an ABM program can be finalized, a student must submit:
   a. The standard application for admission to the Graduate School;
   b. A Plan of Study for the graduate degree that also indicates the graduation date for the master's degree. The Plan of Study must indicate the following: (i) a maximum of 12 graduate credit hours that will also count towards the undergraduate degree, (ii) a maximum of six (6) additional graduate credit hours that may be taken as an undergraduate student that will not be counted towards the bachelor's degree, (iii) courses that will be taken after matriculating into the graduate program, and (iv) the graduation date for the master's degree that meets the time limit for the ABM program (i.e. obtaining a thesis or non-thesis master's degree in the same field within 18 months of completing the bachelor's degree).
   c. Any changes to the ABM Plan of Study must be submitted in writing and approved by the chairperson and graduate program coordinator and by the dean of the Graduate School.

5. Requirements for Participation and Graduation: A student must complete the bachelor's degree prior to being admitted to the master's program. A student in the ABM may not elect to by-pass the bachelor's degree.

6. Continuing Eligibility: It is the responsibility of the student to recognize his/her eligibility status. To maintain continuing eligibility, a student must complete the bachelor's degree requirements with a GPA of at least 3.25 on a 4.0 scale, follow the plan of study, and meet other departmental requirements to continue to be eligible to participate in the program. If a student becomes ineligible to participate in the ABM degree program, the graduate program coordinator must inform the student in writing of his/her ineligibility. A copy of the letter to the student must be sent to the Graduate School.

7. Withdrawal: A student may, at any time, withdraw from the ABM program by informing her/his undergraduate advisor and graduate program coordinator in writing. A copy of this request to withdraw must be sent to the Graduate School for approval.

8. A student who either withdraws or loses eligibility to continue in the program will not be able to use any graduate courses towards the bachelor's degree. However, a maximum of six credit hours of graduate courses may be used towards another master's degree with the approval of the graduate program coordinator, department chair, and the dean of the Graduate School.

Master's Degree Enroute to Doctoral Degree

Graduate programs have the option of making their master's degrees available to students pursuing doctoral degrees in the same or related programs without the students transferring to the master's programs. International doctoral students who wish to obtain a master's degree in any discipline (the same as the doctoral discipline or a different discipline) with the intention of applying for practical training in the field of the master's curriculum must transfer to the new curriculum at the master's level in order to be eligible for practical training in that field. Students in F-1 status who transfer to a new curriculum at the master's level must have a new Form I-20 issued prior to the transfer. The international doctoral graduate student must communicate his/her intentions to the Graduate Coordinator as well as to the International Students and Scholars Office (ISSO). Failure to do so could result in a violation of non-immigrant status and subsequent ineligibility for any type of employment.

1. **Master's Degree in the Same Field as the Doctoral Degree**: A student admitted to a doctoral program may be awarded a master's degree in the same field as the doctoral program provided that all of the following conditions are satisfied:
   - The student does not already have a master's degree in the same field.
   - The student's advisor and department chair approves the awarding of the master's degree
   - All Graduate School, College, and Department/Program requirements for the master's degree are satisfied.
   - A master's Plan of Work is submitted to the Graduate School.
   - The master's degree is awarded no later than the sixth semester of a full-time student's doctoral program
   - The maximum time limit for completion of the doctoral degree remains unchanged
2. **Master's Degree in a Field Different from the Doctoral Degree**: A student admitted to a doctoral program may be awarded a master's degree in a different but related field as the doctoral program provided that all of the following conditions are satisfied:
   - The student does not already have a master's degree in the same discipline as the proposed master's degree.
   - The student's request must be approved by the student's advisor, the Graduate Coordinator of the student's doctoral program, the Graduate coordinator of the proposed master's program, and the Graduate School

- All Graduate School, College, and Department/Program requirements for the master's degree are satisfied.
- The student must make normal academic progress toward the fulfillment of the doctoral degree requirements, consistent with the doctoral Plan of Work.
- The student may take no more than two courses, or six credit hours, per semester in the discipline of the master's degree.
- A master's Plan of Work is submitted to the Graduate School.
- The master's degree is awarded no later than the sixth semester of a full-time student's doctoral program
- The maximum time limit for completion of the doctoral degree remains unchanged

Graduate Student Appeals

Students may appeal decisions made by the academic programs or by the School of Graduate Studies.

1. Grade appeals: The Graduate Appeals Committee (GAC) of the Graduate Council considers grade appeals from graduate students. There are two grounds for appealing a grade: (1) evidence of miscalculation, and (2) material deviation from information published in the course syllabus without adequate notice of the change.

   Before filing an appeal, a graduate student is expected to attempt to resolve the grading issue with the course professor and/or the department chairperson of the academic unit in which the grade was assigned. A graduate student who is unable to resolve issues with the course professor and/or department chairperson has thirty (30) calendar days from the date on which grades are due (as specified on the Registrar's academic calendar) for the relevant semester or summer session, or thirty (30) calendar days after the adverse decision at the department level to file an appeal with the dean of the School of Graduate Studies. If this date falls on a weekend or a university holiday, then the deadline will be the next workday. Students are responsible for submitting a written appeal with the required documentation to the dean of the School of Graduate Studies so that they are postmarked or hand-delivered by the deadline date. If a request for appeal is not postmarked or hand delivered by this deadline, it will not be considered. The decisions of the Graduate Appeals Committee are final and do not set precedent; each case is considered on its own facts and merits.

2. Appealing dismissal from program: A written appeal must be submitted to the School of Graduate Studies within thirty (30) calendar days following the adverse recommendation or decision. The written appeal should include three important aspects: (i) the action(s) being challenged, (ii) the person(s) against whom the complaint is being made—the "respondent," and (ii) the redress being sought. A decision shall be deemed final on the expiration of the period for filing an appeal, or if an appeal is filed, upon issuance of a decision in such an appeal, whichever is later.

   One representative of the School of Graduate Studies, together with one representative from Student Affairs, shall examine the appeal and jointly determine whether the actions complained about were disciplinary or academic. If the challenged action is deemed to be disciplinary, the dean of the School of Graduate Studies shall refer the complaint to the appropriate university officers responsible for disciplinary matters within five (5) business days. If the challenged action is deemed to be an academic matter, the dean of the School of Graduate Studies shall forward the appeal to a review panel.

   The academic review panel will consist of two faculty members and a graduate student. One faculty member, from a college/school other than the one in which the student's academic department resides, will

be appointed by the dean of the School of Graduate Studies. The other faculty member, from the college/school in which the student's program resides, will be appointed by the dean of the academic college/school. However, this representative will not be from the student appellant's department. In the event that either of the two aforementioned deans is a respondent against whom one or more allegations are pending in the appeal, the Provost will appoint the faculty member(s) for the affected dean. The Graduate Student Council will appoint a graduate student for the review panel who is not a student in the appellant's college/school.

The review panel will review all written records of the case. As appropriate, it may afford the student appellant an opportunity to appear in person before it, and consider any written materials the student may wish to bring to its attention. The review panel may also hear from the academic officer(s) whose action is being appealed and may confer with other involved parties. It shall evaluate any other information it deems important to its deliberations. The panel's report will be submitted to the dean of the School of Graduate Studies and the dean(s) of the appellant and the respondent(s). The dean of the School of Graduate Studies and the dean of the appellant's college shall jointly review the case, giving due consideration to the review panel's report and recommendation. The decision of the two deans will be final.

In the event that one or both deans are respondents in the case, the Provost will appoint other deans to officiate with respect to the appeal.

Graduate Faculty

1. Definition and Purpose: The Graduate Faculty of North Carolina Agricultural and Technical State University exists as part of the total University Faculty. The primary function of the Graduate Faculty of NCA&T is to provide educational and research experiences which support high quality graduate education and to provide advice concerning policies associated with graduate programs at the University.

2. All faculty teaching graduate level courses must be members of the graduate faculty. Faculty members teaching courses at the master's and doctoral degree level are expected to hold the terminal degree in the discipline in which they are teaching or in a closely related discipline. In some cases, faculty members without a doctoral degree may teach graduate courses provided there is demonstrable evidence that such faculty member possess experience, knowledge, and capability in the discipline.

3. Appointment of Graduate Faculty: Each school/college will establish criteria that delineate what constitutes an adequate record of sustained academic and scholarly activity for appointment. Some examples of such activity include publications in scholarly journals, experience in funded and unfunded research, advising students and professional work experiences. On the basis of the approved criteria, the school/college will develop a process of systematic review and evaluation that will lead to appointment as graduate faculty. Updates to the roster of graduate faculty for each graduate program will be communicated to the dean of the Graduate School at the start of each academic year.

4. Membership Categories: Membership of the Graduate Faculty shall be divided into two categories: Full Membership and Associate Membership.

5. Full Members:

   Eligibility: All full time tenured, tenure-track or non-tenure track (clinical, extension, practicum, research, teaching, and federal contractual employees) faculty members at the academic rank of assistant professor

or higher are eligible for full membership status. Full members of the Graduate Faculty are expected to hold the terminal degree in the discipline in which they are teaching or in a closely related field. In addition, full graduate faculty will meet the criteria for appointment established by the faculty. Faculty will be appointed to full membership through a process determined by the academic school/college.

Responsibilities: Full Members of the Graduate Faculty may participate in all aspects of the graduate program including teaching graduate level courses in their area of expertise, serving on thesis/dissertation committees, and chairing master's thesis and doctoral dissertation committees. Additionally, only Full Members are eligible for election to the Graduate Council, to serve as a Graduate Coordinator, to represent the Graduate School on thesis and dissertation defenses, and to vote on issues presented to the Graduate Faculty pertaining to changes to the graduate program.

6. Associate Members

   Eligibility: All faculty members, including full time tenured, tenure-track or full or part-time, non-tenure track, visiting and/or adjunct (clinical, extension, practicum, research, teaching, and federal contractual employees) at the academic rank of assistant professor or higher are eligible for associate membership status. Associate members of the Graduate Faculty are expected to hold the terminal degree in the discipline in which they are teaching or in a closely related field. In addition, associate graduate faculty will meet the criteria for appointment established by the faculty. Faculty will be appointed to associate membership through a process determined by the academic school/college.

   Responsibilities: Associate Members of the Graduate Faculty may teach graduate courses, serve on thesis and dissertation committees, and co-chair master's thesis and doctoral dissertation committees provided a full graduate faculty member is the other co-chair.

7. Review and Continuation of Graduate Faculty: Each school/college will establish a process for continuation; change from Associate to Full member; or removal of membership on the Graduate Faculty. This process will be based on a variety of factors, including scholarly productivity, record of graduate teaching or mentorship, and/or other factors as defined by the school/college. The period of review will be defined by the school/college, but must occur at least once every five years.

8. A faculty member will automatically lose graduate faculty status at any time he/she is deemed deficient under post-tenure review.

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. 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 work of any work required by the instructor, and
3. Initiate the request to make-up work on the first day of class attendance after the absence.

Make-Up of Required Course Work

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

The following definitions will apply with respect to 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.

Student Religious Observance

The General Assembly of North Carolina enacted G.S. 116-11(3a), a law mandating the establishment of excused absences for religious observance by students.

1. The University allows up to two (2) excused absences per academic term for religious observances required by the faith of a student.

2. Instructors have the authority to specify, by posting on their course syllabi, the requirements that students must follow in requesting an excused absence for religious observances. These requirements may include, but are not limited to, providing written notice to the instructor, the amount of lead time required prior to the religious observance, the nature of the religious observance and confirmation of the student's participation in writing by an official of the religious organization. All requests for absences for religious observances and the supporting documentation must be maintained by the student's academic college/school.

3. When appropriate notice is provided by a student, the student must be granted up to two (2) excused absences per academic term under this policy and must be allowed to satisfy missed assignments, tests/exams, or other course work disseminated during the period of absence, including requirements to complete anticipated tests/exams or assignments in advance of the originally scheduled date. Beyond the terms and limits of this policy, instructors maintain authority to establish and enforce the attendance policy in their respective courses. The requirement for students to make such requests for excused absences applies only to days when the University is holding class

Add and Drop Period

Adding Courses: Courses may be added during the first five (5) class days of a fall or spring semester. Courses may be added during the first two (2) class days of a summer session.

Dropping Courses: Courses may be dropped during the first five (5) class days of a fall or spring semester. Courses may be dropped during the first two (2) class days of a summer session.

Official student enrollment is represented by the number of hours in which a student is enrolled at the end of the fifth (5) day of classes in a fall or spring semester and at the end of the second (2) day of classes in a summer session. This date corresponds with the last day to drop courses and receive financial credit. Students wishing to drop all courses after this date must follow the University's withdrawal procedure.

All add/drop transactions must be completed by the official close of business on the last day to add/drop classes. If there are University-wide extenuating circumstances that prevent interaction with the web-based student information system, an extension of the add/drop deadline will be established

Withdrawal from an Individual Course

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

Students who withdraw from a course or courses on or before the last day to withdraw from an individual course are assigned a grade of "W." Failure to attend class does not constitute a withdrawal from that course or courses. Students are limited to a maximum of one (1) withdrawal per course, up to a maximum of sixteen (16) credit hours over the student's academic career. Upon a second attempt in a single course, the student is not permitted to withdraw from the course and must receive a grade for the course.

A student who does not officially withdraw from a course or courses will be assigned final grade in each course in which he or she was enrolled during the semester in question. Withdrawing from a course or courses may affect a student's financial aid status, will count toward the tuition surcharge threshold, and may affect the student's progress toward degree completion.

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

Withdrawal from the University

Any student who is officially registered for classes and who wishes to withdraw from the University must complete the withdrawal process by the last day to withdraw from the university as published in the academic calendar.

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

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

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

Retroactive Withdrawal from the University

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

A. serious illness or documented medical condition;
B. death of an immediate family member;
C. involuntary call to active military duty;
D. documented change in conditions of employment;
E. newly documented learning disability;
F. other emergency circumstances, legal requirements, or extraordinary situations.

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

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

Cancellation of Course Registration

Under specific circumstances a student's course registration will be cancelled. The following are situations in which a student's course registration will be cancelled:

1. When the University cancels a course due to low enrollment or the unavailability of a qualified instructor,
2. When a student notifies the University, in writing, prior to the first day of classes that he/she will not be attending,
3. When a student fails to finalize payment of tuition and fees, after official notification to the student,
4. When a student is placed on academic suspension or on academic dismissal,

5. When a student is found to be ineligible to remain in the course due to not meeting the course prerequisite(s) or any course requirement(s),
6. When a student is found to be in violation of the Student Code of Conduct, prior to the first day of classes, and the Office of the Vice Chancellor for Student Affairs requests that the registration be cancelled.

Student Immunization Requirement

To protect the general health of the University community, the General Assembly of North Carolina enacted G.S. 130A-155.1, a law mandating that students submit proof of receiving required immunizations. Students who fail to submit proof of immunization, by the published deadline, will not be allowed to register for courses or they will have their course registration cancelled.

Payment of Tuition, Fees and other Dues

Students are officially enrolled at North Carolina A & T State University when all tuition, housing, meals and other applicable charges and fees have been paid in full. Students are responsible for full payment of tuition, fees and all other debts to the University by the published due date for the term. Failure to pay tuition, fees and all other debts will result in cancellation of the student's schedule/courses.

Students who add courses during the drop/add period, that result in additional tuition charges, are required to pay all charges and fees by the published due date. If the student fails to pay the additional charges, registration for the additional course(s) will be cancelled. Students who drop courses during the drop/add period, that result in a reduction in the tuition amount previously paid, will receive a refund if the transaction is made prior to the last day to drop and receive financial credit. It is the responsibility of the student to periodically check their student account for additional charges. It is also the student's responsibility to immediately respond to all bills and email notification of balances due the university.

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.

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. Unofficial transcripts may be obtained via Aggie Access On-Line (https://horus.ncat.edu:9096).

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 on Academic Dishonesty

A student who feels 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.

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 8-week drop date 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.

Student's 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.

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.

Curriculum Requirements

Adult Education, MS

School/College: School of Education **Degree(s) Offered:** Master of Science
Graduate Coordinator: Patricia Bethea-Whitfield **Email:** betheap@ncat.edu **Phone**: (336) 285-4384
Department Chair: Patricia Bethea-Whitfield **Email:** betheap@ncat.edu **Phone**: (336) 285-4384

The Adult Education program is designed to prepare effective adult educators who will become change agents within local and international communities. Curricular experiences emphasize the historical, philosophical, and socio-cultural foundations of adult education with a special focus on the Black Diaspora. Graduates are prepared to work as community activists, agency supervisors/directors, program planners, program facilitators/planners, community leaders/organizers, directors of professional organizations, media organizers, and many other community roles. The Adult Education program follows the professional standards devised by the Commission of Professors of Adult Education.

Additional Admission Requirements:
- Professional portfolio
- Written sample

Program Outcomes:
- Measurement and Evaluation: Develop and apply standards for evaluating projects, programs and educational research.
- Program Development: Assess design, deliver, and evaluate adult education and training programs.
- Application: Apply adult learning and development theories to increase adult performance at the individual, group, and/or organizational levels.
- Adult Program Processes: Facilitate the understanding of adult education program processes-planning, organizing, leading, implementing, budgeting, and evaluating.
- Communication: Demonstrate effective written and oral communication skills.

Degree Requirements
Total credit hours: 36

Community Education
- ADED 700, 701, 702, 707, 708, 709, 716
- ADED 711, 712, 771, 772
- Select 3 credit hours from: ADED 700-799 excluding 700, 701, 702, 707, 708, 709, 711, 712, 716, 771, 772

Higher Education
- ADED 700, 701, 702, 707, 708, 709, 716
- ADED 714, 773, 776, 778
- Select 3 credit hours from: ADED 700-799 excluding 700, 701, 702, 707, 708, 709, 714, 716, 773, 776, 778

Human Resource Development
- ADED 700, 701, 702, 707, 708, 709, 716
- ADED 710; CUIN 612, 714; TECH 670, 671

Instructional Technology

- ADED 700, 701, 702, 707, 708, 709, 716
- CUIN 617, 716, 742, 762, 765

Community College Teaching

Biology

- ADED 708, 709, 716, 718, 719, 720, 776
- Select 18 credit hours from: BIOL 615, 631, 640, 665, 671, 700

Business Education

- ADED 708, 709, 716, 718, 719, 720, 776
- Select 18 credit hours from: ACCT 708; ECON 706; MGMT 712, 716, 718; MIS 713

English

- ADED 708, 709, 716, 718, 719, 720, 776
- Select 18 credit hours from: ENGL 627, 650, 653, 712, 721/722, 755

History

- ADED 708, 709, 716, 718, 719, 720, 776
- Select 18 credit hours from: HIST 701, 712, 725, 730, 735, 740

Manufacturing Systems

- ADED 708, 709, 716, 718, 719, 720, 776
- Select 18 credit hours from: MSIT 701, 702, 703, 736; MFG 610, 613, 614, 621, 651, 673, 674, 696, 710, 720, 721, 735, 745, 755

Directory of Faculty

- Sharon Waldrum, B.S., M.S., North Carolina A&T State University, Ph.D., University of South Florida.
- C. Dean Campbell, Adjunct Faculty, BA, Yale University, MA, Boston College, Ed.D., University of Southern California.
- Janelle Ellis Rouse, Adjunct Faculty, BS Biology, MS, Adult Education, Concentration in Higher Education, North Carolina A&T State University, PhD Educational Studies, University of North Carolina, Greensboro
- LaWanda Wallace, BS, North Carolina A&T State University, MS, Adult Education, North Carolina A&T State University, PhD, University of North Carolina Greensboro

Agricultural and Environmental Systems - Agribusiness & Food Industry Management, MS

School/College: School of Agriculture & Environmental Science **Degree(s) Offered:** Master of Science
Graduate Coordinator: Dr. Osei Yeboah **Email:** oyeboah@ncat.edu Phone: 336-285 -4727
Department Chair: Dr. Anthony Yeboah **Email:** yeboaha@ncat.edu Phone: 336-285-4827

The Master of Science in Agricultural and Environmental Systems - Agribusiness and Food Industry Management focuses on business applications that support the food and fiber industry. The overall mission of the program is to prepare students for successful postbaccalaureate work by developing and maintaining a program in partnership with industry that is the focal point of state agribusiness which includes the food, fiber and animal sub-sectors in North Carolina as well as the United States.

Program Outcomes:

- The program will give students the skill set, including analytic and communication (both written and oral), to manage an agribusiness enterprise.
- The program will give the students the decision-making skills, including decision-making under risk and uncertainty.
- The program will give students the ability to understand applied economics, including transaction costs analysis and game theory.
- The program will give students the ability to understand the functions of management, including business strategy, marketing, finance, operations/logistics, and human resource management.
- The program will give students an appreciation for contemporary issues facing food and agribusiness managers.
- The program will enhance students' ability to be comfortable with networking (i.e. building social capital).

Degree Requirements
Total credit hours: 30

Thesis Option

- ABM 805; AGRI 800
- Select one course from ABM 825; AGRI 604
- ABM 797 (3)
- Electives: Select 15 credit hours from ABM 632, 634, 638, 640, 641, 648, 675, 808, 810, 820, 832, 834, 835, 836, 838, 840, 856, 860.
- Free elective: Select 3 credits from any graduate level course
- Comprehensive exam: ABM 788 (0)

Project Option

- AGRI 800
- Select one course from ABM 825; AGRI 604
- ABM 796 (3)
- Electives: Select 15 credit hours from ABM 632, 634, 638, 640, 641, 648, 675, 808, 810, 820, 832, 834, 835, 836, 838, 840, 856, 860.
- Free elective: Select 6 credits from any graduate level course
- Comprehensive exam: ABM 788 (0)

Directory of Graduate Faculty

- Antoine Alston, Professor and Associate Dean for Academic Programs, B.S., M.S., North Carolina A&T State University, Ph.D., Iowa State University
- Godfrey C. Ejimakor, Professor, B.S., North Carolina State University; M.S., North Carolina A&T State University; Ph.D., Texas Tech University
- Chastity Warren English, Assistant Professor, B.S., M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University
- Paula E. Faulkner, Assistant Professor, B.S., M.S., North Carolina A&T State University, Ph.D., Pennsylvania 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, Associate Professor, B.S. Southern University and A&M College, M.S. Alabama A&M University, Ph.D. Auburn University
- Donald R. McDowell, Professor, 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
- Terrence Thomas, Research Professor, B.S., University of West Indies; M.S., University of Wisconsin; Ph.D., Louisiana 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

Agricultural and Environmental Systems - Integrated Animal Health Systems, MS

School/College: School of Agriculture & Environmental Science **Degree(s) Offered:** Master of Science
Graduate Coordinator: Dr. Mulumebet Worku **Email:** worku@ncat.edu Phone: 336-285-4816
Department Chair: Dr. Ralph Noble **Email:** rcnoble@ncat.edu Phone: 336-285-4776

The Master of Science in Agricultural and Environmental Systems - Integrated Animal Health Sciences is designed to provide a solid foundation of fundamental biological and biochemical principles within the areas of biotechnology, breeding and genetics, microbiology, nutrition, physiology and toxicology. Thesis research or a project is conducted in the laboratories of faculty research advisors in the areas of biotechnology, immunology, microbiology, nutrition and physiology in poultry and livestock production (swine, goat, sheep, dairy and beef cattle) for sustainable agricultural and environmental systems.

Additional Admission Requirements

- Baccalaureate degree in animal science, agriculture or other related STEM area from an accredited undergraduate institution. Unconditional admission requires an undergraduate degree in animal sciences or a closely related discipline that includes work with lab or farm animals

Program Outcomes:

- To advance scholarship and research in various disciplines of Animal Science
- To increase the number of graduates with degrees in Animal Sciences
- To provide opportunities which prepare students to enter Ph.D. and/or professional programs in animal and related sciences

Degree Requirements

Total credit hours: 30

Thesis Option

- AGRI 604, 800, ABM 705, CHEM 651
- AGRI 797 (3)
- Electives: Select 15 credit hours from ANSC 604, 611, 614, 624, 637, 665, 701, 702, 703, 708, 712, 713, 723, 771, 782
- Comprehensive exam: ANSC 788 (0)

Project Option

- AGRI 604, 800, ABM 640, BIOL 700
- AGRI 796 (3)
- Electives: Select 15 credit hours from ANSC 604, 611, 614, 624, 637, 665, 701, 702, 703, 708, 712, 713, 723, 771, 782
- Comprehensive exam: ANSC 788 (0)

Directory of Graduate Faculty

- Tracy L. Hanner, B.S., North Carolina Central University; DVM, North Carolina State University; Laboratory Animal Science Coordinator (Animal Diseases)
- Radiah Corn Minor, B.S., Florida A&M University; Ph.D., Meharry Medical College, Assistant Professor (Immunology)
- Ralph C. Noble, B.S., M.S. Tuskegee University; Ph.D., University of Illinois-Champaign- Urbana; Associate Professor and Chairperson (Reproduction Physiology/Livestock Management)

- Sang Hyon Oh, B.S., M.S. Seoul National University; Ph.D., North Carolina State University; Adjunct Assistant Professor (Animal Statistical Breeding)
- Rajani Thanissery, DVM, Pondicherry University, Pondicherry, India; M.S. in Poultry Science from Auburn University; Ph.D., in Animal Science with concentration in Poultry Science from North Carolina State University
- Jenora Waterman, B.S., Bennett College for Women; M.S., North Carolina A&T State University; Ph.D., North Carolina State University; Assistant Professor (Functional Genomics)
- Willie L. Willis, B.S., Fort Valley State University; M.S., Ph.D., Colorado State University; Professor (Poultry Science/Management)
- Abraham Woldeghebriel, B.S., Addis Ababa University; M.S., Ph.D., New Mexico State University, Associate Professor (Animal Nutrition)
- Mulumebet Worku, B.Sc., Addis Ababa University, Alemaya College of Agriculture, Ethiopia; M.S., Ph.D., University of Maryland, College Park; Professor (Biotechnologist)

Agricultural and Environmental Systems - Natural Resources and Environmental Systems, MS

School/College: School of Agriculture & Environmental Science **Degree(s) Offered:** Master of Science
Graduate Coordinator: Dr. Charles Raczkowski **Email:** raczkowc@ncat.edu Phone: 336- 285- 4847
Department Chair: Dr. Louis E. Jackai **Email:** lejackai@ncat.edu Phone: 336- 285- 4837

The Master of Science in Agricultural and Environmental Systems – Natural Resources and Environmental Systems prepares students for career opportunities and research in the natural environmental and natural resources.

Additional Admission Requirements
- Academic preparation in basic sciences

Program Outcomes:
- The production of advanced agricultural scholars that obtain professional and leadership roles with agricultural and environmental related entities
- Individuals that pursue doctoral studies and the valuable scholarly works produced by graduates of the program, through thesis and capstone project endeavors.

Degree Requirements
Total credit hours: 30

Thesis Option
- AGRI 604, 800
- AGRI 797 (3)
- Electives: Select 18 credit hours from AGEN 701, 714; EASC 610, 620, 621, 644, 718; HORT 600, 602, 610, 612, 620, 700; NARS 600, 601, 603, 604, 605, 608, 610, 618, 720, 777; SLSC 621, 632, 633, 634, 640, 710, 715, 717, 727, 734
- Free elective: Select 3 credits from any graduate level course
- Comprehensive exam: ANSC 788 (0)

Project Option
- AGRI 604, 800
- AGRI 797 (3)
- Electives: Select 18 credit hours from AGEN 701, 714; EASC 610, 620, 621, 644, 718; HORT 600, 602, 610, 612, 620, 700; NARS 600, 601, 603, 604, 605, 608, 610, 618, 720, 777; SLSC 621, 632, 633, 634, 640, 710, 715, 717, 727, 734
- Free elective: Select 3 credits from any graduate level course
- Comprehensive exam: ANSC 788 (0)

Directory of Graduate Faculty
- J. Cyrus, PhD, Environmental Science, Anna University, India
- G. A. Gayle, Ph.D., N.C. State University, Professor, Water Resources Engineering
- Gu, Sanjun, B.S., Shandong Agricultural University, M.S., China Agricultural University, Ph.D., Horticulture and Forestry, University of Nebraska-Lincoln
- J. Idassi, PhD, Forest Resources, Mississippi State University
- O. Isikhuemhen, Ph.D., Institute of Microbiology, Prague, Associate Professor, Mycology, Mushroom Biology, Biotechnology

- Louis E, Jackai, Ph.D. University of Illinois, Urbana Champaign, Professor and Chairperson, Entomology, Pest Management (IPM)
- C. Raczkowski, Ph.D., N.C. State University, Adjunct Associate Professor and Program Coordinator, Soil Management, Soil and Water Conservation, Soil and Water Quality, Sustainable Cropping Systems
- Noah Ranells, Adjunct Faculty, B.S. University of Maryland; M.S., Ph,.D., North Carolina State University
- G. B. Reddy, Ph.D., University of Georgia, Professor, Water Quality Wetlands and Bioremediation
- M. R. Reddy, Ph.D., University of Georgia, Graduate Coordinator and Professor, Environmental Soil Science and Fate of Heavy Metals, Nutrient Management and Sustainable Agriculture
- G. Shahbazi, Ph.D., Pennsylvania State University, Program Coordinator and Professor, Bioprocess Engineering; Waste Recycling
- G. A. Uzochukwu, Ph.D., University of Nebraska, Professor and Director of Waste Management, Soil Mineralogy, Land use and classification; Earth Science
- G. Yang, Ph.D., University of Nebraska-Lincoln, Professor, Tissue Culture, micropropagation, genetic transformation for biofuel and bioremediation and other traits, plant growth regulation
- Manuel Reyes, Ph.D., Louisiana State University, Professor, Natural Resources Engineering; Erosion modeling; Conservation and Hydrology
- Lijun Wang, PhD, National University of Ireland, Dublin, Associate Professor, Bioprocess Engineering; Bio-energy and Modeling

Agricultural Education – Professional Licensure, MS

School/College: School of Agriculture & Environmental Science **Degree(s) Offered:** Master of Science
Graduate Coordinator: Dr. Antoine J. Alston **Email:** alstona@ncat.edu Phone: 336-334 -7711
Department Chair: Dr. Anthony Yeboah **Email:** yeboaha@ncat.edu Phone: 336-334-7943

The Master of Science in Agricultural Education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber, and natural resources systems. Agricultural Education at North Carolina A&T is offered completely online and on campus. The Professional Licensure concentration prepares individuals to teach agriscience education in middle and high schools. Graduates of this track are eligible to apply for advanced (graduate level) licensure in North Carolina. This track offers graduates versatility in career options, because it also prepares them for the many other professions that rely on agricultural educators. The Agricultural Education program is accredited by the National Council for Accreditation of Teacher Education (NCATE) and the North Carolina Department of Public Instruction to offer advanced licensure training in Agricultural Education.

Teacher Education Licensure: Degree completion and obtaining a teaching license in the State of North Carolina or any other state are separate processes. Admission to this program does not guarantee admission to the Teacher Education Licensure program. To be recommended for licensure, candidates must first be formally admitted to the Teacher Education Licensure Program. Failure to complete the Teacher Education admission requirements during the first semester of enrollment may result in the student's inability register for professional core courses. Candidates should review licensure requirements at http://www.ncat.edu/academics/schools-colleges1/soe/teacher-education/index.html or visit the School of Education for guidance on specific requirements.

Additional Admission Requirements

- Basic preparation in an agricultural related discipline or other broadly related areas.
- The Professional Licensure track is designed for individuals who are currently teaching secondary agricultural education, holders of the "A" License for secondary agricultural education in the State of North Carolina, are provisionally licensed for agricultural education, or are seeking licensure through the graduate program.

Program Outcomes:

Upon completion of the graduate program in Agricultural Education:

- Students will critically analyze issues impacting the food, agricultural, and environmental science.
- Students will demonstrate the ability to effectively communicate knowledge and issues impacting the food, agricultural, and environmental science disciplines.
- Students will develop and implement effective program planning and evaluation plans for their agricultural education programs to facilitate improvement of agricultural education programs.
- Demonstrate a deeper appreciation and knowledge of the agricultural education discipline.
- Students will be able to implement and use a variety of instructional methodologies and technologies.
- Students will be prepared to teach a diverse population about subject matter related to food, agricultural, and environmental sciences.

Degree Requirements

Total credit hours: 37

Core Courses

- Take 10 credit hours: AGED 700, 703, 704, 710

Thesis Option

- Take 6 credit hours: AGED 711, 752

- Select 15 credit hours from AGED 600 – AGED 754, ANSC 600 – 799, ABM 600- 899, ENVS 600- 699, HORT 600-799, NARS 600 – 799, ADED 600-799, CUIN 600 – 799
- Thesis: 6 credit hours: AGED 799

Project Option

- Take 6 credit hours: AGED 711, 752
- Select 17 credit hours from AGED 600 – AGED 754, ANSC 600 – 799, ABM 600- 899, ENVS 600- 699, HORT 600-799, NARS 600 – 799, ADED 600-799, CUIN 600 – 799
- Project: 4 credit hours: AGED 797

Directory of Graduate 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
- Godfrey C. Ejimakor, Professor, B.S., North Carolina State University; M.S., North Carolina A&T State University; Ph.D., Texas Tech
- Paula E. Faulkner, Assistant Professor, B.S., M.S., North Carolina A&T State University, Ph.D. The Pennsylvania State University
- Benjamin Gray, Associate Professor, B.S., M.S. North Carolina A&T State University, Ph.D., North Carolina State University
- Kenrett Y. Jefferson-Moore, Associate 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, 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
- Richard D. Robbins, Professor , B.S., North Carolina A&T State University; M.S., Ph.D., North Carolina State University
- Terrence Thomas, Associate Professor, B.S., University of West Indies; M.S., University of Wisconsin; Ph.D., Louisiana State University
- Chastity Warren English, Assistant Professor, B.S., M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University
- Johnnie Westbrook, Assistant Professor, B.S., M.S., NC State University, Ph.D., Career and Technical Education, Virginia Tech University
- Anthony K. Yeboah, Professor and Chairperson, B.S., University of Science and Technology; M.S., Ph.D., Iowa State University
- Osei-Agyeman Yeboah, Associate Professor, B.S. University of Science and Technology, Kumasi, Ghana, M.S. North Carolina A&T State University; Ph.D. University of Nebraska

Agricultural Education – Professional Service, MS

School/College: School of Agriculture & Environmental Science **Degree(s) Offered:** Master of Science
Graduate Coordinator: Dr. Antoine J. Alston **Email:** alstona@ncat.edu Phone: 336-334 -7711
Department Chair: Dr. Anthony Yeboah **Email:** yeboaha@ncat.edu Phone: 336-334-7943

The Master of Science in Agricultural Education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber, and natural resources systems. Agricultural Education at North Carolina A&T is offered completely online and on campus. The Professional Service concentration prepares individuals for careers in agribusiness, government, or legal professions. Students interested in international study can participate in the Peace Corps International. Students in both study tracks are also prepared for doctoral degree programs and other professional schools. Graduates of the program find employment in secondary education, agribusiness industry, federal and state government, cooperative extension, higher education, rural and international development, and nonprofits. Some prominent employers include the United States Department of Agriculture, John Deere, Kraft, Cargill, and the North Carolina Public School System. Many graduates go on to pursue doctoral work at prestigious research universities such as Iowa State, The Ohio State, Purdue, Penn State, and Virginia Tech.

Additional Admission Requirements

- Basic preparation in an agricultural related discipline or other broadly related areas.

Program Outcomes:

Upon completion of the graduate program in Agricultural Education:

- Students will critically analyze issues impacting the food, agricultural, and environmental science.
- Students will demonstrate the ability to effectively communicate knowledge and issues impacting the food, agricultural, and environmental science disciplines.
- Students will develop and implement effective program planning and evaluation plans for their agricultural education programs to facilitate improvement of agricultural education programs.
- Demonstrate a deeper appreciation and knowledge of the agricultural education discipline.
- Students will be able to implement and use a variety of instructional methodologies and technologies.
- Students will be prepared to teach a diverse population about subject matter related to food, agricultural, and environmental sciences.

Degree Requirements

Total credit hours: 37

Core Courses

- Take 10 credit hours: AGED 700, 703, 704, 710

Thesis Option

- Take 6 credit hours: AGED 712, 753
- Select 15 credit hours from AGED 600 – AGED 754, ANSC 600 – 799, ABM 600- 899, ENVS 600- 699, HORT 600-799, NARS 600 – 799, ADED 600-799, CUIN 600 – 799
- Thesis: 6 credit hours: AGED 799

Project Option

- Take 6 credit hours: AGED 712, 753
- Select 17 credit hours from AGED 600 – AGED 754, ANSC 600 – 799, ABM 600- 899, ENVS 600- 699, HORT 600-799, NARS 600 – 799, ADED 600-799, CUIN 600 – 799

- Project: 4 credit hours: AGED 797

Directory of Graduate 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
- Godfrey C. Ejimakor, Professor, B.S., North Carolina State University; M.S., North Carolina A&T State University; Ph.D., Texas Tech
- Paula E. Faulkner, Assistant Professor, B.S., M.S., North Carolina A&T State University, Ph.D. The Pennsylvania State University
- Benjamin Gray, Associate Professor, B.S., M.S. North Carolina A&T State University, Ph.D., North Carolina State University
- Kenrett Y. Jefferson-Moore, Associate 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, 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
- Richard D. Robbins, Professor , B.S., North Carolina A&T State University; M.S., Ph.D., North Carolina State University
- Terrence Thomas, Associate Professor, B.S., University of West Indies; M.S., University of Wisconsin; Ph.D., Louisiana State University
- Chastity Warren English, Assistant Professor, B.S., M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University
- Johnnie Westbrook, Assistant Professor, B.S., M.S., NC State University, Ph.D., Career and Technical Education, Virginia Tech University
- Anthony K. Yeboah, Professor and Chairperson, B.S., University of Science and Technology; M.S., Ph.D., Iowa State University
- Osei-Agyeman Yeboah, Associate Professor, B.S. University of Science and Technology, Kumasi, Ghana, M.S. North Carolina A&T State University; Ph.D. University of Nebraska

Applied Mathematics, MS

School/College: College of Arts and Sciences **Degree(s) Offered:** Master of Science
Graduate Coordinator: Alexandra Kurepa **Email:** kurepa@ncat.edu Phone: 336-285-2079
Department Chair: Guoqing Tang **Email:** tang@ncat.edu Phone: 336-285-2033

The Applied Mathematics program provides a thorough background and research training in one of the key areas of Applied Mathematics, such as Mathematical Modeling and Analysis, Dynamics Systems and Differential Equations, Numerical Analysis and Fluid Dynamics, Probability and Statistics, Control Theory and Optimizations. The program also gives the students hands-on experience in current important applications in these areas, along with the statistical and computational skills to apply their knowledge to real world applications.

Additional Admission Requirements
A Bachelor's degree in Mathematics or a closed related field from an accredited institution

Program Outcomes:
- Students will develop research expertise in one of the areas of Applied Mathematics.
- Students will proficiently apply mathematical knowledge, technology skills, and logical reasoning and proof skills, in solving problems or developing new techniques in Applied Mathematics.
- Students will communicate effectively and with confidence using accurate symbolic representation and correct mathematical terminology orally, in writing, and when using technology according to the standards of the field of mathematics.
- Students will develop the ability to use mathematical reasoning and analysis to acquire a comprehensive understanding of Applied Mathematics. Students will be able to apply analytical reasoning skills in decision making as well as mathematics based problem solving skills in an interdisciplinary context.
- Students will demonstrate computational skills and knowledge of current technology, software and hardware used in Applied Mathematics.

Degree Requirements
Total credit hours: 30 (thesis option); 33 (project option)

Core: 9 credit hours
- MATH 603, 651, 690
- Comprehensive Exam: 788

Thesis option
- Select 12 credit hours from: MATH 700, 701, 706, 708, 709, 711, 717, 720, 723, 731, 733, 751, 752, 765, 781, 782, 791, 792
- Select 3 credit hours from: MATH 607, 608, 610, 611, 612, 620, 623, 624, 631, 632, 633, 650, 651, 652, 665, 675, 691, 700, 701, 706, 708, 711, 717, 720, 723, 731, 733, 751, 752, 765, 781, 782, 791, 792
- MATH 730 (6)

Non Thesis option
- Select 15 credit hours from: MATH 700, 701, 706, 708, 711, 717, 720, 723, 731, 733, 751, 752, 765, 781, 782, 791, 792, or an application area of mathematics.
- Select 6 semester hours from MATH 607, 608, 610, 611, 612, 620, 623, 624, 631, 632, 633, 650, 651, 652, 665, 675, 691, 700, 701, 706, 708, 709, 711, 717, 720, 723, 731, 733, 751, 752, 765, 781, 782, 791, 792
- MATH 725 (3)

Directory of Faculty

- Burns, D. Shea, B.S., North Carolina A&T State University; M.S., Ph.D., Howard University;Associate Professor
- Gilbert Casterlow, Jr., B.S., M.S., North Carolina A&T State University; Ph.D., The PennsylvaniaState University; Professor Emeritus
- Mingxiang Chen, B.S., M.S., Huazhong Normal University; Ph.D., Georgia Institute of Technology; Associate Professor
- Dominic P. Clemence, B.S., North Carolina A&T State University; M.S., Ph.D., Virginia Polytechnic Institute and State University; Professor
- Kathy M. Cousins-Cooper, B.S., Virginia Polytechnic Institute and State University; M.S., North Carolina A&T State University; Ph.D., University of South Florida; Associate Professor
- Zachary Denton, Ph.D., University of Louisiana at Lafayette, Assistant Professor
- Kossi D. Edoh, B.S., Cap Coast University-Ghana; M.S., Ph.D., Simon Fraser University-Canada; Associate Professor
- Gregory Gibson, B.A., State University of New York/College at Geneseo; M.S., Ph.D., North Carolina State University; Associate Professor
- Seong-Tae "Ty" Kim, Ph.D., North Carolina State University, Assistant Professor
- Alexandra Kurepa, B.S., M.S., University of Zagreb, Ph.D., University of North Texas; Professor and Applied Mathematics Graduate Coordinator
- Yaw Kyei, B.S., University of Ghana; M.S., Ph.D., North Carolina State University; Associate Professor
- Liping Liu, B.S., Huazhong University of Science and Technology; Ph.D., University of Alberta; Assistant Professor
- Nicholas Luke, B.S., North Carolina A&T State University; M.S., Ph.D., North Carolina State University; Assistant Professor
- Amal El Morgrahby, B.S., University of Khartoum; M.S., Ph.D., Brown University; Assistant Professor
- Janis M. Oldham, B.A., University of Chicago; M.S., Purdue University; Ph.D., University of California-Berkeley; Associate Professor
- Choongseok Park, Ph.D., Ohio State University, Assistant Professor
- Yevgeniy A. Rastigeyev, M.S., Moscow Institute of Physics and Technology; M.S., Northwestern University; Ph.D., Notre Dame University; Assistant Professor
- Thomas C. Redd, B.S., Fort Valley State University; M.S., University of Oklahoma; M.S., Ph.D., Brown University; Assistant Professor
- John Paul Roop, B.S., Roanoke College, M.S., Ph.D.; Clemson University; Associate Professor
- Guoqing Tang, B.S., Anhui University; M.S., Nanjing University of Science and Technology; Ph.D., Rutgers University; Professor and Interim Chairperson
- Barbara Tankersley, B.S., Paine College; M.S., North Carolina A&T State University; M.S., Ph.D., Howard University; Associate Professor
- Paramanathan Varatharajah, B.S., University of Jaffna; M.S., Ph.D., University of Arizona; Associate Professor
- Giles Warrack, B.S., M.S., California State Polytechnic University, Ph.D., University of Iowa; Associate Professor
- Nail K. Yamaleev, M.S., Ph.D., Moscow Institute of Physics and Technology; Associate Professor

Bioengineering, MS

School/College: College of Engineering
Degree(s) Offered: Master of Science
Graduate Coordinator: Dr. Leonard Uitenham **Email:** u10ham@ncat.edu Phone: 336-334-7564
Department Chair: Dr. Leonard Uitenham **Email:** u10ham@ncat.edu Phone: 336-334-7564

The Master of Science in Bioengineering program is a two-year engineering program and is open to students who have completed their BS degree in science or engineering. The program emphasizes advanced study in specialization areas: tissue engineering, biomaterials, biomechanics, biosignals and biosensors and biotransport processes. The program provides graduate level education designed to prepare the graduate for Ph.D. level studies or for advanced bioengineering practice in industry, consulting, or government service.

Additional Admission Requirements

- Unconditional admission requires undergraduate degree from an ABET accredited Engineering program

Program Outcomes:

- The graduates will perform effectively in an advanced bioengineering (biomedical) related position in industry or in advance graduate/professional schools.
- The graduates will demonstrate research leadership skills in using interdisciplinary and advance approaches or techniques for solving their research or project problems in the bioengineering field.
- The graduates will be active in leadership positions of the professional societies.
- The graduates will enhance their professional credentials through conference presentations, publications and understanding the importance of lifelong learning.
- Be prepared to join the workforce and contribute to economic development.

Degree Requirements
Total credit hours: 30

Core Courses: 9 credit hours

- BMEN 711, 712, 714

Thesis option

- BMEN 797 (6)
- Engineering electives: Select 9 credit hours from: CHEN 600-899; CIEN 600-899; ELEN 600-899; INEN 600-899; MEEN 600-899; NANO 600-899; CSE 600-899; COMP 600-899
- Life Science electives: Select 6 credit hours from: BIOL 600-899; ANSC 600-899
- BMEN 792 (0)

Directory of Faculty

- Yusuf G. Adewuyi, Professor, PhD, University of Iowa
- Narayan Bhattarai, Assistant Professor, B.Sc., M.Sc., Tribhuvan Universtiy, Ph.D. Chonbuk National University
- Shamsuddin Ilias, Professor & Graduate Program Coordinator, PhD, Queen's University at Kingston
- Vinayak N. Kabadi, Professor & CAS Associate Director, PhD, Pennsylvania State University
- Stephen Knisley, Professor and Chair, B.S., Biomedical Engineering, Duke University; Ph.D., Biomedical Engineering, UNC Chapel Hill
- Jianzhong Lou, Professor, PhD, University of Utah

- Matthew McCullough, Assistant Professor, B.S. Industrial Engineering North Carolina A&T State University, Ph.D. Biomedical Engineering, University of Iowa, Post Doctoral Fellow Orthopaedic Research, Mayo Clinic
- Abolghasem Shahbazi, PhD, Pennsylvania State University
- Leonard C. Uitenham, Professor & Chairperson, PhD, Case Western Reserve University
- Lijun Wang, PhD, National University of Ireland
- Yeoheung Yun, Associate Professor, B.E., M.S., Chonbuk National University, South Korea, Ph.D. University of Cincinnati
- Donghui Zhu, Assistant Professor, BS, Biochemical Engineering, East China University of Science & Technology, MS, Chemical Engineering, Florida State University, MS, Biomedical Engineering, Washington University in St. Louis, PhD, Biomedical Engineering, University of Missouri-Columbia

Biology, MS

School/College: College of Arts & Sciences
Degree(s) Offered: Master of Arts in Teaching, Master of Science
Graduate Coordinator: Dr. Patrick Martin Email: pmmartin@ncat.edu Phone: 336-285-2160
Department Chair: Dr. Mary A. Smith Email: smithma@ncat.edu Phone: 336-285-2160

The primary objective of the Masters of Science program in Biology is to prepare students to enter and complete doctoral and health professional programs in order to become productive teachers, researchers, and health professionals. To support this objective, this program will develop in all participants, through research experiences and other enrichment activities, independent thinking, creativity, critical judgment, and personal integrity. Specifically, this program is designed to enhance the student's ability to design experiments, to analyze results, to become competent using state-of -the art research equipment, enhance manipulative skills, and to improve the student's proficiency in oral and written communication. Students will have opportunity to conduct research in various areas, including cancer research, diabetes research, molecular genetics, microbiology/immunology, genomics/bioinformatics, physiology, evolution, toxicology, and health disparities research. An additional critical objective is to enable students to score at or above the 50th percentile on the GRE Subject Test in Biology after their first year in residency.

Additional Admission Requirements

- A Bachelor's Degree in Biology or a related discipline from an accredited institution.
- Chemistry through Organic II
- One year of Calculus, One year of Physics and Cellular and Molecular Biology
- GRE (General and Biology subject tests)

Program Outcomes

- SLO 1: Knowledge of the Biological Discipline. During the course of study in the Master of Science Degree Program in Biology, students integrate biological concepts from a variety of sub-disciplines on the required comprehensive examination prepared by instructors of courses that students have taken inthe first year.
- SLO 2: Communication. During the course of study in the Master of Science Degree Program in Biology, students will present research findings in standard formats used by biological scientists and the guidelines of the NC A&T Graduate School.
- SLO 3: Critical Thinking (Masters Level). During the course of study in the Master of Science Degree Program in Biology, students will conduct critical reviews of scientific papers according to guidelines of the instructor.
- SLO 4: Scientific Research. During the course of study in the Master of Science Degree Program in Biology, students will implement an original research project based on the standard guidelines for biological research and a proposal approved by a faculty research advisor and committee.

Degree Requirements

Total credit hours: 30 (thesis option), 33 (project option)

Core Courses:

- 14 credit hours: BIOL 701, 702, 703, 749, 785; CHEM 651
- Comprehensive examination: BIOL 788 (0)

Thesis Option

- Electives: Take 4 credit hours from BIOL 600-780 excluding 712, 722, 723; ANSC 700-782, CSE 700-785.

- Thesis (12 credit hours) BIOL 794, 797

Project Option

- Electives: Take 7 credit hours from BIOL 700-780 excluding 722, 723; ANSC 700-782, CSE 700-785.
- Electives: Take 6 credit hours from BIOL 600-780; ANSC 600-699, CSE 600-699.
- Project: 6 credit hours: BIOL 796

Directory of Faculty

- David W. Aldridge, Professor and Associate Dean for Research and Graduate Studies, B.S., University of Texas, Arlington; Ph.D., Syracuse University
- Bernot, Kelsie, Assistant Professor, BS Duquesne University; PhD Biochemistry, Johns Hopkins University
- Goldie S. Byrd, Nathan F. Sims Endowed Professor and Dean of College of Arts & Sciences, B.S., North Carolina A&T State University; Ph.D., Meharry Medical College
- Roy J. Coomans, Associate Professor and Associate Chairperson, B.S., Eckerd College; Ph.D., University of North Carolina at Chapel Hill
- Doretha B. Foushee, Associate Professor, B.S., Shaw University; M.S., North Carolina Central University; Ph.D., University of Maryland at College Park
- Gregory D. Goins, Associate Professor, B.S., University of North Carolina at Chapel Hill; M.S., Ph.D., North Carolina State University
- Andrew G. Goliszek, Associate Professor, B.S., University of West Florida; M.S., Ph.D., Utah State University
- Jessica (Jian) Han, Assistant Professor, B.S., M.S., Nankai University; M.S.,University of Hawaii at Manoa; Ph.D., Pennsylvania State University
- Scott H. Harrison, Assistant Professor, B.S., Ph.D., Michigan State University
- Randall Hayes, Assistant Professor, B.S., University of Kentucky, Lexington; Ph.D., University of Rochester
- Shannon Z. Jones, Adjunct Associate Professor, BS Biology, Winston-Salem State University; PhD, Toxicology, University of North Carolina, Chapel Hill; SPIRE Postdoctoral Fellow, UNC-CH 2012-present.
- R. Lang-Walker, PhD, Molecular and Cellular Pharmacology, University of Miami School of Medicine
- Patrick Martin, Assistant Professor, B.S., Virginia Union University; Ph.D., University of Virginia
- Perpetua Muganda, Professor, B.S., Lock Haven State College; M.S., Howard University; Ph.D., Indiana University School of Medicine
- Robert H. Newman, Assistant Professor, B.A., McDaniel College; Ph.D., Johns Hopkins University
- Elimelda M. Ongeri, Assistant Professor, B.S., Egerton University; M.S., Ph.D., Purdue University
- Checo Rorie, Assistant Professor, B.S., Clark Atlanta University; Ph.D., University of North Carolina at Chapel Hill
- Mary A. Smith, Associate Professor and Chairperson, B.S., M.S., Morgan State University; Ph.D. Cornell University
- Catherine D. White, Associate Professor, B.S., Johnson C. Smith University; Ph.D., Wayne State University
- Joseph J. Whittaker, Associate Professor, A.B., Talladega College; Ph.D., Meharry Medical College

Biology – Industrial Biosciences PSM, MS

School/College: College of Arts & Sciences
Degree(s) Offered: Master of Arts in Teaching, Master of Science
Graduate Coordinator: Dr. Patrick Martin Email: pmmartin@ncat.edu Phone: 336-285-2160
Department Chair: Dr. Mary A. Smith Email: smithma@ncat.edu Phone: 336-285-2160

The primary objective of the Professional Science Master's concentration in Industrial Biosciences is to provide students with advanced technical skills, industry-guided knowledge, and business training to prepare them for work in the commercial sector. To support this objective, this program will develop in all participants, through training experiences and other enrichment activities, scientific understanding, understanding of the commercialization process, critical judgment, and personal integrity. Specifically, this program is designed to enhance the student's ability to manage scientific projects, to understand regulatory, ethical and legal dimensions of science-based work, to become competent using state-of -the art research equipment, and to improve the student's proficiency in oral and written communication. Students will have opportunity to pursue training in various project areas, including genetics, microbiology, biotechnology, bioinformatics, physiology, evolution, toxicology, and health disparities research.

Additional Admission Requirements

- A Bachelor's Degree in Biology or a related discipline from an accredited institution.
- Chemistry through Organic II
- One year of Calculus, One year of Physics and Cellular and Molecular Biology
- GRE (General and Biology subject tests)

Program Outcomes

- Communication skills: Students completing the MS degree program in Biology will exhibit effective communication skills (written, oral, graphic and interpersonal) appropriate for professionals in this field of study at the master's or doctoral level
- Critical Thinking skills: Students completing the MS degree program in Biology will effectively use quantitative and/or qualitative analytical problem-solving skills appropriate for professionals in this field of study at the master's or doctoral level
- Disciplinary Expertise: Students completing the MS degree program in Biology will demonstrate a level of discipline-specific expertise (knowledge, skills, and professionalism) appropriate for professionals in this field of study at the master's or doctoral level
- Research/Creative Engagement: Students completing the MS degree program in Biology will demonstrate ability to engage productively in the review and conduct of disciplinary research and creative professional activity appropriate for professionals in this field of study at the master's or doctoral level

Degree Requirements
Total credit hours: 33

Core Courses:

- 9 credit hours: BIOL 749, 785; CHEM 651
- Comprehensive examination: BIOL 788 (0)

Disciplinary Electives

- Select 9 credit hours from: BIOL 600-780 excluding 722, 723, 796

Business/Management/Ethics Electives

- Select 6 credit hours from: BUAD 600-780
- Select 3 credit hours from: MKTG 636, WMI 617, LEST 810

Experiential Component

- Project: 6 credit hours: BIOL 796

Directory of Faculty

- David W. Aldridge, Professor and Associate Dean for Research and Graduate Studies, B.S., University of Texas, Arlington; Ph.D., Syracuse University
- Bernot, Kelsie, Assistant Professor, BS Duquesne University; PhD Biochemistry, Johns Hopkins University
- Goldie S. Byrd, Nathan F. Sims Endowed Professor and Dean of College of Arts & Sciences, B.S., North Carolina A&T State University; Ph.D., Meharry Medical College
- Roy J. Coomans, Associate Professor and Associate Chairperson, B.S., Eckerd College; Ph.D., University of North Carolina at Chapel Hill
- Doretha B. Foushee, Associate Professor, B.S., Shaw University; M.S., North Carolina Central University; Ph.D., University of Maryland at College Park
- Gregory D. Goins, Associate Professor, B.S., University of North Carolina at Chapel Hill; M.S., Ph.D., North Carolina State University
- Andrew G. Goliszek, Associate Professor, B.S., University of West Florida; M.S., Ph.D., Utah State University
- Jessica (Jian) Han, Assistant Professor, B.S., M.S., Nankai University; M.S.,University of Hawaii at Manoa; Ph.D., Pennsylvania State University
- Scott H. Harrison, Assistant Professor, B.S., Ph.D., Michigan State University
- Randall Hayes, Assistant Professor, B.S., University of Kentucky, Lexington; Ph.D., University of Rochester
- Shannon Z. Jones, Adjunct Associate Professor, BS Biology, Winston-Salem State University; PhD, Toxicology, University of North Carolina, Chapel Hill; SPIRE Postdoctoral Fellow, UNC-CH 2012-present.
- R. Lang-Walker, PhD, Molecular and Cellular Pharmacology, University of Miami School of Medicine
- Patrick Martin, Assistant Professor, B.S., Virginia Union University; Ph.D., University of Virginia
- Perpetua Muganda, Professor, B.S., Lock Haven State College; M.S., Howard University; Ph.D., Indiana University School of Medicine
- Robert H. Newman, Assistant Professor, B.A., McDaniel College; Ph.D., Johns Hopkins University
- Elimelda M. Ongeri, Assistant Professor, B.S., Egerton University; M.S., Ph.D., Purdue University
- Checo Rorie, Assistant Professor, B.S., Clark Atlanta University; Ph.D., University of North Carolina at Chapel Hill
- Mary A. Smith, Associate Professor and Chairperson, B.S., M.S., Morgan State University; Ph.D. Cornell University
- Catherine D. White, Associate Professor, B.S., Johnson C. Smith University; Ph.D., Wayne State University
- Joseph J. Whittaker, Associate Professor, A.B., Talladega College; Ph.D., Meharry Medical College

Business Administration - Accounting, MBA

School/College: School of Business and Economics
Degree(s) Offered: Master of Science in Management
Graduate Coordinator: Roger J. Gagnon **Email:** gagnonr@ncat.edu Phone: 336-285-3291
Department Chair: Kevin James **Email:** kljames@ncat.edu Phone: 336-334-7581

The Master of Science in Management program with a concentration in Accounting prepares students for professional careers in accounting and management positions in the public or private sectors. This high quality program will provide accounting graduates from A&T and other institutions the opportunity to enhance their marketability through professional certification. This program has been designed to be competitive with graduate accounting programs at peer and competitive institutions. The MSM program is accredited by the AACSB International - The Association to Advance Collegiate Schools of Business International. This is the premier accrediting agency for undergraduate and graduate schools of business, economics, and accountancy

Additional Admission Requirements

1. Appropriate GMAT or GRE exam scores. GMAT and GRE exam is waived if undergraduate GPA is 3.30 or higher
2. A current resume

Learning Objectives:

- Students will gain enhanced knowledge of financial accounting processes needed for professional practice and successful completion of professional certification exams.
- Students will understand the application of accounting principles and practices in a global environment.

Degree Requirements

Total credit hours: 30

Course requirements

- Core Courses: MIS 713, MGMT 715, 718, ECON 608
- ACCT 820, 845, 861, 863
- Elective: Select one course from ACCT 643, 691, 690, MIS 744
- Elective: Select one course from BUAD 600-899; ECON 600-899 excluding ECON 608

Directory of Faculty

- Robert Angell; BSBA, UNC Chapel Hill; MBA, University of Virginia; DBA, Florida State University; Professor
- Ronald Campbell; B.A., Oakwood College; M.B.A., The Ohio State University; Ph.D., Texas A & M University
- Lemuria Carter; B.S., Virginia State University; M.S., Virginia Polytechnic and State University; Ph.D., Virginia Polytechnic and State University
- William Cooper; B.B.A., Georgia State University; M.B.A., Georgia State University; Ph.D., University of Arkansas
- Gwendolyn Highsmith-Quick; B.S., North Carolina A&T State University;M.B.A., University of Wisconsin-Madison; Ph.D., University of Houston
- Kevin James, Chairperson; B.B.A., Middle Tennessee State University; M.B.A., Middle Tennessee State University; Ph.D., The University of Tennessee
- Charles Malone; A.B., Boston University; J.D., Boston University; M.B.A., Columbia University; Ph.D., University of Missouri

- Gwendolyn McFadden-Wade; B.S., South Carolina State University; M.ACC. University of South Carolina; J.D., Stetson University of Law; L.L.M. University of Florida
- Lisa Owens-Jackson; B.S., North Carolina A&T State University; M.A., The Ohio State University; Ph.D., Oklahoma State University
- Brandis Phillips; B.A., Michigan State University; M.B.A., University of Iowa; Ph.D., Michigan State University
- Joseph Reid; BS Accountancy, Winston Salem State University; MS Accountancy, Wake Forest University; PhD Accounting, University of Memphis
- Diana Robinson; B.S, North Carolina A&T State University; M.B.A., Duke University; Ph.D. Oklahoma State University
- Jerry Thorne; B.S., North Carolina A&T State University; M.B.A. University of Wisconsin - Madison; Ph.D., Texas A & M University

Business Administration - Human Resources Management, MBA

School/College: School of Business and Economics
Degree(s) Offered: Master of Science in Management
Graduate Coordinator: Roger J. Gagnon **Email:** gagnonr@ncat.edu Phone: 336-285-3291
Department Chair: Silvanus J. Udoka **Email:** udoka@ncat.edu Phone: 336-256-2273

The Department of Management offers a program of study leading to the Master of Science in Management degree with a major concentration in Human Resources Management (HRM). The program prepares students and professionals for careers in public and private sector positions in the Human Resources Management function of organizations and managers interested in understanding how to effectively develop and manage human resources. The MSM program is accredited by the AACSB International - The Association to Advance Collegiate Schools of Business International. This is the premier accrediting agency for undergraduate and graduate schools of business, economics, and accountancy. In addition the Human Resources Management concentration is one of few graduate HRM programs certified by the Society of Human Resources Management (SHRM).

Additional Admission Requirements

- Appropriate GMAT or GRE exam scores. GMAT and GRE exam is waived if undergraduate GPA is 3.30 or higher
- A current resume

Learning Objectives:

- Students will understand the concepts and applications of the HRM function, and its contribution to firm performance.
- Students will comprehend the strategic importance of the HRM function as a competitive advantage.
- Students will be able to plan, manage, and revise a HRM function in a professional domestic or global setting, while demonstrating the appropriate responses to ethical, social, and multicultural issues.

Degree Requirements

Total credit hours: 30

Course requirements

- Core Courses: ACCT 714, MIS 713, MGMT 715, 718, MKTG 716, ECON 608
- MGMT 730, 731, 732, 733, 734
- Electives: Select one course from MGMT 735, 736, 699

Directory of Faculty

- Obasi H. Akan, Assistant Professor, B.A., Howard University; M.S., Ph.D., Case Western Reserve University
- Hayward P. Andres, Associate Professor, 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
- Verona P. Edmond, Assistant Professor, B. S., North Carolina A&T State University; M.B.A., University of Illinois; Ph.D., Syracuse University
- Marka B. Fleming, Assistant Professor, B.S., Wake Forest; J.D., North Carolina Central School of Law
- Roger J. Gagnon, Associate Professor and Director of Master of Science in Management Program, B.S., Boston University; M.B.A., Clark University; Ph.D., University of Cincinnati
- Rhonda L. Hensley, Associate Professor, B.S., M.B.A., James Madison University; Ph.D., Virginia Commonwealth University

- Jeanne Johnson Holmes, Ph. D., Assistant Professor, B. S., Miami University, Oxford, Ohio; M. S. North Carolina State University; Ph. D. University of South Carolina
- Susan M. Houghton, Associate Professor, B.A., Yale University; M.B.A., Ph.D., University of North Carolina at Chapel Hill
- Alice M. Johnson, Associate Professor, B.A., Winston-Salem State University; M.S., Winthrop University; Ph.D., University of Kentucky
- Kathryn Kisska-Schulze, Assistant Professor, B.S., Radford University; J.D., University of Wyoming ; L.L.M., University of Florida
- Mary R. Lind, Professor, B.S., Duke University; M.B.A., Ph.D., University of North Carolina at Chapel Hill
- Maranda McBride, Associate Professor, B.S., M.S., North Carolina A&T State University; MBA, Wake Forrest University; Ph.D., North Carolina A&T State University
- Thaddeus McEwen, Professor, B.S., University of Technology, Jamaica; M.S., Ph.D., Southern Illinois University at Carbondale
- Mahour Mellat-Parast, Assistant Professor, B.S., M.S., Sharif University of Technology, Tehran, Iran; Ph.D., University of Nebraska
- Angela K. Miles, Associate Professor, B.A., University of Virginia; M.B.A., University of Wisconsin; Ph.D., Florida State University
- Shona D. Morgan, Associate Professor , B.S., Spelman College; M.S., Ph.D., North Carolina State University
- Frank Mullins, Associate Professor, B.S., Oakwood University; M.B.A., Ph.D. 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 J. Udoka, Associate Professor and Chairperson, 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

Business Administration - Supply Chain Systems, MBA

School/College: School of Business and Economics
Degree(s) Offered: Master of Science in Management
Graduate Coordinator: Roger J. Gagnon **Email:** gagnonr@ncat.edu Phone: 336-285-3291
Department Chair: Linda S. Coley **Email:** lscoley@ncat.edu Phone: 336-285-3340

The Department of Marketing, Transportation and Supply Chain offers a program of study leading to the Master of Science in Management degree with a major concentration in Supply Chain Systems. The program prepares students and professionals for careers in public and private sector positions in transportation and supply chain management. The program blends traditional management education in the areas of marketing, management, management information systems, and quantitative analysis, with specialized core competencies relating to supply chain management, transportation planning, transportation, materials management, and purchasing. The MSM program is accredited by the AACSB International - The Association to Advance Collegiate Schools of Business International. This is the premier accrediting agency for undergraduate and graduate schools of business, economics, and accountancy.

Additional Admission Requirements

- Appropriate GMAT or GRE exam scores. GMAT and GRE exam is waived if undergraduate GPA is 3.30 or higher
- A current resume

Learning Objectives:

- Students will know the supply chain functions and recognize the impact these functions have on domestic and global operations.
- Students will be able to apply the principles of cost, demand, and supply chain design to effectively manage the information, product, and financial flows through the supply chain to develop value-creating networks

Degree Requirements

Total credit hours: 30

Course requirements

- Core Courses: ACCT 714, MIS 713, MGMT 715, 718, MKTG 716, ECON 608
- MIS 719, 744, TSCM 720, 725, 727
- Electives: Select one course from TSCM 600, 650, 660, 670, 730

Directory of Faculty

- Julian Benjamin, Professor, B.S., New York University; M.S., Ph.D., State University of New York at Buffalo
- Linda Silver Coley, Associate Professor and Chairperson, B.S. Chemistry, Bennett College; M.S. Pharmaceutical Chemistry/Medicinal Chemistry, The University of Michigan (Ann Arbor); M.B.A. Marketing, Xavier University (Cincinnati, Ohio); PhD. Marketing/Supply Chain Management, University of Cincinnati
- Kathryn Cort, Associate Professor, B.S.Ed., M.A., The Ohio State University; M.B.A. and Ph.D., Kent State University
- Kathryn E. Dobie, UPS Chaired Professor and Director of Transportation Institute, B.M. Music, Wittenberg University; M.B.A. Business Administration, University of Central Arkansas; Ph.D. Business Administration/Marketing, Memphis State University
- Johnny Ducking, Assistant Professor, Ph.D. (Economics), University of Kentucky; MS (Economics), University of Kentucky; MA, University of Mississippi, BA, University of Mississippi

- Roland Leak, Assistant Professor, B.S., North Carolina A&T State University; M.B.A., Wake Forest University; Ph.D., University of South Carolina
- Laquanda Leaven, Assistant Professor, B.S. Industrial and Operations Engineering, The University of Michigan (Ann Arbor); M.S. Industrial and Systems Engineering, North Carolina Agricultural & Technical State University; PhD Industrial and Systems Engineering/Supply Chain Management, North Carolina Agricultural & Technical State University
- Kimberly R. McNeil, Associate Professor, B.S., North Carolina A&T State University; Ph.D., Florida State University
- Kofi Obeng, Professor , B.Sc., University of Science & Technology (Kumasi, Ghana); M.U.P., McGill University (Montreal, Canada); A.M., Ph.D., University of Pennsylvania
- George W. Stone, Associate Professor, B.S., United States Military Academy, West Point; M.S.B.A. Business Administration, Boston University; Ph.D., University of Mississippi
- Shengbin Wang, Assistant Professor, B.A. Mathematics and Applied Mathematics, Zhejiang University (Hangzhou, China); M.S. Applied Mathematics, New Jersey Institute of Technology; PhD Management/Supply Chain Management, Rutgers University (Newark)
- Jacqueline Williams, Associate Professor, B.S., Drexel University; M.B.A., University of Delaware; Ph.D., Florida State University
- Omar Woodham, Assistant Professor, B.Sc., University of the West Indies; M.B.A., Rochester Institute of Technology; Ph.D. Syracuse University

Chemical Engineering, MS

School/College: College of Engineering
Degree(s) Offered: Master of Science
Graduate Coordinator: Dr. Shamsuddin Ilias **Email:** ilias@ncat.edu Phone: 336-334-7564
Department Chair: Dr. Leonard Uitenham **Email:** u10ham@ncat.edu Phone: 336-334-7564

The graduate Chemical Engineering program prepares students for further study at the doctoral level or for advanced chemical engineering practice in industry. Graduates of the program work in a broad range of fields and create innovative solutions to important industrial and societal problems. Active areas of research include Thermodynamics and Molecular Computation, Catalysis and Reaction Engineering, Transport Processes, Polymers, and Biological Engineering.

Additional Admission Requirements

- Undergraduate degree in STEM discipline
- Unconditional admission requires an engineering undergraduate degree from an ABET accredited Chemical Engineering program

Program Outcomes:

- The graduates will perform effectively in an advanced chemical engineering related position in industry or in advanced graduate/professional schools.
- The graduates will demonstrate research leadership skills in using interdisciplinary and advanced approaches or techniques for solving their research or project problems.
- The graduates will be active in professional societies.
- The graduates will enhance their professional credentials through lifelong learning.

Degree Requirements

Total credit hours: 30 (thesis option), 33 (course or project option)

Core Courses: 9 credit hours
Select three courses from: CHEN 705, 710, 715, 720, 750, 760

Thesis option:

- CHEN Electives: Select 9 credit hours from CHEN 605-789
- Electives: Select 6 credit hours from: CHEN 605-789; BMEN 700-791; CSE 700-785; ELEN 600-785; INEN 600-785, excluding 685, 694; MEEN 600-789, excluding 778, 788; PHYS 600-799, excluding 740, 791-792; CHEM 600-799 excluding 703, 788, 799; BIOL 600-799, excluding 701, 702, 712, 788; MATH 600-799, excluding 625, 626, 705, 713, 725, 730, 788; EES 700-785
- Thesis: CHEN 797 (6)

Course option:

- CHEN Electives: Select 15 credit hours from CHEN 605-789
- Electives: Select 9 credit hours from CHEN 605-789; BMEN 700-791; CSE 700-785; ELEN 600-785; INEN 600-785, excluding 685, 694; MEEN 600-789, excluding 778, 788; PHYS 600-799, excluding 740, 791-792; CHEM 600-799 excluding 703, 788, 799; BIOL 600-799, excluding 701, 702, 712, 788; MATH 600-799, excluding 625, 626, 705, 713, 725, 730, 788; EES 700-785

Project option:

- CHEN Electives: Select 12 credit hours from CHEN 605-789

- Electives: Select 9 credit hours from CHEN 605-789; BMEN 700-791; CSE 700-785; ELEN 600-785; INEN 600-785, excluding 685, 694; MEEN 600-789, excluding 778, 788; PHYS 600-799, excluding 740, 791-792; CHEM 600-799 excluding 703, 788, 799; BIOL 600-799, excluding 701, 702, 712, 788; MATH 600-799, excluding 625, 626, 705, 713, 725, 730, 788; EES 700-785
- Project: CHEN 796 (3)

Directory of Faculty

- Yusuf G. Adewuyi, Professor, PhD, University of Iowa
- Shamsuddin Ilias, Professor & Graduate Program Coordinator, PhD, Queen's University at Kingston
- Vinayak N. Kabadi, Professor & CAS Associate Director, PhD, Pennsylvania State University
- Franklin G. King, Professor, DSc, Stevens Institute of Technology
- Jianzhong Lou, Professor, PhD, University of Utah
- Abolghasem Shahbazi, PhD, Pennsylvania State University
- Gary B. Tatterson, Professor, PhD, The Ohio State University.
- Leonard C. Uitenham, Professor & Chairperson, PhD, Case Western Reserve University
- Lijun Wang, PhD, National University of Ireland

Chemistry, MS

School/College: College of Arts and Sciences
Degree(s) Offered: Master of Arts in Teaching, Master of Science
Graduate Coordinator: Zerihun Assefa **Email:** zassefa@ncat.edu **Phone**: 336-285-2255
Department Chair: Margaret I. Kanipes **Email:** mikanipe@ncat.edu **Phone**: 336-285-2233

The mission of the MS in Chemistry program at North Carolina Agricultural and Technical State is to provide the theoretical and experimental training for post-baccalaureate students leading to Masters level degrees in chemistry and teaching. The graduate degree program prepares students to pursue advanced professional and doctoral degrees. In addition, courses are offered that may be used for renewal of teacher certificates.

Additional Admission Requirements

- An undergraduate major in chemistry that includes one year of physical chemistry and one year of differential and integral calculus.
- Undergraduate coursework in all of the major areas of Chemistry including physical analytical, organic and inorganic chemistry.
- Two of the three letters of recommendation should be from former science or math professors.

Program Outcomes:

- Communication: M.S. candidates will demonstrate the ability to comprehend, apply and evaluate information from chemistry literature which is to be orally presented and validated in a seminar.
- Chemical Knowledge: M.S. candidates will demonstrate chemistry proficiency in all four sub-disciplines of chemistry: analytical, inorganic, organic, and physical.
- Research Training: M.S. candidates will acquire the basic tools needed to carry out independent chemical research. Students should become proficient in their specialized area of chemistry and successfully complete a written graduate level research project or thesis.

Degree Requirements

Total credit hours: 30 (thesis option), 33 (non-thesis option)

Core courses: 13 credit hours

- CHEM 792, 711, 722, 732, 743

Thesis option

- Take 9 credit hours: CHEM 794, 797
- Select 8 credit hours from: CHEM 610, 611, 621, 651, 652, 663, 664, 700-799

Non-thesis option

- Take 3 credit hours: CHEM 796
- Select 6 credits from: CHEM 700-799
- Select 11 credit hours from: CHEM 610, 611, 621, 651, 652, 663, 664, 700-799

Directory of Faculty

- William Adeniyi, Associate Professor, B.A., Hampton University; M.S., Loyola University; Ph.D., Baylor University, Analytical Chemistry
- Zerihun Assefa, Associate Professor, B. S., Addis Ababa University (Ethiopia); Ph.D., University of Maine, Inorganic Chemistry
- Mufeed Basti, Associate Professor, B.S., Baath University (Homs, Syria); Ph.D., North Illinois University, Physical Chemistry

- Sayo Fakayode, Associate Professor, B.S. Chemistry, University of Ibadan; M.S. Chemistry, University of Ibadan; Ph.D. Analytical Chemistry, Baylor University; Post-Doctoral Research; Louisiana State University
- Marion Franks, Associate Professor, B.S., Clark-Atlanta University, Ph.D., Virginia Polytechnic Institute and State University. Organic Chemistry
- Julius Harp, Associate Professor, B.S., York College (Jamaica, NY); Ph.D., Howard University, Organic Chemistry
- Steven Harris, Adjunct Professor, B.S. Chemistry, Langston University; M.S. Biochemistry, University of Oklahoma; Ph.D. Biochemistry, University of Oklahoma; SPIRE Postdoctoral Scholar, NIH (UNC-Chapel Hill)
- Margaret Kanipes, Associate Professor, B.S., North Carolina A&T State University, Ph.D., Carnegie-Mellon University
- Debasish Kuila, Professor, B.Sc. (Hons.), Calcutta University, India; M.Sc., Indian Institute of Technology, Madras, Ph.D., The City University of New York
- Claude N. Lamb, Associate Professor, B.S., Mount Union College; M.S., North Carolina Central University; Ph.D., Howard University; Organic Chemistry
- Divi Venkateswarlu, Associate Professor, B.S., Sri Venkateswara University, M.S., Kakatiya University, M.Phil. University of Hyderabad, Ph.D., North Eastern Hill University
- Alex N. Williamson, Associate Professor, B.S., Jackson State University; Ph.D., University of Illinois; Inorganic Chemistry

Civil Engineering, MS

School/College: College of Engineering **Degree(s) Offered:** Master of Science
Graduate Coordinator: Shoou-Yuh Chang **Email:** chang@ncat.edu Phone: 336-334-7737
Department Chair: Sameer Hamoush **Email:** sameer@ncat.edu Phone: 336-334-7575

The Master of Science in Civil Engineering program provides advanced study and research in the following areas: Environmental/Water Resources, Structures/Geotechnical, Transportation/Regional Development, Construction Management, and Energy Resources/ Systems.

Additional Admission Requirements

- Unconditional admission requires undergraduate degree from an ABET accredited Civil Engineering, Architectural Engineering, or Environmental Engineering program

Degree Requirements
Total credit hours: 30

Core Requirements: 9 credit hours

- Select one course from: CIEN 644, 700, 702, 721
- Select 6 credit hours from: MATH 700-899
- CIEN 792

Thesis option

- CIEN 797 (6)
- Electives: Select 15 credit hours from: CIEN 600, 610, 614, 616, 618, 620, 622, 624, 626, 628, 630, 640, 641, 642, 644, 646, 648, 650, 652, 656, 658, 660, 662, 664, 668, 670, 699, 700, 702, 710, 712, 720, 721, 722, 724, 726, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 752, 754, 756, 766, 767, 768, 769, 770, 771, 772, 785, 786, 792, 793, 794

Project option

- CIEN 796 (3)
- Electives: Select 18 credit hours from: CIEN 600, 610, 614, 616, 618, 620, 622, 624, 626, 628, 630, 640, 641, 642, 644, 646, 648, 650, 652, 656, 658, 660, 662, 664, 668, 670, 699, 700, 702, 710, 712, 720, 721, 722, 724, 726, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 752, 754, 756, 766, 767, 768, 769, 770, 771, 772, 785, 786, 792, 793, 794

Course-only option

- Electives: Select 21 credit hours from: CIEN 600, 610, 614, 616, 618, 620, 622, 624, 626, 628, 630, 640, 641, 642, 644, 646, 648, 650, 652, 656, 658, 660, 662, 664, 668, 670, 699, 700, 702, 710, 712, 720, 721, 722, 724, 726, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 752, 754, 756, 766, 767, 768, 769, 770, 771, 772, 785, 786, 792, 793, 794
- Comprehensive exam: CIEN 788 (0)

Directory of Faculty

- Taher Abu-Lebdeh, Assistant Professor, B.S., M.S., Yarmouk University, Jordan; Ph.D., Louisiana State University; Professional Engineer
- 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

- Wonchang Choi, Assistant Professor, B.S., Kyung-hee University; B.S., M.S., Hong-ik university; Ph.D., North Carolina State University.
- Ellie Fini, Assistant Professor, B.S., Isfahan University of Technology; B.S., M.S., Sharif University of Technology ; Ph.D., University of Illinois Urbana Champaign.
- Sameer A. Hamoush, Professor, B.S., University of Damascus; M.S., University of Nebraska; Ph.D., North Carolina State University; Professional Engineer
- Manoj K. Jha, Assistant Professor, B.E., Tribhuva University; M.E. Asian Insitute of Technology; M.S., Ph.D., Iowa State University
- Stephanie Luster-Teasley, Associate Professor of Civil and Chemical Engineering, B.S., North Carolina A&T State University; Ph.D., Michigan State University
- Ahmed Megri, Associate Professor, B.S., Constantine University (Algeria), MS Science and PhD, INSA (Lyon Institute of Technology) at Lyon (France), HDR (Habilitation) from Pierre-and-Marie-Curie University, Sorbonne Universities (Paris VI), France
- Nabil Nassif, Assistant Professor, B.S., University of Damascus; B.S., M.S., University of Damascus; Ph.D., Quebec University, Canada
- Miguel Picornell, Professor and Coordinator, Civil Engineering Program, B.S., Madrid Polytechnic University; M.S., Ph.D., Texas A&M University; Professional Engineer

Computational Science and Engineering, MS

School/College: College of Engineering
Degree(s) Offered: Master of Science, Doctor of Philosophy
Graduate Coordinator: Dr. Dukka KC **Email:** dukkakc@ncat.edu **Phone**: 336-334-7437
Department Chair: Dr. Marwan Bikdash **Email:** bikdash@ncat.edu **Phone**: 336-334-7437

Computational Science and Engineering (CSE) is an interdisciplinary graduate program designed for students who seek to use advanced computational methods to solve large problems in diverse fields ranging from the basic sciences (physics, chemistry, mathematics, etc.) to sociology, biology, engineering, and economics. The mission of Computational Science and Engineering is to graduate professionals who (a) have expertise in developing novel computational methodologies and products, and/or (b) have extended their expertise in specific disciplines (in science, technology, engineering, and socioeconomics) with computational tools. The Computational Methods track is designed primarily for students with undergraduate degrees in engineering, chemistry, physics, mathematics, and computer science who will be trained to develop problem-solving methodologies and computational for solving challenging problems. Research in this track includes but is not limited to computational quantum chemistry, computational nuclear and high-energy physics, computational solid or fluid dynamics, computational material science, bioengineering, computational geometry, computational nonlinear dynamics, computational statistics, engineering design and automation, applied and environmental geophysics, computational seismology, nonlinear computational mechanics and dynamics, super-fast algorithms for numerical and algebraic computation, and distributed and high-performance computing. The Computational Applications track is designed primarily for students with undergraduate degrees in chemistry, biology, psychology, business, finance and economics, technology and engineering, and agricultural sciences who will be trained to apply or extend computational tools and methods, as well as data acquisition, processing and visualization techniques, to study computationally intensive problems in their disciplines.

Additional Admission Requirements

- Approved Bachelor of Science or Bachelor of Engineering degree
- Knowledge of Calculus through differential equations and elementary numerical analysis
- Programming skills and working knowledge of at least one high-level programming language.

Program Outcomes:

- Students will demonstrate critical thinking and ability in conducting research in engineering, science and mathematics through computational modeling and simulations.
- Students will demonstrate mastery in communicating research results through publications that indicate effective content, organization and adherence to journal publication conventions.
- Students will explain the underlying principles behind scientific visualization of large data sets.
- Students will perform independent research in order to generate a dissertation of an original idea and to publish technical papers.

Degree Requirements

Total credit hours: 34

Core Courses:

- Select 6 credit hours from: CSE 620, 701-749, 801-849
- CSE 992(1)

Thesis option

- Select 6 credit hours from one of the following tracks.

- Computational Methods Track: Select 6 credit hours from: CSE 700-899; CHEM 673; CHEN 640; CIEN 644; COMP 681, 733, 747, 755; ELEN 668, 865; GCS 631, 632; INEN 742; ITT 702; MATH 631, 650, 651, 652, 712, 751, 765, 781; MEEN 847, 716, 618.
- Computational Applications Track: Select 6 credit hours from: AGEC 705; BIOL 630, 640, 755; BUED 624; CHEN 600, 655, 760; CHEM 673; BUAD 744; CIEN 754; CSE 712, 713; ELEN 650, 850, 865; MEEN 626, 655, 847; MFG 674; PHYS 744, 745.

- Select 15 credit hours from: BMEN 600-899; CHEN 600-899; CIEN 600-899; COMP 600-899; ELEN 600-899; INEN 600-899; MEEN 600-899; MATH 600-899; PHYS 600-899; CHEM 600-899; BIOL 600-899; ECON 600-899; BUAD 600-899; ANSC 600-899
- CSE 797 (6 credits)

Project option

- Select 6 credit hours from one of the following tracks.
  - Computational Methods Track: Select 6 credit hours from: CSE 700-899; CHEM 673; CHEN 640; CIEN 644; COMP 681, 733, 747, 755; ELEN 668, 865; GCS 631, 632; INEN 742; ITT 702; MATH 631, 650, 651, 652, 712, 751, 765, 781; MEEN 847, 716, 618.
  - Computational Applications Track: Select 6 credit hours from: AGEC 705; BIOL 630, 640, 755; BUED 624; CHEN 600, 655, 760; CHEM 673; BUAD 744; CIEN 754; CSE 712, 713; ELEN 650, 850, 865; MEEN 626, 655, 847; MFG 674; PHYS 744, 745.
- Select 18 credit hours from: BMEN 600-899; CHEN 600-899; CIEN 600-899; COMP 600-899; ELEN 600-899; INEN 600-899; MEEN 600-899; MATH 600-899; PHYS 600-899; CHEM 600-899; BIOL 600-899; ECON 600-899; BUAD 600-899; ANSC 600-899
- CSE 796 (3 credits)

Directory of Faculty

- Marwan Bikdash, Professor and Director of Computational Science and Engineering; B.S., Electrical Engineering, American University of Beirut; M.S., Virginia Tech; Ph.D., Virginia Tech
- K. M. Flurchick, Assistant Professor of Computational Science and Engineering/Physics; B.A. William Paterson College; M.S., & Ph.D., Colorado State University
- Dukka KC, Assistant Professor of Computational Science and Engineering; B. Eng., M. Inf., Ph.D., Kyoto University

Contributing Faculty

- Lyubov L. Kurkalova, Associate Professor of Economics/EES; B.S., Tajik State University; M.S., Kazakh State University; Ph.D., Iowa State University
- Yuh-Lang Lin, Professor of Physics/EES; B.S., Fu Jen Catholic University; M.A., Fordham University; M.S., South Dakota School of Mines and Technology; Ph.D., Yale University
- Justin Zhan, Computer Science; Ph.D., Carnegie Melon University
- Zhichao Li, Professor of Industrial and Systems Engineering; B.S., M.S., Tianjin University of Technology and Education, Ph.D., Kansas State University
- Taher Abu-Lebdeh, Assistant Professor of Civil Engineering; B.S., M.S., Yarmouk University; Ph.D. Louisiana State University
- Albert C. Esterline, Associate Professor of Computer Science; B.A., Lawrence University; M.Litt., Ph.D., University of St. Andrews; M.S., Ph.D., University of Minnesota
- Ellie Fini, Assistant Professor of Civil Engineering; B.S., Isfahan University of Technology; B.S., M.S., Sharif University of Technology ; Ph.D., University of Illinois
- Scott H. Harrison, Assistant Professor of Biology; B.S., Ph.D., Michigan State University
- Manoj K. Jha, Assistant Professor of Civil Engineering; B.E., Tribhuva University; M.E. Asian Institute of Technology; M.S., Ph.D., Iowa State University

- Ajit D. Kelkar, Professor of Mechanical Engineering and Chair, Nanoengineering; B.S., Pune University, Pune, India; M.S., South Dakota State University; Ph.D., Old Dominion University
- Divi Venkateswarlu, Associate Professor of Chemistry; M.Sc, Regional Engineering College; M.Phil, University of Hydrabad; Ph.D., North Eastern Hill University
- Dhananjay Kumar, Associate Professor and ORNL Joint Faculty of Mechanical Engineering; B.S., Bhagalpur University; M.S., Magadh University, Ph.D., Indian Institute of Technology
- Jianzhong Lou, Professor of Chemical Engineering; Ph.D., University of Utah
- Perpetua Muganda, Professor of Biology; B.S., Lock Haven State College; M.S., Howard University; Ph.D., Indiana University School of Medicine
- Ram Mohan, Associate Professor of Nanoengineering; B. Engg, University of Madras; M.S.M.E., West Virginia University, M.S. University of Illinois at Urbana-Champaign; Ph.D. University of Minnesota
- Abolghasem Shahbazi, Professor of Natural Resources & Environmental Design; Ph.D., Pennsylvania State University
- Guoqing Tang, Professor of Mathematics; B.S., Anhui University; M.S., Nanjing University of Science and Technology; Ph.D., Rutgers University
- Lijun Wang, Associate Professor of Natural Resources & Environmental Design; Ph.D., National University of Ireland
- Robert Newman, Assistant Professor of Biology; B.A., McDaniel College; Ph.D, John Hopkins University School of Public Health
- Mulumebet Worku, Professor of Animal Science; B.S., Addis Ababa University, Alemaya College of Agriculture, Ethiopia; M.S., Ph.D., University of Maryland, College Park
- Mary Smith, Associate Professor and Chairperson of Biology; B.S., Morgan State University; Ph.D., Cornell University
- Abdellah Ahmidouch, Associate Professor and Chairperson of Department of Physics; B.S., Mohammed V. University, M.S., Joseph Fourier Grenoble I University; Ph.D., University of Geneva
- Paramanathan Varatharajah, Associate Professor of Mathematics; Ph.D., University of Arizona
- Mark L. Burkey, Professor of Economics, Degrees in Economics, Banking, and Mathematics, Appalachian State University; MA and Ph.D, Economics, Duke University.

Computational Science and Engineering, PhD

School/College: College of Engineering
Degree(s) Offered: Master of Science, Doctor of Philosophy
Graduate Coordinator: Dr. Dukka KC **Email:** dukkakc@ncat.edu Phone: 336-334-7437
Department Chair: Dr. Marwan Bikdash **Email:** bikdash@ncat.edu Phone: 336-334-7437

Computational Science and Engineering (CSE) is an interdisciplinary graduate program designed for students who seek to use advanced computational methods to solve large problems in diverse fields ranging from the basic sciences (physics, chemistry, mathematics, etc.) to sociology, biology, engineering, and economics. The mission of Computational Science and Engineering is to graduate professionals who (a) have expertise in developing novel computational methodologies and products, and/or (b) have extended their expertise in specific disciplines (in science, technology, engineering, and socioeconomics) with computational tools. The Computational Methods track is designed primarily for students with undergraduate degrees in engineering, chemistry, physics, mathematics, and computer science who will be trained to develop problem-solving methodologies and computational for solving challenging problems. Research in this track includes but is not limited to computational quantum chemistry, computational nuclear and high-energy physics, computational solid or fluid dynamics, computational material science, bioengineering, computational geometry, computational nonlinear dynamics, computational statistics, engineering design and automation, applied and environmental geophysics, computational seismology, nonlinear computational mechanics and dynamics, super-fast algorithms for numerical and algebraic computation, and distributed and high-performance computing. The Computational Applications track is designed primarily for students with undergraduate degrees in chemistry, biology, psychology, business, finance and economics, technology and engineering, and agricultural sciences who will be trained to apply or extend computational tools and methods, as well as data acquisition, processing and visualization techniques, to study computationally intensive problems in their disciplines.

Additional Admission Requirements

- Master of Science or Engineering degree in Computational Science and Engineering (CSE) or in science, engineering, business, economics, technology or in a field allied to computational science or computational engineering field.
- GRE scores

Program Outcomes:

- Students will demonstrate critical thinking and ability in conducting research in engineering, science and mathematics through computational modeling and simulations.
- Students will demonstrate mastery in communicating research results through publications that indicate effective content, organization and adherence to journal publication conventions.
- Students will explain the underlying principles behind scientific visualization of large data sets.
- Students will perform independent research in order to generate a dissertation of an original idea and to publish technical papers.

Degree Requirements

Total credit hours: 53 credit hours (beyond Masters degree).

Core Courses:

- Select 9 credit hours from: CSE 620, 701-749, 801-849
- CSE 992(2), 991 (3), 995 (3), 997 (12)

Electives

- Select 6 credit hours from: CSE 620, 701-749, 801-899
- Select 3 credit hours from: CSE 993, 994
- Select 15 credit hours from: CSE 620, 701-749, 801-899; BMEN 600-899; CHEN 600-899; CIEN 600-899; COMP 600-899; ELEN 600-899; INEN 600-899; MEEN 600-899; MATH 600-899; PHYS 600-899; CHEM 600-899; BIOL 600-899; ECON 600-899; BUAD 600-899; ANSC 600-899.

Dissertation Research:
A student may not register for dissertation credits before passing Qualifying Examination. No more than 18 dissertation credits are counted toward the total credit hours requirement for the degree.

Qualifying Examination:
The Qualifying Examination is given to assess the student's competence in a broad range of relevant subject areas. Only students with unconditional status and in good academic standing may take the Qualifying Examination. A student who wants to retake the Qualifying Examination must apply to retake the Qualifying Examination by the posted deadline. No student is permitted to take the Qualifying Examination more than twice. A student not recommended for re-examination or who fails the exam on a second attempt may be dismissed from the doctoral program.

Preliminary Oral Examination:
The Preliminary Oral Examination is conducted by the student's dissertation committee and is a defense of the student's dissertation proposal. Passing this exam satisfies requirements for Ph.D. Candidacy. Failure on the examination may result in dismissal from the doctoral program. The student's Advisory Committee may permit one re-examination. At least one full semester must elapse before the re-examination. Failure on the second attempt will result in dismissal from the doctoral program.

Admission to Candidacy
Student will be admitted to candidacy upon successful completion of the Qualifying Exam and the Preliminary oral Exam.

Final Oral Examination:
The Final Oral Examination is conducted by the student's dissertation committee. This examination is the final dissertation defense presentation that is scheduled after a dissertation is completed. The examination may be held no earlier than one semester (or four months) after admission to candidacy. Failure on the examination may result in dismissal from the doctoral program. The student's Advisory Committee may permit one re-examination. At least one full semester must elapse before the re-examination. Failure on the second attempt will result in dismissal from the doctoral program.

Submission of Dissertation:
Upon passing the Ph.D. Final Oral Examination, the Ph.D. student must have the dissertation approved by each member of the student's dissertation committee. The approved dissertation must be submitted to The Graduate School by the deadline given in the academic calendar, and must conform to the Graduate School's guidelines for theses and dissertations.

Directory of Faculty
- Marwan Bikdash, Professor and Director of Computational Science and Engineering; B.S., Electrical Engineering, American University of Beirut; M.S., Virginia Tech; Ph.D., Virginia Tech
- K. M. Flurchick, Assistant Professor of Computational Science and Engineering/Physics; B.A. William Paterson College; M.S., & Ph.D., Colorado State University
- Dukka KC, Assistant Professor of Computational Science and Engineering; B. Eng., M. Inf., Ph.D., Kyoto University

Contributing Faculty

- Lyubov L. Kurkalova, Associate Professor of Economics/EES; B.S., Tajik State University; M.S., Kazakh State University; Ph.D., Iowa State University
- Yuh-Lang Lin, Professor of Physics/EES; B.S., Fu Jen Catholic University; M.A., Fordham University; M.S., South Dakota School of Mines and Technology; Ph.D., Yale University
- Justin Zhan, Computer Science; Ph.D., Carnegie Melon University
- Zhichao Li, Professor of Industrial and Systems Engineering; B.S., M.S., Tianjin University of Technology and Education, Ph.D., Kansas State University
- Taher Abu-Lebdeh, Assistant Professor of Civil Engineering; B.S., M.S., Yarmouk University; Ph.D. Louisiana State University
- Albert C. Esterline, Associate Professor of Computer Science; B.A., Lawrence University; M.Litt., Ph.D., University of St. Andrews; M.S., Ph.D., University of Minnesota
- Ellie Fini, Assistant Professor of Civil Engineering; B.S., Isfahan University of Technology; B.S., M.S., Sharif University of Technology ; Ph.D., University of Illinois
- Scott H. Harrison, Assistant Professor of Biology; B.S., Ph.D., Michigan State University
- Manoj K. Jha, Assistant Professor of Civil Engineering; B.E., Tribhuva University; M.E. Asian Institute of Technology; M.S., Ph.D., Iowa State University
- Ajit D. Kelkar, Professor of Mechanical Engineering and Chair, Nanoengineering; B.S., Pune University, Pune, India; M.S., South Dakota State University; Ph.D., Old Dominion University
- Divi Venkateswarlu, Associate Professor of Chemistry; M.Sc, Regional Engineering College; M.Phil, University of Hydrabad; Ph.D., North Eastern Hill University
- Dhananjay Kumar, Associate Professor and ORNL Joint Faculty of Mechanical Engineering; B.S., Bhagalpur University; M.S., Magadh University, Ph.D., Indian Institute of Technology
- Jianzhong Lou, Professor of Chemical Engineering; Ph.D., University of Utah
- Perpetua Muganda, Professor of Biology; B.S., Lock Haven State College; M.S., Howard University; Ph.D., Indiana University School of Medicine
- Ram Mohan, Associate Professor of Nanoengineering; B. Engg, University of Madras; M.S.M.E., West Virginia University, M.S. University of Illinois at Urbana-Champaign; Ph.D. University of Minnesota
- Abolghasem Shahbazi, Professor of Natural Resources & Environmental Design; Ph.D., Pennsylvania State University
- Guoqing Tang, Professor of Mathematics; B.S., Anhui University; M.S., Nanjing University of Science and Technology; Ph.D., Rutgers University
- Lijun Wang, Associate Professor of Natural Resources & Environmental Design; Ph.D., National University of Ireland
- Robert Newman, Assistant Professor of Biology; B.A., McDaniel College; Ph.D, John Hopkins University School of Public Health
- Mulumebet Worku, Professor of Animal Science; B.S., Addis Ababa University, Alemaya College of Agriculture, Ethiopia; M.S., Ph.D., University of Maryland, College Park
- Mary Smith, Associate Professor and Chairperson of Biology; B.S., Morgan State University; Ph.D., Cornell University
- Abdellah Ahmidouch, Associate Professor and Chairperson of Department of Physics; B.S., Mohammed V. University, M.S., Joseph Fourier Grenoble I University; Ph.D., University of Geneva
- Paramanathan Varatharajah, Associate Professor of Mathematics; Ph.D., University of Arizona
- Mark L. Burkey, Professor of Economics, Degrees in Economics, Banking, and Mathematics, Appalachian State University; MA and Ph.D, Economics, Duke University.

Computer Science, MS

School/College: College of Engineering
Degree(s) Offered: Master of Science, Doctor of Philosophy
Graduate Coordinator: Huiming (Anna) Yu **Email:** cshmyu@ncat.edu Phone: 336-285-3699
Department Chair: Gerry Dozier **Email:** gvdozier@ncat.edu Phone: 336-334-7245

The MS in Computer Science program combines computer science fundamentals with practical knowledge and technical excellence in the most advanced technologies. Research is funded by agencies including the National Aeronautics and Space Administration, the U.S. Air Force, the National Security Agency, the Naval Oceanographic Office, National Science Foundation and among others. The research interests of the faculty include software engineering, information assurance, secure software engineering, artificial intelligence, computational science, distributed systems, multi-agent systems, computer security, trustworthy cloud computing and high performance computing. In addition to a general track", five additional tracks are offered in Software Engineering, Computational Science and Engineering, Information Assurance, Secure Software Engineering and Artificial Intelligence.

Additional Admission Requirements

- Unconditional admission requires a BS in Computer Science

Program Outcomes:

Graduates of the Computer Science Master's program will be able to: (1) apply knowledge of complex mathematics and computer science to develop software solutions to real world problems, (2) analyze and synthesize novel solutions to critical problems within the area of computer science, (3) design and implement software systems, (4) understand professional, legal and ethical issues, (5) effectively communicate, both orally and in writing, and (6) engage in lifelong learning.

Degree Requirements

Total credit hours: 30 (thesis), 33 (project), 33 (course)

Core Courses:

- Take 6 credit hours: COMP 755, 785

Thesis option

- COMP 797 (6 credits)
- Select one track and follow course requirements within the selected track
    - Software Engineering Track
        - Take 9 credit hours: COMP 710, 711, 712
        - Select 3 credit hours from: COMP 611, 620, 621, 627, 653, 663, 670, 681, 700, 713, 716, 717, 718, 722, 723, 724, 725, 726, 727, 732, 733, 741, 743, 744, 747, 750, 753, 765, 767, 768, 770, 780, 786, 790, 793
        - Select 6 credit hours from: COMP 611, 620, 621, 627, 653, 663, 670, 681, 700, 713, 716, 717, 718, 722, 723, 724, 725, 726, 727, 732, 733, 741, 743, 744, 747, 750, 753, 765, 767, 768, 770, 780, 786, 790, 793; ELEN 602, 614, 615, 616, 617, 627, 629, 633, 649, 650, 656, 668, 674, 705, 727, 729, 748, 756, 760, 762; GEEN 601, 302; INEN 600, 615, 670, 675, 735; MATH 700, 701, 710, 711, 715; MFG 651, 674, 770
    - Computational Science and Engineering Track
        - Take 9 credit hours: COMP 770, 732; MATH 731
        - Select 6 credit hours from: COMP 611, 620, 621, 627, 653, 670, 681, 700, 710, 712, 713, 716, 718, 722, 723, 724, 726, 733, 740, 741, 750, 753, 767, 780, 786, 790, 793

        - Select 3 credit hours from: COMP 611, 620, 621, 627, 653, 670, 681, 700, 710, 712, 713, 716, 718, 722, 723, 724, 726, 733, 740, 741, 750, 753, 767, 780, 786, 790, 793; ELEN 602, 614, 615, 616, 617, 627, 629, 633, 649, 650, 656, 668, 674, 705, 727, 729, 748, 756, 760, 762; GEEN 601, 302; INEN 600, 615, 670, 675, 735; MATH 700, 701, 710, 711, 715; MFG 651, 674, 770
    - Information Assurance Track
        - Take 9 credit hours: COMP 620, 621, 726
        - Select 6 credit hours from: COMP 611, 627, 653, 670, 700, 710, 712, 713, 716, 717, 718, 722, 723, 724, 725, 726, 727, 732, 733, 741, 743, 744, 747, 750, 753, 765, 767, 768, 770, 780, 786, 793
        - Select 3 credit hours from: COMP 611, 627, 653, 670, 700, 710, 712, 713, 716, 717, 718, 722, 723, 724, 725, 726, 727, 732, 733, 741, 743, 744, 747, 750, 753, 765, 767, 768, 770, 780, 786, 793; ELEN 602, 614, 615, 616, 617, 627, 629, 633, 649, 650, 656, 668, 674, 705, 727, 729, 748, 756, 760, 762; GEEN 601, 302; INEN 600, 615, 670, 675, 735; MATH 700, 701, 710, 711, 715; MFG 651, 674, 770
    - Secure Software Engineering Track
        - Take 9 credit hours: COMP 710, 725, 727
        - Select 6 credit hours from: COMP 611, 620, 621, 627, 653, 663, 670, 681, 700, 711, 712, 713, 716, 717, 718, 722, 723, 724, 726, 733, 740, 741, 743, 744, 747, 750, 753, 765, 767, 768, 770, 780, 786, 790, 793
        - Select 3 credit hours from: COMP 611, 620, 621, 627, 653, 663, 670, 681, 700, 711, 712, 713, 716, 717, 718, 722, 723, 724, 726, 733, 740, 741, 743, 744, 747, 750, 753, 765, 767, 768, 770, 780, 786, 790, 793; ELEN 602, 614, 615, 616, 617, 627, 629, 633, 649, 650, 656, 668, 674, 705, 727, 729, 748, 756, 760, 762; GEEN 601, 302; INEN 600, 615, 670, 675, 735; MATH 700, 701, 710, 711, 715; MFG 651, 674, 770
    - Artificial Intelligence Track
        - Take 6 credit hours: COMP 645, 740
        - Select 6 credit hours from: COMP 611, 620, 621, 653, 662, 663, 670, 681, 700, 710, 712, 713, 714, 716, 718, 722, 724, 725, 727, 733, 741, 742, 743, 744, 745, 747, 749, 750, 753, 765, 767, 768, 770, 780, 786, 790, 793
        - Select 6 credit hours from: COMP 611, 620, 621, 653, 662, 663, 670, 681, 700, 710, 712, 713, 714, 716, 718, 722, 724, 725, 727, 733, 741, 742, 743, 744, 745, 747, 749, 750, 753, 765, 767, 768, 770, 780, 786, 790, 793; ELEN 602, 614, 615, 616, 617, 627, 629, 633, 649, 650, 656, 668, 674, 705, 727, 729, 748, 756, 760, 762; GEEN 601, 302; INEN 600, 615, 670, 675, 735; MATH 700, 701, 710, 711, 715; MFG 651, 674, 770
    - General Track
        - Take 6 credit hours: COMP 681, 710
        - Select 15 credit hours from: COMP 611, 620, 621, 627, 645, 653, 662, 663, 670, 700, 711, 712, 713, 714, 716, 717, 718, 722, 723, 724, 725, 726, 727, 732, 733, 740, 741, 742, 743, 744, 745, 747, 749, 750, 753, 765, 767, 768, 770, 780, 786, 790, 793; ELEN 602, 614, 615, 616, 617, 627, 629, 633, 649, 650, 656, 668, 674, 705, 727, 729, 748, 756, 760, 762; GEEN 601, 302; INEN 600, 615, 670, 675, 735; MATH 700, 701, 710, 711, 715; MFG 651, 674, 770

<u>Project option</u>

- COMP 796 (3 credits)
- Select one track and follow course requirements within the selected track
    - Software Engineering Track
        - Take 9 credit hours: COMP 710, 711, 712
        - Select 3 credit hours from: COMP 611, 620, 621, 627, 653, 663, 670, 681, 700, 713, 716, 717, 718, 722, 723, 724, 725, 726, 727, 732, 733, 741, 743, 744, 747, 750, 753, 765, 767, 768, 770, 780, 786, 790, 793

- Select 12 credit hours from: COMP 611, 620, 621, 627, 653, 663, 670, 681, 700, 713, 716, 717, 718, 722, 723, 724, 725, 726, 727, 732, 733, 741, 743, 744, 747, 750, 753, 765, 767, 768, 770, 780, 786, 790, 793; ELEN 602, 614, 615, 616, 617, 627, 629, 633, 649, 650, 656, 668, 674, 705, 727, 729, 748, 756, 760, 762; GEEN 601, 302; INEN 600, 615, 670, 675, 735; MATH 700, 701, 710, 711, 715; MFG 651, 674, 770

- Computational Science and Engineering Track
  - Take 9 credit hours: COMP 770, 732; MATH 731
  - Select 6 credit hours from: COMP 611, 620, 621, 627, 653, 670, 681, 700, 710, 712, 713, 716, 718, 722, 723, 724, 726, 733, 740, 741, 750, 753, 767, 780, 786, 790, 793
  - Select 9 credit hours from: COMP 611, 620, 621, 627, 653, 670, 681, 700, 710, 712, 713, 716, 718, 722, 723, 724, 726, 733, 740, 741, 750, 753, 767, 780, 786, 790, 793; ELEN 602, 614, 615, 616, 617, 627, 629, 633, 649, 650, 656, 668, 674, 705, 727, 729, 748, 756, 760, 762; GEEN 601, 302; INEN 600, 615, 670, 675, 735; MATH 700, 701, 710, 711, 715; MFG 651, 674, 770
- Information Assurance Track
  - Take 9 credit hours: COMP 620, 621, 726
  - Select 6 credit hours from: COMP 611, 627, 653, 670, 700, 710, 712, 713, 716, 717, 718, 722, 723, 724, 725, 726, 727, 732, 733, 741, 743, 744, 747, 750, 753, 765, 767, 768, 770, 780, 786, 793
  - Select 9 credit hours from: COMP 611, 627, 653, 670, 700, 710, 712, 713, 716, 717, 718, 722, 723, 724, 725, 726, 727, 732, 733, 741, 743, 744, 747, 750, 753, 765, 767, 768, 770, 780, 786, 793; ELEN 602, 614, 615, 616, 617, 627, 629, 633, 649, 650, 656, 668, 674, 705, 727, 729, 748, 756, 760, 762; GEEN 601, 302; INEN 600, 615, 670, 675, 735; MATH 700, 701, 710, 711, 715; MFG 651, 674, 770
- Secure Software Engineering Track
  - Take 9 credit hours: COMP 710, 725, 727
  - Select 6 credit hours from: COMP 611, 620, 621, 627, 653, 663, 670, 681, 700, 711, 712, 713, 716, 717, 718, 722, 723, 724, 726, 733, 740, 741, 743, 744, 747, 750, 753, 765, 767, 768, 770, 780, 786, 790, 793
  - Select 9 credit hours from: COMP 611, 620, 621, 627, 653, 663, 670, 681, 700, 711, 712, 713, 716, 717, 718, 722, 723, 724, 726, 733, 740, 741, 743, 744, 747, 750, 753, 765, 767, 768, 770, 780, 786, 790, 793; ELEN 602, 614, 615, 616, 617, 627, 629, 633, 649, 650, 656, 668, 674, 705, 727, 729, 748, 756, 760, 762; GEEN 601, 302; INEN 600, 615, 670, 675, 735; MATH 700, 701, 710, 711, 715; MFG 651, 674, 770
- Artificial Intelligence Track
  - Take 6 credit hours: COMP 645, 740
  - Select 6 credit hours from: COMP 611, 620, 621, 653, 662, 663, 670, 681, 700, 710, 712, 713, 714, 716, 718, 722, 724, 725, 727, 733, 741, 742, 743, 744, 745, 747, 749, 750, 753, 765, 767, 768, 770, 780, 786, 790, 793
  - Select 12 credit hours from: COMP 611, 620, 621, 653, 662, 663, 670, 681, 700, 710, 712, 713, 714, 716, 718, 722, 724, 725, 727, 733, 741, 742, 743, 744, 745, 747, 749, 750, 753, 765, 767, 768, 770, 780, 786, 790, 793; ELEN 602, 614, 615, 616, 617, 627, 629, 633, 649, 650, 656, 668, 674, 705, 727, 729, 748, 756, 760, 762; GEEN 601, 302; INEN 600, 615, 670, 675, 735; MATH 700, 701, 710, 711, 715; MFG 651, 674, 770
- General Track
  - Take 6 credit hours: COMP 681, 710
  - Select 18 credit hours from: COMP 611, 620, 621, 627, 645, 653, 662, 663, 670, 700, 711, 712, 713, 714, 716, 717, 718, 722, 723, 724, 725, 726, 727, 732, 733, 740, 741, 742, 743, 744, 745, 747, 749, 750, 753, 765, 767, 768, 770, 780, 786, 790, 793; ELEN 602, 614, 615, 616, 617, 627, 629, 633, 649, 650, 656, 668, 674, 705, 727, 729, 748, 756, 760, 762; GEEN 601, 302; INEN 600, 615, 670, 675, 735; MATH 700, 701, 710, 711, 715; MFG 651, 674, 770

Course option

- Select one track and follow course requirements within the selected track
    - Software Engineering Track
        - Take 9 credit hours: COMP 710, 711, 712
        - Select 3 credit hours from: COMP 611, 620, 621, 627, 653, 663, 670, 681, 700, 713, 716, 717, 718, 722, 723, 724, 725, 726, 727, 732, 733, 741, 743, 744, 747, 750, 753, 765, 767, 768, 770, 780, 786, 790, 793
        - Select 15 credit hours from: COMP 611, 620, 621, 627, 653, 663, 670, 681, 700, 713, 716, 717, 718, 722, 723, 724, 725, 726, 727, 732, 733, 741, 743, 744, 747, 750, 753, 765, 767, 768, 770, 780, 786, 790, 793; ELEN 602, 614, 615, 616, 617, 627, 629, 633, 649, 650, 656, 668, 674, 705, 727, 729, 748, 756, 760, 762; GEEN 601, 302; INEN 600, 615, 670, 675, 735; MATH 700, 701, 710, 711, 715; MFG 651, 674, 770
    - Computational Science and Engineering Track
        - Take 9 credit hours: COMP 770, 732; MATH 731
        - Select 6 credit hours from: COMP 611, 620, 621, 627, 653, 670, 681, 700, 710, 712, 713, 716, 718, 722, 723, 724, 726, 733, 740, 741, 750, 753, 767, 780, 786, 790, 793
        - Select 12 credit hours from: COMP 611, 620, 621, 627, 653, 670, 681, 700, 710, 712, 713, 716, 718, 722, 723, 724, 726, 733, 740, 741, 750, 753, 767, 780, 786, 790, 793; ELEN 602, 614, 615, 616, 617, 627, 629, 633, 649, 650, 656, 668, 674, 705, 727, 729, 748, 756, 760, 762; GEEN 601, 302; INEN 600, 615, 670, 675, 735; MATH 700, 701, 710, 711, 715; MFG 651, 674, 770
    - Information Assurance Track
        - Take 9 credit hours: COMP 620, 621, 726
        - Select 6 credit hours from: COMP 611, 627, 653, 670, 700, 710, 712, 713, 716, 717, 718, 722, 723, 724, 725, 726, 727, 732, 733, 741, 743, 744, 747, 750, 753, 765, 767, 768, 770, 780, 786, 793
        - Select 12 credit hours from: COMP 611, 627, 653, 670, 700, 710, 712, 713, 716, 717, 718, 722, 723, 724, 725, 726, 727, 732, 733, 741, 743, 744, 747, 750, 753, 765, 767, 768, 770, 780, 786, 793; ELEN 602, 614, 615, 616, 617, 627, 629, 633, 649, 650, 656, 668, 674, 705, 727, 729, 748, 756, 760, 762; GEEN 601, 302; INEN 600, 615, 670, 675, 735; MATH 700, 701, 710, 711, 715; MFG 651, 674, 770
    - Secure Software Engineering Track
        - Take 9 credit hours: COMP 710, 725, 727
        - Select 6 credit hours from: COMP 611, 620, 621, 627, 653, 663, 670, 681, 700, 711, 712, 713, 716, 717, 718, 722, 723, 724, 726, 733, 740, 741, 743, 744, 747, 750, 753, 765, 767, 768, 770, 780, 786, 790, 793
        - Select 12 credit hours from: COMP 611, 620, 621, 627, 653, 663, 670, 681, 700, 711, 712, 713, 716, 717, 718, 722, 723, 724, 726, 733, 740, 741, 743, 744, 747, 750, 753, 765, 767, 768, 770, 780, 786, 790, 793; ELEN 602, 614, 615, 616, 617, 627, 629, 633, 649, 650, 656, 668, 674, 705, 727, 729, 748, 756, 760, 762; GEEN 601, 302; INEN 600, 615, 670, 675, 735; MATH 700, 701, 710, 711, 715; MFG 651, 674, 770
    - Artificial Intelligence Track
        - Take 6 credit hours: COMP 645, 740
        - Select 6 credit hours from: COMP 611, 620, 621, 653, 662, 663, 670, 681, 700, 710, 712, 713, 714, 716, 718, 722, 724, 725, 727, 733, 741, 742, 743, 744, 745, 747, 749, 750, 753, 765, 767, 768, 770, 780, 786, 790, 793
        - Select 15 credit hours from: COMP 611, 620, 621, 653, 662, 663, 670, 681, 700, 710, 712, 713, 714, 716, 718, 722, 724, 725, 727, 733, 741, 742, 743, 744, 745, 747, 749, 750, 753, 765, 767, 768, 770, 780, 786, 790, 793; ELEN 602, 614, 615, 616, 617, 627, 629, 633, 649, 650,

656, 668, 674, 705, 727, 729, 748, 756, 760, 762; GEEN 601, 302; INEN 600, 615, 670, 675, 735; MATH 700, 701, 710, 711, 715; MFG 651, 674, 770

- General Track
  - Take 6 credit hours: COMP 681, 710
  - Select 21 credit hours from: COMP 611, 620, 621, 627, 645, 653, 662, 663, 670, 700, 711, 712, 713, 714, 716, 717, 718, 722, 723, 724, 725, 726, 727, 732, 733, 740, 741, 742, 743, 744, 745, 747, 749, 750, 753, 765, 767, 768, 770, 780, 786, 790, 793; ELEN 602, 614, 615, 616, 617, 627, 629, 633, 649, 650, 656, 668, 674, 705, 727, 729, 748, 756, 760, 762; GEEN 601, 302; INEN 600, 615, 670, 675, 735; MATH 700, 701, 710, 711, 715; MFG 651, 674, 770

Directory of Faculty

- Dr. Mohd Anwar, B.S., Computer Science, Winona State University; M.S., Computer Science, North Dakota State University; Ph.D., Computer Science, University of Saskatshewan; Post-doc experience, University of Calgary; Assistant Professor
- Kelvin S. Bryant, B.S., North Carolina State University; M.S., North Carolina State University; Ph.D., North Carolina State University; Assistant Professor
- Gerry Dozier, B.S. Northeastern Illinois University; M.S. North Carolina State University; Ph.D., North Carolina State University; Professor and Chairperson
- Albert C. Esterline, B.A., Lawrence University; M.Litt., Ph.D., University of St. Andrews; M.S., Ph.D., University of Minnesota; Associate Professor
- Jung Hee Kim, B.S., Korea University; M.S., Ph.D., Illinois Institute of Technology; Associate Professor
- Dr. Kaushik Roy, B.Sc., Computer Science, University of rajshahi, Bangladesh; PhD, Computer Science, Concordia University, Montreal; Post-doc experience, University of Waterloo; Assistant Professor
- Kenneth A. Williams, B.S., M.S., Michigan Technological University; Ph.D., University of Minnesota; Associate Professor
- Jinsheng Xu, B.S., Nanjing University; M.S., Beijing University; Ph.D., Michigan State University; Associate Professor
- Xiaohong Yuan, B.S., Hua Zhong University of Science and Technology; Ph.D., Institute of Automation, Chinese Academy of Sciences; Ph.D., Florida Atlantic University; Associate Professor
- Huiming (Anna) Yu, B.S., Xiamen University; M.S., Hefei Polytechnic University; Ph.D., Stevens Institute of Technology; Professor and Director of Graduate Studies
- Dr. Justin Zhan, B.S., Engineering, Liaoning University of Engineering and Technology, China; M.S, Statistics, Syracuse University; Ph.D., Computer Science, University of Ottawa; Assistant Professor

Computer Science, PhD

School/College: College of Engineering
Degree(s) Offered: Master of Science, Doctor of Philosophy
Graduate Coordinator: Huiming (Anna) Yu **Email:** cshmyu@ncat.edu Phone: 336-285-3699
Department Chair: Gerry Dozier **Email:** gvdozier@ncat.edu Phone: 336-334-7245

The Ph.D. program in Computer Science presents both advanced instruction and opportunities for independent research. The Ph.D. degree is the highest academic degree offered, and graduates typically find employment as researchers in government or industry laboratories or as university faculty. Earning a PhD. degree requires initiative and responsibility, and the student is expected to make a significant contribution to computer-science knowledge by investigating a topic that is recognized as significant.

Additional Admission Requirements

- Master of Science degree in Computer Science with a minimum GPA of 3.25 or Bachelor of Science in computer science with a minimum GPA of 3.5 over the last 60 course credit hours of the undergraduate degree
- GRE test scores

Program Outcomes

- Graduates of the Ph.D. program will conduct advanced research in such computer science areas as information security, distributed systems, and artificial intelligence.
- Graduates will develop the ability to identify research problems in computer science and to develop solutions for them.
- Graduates will develop the ability to address important computing problems from a variety of areas, including business, the environment, the State's economy, healthcare, and law enforcement.
- Graduates will develop the ability to examine certain grand challenge problems in the discipline.
- Graduates will acquire the skills and abilities to be effective educators in computer science at the university level.

Degree Requirements

Total credit hours: 72 (after BS), 54 (after MS)

Credit distribution after BS

- Take 9 credit hours: COMP 755, 785, 892
- Select 6 credit hours from COMP 710, 711, 725, 726, 727, 767, 740, 786
- Select 9 credit hours:
    - Either select 6 credit hours from COMP 821, 823 and 3 credit hours from COMP 832, 841, 872, 881
    - Or select 6 credit hours from COMP 832, 841, 872, 881 and 3 credit hours from COMP 821, 823
- Take 30 credit hours: COMP 991 (3), 993 (3), 994 (3), 995 (3), 997 (18)
- Select 9 credits hours from: COMP 800-899
- Select 3 credit hours from: COMP 700-899
- Select 6 credit hours from: COMP 700-899, ELEN 720, 721, 723, 725, 727, 749, 752, 762, 821, 822, 823, 847-870, INEN 735, 742, 812-814, 832, 841-844, CSE 702-704, 803, 804, MEEN 716, 719, 848, 849, MATH 709, 712, 731, 752, 765, 781, 782, 791, 792, BIOL 700, 704, CHEM 731, 732, 741, 742, PHYS 745, SOCI 701, BUAD 740, 746, AGEC 708, 710, AGED 709, ANSC 771, AGEN 701, 714

Credit distribution after MS

- Take 3 credit hours: COMP 892
- Select 9 credit hours:
    - Either select 6 credit hours from COMP 821, 823 and 3 credit hours from COMP 832, 841, 872, 881
    - Or select 6 credit hours from COMP 832, 841, 872, 881 and 3 credit hours from COMP 821, 823
- Take 30 credit hours: COMP 991 (3), 993 (3), 994 (3), 995 (3), 997 (18)
- Select 9 credits hours from: COMP 800-899
- Select 3 credit hours from: COMP 700-899, ELEN 720, 721, 723, 725, 727, 749, 752, 762, 821, 822, 823, 847-870, INEN 735, 742, 812-814, 832, 841-844, CSE 702-704, 803, 804, MEEN 716, 719, 848, 849, MATH 709, 712, 731, 752, 765, 781, 782, 791, 792, BIOL 700, 704, CHEM 731, 732, 741, 742, PHYS 745, SOCI 701, BUAD 740, 746, AGEC 708, 710, AGED 709, ANSC 771, AGEN 701, 714

Dissertation Research:

A student may not register for dissertation credits before passing Qualifying Examination. No more than 18 dissertation credits are counted toward the total credit hours requirement for the degree.

Qualifying Examination:

The Qualifying Examination is given to assess the student's competence in a broad range of relevant subject areas. Only students with unconditional status and in good academic standing may take the Qualifying Examination. A student who wants to retake the Qualifying Examination must apply to retake the Qualifying Examination by the posted deadline. No student is permitted to take the Qualifying Examination more than twice. A student not recommended for re-examination or who fails the exam on a second attempt may be dismissed from the doctoral program.

Preliminary Oral Examination:

The Preliminary Oral Examination is conducted by the student's dissertation committee and is a defense of the student's dissertation proposal. Passing this exam satisfies requirements for Ph.D. Candidacy. Failure on the examination may result in dismissal from the doctoral program. The student's Advisory Committee may permit one re-examination. At least one full semester must elapse before the re-examination. Failure on the second attempt will result in dismissal from the doctoral program.

Admission to Candidacy

Student will be admitted to candidacy upon successful completion of the Qualifying Exam and the Preliminary oral Exam.

Final Oral Examination:

The Final Oral Examination is conducted by the student's dissertation committee. This examination is the final dissertation defense presentation that is scheduled after a dissertation is completed. The examination may be held no earlier than one semester (or four months) after admission to candidacy. Failure on the examination may result in dismissal from the doctoral program. The student's Advisory Committee may permit one re-examination. At least one full semester must elapse before the re-examination. Failure on the second attempt will result in dismissal from the doctoral program.

Submission of Dissertation:

Upon passing the Ph.D. Final Oral Examination, the Ph.D. student must have the dissertation approved by each member of the student's dissertation committee. The approved dissertation must be submitted to The Graduate School by the deadline given in the academic calendar, and must conform to the Graduate School's guidelines for theses and dissertations.

Directory of Faculty

- Dr. Mohd Anwar, B.S., Computer Science, Winona State University; M.S., Computer Science, North Dakota State University; Ph.D., Computer Science, University of Saskatshewan; Post-doc experience, University of Calgary; Assistant Professor
- Kelvin S. Bryant, B.S., North Carolina State University; M.S., North Carolina State University; Ph.D., North Carolina State University; Assistant Professor
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- Jung Hee Kim, B.S., Korea University; M.S., Ph.D., Illinois Institute of Technology; Associate Professor
- Dr. Kaushik Roy, B.Sc., Computer Science, University of rajshahi, Bangladesh; PhD, Computer Science, Concordia University, Montreal; Post-doc experience, University of Waterloo; Assistant Professor
- Kenneth A. Williams, B.S., M.S., Michigan Technological University; Ph.D., University of Minnesota; Associate Professor
- Jinsheng Xu, B.S., Nanjing University; M.S., Beijing University; Ph.D., Michigan State University; Associate Professor
- Xiaohong Yuan, B.S., Hua Zhong University of Science and Technology; Ph.D., Institute of Automation, Chinese Academy of Sciences; Ph.D., Florida Atlantic University; Associate Professor
- Huiming (Anna) Yu, B.S., Xiamen University; M.S., Hefei Polytechnic University; Ph.D., Stevens Institute of Technology; Professor and Director of Graduate Studies
- Dr. Justin Zhan, B.S., Engineering, Liaoning University of Engineering and Technology, China; M.S, Statistics, Syracuse University; Ph.D., Computer Science, University of Ottawa; Assistant Professor

Electrical Engineering, MS

School/College: College of Engineering
Degree(s) Offered: Master of Science, Doctor of Philosophy
Graduate Coordinator: Dr. Jung H. Kim **Email:** kim@ncat.edu Phone: (336) 285-3713
Department Chair: Dr. John Kelly **Email:** jck@ncat.edu Phone: (336) 285-3712

The Master of Science Program in Electrical Engineering provides graduate level education for advanced professional practice or further graduate studies. The program offers the following four tracks: Computer Engineering, Communications and Signal Processing, Electronic and Optical Materials and Devices, and Power Systems and Control.

Additional Admission Requirements:

- Unconditional admission requires an undergraduate degree in Electrical Engineering from an ABET accredited institution with an overall 3.0 GPA in all engineering courses.

Degree requirements

Total credit hours: 31 (thesis), 34 (project or course option)

Thesis option:

- Select 12 credit hours from: ECEN 700-899
- Select 12 credit hours from: ECEN 600-899
- Thesis: ECEN 797 (6)
- Seminar: ECEN 792 (1)

Project option

- Select 15 credit hours from: ECEN 700-899
- Select 15 credit hours from: ECEN 600-899
- Project: ECEN 796 (3)
- Seminar: ECEN 792 (1)

Course option

- Select 15 credit hours from: ECEN 700-899
- Select 18 credit hours from: ECEN 600-899
- Seminar: ECEN 792 (1)

Directory of Faculty

- Fatemeh Afghah, Assistant Professor, PhD Electrical Engineering, University of Maine; Post-doc experience, University of Maryland
- Winser E. Alexander, Professor and Interim Provost, B.S. North Carolina A&T State University, M.S., Ph.D. University of New Mexico
- Korey Bennett, Adjunct Assistant Professor, PhD Electrical Engineering, North Carolina A&T State University; Post-doc experience, Becton-Dickinson, Inc.
- Ali Abul-Fadl, Associate Professor, B.S., M.S., Ph.D., University of Idaho
- Marwan Bikdash, Professor, B.S., M.S., Ph.D., Virginia Polytechnic Institute
- Ward J. Collis, Associate Professor Emeritus, 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
- 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
- Ali Karimoddini, Assistant Professor, PhD Electrical Engineering, National University of Singapore; Post-doc experience, University of Notre Dame
- 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
- Daniel Limbrick, Assistant Professor, PhD Electrical Engineering, Vanderbilt University; Post-doc experience, Georgia Tech
- 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, Emeritus Professor, B.Eng., McGill University; M.S., Ph.D., The Ohio State University

Electrical Engineering, PhD

School/College: College of Engineering
Degree(s) Offered: Master of Science, Doctor of Philosophy
Graduate Coordinator: Dr. Jung H. Kim **Email:** kim@ncat.edu Phone: (336) 285-3713
Department Chair: Dr. John Kelly **Email:** jck@ncat.edu Phone: (336) 285-3712

The Doctoral Program in Electrical Engineering offers the following four tracks: Computer Engineering, Communications and Signal Processing, Electronic and Optical Materials and Devices, and Power Systems and Control.

Additional Admission Requirements

- Master of Science in Electrical Engineering, Computer Engineering, or a related discipline from an acceptable institution of higher learning or Bachelor's degree in electrical/computer engineering from an ABET accredited university or from an acceptable institution of higher learning with an earned GPA of 3.5 or higher over the last 60 course credit hours of undergraduate degree, and prior research experience.
- GRE scores
- At least one of the letters of recommendations must come from an individual knowledgeable of the student's graduate performance and potential
-

Degree Requirements
Total credit hours: 72 (after BS), 54 (after MS)

Credit distribution after BS

- Select 12 credit hours from: ECEN 800-899
- Select 24 credit hours from: ECEN 600-899
- Select 6 credit hours from CHEN 600-899; CIEN 600-899; ELEN 600-899; INEN 600-899; MEEN 600-899; NANO 600-899; CSE 600-899; COMP 600-899
- Select 3 credit hours from: ECEN 600-899, CHEN 600-899; CIEN 600-899; ELEN 600-899; INEN 600-899; MEEN 600-899; NANO 600-899; CSE 600-899; COMP 600-899; PHYS 600-899; BIOL 600-899; AGRI 600-899; ANSC 600-899
- ELEN 991 (3), 992 (3), 995 (3), 997 (18)

Credit distribution after MS

- Select 12 credit hours from: ECEN 800-899
- Select 12 credit hours from: ECEN 600-899
- Select 3 credit hours from: ECEN 600-899, CHEN 600-899; CIEN 600-899; ELEN 600-899; INEN 600-899; MEEN 600-899; NANO 600-899; CSE 600-899; COMP 600-899; PHYS 600-899; BIOL 600-899; AGRI 600-899; ANSC 600-899
- ELEN 991 (3), 992 (3), 995 (3), 997 (18)

Dissertation Research:
A student may not register for dissertation credits before passing Qualifying Examination. No more than 18 dissertation credits are counted toward the total credit hours requirement for the degree.

Qualifying Examination:
The Qualifying Examination is given to assess the student's competence in a broad range of relevant subject areas. Only students with unconditional status and in good academic standing may take the Qualifying Examination. A

student who wants to retake the Qualifying Examination must apply to retake the Qualifying Examination by the posted deadline. No student is permitted to take the Qualifying Examination more than twice. A student not recommended for re-examination or who fails the exam on a second attempt may be dismissed from the doctoral program.

Preliminary Oral Examination:
The Preliminary Oral Examination is conducted by the student's dissertation committee and is a defense of the student's dissertation proposal. Passing this exam satisfies requirements for Ph.D. Candidacy. Failure on the examination may result in dismissal from the doctoral program. The student's Advisory Committee may permit one re-examination. At least one full semester must elapse before the re-examination. Failure on the second attempt will result in dismissal from the doctoral program.

Admission to Candidacy
Student will be admitted to candidacy upon successful completion of the Qualifying Exam and the Preliminary oral Exam.

Final Oral Examination:
The Final Oral Examination is conducted by the student's dissertation committee. This examination is the final dissertation defense presentation that is scheduled after a dissertation is completed. The examination may be held no earlier than one semester (or four months) after admission to candidacy. Failure on the examination may result in dismissal from the doctoral program. The student's Advisory Committee may permit one re-examination. At least one full semester must elapse before the re-examination. Failure on the second attempt will result in dismissal from the doctoral program.

Submission of Dissertation:
Upon passing the Ph.D. Final Oral Examination, the Ph.D. student must have the dissertation approved by each member of the student's dissertation committee. The approved dissertation must be submitted to The Graduate School by the deadline given in the academic calendar, and must conform to the Graduate School's guidelines for theses and dissertations.

Directory of Faculty

- Fatemeh Afghah, Assistant Professor, PhD Electrical Engineering, University of Maine; Post-doc experience, University of Maryland
- Winser E. Alexander, Professor and Interim Provost, B.S. North Carolina A&T State University, M.S., Ph.D. University of New Mexico
- Korey Bennett, Adjunct Assistant Professor, PhD Electrical Engineering, North Carolina A&T State University; Post-doc experience, Becton-Dickinson, Inc.
- Ali Abul-Fadl, Associate Professor, B.S., M.S., Ph.D., University of Idaho
- Marwan Bikdash, Professor, B.S., M.S., Ph.D., Virginia Polytechnic Institute
- Ward J. Collis, Associate Professor Emeritus, 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
- 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

- Ali Karimoddini, Assistant Professor, PhD Electrical Engineering, National University of Singapore; Post-doc experience, University of Notre Dame
- 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
- Daniel Limbrick, Assistant Professor, PhD Electrical Engineering, Vanderbilt University; Post-doc experience, Georgia Tech
- 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, Emeritus Professor, B.Eng., McGill University; M.S., Ph.D., The Ohio State University

Elementary Education K-6, MAEd

School/College: School of Education
Degree(s) Offered: Master of Arts in Education (MAEd)
Graduate Coordinator: Ereka Williams, Ph.D. **Email:** ewilliam@ncat.edu Phone: (336) 334-7848
Department Chair: Anthony Graham, Ph.D. **Email:** agraham@ncat.edu Phone: (336) 334-7848

The Master of Arts in Education (MAEd) Elementary Education program prepares highly-qualified K-6 classroom teachers who utilize research-verified pedagogical approaches to engage students from diverse populations in developmentally-appropriate, rigorous, and relevant instruction. Through courses in research and inquiry, current research in the elementary classroom, standards and accountability, and issues and trends in urban education, candidates in the Master of Arts in Education, Elementary Education program develop knowledge, skills, dispositions, and professional attitudes that empower them to become lifelong learners, skilled researchers, and exemplary educational leaders inside and outside K-6 learning contexts while concurrently developing the skills necessary to attain certification from the National Board Professional Teaching Standards. The MAEd program in Elementary Education is aligned with professional standards commensurate with the Interstate Teacher Assessment and Support Consortium (InTASC), the National Council for the Accreditation of Teacher Education (NCATE), the North Carolina Department of Public Instruction (NCDPI), and National Board Professional Teaching Standards (NBPTS). The Master of Arts in Education (MAEd) program in Elementary Education is an accredited program by the National Council for the Accreditation of Teacher Education (NCATE) and by the North Carolina Department of Public Instruction (NCDPI).

Teacher Education Licensure: Degree completion and obtaining a teaching license in the State of North Carolina or any other state are separate processes. Admission to this program does not guarantee admission to the Teacher Education Licensure program. To be recommended for licensure, candidates must first be formally admitted to the Teacher Education Licensure Program. Failure to complete the Teacher Education admission requirements during the first semester of enrollment may result in the student's inability register for professional core courses. Candidates should review licensure requirements at http://www.ncat.edu/academics/schools-colleges1/soe/teacher-education/index.html or visit the School of Education for guidance on specific requirements.

Additional Admission Requirements

- Graduate Record Examination (GRE) Scores
- Standard Professional 1 or 2 NC Teaching License in the area of study
- Two Page Double-Spaced Statement of Purpose or Intent

Program Outcomes:
Candidates in the MAED Elementary Education program will: (1) demonstrate effective research writing skills appropriate for educational scholars, (2) demonstrate effective knowledge, skills, and attitudes in diversity issues, learning theories, technological skills, and methods of instruction, (3) demonstrate the ability to implement research-based content pedagogy aligned to the North Carolina Common Core and Essential Skills Standards with K-6 students, and (4) demonstrate their depth of content knowledge and breadth of content pedagogical skills for K-6 students from diverse backgrounds.

Degree Requirements
Total credit hours: 39

Phase I

- Take 15 credit hours: CUIN 711, 728, 740, 783; ELED 714

Phase II

- Select 24 credit hours from: ELED 719, 740, 751, 752, 753, 754, 755, 757
- CUIN 999 (0)

Up to six credit hours may be waived for students who have National Board certification.

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, Associate Professor, B.A., University of Virginia, M.Ed., Averett College, Ph.D., University of Virginia
- Debra Davidson, Adjunct Assistant Professor, B.S. Appalachian State University; M.S., University of Nebraska at Omaha; Ph.D., University of Nebraska
- Elizabeth Jane Davis, Associate Professor, B.A., Duke University; M.Ed., University of Virginia; Ph.D., University of North Carolina at Greensboro
- Charlesetta Dawson, Clinical Assistant Professor, B.A., M.A., University of Northern Iowa; Ph.D., University of North Carolina at Greensboro
- Michael Day, B.F.A and M.M., University of South Dakota; D.M.A., (Doctor of Musical Arts), University of Arizona
- Kimberly Erwin, Assistant Professor, B.S., M.S., North Carolina A&T State University, Ph.D., Virginia Polytechnic Institute and State University
- Loury Floyd, Associate Professor and Associate Dean for Undergraduate Programs, B.S., North Carolina A&T State University; M.S., University of Wisconsin-LaCrosse; Ph.D., The College of William and Mary
- Anthony Graham, Professor and Chairperson, B.A., University of North Carolina at Chapel Hill; M.Ed., Ph.D., University of North Carolina at Greensboro
- Karen D. Guy, Assistant Professor and Assistant Dean for Student Support Services, B.S., North Carolina A&T State University; M.Ed., North Carolina Central University; Ed.D., University of North Dakota
- Vivian Hampton, Associate Professor, B.A., North Carolina Central University; M.Ed., Howard University; Ph.D., University of Maryland
- Carl Haltom, Adjunct Assistant Professor, B.S. Cortland State College; M.A., San Francisco State University; Ed.D., Pennsylvania State University
- Pamela I. Hunter, Associate Professor, B.A., Livingston College; M.Ed., University of North Carolina at Greensboro; Ph.D., Ohio State University
- Sharon Hunter, Clinical Faculty, B.S., North Carolina A & T State University; M.A., University of North Carolina at Charlotte, Ed.D., Nova Southern University
- Ioney James, Associate Professor, B.A., University of West Indies, M.S., Central Connecticut State University, Ph.D., University of Albany
- Muktha Jost, Professor, B.A., Madras University; M.S., University of Kansas; Ph.D., Iowa State University
- Cathy Kea, Professor, B.A., North Carolina Central University; M.S., University of Wisconsin-LaCross; Ph.D., University of Kansas
- Thelma King, Associate Professor (Retd.), B.S. NC A&T State University; M.S., University of North Carolina at Greensboro; Ph.D., Virginia Polytechnic Institute and State University
- Dorothy D. Leflore, Associate Professor, B.S., Mississippi Valley State University; M.S., University of Oregon; Ph.D., University of Oregon
- Stephen McCary-Henderson, Associate Professor, B.S., North Carolina A&T State University; M.Ed. University of Southern Mississippi; Ph.D., Union Institute and University
- Barbara Mosley, Associate Professor, B.A., M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute & State University
- Felicia Sawyer, Clinical Faculty, B.A., North Carolina Central University; M.A.T., The Ohio State University; Ph.D., Capella University

- Nichole Smith, Assistant Professor, B.S., B.A, Appalachian State University; M.Ed., University of North Carolina at Greensboro; Ed.D., University of North Carolina at Chapel Hill
- Thomas J. Smith, Associate Professor, B.A., Manchester College; M.S., Indiana University; Ph.D., University of South Carolina
- Karen Smith-Gratto, Professor, B.A., Christopher Newport College; M.A., Ph.D., University of New Orleans
- Dawn C. Waegerle, Clinical Assistant Professor, B.A., M.A., Oral Roberts University; Ed.D. College of William and Mary
- Kendra Williamson, Adjunct Assistant Professor, B.S., North Carolina A&T State University; M.Ed., Appalachian State University; Ph.D., University of North Carolina at Greensboro
- Ereka Williams, Associate Professor, B.S., M.A.; Fayetteville State University; Ph.D., University of North Carolina at Greensboro

Contributing Faculty

- Valerie McMillian, Associate Professor of Family and Consumer Sciences, B.S., M.Ed., South Carolina State University; Ph.D., Iowa State University
- Dwana Waugh, Assistant Professor of History, Ph.D., University of North Carolina at Chapel Hill

Energy & Environmental Systems, PhD

School/College: College of Arts and Sciences
Degree(s) Offered: Doctoral
Graduate Coordinator: Dr. Keith Schimmel **Email:** schimmel@ncat.ed Phone: 336-285-2329
Department Chair: Dr. Keith Schimmel **Email:** schimmel@ncat.edu Phone: 336-285-2329

The Energy and Environmental Systems PhD program is designed to prepare men and women for positions in research and consulting in industry, government and service organizations, and teaching and research positions in colleges and universities. Graduates will be able to: conceive, develop, and conduct original research leading to useful applications in energy and environmental systems; Incorporate into their professional work considerations relating to scientific and social aspects of energy and environmental systems; and Demonstrate effective written and oral communication skills related to research issues in energy and environmental systems.

Additional Admission Requirements

- A master's degree in engineering; agriculture, physical, biological and computational sciences; technology; or business and economics from a college or university recognized by a regional or general accrediting agency with a minimum GPA of 3.25/4.0 or B.S. degree in a science, engineering, technology, or economics discipline with GPA>3.5
- GRE or GMAT verbal and quantitative scores

Program Outcomes:

Upon completion of the doctoral program in Energy and Environmental Systems:

- Graduates will be able to communicate research findings orally and in writing according to the needs of the audience.
- Graduates will be able to assess discipline related literature for unanswered research questions.
- Graduates will be able to develop advanced level research projects related to their interests in energy and environmental systems.
- Graduates will be able to analyze data in terms of applicable theories in energy and environmental systems.

Degree Requirements

Total credit hours: 75 (after BS), 52 (after MS)

Credit Distribution after BS

- Take 6 credit hours of EES 992(1); take seminar six times
- Professional practice/development: Select 3 credit hours from: EES 984, 985, 993
- Qualifying Exam: EES 991 (0)
- Preliminary Exam: Take 3 credits: EES 995
- Dissertation: Take 15 credit hours: EES 997
- Take 10 credit hours: EES 800, 821, 822, 830
- Select 3 credit hours from: EES 812, 813, 840, 850

General Concentration

- Select 35 credit hours from: EES 600-899; AET 600-899; AGEC 600-899; AGRI 600-899; ANSC 600-899; BIOL 600-899; BMEN 600-899; CHEM 600-899; CHEN 600-899; CIEN 600-899; CM 600-899; COMP 600-899; CSE 600-899; ECEN 600-899; ECON 600-899; ELEN 600-899; ENVS 600-899; FCS 600-899; HORT 600-899; INEN 600-899; LAND 600-899; MATH 600-899; MEEN 600-899; NARS 600-899; PHYS 600-899; PLSC 600-899; SLSC 600-899

Atmospheric Sciences

- Take 6 credit hours: EES 850, 851
- Select 6 credit hours from: EES 852, 853, 854, 855, 885
- Select 23 credit hours from: EES 600-899; COMP 600-899; CSE 600-899; ELEN 600-899; ECEN 600-899; MEEN 600-899; MATH 600-899; PHYS 600-899; CHEM 600-899; ANSC 600-899; NARS 600-899; SLSC 600-899; AGRI 600-899; ENVS 600-899; HORT 600-899; PLSC 600-899

Sustainable Bioproducts

- Take 3 credit hours: EES 840
- Select 9 credit hours from: EES 841, 842, 843, 844, 885
- Select 23 credit hours from: EES 600-899; BMEN 600-899; CHEN 600-899; CIEN 600-899; COMP 600-899; CSE 600-899; ELEN 600-899; ECEN 600-899; INEN 600-899; MEEN 600-899; MATH 600-899; PHYS 600-899; CHEM 600-899; BIOL 600-899; ANSC 600-899; FCS 600-899; NARS 600-899; SLSC 600-899; AGRI 600-899; ENVS 600-899; HORT 600-899; PLSC 600-899; NANO 600-899; CM 600-899; LAND 600-899; AET 600-899

Energy & Environmental Sciences & Economics

- Select 12 credit hours from: AGEC 705, 708, 710; ECON 701, 705, 710, 720; EES 885
- Select 23 credit hours from: EES 600-899; CSE 600-899; INEN 600-899; MATH 600-899; PHYS 600-899; CHEM 600-899; BIOL 600-899; ECON 600-899; ANSC 600-899; AGEC 600-899; FCS 600-899; NARS 600-899; SLSC 600-899; AGRI 600-899; ENVS 600-899; HORT 600-899; PLSC 600-899; CM 600-899; LAND 600-899; AET 600-899

Credit Distribution after MS

- Take 3 credit hours of EES 992(1); take seminar three times
- Professional practice/development: Select 3 credit hours from: EES 984, 985, 993
- Qualifying Exam: EES 991 (0)
- Preliminary Exam: Take 3 credits: EES 995
- Dissertation: Take 15 credit hours: EES 997
- Take 10 credit hours: EES 800, 821, 822, 830
- Select 3 credit hours from: EES 812, 813, 840, 850

General Concentration

- Select 15 credit hours from: EES 600-899; AET 600-899; AGEC 600-899; AGRI 600-899; ANSC 600-899; BIOL 600-899; BMEN 600-899; CHEM 600-899; CHEN 600-899; CIEN 600-899; CM 600-899; COMP 600-899; CSE 600-899; ECEN 600-899; ECON 600-899; ELEN 600-899; ENVS 600-899; FCS 600-899; HORT 600-899; INEN 600-899; LAND 600-899; MATH 600-899; MEEN 600-899; NARS 600-899; PHYS 600-899; PLSC 600-899; SLSC 600-899

Atmospheric Sciences

- Take 6 credit hours: EES 850, 851
- Select 6 credit hours from: EES 852, 853, 854, 855, 885
- Select 3 credit hours from: EES 600-899; COMP 600-899; CSE 600-899; ELEN 600-899; ECEN 600-899; MEEN 600-899; MATH 600-899; PHYS 600-899; CHEM 600-899; ANSC 600-899; NARS 600-899; SLSC 600-899; AGRI 600-899; ENVS 600-899; HORT 600-899; PLSC 600-899

Sustainable Bioproducts

- Take 3 credit hours: EES 840
- Select 9 credit hours from: EES 841, 842, 843, 844, 885

- Select 3 credit hours from: EES 600-899; BMEN 600-899; CHEN 600-899; CIEN 600-899; COMP 600-899; CSE 600-899; ELEN 600-899; ECEN 600-899; INEN 600-899; MEEN 600-899; MATH 600-899; PHYS 600-899; CHEM 600-899; BIOL 600-899; ANSC 600-899; FCS 600-899; NARS 600-899; SLSC 600-899; AGRI 600-899; ENVS 600-899; HORT 600-899; PLSC 600-899; NANO 600-899; CM 600-899; LAND 600-899; AET 600-899

Energy & Environmental Sciences & Economics

- Select 12 credit hours from: AGEC 705, 708, 710; ECON 701, 705, 710, 720; EES 885
- Select 3 credit hours from: EES 600-899; CSE 600-899; INEN 600-899; MATH 600-899; PHYS 600-899; CHEM 600-899; BIOL 600-899; ECON 600-899; ANSC 600-899; AGEC 600-899; FCS 600-899; NARS 600-899; SLSC 600-899; AGRI 600-899; ENVS 600-899; HORT 600-899; PLSC 600-899; CM 600-899; LAND 600-899; AET 600-899

Dissertation Research:
A student may not register for dissertation credits before passing Qualifying Examination. No more than 18 dissertation credits are counted toward the total credit hours requirement for the degree.

Qualifying Examination:
The Qualifying Examination is given to assess the student's competence in a broad range of relevant subject areas. Only students with unconditional status and in good academic standing may take the Qualifying Examination. A student who wants to retake the Qualifying Examination must apply to retake the Qualifying Examination by the posted deadline. No student is permitted to take the Qualifying Examination more than twice. A student not recommended for re-examination or who fails the exam on a second attempt may be dismissed from the doctoral program.

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Admission to Candidacy
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Final Oral Examination:
The Final Oral Examination is conducted by the student's dissertation committee. This examination is the final dissertation defense presentation that is scheduled after a dissertation is completed. The examination may be held no earlier than one semester (or four months) after admission to candidacy. Failure on the examination may result in dismissal from the doctoral program. The student's Advisory Committee may permit one re-examination. At least one full semester must elapse before the re-examination. Failure on the second attempt will result in dismissal from the doctoral program.

Submission of Dissertation:
Upon passing the Ph.D. Final Oral Examination, the Ph.D. student must have the dissertation approved by each member of the student's dissertation committee. The approved dissertation must be submitted to The Graduate School by the deadline given in the academic calendar, and must conform to the Graduate School's guidelines for theses and dissertations.

Directory of Faculty

- Lyubov L. Kurkalova, Associate Professor of Economics/EES, B.S., Tajik State University; M.S., Kazakh State University; Ph.D., Iowa State University
- Yuh-Lang Lin, Professor of Physics/EES, B.S., Fu Jen Catholic University; M.A., Fordham University; M.S., South Dakota School of Mines and Technology; Ph.D., Yale University
- Ademe Mekonnen, Assistant Professor of Energy & Environmental Systems, B.S., Addis Ababa University; M.S., University of Reading; Ph.D., University of Albany
- Yevgenii A. Rastigejev, Assistant Professor of Mathematics/EES, B.S., Moscow Institute of Physics and Technology; M.S., Ph.D., University of Notre Dame
- Keith A. Schimmel, Associate Professor of Chemical Engineering and Chairperson Energy & Environmental Systems, B.S., Purdue University; M.S., Ph.D., Northwestern University
- Jing Zhang, Associate Professor of Physics/EES, B.S., M.S., Nanjing University; Ph.D., Peking University

Contributing Faculty

- Zerihun Assefa, Associate Professor of Chemistry, B. S., Addis Ababa University (Ethiopia); Ph.D., University of Maine, Inorganic Chemistry
- Mufeed Basti, Associate Professor of Chemistry, B.S., Baath University (Homs, Syria); Ph.D., North Illinois University, Physical Chemistry
- Solomon Bililign, Professor of Physics, B.S., M.S., Addis Ababa University; Ph.D., University of Iowa
- Mark Burkey, Professor of Economics, B.S., B.A., Appalachian State University; M.A., Ph.D., Duke University
- Shoou-Yuh Chang, Professor of Civil Engineering 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
- Jeffrey A. Edwards, Professor of Economics, B.A., University of North Carolina at Chapel Hill; M.A., Ph.D., Virginia Tech
- Albert C. Esterline, Associate Professor of Computer Science, B.A., Lawrence University; M.Litt., Ph.D., University of St. Andrews; M.S., Ph.D., University of Minnesota
- Ellie Fini, Assistant Professor of Civil Engineering, B.S., Isfahan University of Technology; B.S., M.S., Sharif University of Technology ; Ph.D., University of Illinois
- Clay Gloster, Jr., Professor and Chair of Computer Systems Technology, B.S., M.S., North Carolina A&T State University; Ph.D., Computer Engineering, North Carolina State University
- Scott H. Harrison, Assistant Professor of Biology, B.S., Ph.D., Michigan State University
- Abdollah Homaifar, Duke Energy Eminent Professor of Electrical Engineering, B.S., M.S., State University of New York-Stony Brook; Ph.D., University of Alabama
- Salam A. Ibrahim, Professor of Family & Consumer Science, B.S., University of Mosul; M.S., University of Georgia; Ph.D., University of Kentucky
- Shamsuddin Ilias, Professor of Chemical Engineering, Ph.D., Queen's University at Kingston
- O. Isikhuemhen, Associate Professor of Natural Resources & Environmental Design, B.S., M.S., University of Benin, Nigeria; Ph.D. Institute of Microbiology, Prague, Czech Republic
- Manoj K. Jha, Assistant Professor of Civil Engineering, B.E., Tribhuva University; M.E. Asian Insitute of Technology; M.S., Ph.D., Iowa State University
- Ajit D. Kelkar, Professor of Mechanical Engineering and Chair, Nanoengineering, B.S., Pune University, Pune, India; M.S., South Dakota State University; Ph.D., Old Dominion University
- Debasish Kuila, Professor of Chemistry, B.S., Calcutta University, India; M.S., Indian Institute of Technology, Madras; Ph.D., The City University of New York
- Dhananjay Kumar, Associate Professor and ORNL Joint Faculty of Mechanical Engineering, B.S., Bhagalpur University; M.S., Magadh University, Ph.D., Indian Institute of Technology

- Claude N. Lamb, Associate Professor of Chemistry, B.S., Mount Union College; M.S., North Carolina Central University; Ph.D., Howard University, Organic Chemistry
- Liping Liu, Assistant Professor of Mathematics, B.S., Huazhong University of Science and Technology; Ph.D., University of Alberta
- Jianzhong Lou, Professor of Chemical Engineering, Ph.D., University of Utah
- Stephanie Luster-Teasley, Associate Professor of Civil and Chemical Engineering, B.S., North Carolina A&T State University; Ph.D., Michigan State University
- Patricia A. Lynch, Assistant Professor of Family and Consumer Science, B.S., M.S. North Carolina A&T State University; Ph.D., R.D., University of Nebraska
- Patrick Martin, Assistant Professor, B.S., Virginia Union University; Ph.D., University of Virginia
- Radiah Corn Minor, Assistant Professor of Animal Science, B.S., Florida A&M University; Ph.D., Meharry Medical College
- Perpetua Muganda, Professor of Biology, B.S., Lock Haven State College; M.S., Howard University; Ph.D., Indiana University School of Medicine
- Robert B. Pyle, Professor Construction Management & Safety and Chair, B.A., M.A., Trenton State College; Ph.D., University of Pittsburgh
- M.R. Reddy, Professor of Natural Resources & Environmental Design, B.S., Osmania University; M.S., A.P.A.U. (India); Ph.D., University of Georgia
- Manuel R. Reyes, Associate Professor of Natural Resources & Environmental Design, B.S., University of the Philippines at Los Banos; M.S., Cranfield Institute of Technology, England; Ph.D., Louisiana State University
- John Paul Roop, Associate Professor of Mathematics, B.S., Roanoke College; M.S., Ph.D., Clemson University
- Shengmin Sang, Associate Professor, Lead Scientist for Functional Foods, Center for Excellence in Post-Harvest Technologies, B.S. Shandong Normal University, Jinan, P.R. China; Ph.D. Shanghai Institute of Materia Medica, Chinese Academy of Science
- Jagannathan Sankar, University Distinguished Professor of Mechanical Engineering and Director, NSF Engineering Research Center, B.E., University of Madras; M.E., Concordia University, Ph.D., Lehigh University
- Dilip T. Shah, Associate Professor of Construction Management & Safety, B.E., Poona, India; M.S., Illinois State University; Ph.D., Texas A&M University
- Abolghasem Shahbazi, Professor of Natural Resources & Environmental Design, Ph.D., Pennsylvania State University
- Ji Y. Shen, Professor of Applied Engineering Technology and Chairperson, B.S., Northwestern Polytechnic University; M.S., Nanjing Aeronautical University; Ph.D., Old Dominion University
- Musibau A. Shofoluwe, Professor of Construction Management & Safety, B.S., North Carolina A&T State University; M.S., Pittsburgh State University; DIT University of Northern Iowa
- Guoqing Tang, Professor of Mathematics, B.S., Anhui University; M.S., Nanjing University of Science and Technology; Ph.D., Rutgers University
- G.A. Uzochukwu, Professor of Natural Resources & Environmental Design, B.S., M.S., Oklahoma State University; Ph.D., University of Nebraska
- Lijun Wang, Associate Professor of Natural Resources & Environmental Design, Ph.D., National University of Ireland
- Jenora Waterman, Assistant Professor of Animal science, B.S., Bennett College for Women; M.S., North Carolina A&T State University; Ph.D., North Carolina State University
- Leonard L. Williams, Professor, Interim Director and Lead Scientist for Food Safety and Microbiology, Center for Excellence in Post-Harvest Technologies, B.S., M.S., North Carolina A&T State University; Ph.D., Alabama A&M University
- Alex N. Williamson, Associate Professor of Chemistry, B.S., Jackson State University; Ph.D., University of Illinois, Inorganic Chemistry

- Abraham Woldeghebriel, Associate Professor of Animal Science, B.S., Addis Ababa University; M.S., Ph.D., New Mexico State University
- Mulumebet Worku, Professor of Animal science, B.S., Addis Ababa University, Alemaya College of Agriculture, Ethiopia; M.S., Ph.D., University of Maryland, College Park
- Osei-Agyeman Yeboah, Associate Professor of Agri Business, Applied Economics & Ag Science, B.S., University of Science and Technology, Kumasi, Ghana; M.S., North Carolina A&T State University; Ph.D., University of Nebraska
- Yeo Heung Yun, Associate Professor of Bioengineering, B.E., M.S., Chonbuk National University, South Korea; Ph.D. University of Cincinnati
- Qing-An Zeng, Assistant Professor of Computer Systems Technology, B.S., Chengdu University of Information Technology, China; M.S., Ph.D., Shizuoka University, Japan

Adjunct Faculty

- Mohamed Ahmedna (Qatar University), Adjunct Professor, B.S., Institut Agronomique et Veterinaire Hassan II; M.S., Ph.D., Louisiana State University
- Cathy Connor (Environmental Science Program, University of Alaska Southeast), Adjunct Assistant Professor, B.S., M.S., Stanford University; Ph.D., University of Montana
- Angela M. Fraser (Department of Food, Nutrition, and Packaging Sciences, Clemson University), Adjunct Associate Professor, B.S., M.S., Ph.D., Michigan State University
- Ipek Goktepe (Qatar University), Adjunct Associate Professor, B.S., University of Istanbul; M.S., Ph.D.; Louisiana State University
- Jin-Luen Lee (NOAA, Earth System Research Laboratory), Adjunct Professor, Ph.D. University of Utah
- Albachir Seydou Niandou (Niger University), Adjunct Assistant Professor, B.S., Université Hassan; M.S., Ph.D., North Carolina A&T State University
- Jack Odle (Department of Animal Science, North Carolina State University), Adjunct Professor, B.S., Purdue University; M.S., Ph.D., University of Wisconsin-Madison
- Jeff Ramsdell (Director of the Appalachian Energy Center, Technology & Environmental Design Department, Appalachian State University), Adjunct Professor, B.S., University of Florida; M.B.A., Rollins College; Ph.D., University of Central Florida
- Gilbert Sigua (USDA, Coastal Plains Soil, Water, and Plant Research Center), Adjunct Professor

English and African American Literature, MA

School/College: College of Arts and Sciences
Degree(s) Offered: Master of Arts
Graduate Coordinator: Dr. Pauline Uwakweh **Email:** pauwakwe@ncat.edu
Department Chair: Dr. Faye Spencer Maor **Email:** fsmaor@ncat.edu

The objective of the M.A. program in English and African American literature is to provide in-depth training in English Education; English, American and African American literature; folklore and language. The department introduces students to a diverse range of graduate-level work, including critical theory, graduate literary studies, and contemporary practices in grammar and rhetoric. Students' exposure to various genres and works of African American, American and English literatures will provide a substantial foundation for continued study at the doctoral level as well as preparation for various professional and teaching contexts. The program provides students the opportunity to explore critical theories and hone their critical reading, thinking and writing skills. It also offers a solid foundation for those who may choose to seek a Ph.D. in such disciplines as African American, Comparative, and English Literatures as well as African American, Africana, Cultural, Ethnic, Gender, Subaltern and Women's Studies.

Additional Admission Requirements

1. At least 24 undergraduate credit hours in English
2. GRE Test Scores

Degree Requirements
Total credit hours: 30

Core Course(s)
ENGL 700, 753, 755

Thesis Option

- Select 9 credit hours in African American Literature from: ENGL 631 , 650, 652, , 654, 656, 658, 660, 744, 760, 762, 764, 766
- Select 9 credit hours in English and American Literature from: ENGL 603, 628, 631, 653, 672, , 701, 703, 336, 705, 706, 707, 709, 712, 721, 722, 723, 724, 730, 731, 744
- Thesis Research: ENGL 775(3)

Non-Thesis Option

- Select 12 credit hours in African American Literature from: ENGL 631 , 650, 652, , 654, 656, 658, 660, 744, 760, 762, 764, 766
- Select 9 credit hours in English and American Literature from: ENGL 603, 628, 631, 653, 672, , 701, 703, 336, 705, 706, 707, 709, 712, 721, 722, 723, 724, 730, 731, 744

Directory of Faculty

- Ahmad, Anjail R, Associate Professor , B.A., Agnes Scott College; M.A., New York University; Ph.D., University of Missouri-Columbia
- Bonner, Patricia E, Professor, B.A., University of Alabama; M.A., Atlanta University; Ph.D., University of South Florida
- Brown, Jane G, Associate Professor, B.A., Converse College; M.A., Vanderbilt University; M.A. and Ph.D., University of Dallas
- DePolo, Jason, B.A., Indiana University of Pennsylvania; M.A., North Carolina A&T State University; Ph.D., Indiana University of Pennsylvania

- Drieling, C., PhD, English Language and Literature, Indiana University/Kiel University
- Garren, Samuel B, Professor, B.A., Davidson College; M.A., Ph.D., Louisiana State University
- Greene, Michael, Professor, B.A., Duke University; M.A., Ph.D., Indiana University
- Kulii, Elon, Professor, B.A., Winston-Salem State University; M.S., North Carolina A&T State University; Ph.D., Indiana University
- Levy, Michele F, Professor, B.A., George Washington University; M.A. and Ph.D., University of North Carolina at Chapel Hill
- Maor, Faye S, Professor and Chairperson, B.S., Florida A&M University; M.A., University of Colorado at Boulder; Ph.D., University of Illinois Urbana-Champaign.
- Meyerson, Gregory D, Associate Professor, B.A., Miami University of Ohio; M.A. and Ph.D., Northwestern University
- Nwankwo, Chimalum, Professor, B.A., University of Nigeria, Nsukka; M.F.A., M.A., and Ph.D., University of Texas at Austin
- Parker, Jeffrey D, Associate Professor, B.A., University of North Carolina at Greensboro; M.A., North Carolina &T State University; Ph.D., University of South Carolina
- Uwakweh, Pauline, Assistant Professor, B.A., University of Port Harcourt, Nigeria; M.A., University of Calabar, Nigeria; Ph.D., Temple University.

Food and Nutritional Sciences, MS

School/College: School of Agricultural and Environmental Science
Degree(s) Offered: Master of Science
Graduate Coordinator: Dr. Valerie L. Giddings **Email:** vlgiddin@ncat.edu Phone: 336-334-7850
Department Chair: Dr. Valerie L. Giddings **Email:** vlgiddin@ncat.edu Phone: 336-334-7850

The Master of Science in Food and Nutritional Sciences is designed to develop the basic knowledge and skills necessary to undertake research in Food and Nutritional Sciences and other related areas. It also develops competencies to work as food and nutrition specialists in education, or with other community nutrition agencies and food industries. The program also develops theoretical and experimental competencies necessary to pursue additional graduate studies or obtain professional degrees.

Additional Admission Requirements

1. Earned baccalaureate degree in food and nutrition or related field from an accredited institution
2. Resume

Program Outcomes:

1. Upon completion of their coursework, students will accurately communicate in writing their knowledge of advanced concepts and principles related to food and nutritional sciences.
2. Upon completion of their coursework, students will effectively express in an oral presentation their knowledge of food and nutritional sciences concepts, principles and trends.
3. Upon completion of core courses, students will read and analyze scholarly literature in food and nutritional sciences for accuracy of research techniques and contributions to the discipline.
4. Upon completion of the thesis option, students will develop research questions, hypotheses and research methodology to address a problem in the field of food and nutritional sciences.
5. Upon completion of the program, students will identify and apply appropriate theories to address food and nutrition related issues impacting society.

Degree Requirements

Total credit hours: 30 hours (thesis option), 36 (non-thesis option)

Core Courses: 10 credit hours

- FCS 711, 730, 760 Graduate Seminar (1)
- FCS 715 (3) or 735 (4)
- FCS 788 Comprehensive Examination (0)

Thesis option

- FCS 739 (3)
- CHEM 651 (3)
- AGEC 705 (3) or BIOL 681(3)
- Electives: Select 12 credit hours from FCS 600-899 excluding FCS 711, 730, 760, 739, 745

Non-thesis option

- FCS 745 (3)
- Electives: Select 18 credit hours from FCS 600-899 excluding FCS 711, 730, 760, 739, 745

Directory of Faculty

- L. Brown, PhD, Nutrition, University of Maryland at College Park

- Devona Dixon, Assistant Professor, B.S., Southern University; M.S., Colorado State University; Ph.D. Louisiana State University
- Valerie L. Giddings, Associate Professor and Chairperson, B.S., Bennett College; M.S., Ph.D., Virginia Polytechnic Institute and State University
- Salam A. Ibrahim, Professor, B.S., University of Mosul; M.S., University of Georgia; Ph.D., University of Kentucky
- Sung-Jin Lee, Assistant Professor, B.S., Chungnam National University; M.S Chungnam National University; M.S. , Ph.D. Virginia Polytechnic Institute and State University.
- 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
- Elizabeth Newcomb, Assistant Professor, B.S., M.S., Ph.D. North Carolina State University
- Yi-Ling Pan, Assistant Professor, B.S., Chung Shan Medical University; M.S., Ph.D., Florida International University.
- Rosa S. Purcell, Associate Professor, B.S., North Carolina A&T State University; M.Ed., Ph.D., University of Illinois
- Claudette Smith, Cooperative Extension Faculty, B.S., North Carolina A&T State University; M.S., Ph.D., Ohio State University
- R. Tahergorabi, PhD, Food Science, West Virginia University
- 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
- J. Yu, PhD, Food Science, Louisiana State University

Faculty Emiriti

- 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

Health and Physical Education, MS

Degree(s) Offered: Master of Arts in Teaching
Graduate Coordinator: Gloria Elliot **Email:** ghelliot@ncat.edu Phone: 336-285-3546
Department Chair: Daniel Webb **Email:** dwebb@ncat.edu Phone: 336-334-7712

The MS program in Physical Education is designed to prepare school practitioners and professionals in the areas of teaching and research through an interdisciplinary and standards-based graduate curriculum to take leadership roles in the areas of teaching and research through an interdisciplinary and standards-based graduate curriculum. As a means to accommodate working professionals, approximately 50% of the graduate program courses are offered online. Graduate students are afforded opportunities to engage in funded and non-funded research projects. Some research areas include (i) Obesity and physical activity; (ii) Inclusion and children with disabilities; (iii) Effective pedagogy; (iv) Professional preparation of pre-service and in-service teachers; (v) Motor learning and control; (vi) Psychometric measurements; (vii) Contextual influences; and (viii) Physical and/or orthopedic impairments. The M.S. in Physical Education and Health program is aligned with professional standards commensurate with the National Council for Accreditation of Teacher Education (NCATE), Southern Association of Colleges and Schools (SACS), and North Carolina Department of Public Instruction (NCDPI).

Teacher Education Licensure: Degree completion and obtaining a teaching license in the State of North Carolina or any other state are separate processes. Admission to this program does not guarantee admission to the Teacher Education Licensure program. To be recommended for licensure, candidates must first be formally admitted to the Teacher Education Licensure Program. Failure to complete the Teacher Education admission requirements during the first semester of enrollment may result in the student's inability register for professional core courses. Candidates should review licensure requirements at http://www.ncat.edu/academics/schools-colleges1/soe/teacher-education/index.html or visit the School of Education for guidance on specific requirements.

Additional Admission Requirements

- An earned Bachelor's degree in Physical Education, Exercise Science, or a related field of study
- Graduate Record Examination (GRE) Scores or Miller Analogies Test (MAT)

Program Outcomes:

- To provide an advanced level of study in the areas of teaching and research in physical education and health.
- To provide students with advanced competencies in developing, implementing, and evaluating quality programs of physical activities for a wide range of diverse population.
- To further develop technological competencies in physical education and health.

Degree Requirements
Total credit hours: 39

Core courses:
Take 24 credit hours: HPED 700, 723, 760, 761, 762, 784, 786, 798

Professional Education Courses:
Select 15 credit hours from: CUIN 619, 711, 721, 718, 729

Capstone:
Comprehensive exams: ELED 788, HPED 788

Directory of Faculty

- Phoebe Ajibade, Associate Professor, B.S. Community Health and Biology, Radford University; M.S. Community Health, Old Dominion University; Ed.D. Higher Ed Edministration, The George Washington University
- Paul Ankomah, Professor, BA, Geography, University of Ghana; MA, Geography, Wilfris Laurier University, Canada; PhD, Rescreation and Resources Development, Texas A&M University
- Deborah J. Callaway, Associate Professor and Special Assistant to the Chancellor, B.S., Virginia State College; M.Ed., Virginia Commonwealth University; Ed.D., Virginia Polytechnic Institute and State University; Associate Professor
- Teresa K. Dail, Associate Professor and MAT Coordinator, B.S., Wake Forest University; M.A.T., University of North Carolina at Chapel Hill, Ph.D., University of North Carolina at Greensboro
- Gloria H. Elliott, Assistant Professor, B.S., Fayetteville State University; M.S., The University of Connecticut; Ph.D., The Ohio State University
- Dwedor Ford, Assistant Professor, B.S. Computer Science, Tennessee State University; M.S. Health, Physical Ed & Rec (Sport Management) and Ph.D. Human Performance, Middle Tennessee State University
- Tiffany Fuller, BS, Health and Physical Education-Psychology, NC A&T State University; M.A., Health & Physical Education-Adapted Physical Education, NC A&T State University; Ph.D., Exercise & Sport Science, University of North Carolina At Greensboro:
- Trent Larson, B.S., Psychology, Brigham Young University; M.A., Recreation Management, Brigham Young University; Ph.D., Health, Physical Education and Recreation, University of New Mexico:
- Minyong Lee, Assistant Professor, B.S. Mechanical Engineering, Chosun University, Republic of Korea; M.S. Education and Ph.D. Kinesiology, University of Connecticut
- Diana Melton, B.S., Rehabilitation, Springfield College; M.S., Exercise Physiology, University of North Carolina-Greensboro; Ed.D., Exercise and Sport Science, University of North Carolina-Greensboro
- Jerono Rotich, B.S., Physical Education, Kenyatta University, Kenya; M.S.Ed., Physical Education, SUNY Brockport, Ph.D., Exercise Science, Health and Physical Education, University of North Carolina Greensboro
- Brenda Swearingin, Assistant Professor, B. S., University of Arkansas, M.S. University of Arkansas, Ph.D, University of North Carolina at Greensboro
- Daniel Webb, B.S., Associate Professor and HPLS Chair, Coppin State University; M.S., University of Wisconsin; Ph.D., The Ohio State University

Health and Physical Education – Sports Administration, MS

Degree(s) Offered: Master of Arts in Teaching
Graduate Coordinator: Gloria Elliot **Email:** ghelliot@ncat.edu Phone: 336-285-3546
Department Chair: Daniel Webb **Email:** dwebb@ncat.edu Phone: 336-334-7712

The Sports Administration concentration within the MS program in Physical Education is designed to prepare professionals for managing sports related businesses.

Additional Admission Requirements

- An earned Bachelor's degree in Physical Education, Exercise Science, or a related field of study
- Graduate Record Examination (GRE) Scores or Miller Analogies Test (MAT)

Program Outcomes:

- To provide an advanced level of study in the areas of amateur and professional sport industries.
- To provide students with advanced competencies relative to the administration of sport.

Degree Requirements

Total credit hours: 36

Course requirements:

- Select 21 credit hours from: HPED 820, 821, 822, 823, 824, 884, 885
- Comprehensive examination: HPED 788(0)
- Thesis: 9 credit hours HPED 797
- Internship: 6 credit hours HPED 799

Directory of Faculty

- Phoebe Ajibade, Associate Professor, B.S. Community Health and Biology, Radford University; M.S. Community Health, Old Dominion University; Ed.D. Higher Ed Edministration, The George Washington University
- Paul Ankomah, Professor, BA, Geography, University of Ghana; MA, Geography, Wilfris Laurier University, Canada; PhD, Rescreation and Resources Development, Texas A&M University
- Deborah J. Callaway, Associate Professor and Special Assistant to the Chancellor, B.S., Virginia State College; M.Ed., Virginia Commonwealth University; Ed.D., Virginia Polytechnic Institute and State University; Associate Professor
- Teresa K. Dail, Associate Professor and MAT Coordinator, B.S., Wake Forest University; M.A.T., University of North Carolina at Chapel Hill, Ph.D., University of North Carolina at Greensboro
- Gloria H. Elliott, Assistant Professor, B.S., Fayetteville State University; M.S., The University of Connecticut; Ph.D., The Ohio State University
- Dwedor Ford, Assistant Professor, B.S. Computer Science, Tennessee State University; M.S. Health, Physical Ed & Rec (Sport Management) and Ph.D. Human Performance, Middle Tennessee State University
- Tiffany Fuller, BS, Health and Physical Education-Psychology, NC A&T State University; M.A., Health & Physical Education-Adapted Physical Education, NC A&T State University; Ph.D., Exercise & Sport Science, University of North Carolina At Greensboro:
- Trent Larson, B.S., Psychology, Brigham Young University; M.A., Recreation Management, Brigham Young University; Ph.D., Health, Physical Education and Recreation, University of New Mexico:
- Minyong Lee, Assistant Professor, B.S. Mechanical Engineering, Chosun University, Republic of Korea; M.S. Education and Ph.D. Kinesiology, University of Connecticut

- Diana Melton, B.S., Rehabilitation, Springfield College; M.S., Exercise Physiology, University of North Carolina-Greensboro; Ed.D., Exercise and Sport Science, University of North Carolina-Greensboro
- Jerono Rotich, B.S., Physical Education, Kenyatta University, Kenya; M.S.Ed., Physical Education, SUNY Brockport, Ph.D., Exercise Science, Health and Physical Education, University of North Carolina Greensboro
- Brenda Swearingin, Assistant Professor, B. S., University of Arkansas, M.S. University of Arkansas, Ph.D, University of North Carolina at Greensboro
- Daniel Webb, B.S., Associate Professor and HPLS Chair, Coppin State University; M.S., University of Wisconsin; Ph.D., The Ohio State University

Industrial and Systems Engineering, MS

School/College: College of Engineering
Degree(s) Offered: Master of Science, Doctoral
Graduate Coordinator: Eui H. Park **Email**: park@ncat.edu **Phone**: 336-285-3732
Department Chair: Tonya Smith-Jackson **Email**: tlsmithj@ncat.edu **Phone**: 336-285-3759

The Master of Science (M.S.) in Industrial and Systems Engineering (ISE) program prepares students for successful careers in industry and continuation to doctoral study. The program emphasizes the systems engineering, collaboration and engagement skills critical to addressing the complex societal problems of tomorrow. ISE graduate students tackle these problems in a supportive environment working with nationally-recognized faculty. ISE programs are inclusive of many undergraduate majors. Any engineering major may choose graduate education in ISE to expand systems skills. Many related non-engineering majors might choose ISE with some background courses to expand technical capability.

Program Outcomes:
The Master of Science in Industrial and Systems Engineering program will prepare graduates to:

- Decompose systems into component parts and logically model and evaluate using mathematical, statistical and computational tools.
- Construct and improve integrated systems or processes consisting of people, materials, information, equipment and energy considering life cycle factors.
- Formulate and solve multi-objective problems using industrial and systems engineering methods and tools.
- Apply systems analysis, synthesis, and problem-solving to real world settings to reduce cost and improve productivity and quality.
- Perform presentable research under the supervision of a faculty member.
- Communicate Industrial and Systems technical information a professional level in written, oral, and business graphics formats.

Degree Requirements:
Total credit hours: 30 (thesis option), 33 (project option), 34 (course option)

Core Courses

- Take 12 credit hours: INEN 625, 655, 665, 675

Thesis option

- Select 9 credit hours from: INEN 600-899
- Select 9 credit hours from one of the following tracks.
    - Human Machine Systems Engineering Track: INEN 721, 812, 813, 814, 821
    - Manufacturing & Service Enterprise Engineering Track: INEN 833, 841, 852, 853

Project option

- Select 12 credit hours from: INEN 600-899
- Select 9 credit hours from one of the following tracks.
    - Human Machine Systems Engineering Track: INEN 721, 812, 813, 814, 821
    - Manufacturing & Service Enterprise Engineering Track: INEN 833, 841, 852, 853

Course option

- Select 13 credit hours from: INEN 600-899
- Select 9 credit hours from one of the following tracks.
    - Human Machine Systems Engineering Track: INEN 721, 812, 813, 814, 821

- Manufacturing & Service Enterprise Engineering Track: INEN 833, 841, 852, 853

Directory of Faculty

- Davis, Lauren, Associate Professor, BS, Computational Mathematics, Rochester Institute of Technology; MSIME, Rensselaer Polytechnic Institute; PhD, North Carolina State University
- DeMattos, Policarpo, Adjunct Assistant Professor, PhD, North Carolina A&T State University
- Desai, Salil, L., Associate Professor, BSME, University of Bombay; MSIE, PhD, University of Pittsburgh
- Jiang, Steven, Associate Professor, MSME, East China Institute of Technology; MS, Nanjing University of Science & Technology; PhD, Clemson University
- Jiang, Zongliang, Assistant Professor, BS, Shanghai Jiao Tong University ; MS, PhD, North Carolina State University
- Li, Zhichao, Assistant Professor, BS, MS, Tianjin University of Technology and Education ; Ph.D., Kansas State University
- McBride, Maranda, Assistant Professor (Joint with Business Administration), BS, MS, PhD, North Carolina A&T State University
- Mountjoy, Daniel, Adjunct Associate Professor, PhD, North Carolina State University
- Ntuen, Celestine A., Distinguished University Professor, NCE, College of Education, Uyo, Nigeria; BSISE, MSIE, PhD, West Virginia University
- Park, Eui H., Professor, BS, Yonsei University; MBA, City University; MSIE, PhD, Mississippi State University
- Qu, Xiuli, Assistant Professor, BEEE, MSEE, University of Science and Technology Beijing; MSIE, PhD, Purdue University
- Ram, Bala, Professor and Interim Associate Dean for Graduate Programs and Research, BSME, MSIE, Indian Institute of Technology, Madras; PhD, State University of New York at Buffalo
- Sarin, Sanjiv, Professor and Vice Provost for Research, Graduate Programs and Extended Learning and Dean, Graduate School, BSChE, MSIE, Indian Institute of Technology, Delhi; PhD, State University of New York at Buffalo
- Seong, Younho, Associate Professor, BSISE, MSIE, Incheon University; PhD, State University of New York at Buffalo
- Smith-Jackson, Tonya, Professor and Chair, BS, UNC-Chapel Hill; MS, PhD, North Carolina State University
- Stanfield, Paul, Associate Professor, BSEE, MSIE, Ph.D., North Carolina State University; MBA, University of North Carolina at Greensboro
- Udoka, Silvanus, Associate Professor, PhD, Industrial Engineering and Management, Oklahoma State University

Industrial and Systems Engineering, PhD

School/College: College of Engineering
Degree(s) Offered: Master of Science, Doctoral
Graduate Coordinator: Eui H. Park **Email**: park@ncat.edu **Phone**: 336-285-3732
Department Chair: Tonya Smith-Jackson **Email**: tlsmithj@ncat.edu **Phone**: 336-285-3759

The Doctor of Philosophy (Ph.D.) in Industrial and Systems Engineering (ISE) program prepares students for successful careers as teachers, researchers, and leaders in academia, industry and the public sector. The program emphasizes the systems engineering, collaboration and engagement skills critical to addressing the complex societal problems of tomorrow. ISE graduate students tackle these problems in a supportive environment working with nationally-recognized faculty.

Additional Admission Requirements

- At least one degree in Engineering or Computer Science.
- Master of Science degree in a discipline related to Industrial & Systems Engineering with a cumulative GPA of 3.3 or Bachelor of Science degree in Engineering or Computer Science with a cumulative GPA of 3.5 or above
- A Graduate Record Exam (GRE) Aptitude Exam score

Program Outcomes:

The Doctor of Philosophy in Industrial and Systems Engineering program will prepare graduates to

- Demonstrate broad knowledge of industrial and systems engineering sub-disciplines and deep knowledge of a specific sub-discipline.
- Effectively teach industrial and systems engineering methods and tools.
- Independently perform research with mentoring from a faculty member.
- Decompose systems into component parts and logically model and evaluate using mathematical, statistical and computational tools.
- Construct and improve integrated systems or processes consisting of people, materials, information, equipment and energy considering life cycle factors.
- Formulate and solve multi-objective problems using industrial and systems engineering methods and tools.
- Communicate Industrial and Systems Engineering research information in written, oral, and presentation formats.

Degree Requirements:

Total credit hours: 75

Core Courses

- Select 3 credit hours from: INEN 993, 994
- Take 2 credit hours: INEN 992 (take twice)
- Take 22 credit hours: INEN 991, INEN 995, INEN 997(18)

Electives

- Select 24 credit hours from: INEN 600-899
- Select 12 credit hours from: INEN 700-899
- Select 12 credit hours from one of the following tracks.
    - Human Machine Systems Engineering Track: Take INEN 821 and Select 9 credit hours from: INEN 721, 812, 813, 814
    - Manufacturing & Service Enterprise Engineering Track: Take 12 credit hours: INEN 833, 841, 852,853

Dissertation Research:
A student may not register for dissertation credits before passing Qualifying Examination. No more than 18 dissertation credits are counted toward the total credit hours requirement for the degree.

Qualifying Examination:
The Qualifying Examination is given to assess the student's competence in a broad range of relevant subject areas. Only students with unconditional status and in good academic standing may take the Qualifying Examination. A student who wants to retake the Qualifying Examination must apply to retake the Qualifying Examination by the posted deadline. No student is permitted to take the Qualifying Examination more than twice. A student not recommended for re-examination or who fails the exam on a second attempt may be dismissed from the doctoral program.

Preliminary Oral Examination:
The Preliminary Oral Examination is conducted by the student's dissertation committee and is a defense of the student's dissertation proposal. Passing this exam satisfies requirements for Ph.D. Candidacy. Failure on the examination may result in dismissal from the doctoral program. The student's Advisory Committee may permit one re-examination. At least one full semester must elapse before the re-examination. Failure on the second attempt will result in dismissal from the doctoral program.

Admission to Candidacy
Student will be admitted to candidacy upon successful completion of the Qualifying Exam and the Preliminary oral Exam.

Final Oral Examination:
The Final Oral Examination is conducted by the student's dissertation committee. This examination is the final dissertation defense presentation that is scheduled after a dissertation is completed. The examination may be held no earlier than one semester (or four months) after admission to candidacy. Failure on the examination may result in dismissal from the doctoral program. The student's Advisory Committee may permit one re-examination. At least one full semester must elapse before the re-examination. Failure on the second attempt will result in dismissal from the doctoral program.

Submission of Dissertation:
Upon passing the Ph.D. Final Oral Examination, the Ph.D. student must have the dissertation approved by each member of the student's dissertation committee. The approved dissertation must be submitted to The Graduate School by the deadline given in the academic calendar, and must conform to the Graduate School's guidelines for theses and dissertations.

Directory of Faculty

- Davis, Lauren, Associate Professor, BS, Computational Mathematics, Rochester Institute of Technology; MSIME, Rensselaer Polytechnic Institute; PhD, North Carolina State University
- Desai, Salil, L., Associate Professor, BSME, University of Bombay; MSIE, PhD, University of Pittsburgh
- Jiang, Steven, Associate Professor, MSME, East China Institute of Technology; MS, Nanjing University of Science & Technology; PhD, Clemson University
- Jiang, Zongliang, Assistant Professor, BS, Shanghai Jiao Tong University ; MS, PhD, North Carolina State University
- Li, Zhichao, Assistant Professor, BS, MS, Tianjin University of Technology and Education ; Ph.D., Kansas State University
- McBride, Maranda, Assistant Professor (Joint with Business Administration), BS, MS, PhD, North Carolina A&T State University

- Ntuen, Celestine A., Distinguished University Professor, NCE, College of Education, Uyo, Nigeria; BSISE, MSIE, PhD, West Virginia University
- Park, Eui H., Professor, BS, Yonsei University; MBA, City University; MSIE, PhD, Mississippi State University
- Qu, Xiuli, Assistant Professor, BEEE, MSEE, University of Science and Technology Beijing; MSIE, PhD, Purdue University
- Ram, Bala, Professor and Interim Associate Dean for Graduate Programs and Research, BSME, MSIE, Indian Institute of Technology, Madras; PhD, State University of New York at Buffalo
- Sarin, Sanjiv, Professor and Vice Provost for Research, Graduate Programs and Extended Learning and Dean, Graduate School, BSChE, MSIE, Indian Institute of Technology, Delhi; PhD, State University of New York at Buffalo
- Seong, Younho, Associate Professor, BSISE, MSIE, Incheon University; PhD, State University of New York at Buffalo
- Smith-Jackson, Tonya, Professor and Chair, BS, UNC-Chapel Hill; MS, PhD, North Carolina State University
- Stanfield, Paul, Associate Professor, BSEE, MSIE, Ph.D., North Carolina State University; MBA, University of North Carolina at Greensboro

Information Technology, MS

School/College: School of Technology
Degree(s) Offered: Master of Science
Graduate Coordinator: Dr. Rajeev Agrawal **Email**: ragrawal@ncat.edu **Phone**: 336-285-3137
Department Chair: Dr. Clay Gloster, Jr. **Email**: cgloster@ncat.edu **Phone**: 336-285-3134

The Master of Science in Information Technology prepares students to pursue technical, as well as management careers in all employment sectors. The program emphasizes acquisition of sound theoretical concepts with intensive "hands-on" experience in the area of information technology. The courses are taught by faculty with high level expertise gained through their research activity, affiliations with industry and professional experience. Graduates of the program work in a variety of positions, some of which include Database and Network Administrator, System Analyst, IT consultant, and Project Manager. Recent graduates are employed with EMC, Accenture, AT&T, General Electric, IBM, Northrop Grumman, BlueCross BlueShield, and state and federal agencies. Students also have the opportunity to pursue Doctoral study.

Program Outcomes:

- An ability to communicate effectively with a range of audiences
- An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
- An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
- An ability to analyze the local and global impact of computing on individuals, organizations, and society
- An understanding of professional, ethical, legal, security and social issues and responsibilities

Degree Requirements

Total credit hours: 30 (thesis), 36 (course)

Core Courses

- Take 12 credit hours: ITT 700, 701, 702, 703

Thesis option

- Select 6 credit hours from: ITT 620, 625, 685, 730, 735, 740, 749; ECT 759
- Select 6 credit hours from: ITT 605, 610, 615, 650, 655, 665, 725, 729, 731, 745, 747, 750, 752
- Thesis: Select 6 credit hours from: ITT 791, 792, 793, 794

Course option

- Select 6 credit hours from: ITT 620, 625, 685, 730, 735, 740; ECT 759
- Select 18 credit hours from: ITT 605, 610, 615, 650, 655, 665, 725, 729, 731, 745, 747, 750, 752
- Comprehensive Examination: ITT 787, 788

Directory of Faculty

- Rajeev Agrawal, Assistant Professor, B.S., G.B. Pant University, India; M.S., Thaper University, India; Ph.D., Wayne State University
- DeWayne Brown, Professor, B.S., University of South Carolina; M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University
- Larry Burton, Associate Professor, B.S., M.S., Ph.D., Duke University
- Naser El-Bathy, Assistant Professor, B.A., Cairo University, M.S., Wayne State University, Ph.D., Lawrence Technological University

- Clay Gloster, Jr., Professor and Chair B.S., M.S., North Carolina A&T State University; Ph.D., Computer Engineering, North Carolina State University
- Ibraheem Kateeb, Assistant Professor, B.S., University of Science and Technology (Yarmouk University); M.S., Ph.D., North Carolina A&T State University
- Cameron Seay, Assistant Professor, B.A., M.A., City University of New York; M.B.A., M.S., Ph.D., Georgia State University
- Evelyn Sowells, Adjunct Assistant Professor, B.S., M.S., Computer Science, North Carolina A& T State University; Ph.D., Electrical Engineering, North Carolina A& T State University
- Li-Shiang Tsay, Assistant Professor, B.A., M.S., Ph.D., Information Technology, University of North Carolina at Charlotte
- Yili Tseng, Associate Professor, B.S., National Taiwan University; M.S., University of Florida; M.S., Ph.D., University of Central Florida
- Qing-An Zeng, Assistant Professor, B.S., Chengdu University of Information Technology, China; M.S., Ph.D., Shizuoka University, Japan

Instructional Technology, MS

School/College: School of Education **Degree(s) Offered:** Master of Science
Graduate Coordinator: Muktha Jost **Email:** mjost@ncat.edu Phone: 336-285-2138
Department Chair: Anthony Graham **Email:** agraham@ncat.edu Phone: 336-334-7848

The Master of Science in Instructional Technology program prepares highly-qualified instructional technologists for K-12 schools, businesses, and industries. Through courses in instructional design, multimedia development and evaluation, media and technology, and assistive technology, candidates in the Master of Science in Instructional Technology develop knowledge, skills, dispositions, and professional attitudes that empower them to become lifelong learners and exemplary instructional technologists in various professional contexts. The MS program in Instructional Technology is aligned with professional standards commensurate with the Interstate Teacher Assessment and Support Consortium (InTASC), the National Council for the Accreditation of Teacher Education (NCATE), the North Carolina Department of Public Instruction (NCDPI), and National Board Professional Teaching Standards (NBPTS). The Master of Science (MS) program in Instructional Technology is an accredited program by the National Council for the Accreditation of Teacher Education (NCATE) and by the North Carolina Department of Public Instruction (NCDPI).

Teacher Education Licensure: Degree completion and obtaining a teaching license in the State of North Carolina or any other state are separate processes. Admission to this program does not guarantee admission to the Teacher Education Licensure program. To be recommended for licensure, candidates must first be formally admitted to the Teacher Education Licensure Program. Failure to complete the Teacher Education admission requirements during the first semester of enrollment may result in the student's inability register for professional core courses. Candidates should review licensure requirements at http://www.ncat.edu/academics/schools-colleges1/soe/teacher-education/index.html or visit the School of Education for guidance on specific requirements.

Additional Admission Requirements

- Standard Professional 1 or 2 NC Teaching License required for Media Coordinator track and the Instructional Technology Director track
- Graduate Record Examination (GRE) Scores

Program Outcomes

Candidates in the MS Instructional Technology program will:

- Demonstrate effective critical writing skills appropriate for educational scholars according to current standards of the profession
- Demonstrate effective knowledge, skills, and attitudes in diversity issues, learning theories, technological skills, and methods of instruction
- Demonstrate their depth of technological knowledge and breadth of technological skills for appropriate learning contexts.

Degree Requirements

Total credit hours: 33

Core courses

- Take 21 credit hours: CUIN 711; INST 700, 702, 703, 721, 722, 735
- Take 3 credit hours of Internship: INST 798
- Comprehensive Exam: INST 788(0)

Instructional Technology Media Coordinator track

- Take 6 credit hours: INST 680, 723

- Take 3 credit hours from: INST 613, 614; ENGL 626, 627

Instructional Technology Director track
- Take 6 credit hours: INST 723, 752
- Select 3 credit hours from: BUAD 600-899, ADED 600-899, CUIN 600-899, TECH 600-899

Business and Industry track
- Take 6 credit hours: INST 705, 752
- Select 3 credit hours from: BUAD 600-899, ADED 600-899, CUIN 600-899, TECH 600-899

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, Associate Professor, B.A., University of Virginia, M.Ed., Averett College, Ph.D., University of Virginia
- Debra Davidson, Adjunct Assistant Professor, B.S. Appalachian State University; M.S., University of Nebraska at Omaha; Ph.D., University of Nebraska
- Elizabeth Jane Davis, Associate Professor, B.A., Duke University; M.Ed., University of Virginia; Ph.D., University of North Carolina at Greensboro
- Charlesetta Dawson, Clinical Assistant Professor, B.A., M.A., University of Northern Iowa; Ph.D., University of North Carolina at Greensboro
- Michael Day, B.F.A and M.M., University of South Dakota; D.M.A., (Doctor of Musical Arts), University of Arizona
- Kimberly Erwin, Assistant Professor, B.S., M.S., North Carolina A&T State University, Ph.D., Virginia Polytechnic Institute and State University
- Loury Floyd, Associate Professor and Associate Dean for Undergraduate Programs, B.S., North Carolina A&T State University; M.S., University of Wisconsin-LaCrosse; Ph.D., The College of William and Mary
- Anthony Graham, Professor and Chairperson, B.A., University of North Carolina at Chapel Hill; M.Ed., Ph.D., University of North Carolina at Greensboro
- Karen D. Guy, Assistant Professor and Assistant Dean for Student Support Services, B.S., North Carolina A&T State University; M.Ed., North Carolina Central University; Ed.D., University of North Dakota
- Vivian Hampton, Associate Professor, B.A., North Carolina Central University; M.Ed., Howard University; Ph.D., University of Maryland
- Carl Haltom, Adjunct Assistant Professor, B.S. Cortland State College; M.A., San Francisco State University; Ed.D., Pennsylvania State University
- Pamela I. Hunter, Associate Professor, B.A., Livingston College; M.Ed., University of North Carolina at Greensboro; Ph.D., Ohio State University
- Sharon Hunter, Clinical Faculty, B.S., North Carolina A & T State University; M.A., University of North Carolina at Charlotte, Ed.D., Nova Southern University
- Ioney James, Associate Professor, B.A., University of West Indies, M.S., Central Connecticut State University, Ph.D., University of Albany
- Muktha Jost, Professor, B.A., Madras University; M.S., University of Kansas; Ph.D., Iowa State University
- Cathy Kea, Professor, B.A., North Carolina Central University; M.S., University of Wisconsin-LaCross; Ph.D., University of Kansas
- Thelma King, Associate Professor (Retd.), B.S. NC A&T State University; M.S., University of North Carolina at Greensboro; Ph.D., Virginia Polytechnic Institute and State University
- Dorothy D. Leflore, Associate Professor, B.S., Mississippi Valley State University; M.S., University of Oregon; Ph.D., University of Oregon

- Stephen McCary-Henderson, Associate Professor, B.S., North Carolina A&T State University; M.Ed. University of Southern Mississippi; Ph.D., Union Institute and University
- Barbara Mosley, Associate Professor, B.A., M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute & State University
- Felicia Sawyer, Clinical Faculty, B.A., North Carolina Central University; M.A.T., The Ohio State University; Ph.D., Capella University
- Nichole Smith, Assistant Professor, B.S., B.A, Appalachian State University; M.Ed., University of North Carolina at Greensboro; Ed.D., University of North Carolina at Chapel Hill
- Thomas J. Smith, Associate Professor, B.A., Manchester College; M.S., Indiana University; Ph.D., University of South Carolina
- Karen Smith-Gratto, Professor, B.A., Christopher Newport College; M.A., Ph.D., University of New Orleans
- Dawn C. Waegerle, Clinical Assistant Professor, B.A., M.A., Oral Roberts University; Ed.D. College of William and Mary
- Kendra Williamson, Adjunct Assistant Professor, B.S., North Carolina A&T State University; M.Ed., Appalachian State University; Ph.D., University of North Carolina at Greensboro
- Ereka Williams, Associate Professor, B.S., M.A.; Fayetteville State University; Ph.D., University of North Carolina at Greensboro

Contributing Faculty

- Valerie McMillian, Associate Professor of Family and Consumer Sciences, B.S., M.Ed., South Carolina State University; Ph.D., Iowa State University
- Dwana Waugh, Assistant Professor of History, Ph.D., University of North Carolina at Chapel Hill

Leadership Studies, PhD

School/College: School of Education
Degree(s) Offered: Doctor of Philosophy
Department Chair: Comfort Okpala **Email:** cookpala@ncat.edu Phone: 336-256-2342

The doctoral program in leadership studies prepares tomorrow's leaders to solve societal challenges through the study of theoretical and practical knowledge in leadership studies. Through its commitment to civic engagement, transformative research and creative scholarship the program produces critically minded scholars who are social justice advocates capable of transforming organizations to maximize human potential.

Additional Admission Requirements

- A master's degree from a college or university recognized by a regional or general accrediting agency.
- Interest in conducting research in leadership studies. Preferred experience in a leadership or administrative capacity
- A completed Graduate Record Exam (GRE) general test, or the Graduate Management Admissions Test (GMAT), or the Miller Analogies Test (MAT) as applicable to the discipline area of the student.
- Selected applicants are first interviewed by an Admission Committee as part of the admission requirements, prior to the recommendation for acceptance into the program.

Program Outcomes

- Demonstrate understanding of major leadership theories in Leadership Studies, and the ability to analyze and critique these theories, and apply these theories in diverse settings.
- Effectively demonstrate decision making skills and a repertoire of knowledge needed to lead, organize, and engage diverse local, national, and global communities.
- Able to use a range of perspectives from interdisciplinary fields of study particularly to provide leadership that addresses societal challenges.
- Articulate an understanding of the role of ethics in leadership, and develop ethical reasoning as well as reflection skills that promote social justice.
- Demonstrate the ability to design, analyze, critique, and conduct research using qualitative, quantitative, and mixed methods research techniques.

Degree Requirements

Total credit hours: 54 (beyond the master's degree)

Core Courses

- Take 18 credit hours: LEST 800, 801, 802, 810, 812, 840, 991, 995

Research Courses

- Take 9 credit hours: LEST 815, 860, 862
- Select 3 credit hours from: LEST 817, 861, 863, 864, 865; INST 753

Dissertation:

- Take 12 credit hours: LEST 997

Electives

Select 12 credit hours from courses in one of the following tracks. Students also have the option of designing a coherent track in consultation with their advisor.

Higher Education and Community College Leadership
- Take 9 credit hours: LEST 818, 830, 850
- Select 3 credit hours from: ADED 776, 777, 778; LEST 831, 832, 833, 885

Transformative Leadership for Civic and Community Engagement
- Take 9 credit hours: LEST 811, 816, 850
- Select 3 credit hours from: LEST 841, 842, 843, 885

Leadership for K-20 Diversity and Educational Justice
- Take 9 credit hours: LEST 835, 850, 998
- Select 3 credit hours from: ADED 777; CUIN 701, 729; LEST 814, 885; MSA 771

African American Leadership Studies
- Take 9 credit hours: LEST 811, 814, 850
- Select 3 credit hours from: HIST 712; LEST 844, 885

Interdisciplinary
- Take 3 credit hours: LEST 850
- Select 9 credit hours from: BUED 600 - 899; CUIN 600 – 899; EES 600- 899; HDSV 700 - 899; MATH 600 - 899; MEEN 600 - 899; MGMT 600 - 899; MIS 600 -899; MKTG 600 – 899; SOWK 600 - 699; TECH 600 - 899

Dissertation Research:
A student may not register for dissertation credits before passing Qualifying Examination. No more than 18 dissertation credits are counted toward the total credit hours requirement for the degree.

Qualifying Examination:
The Qualifying Examination is given to assess the student's competence in a broad range of relevant subject areas. Only students with unconditional status and in good academic standing may take the Qualifying Examination. A student who wants to retake the Qualifying Examination must apply to retake the Qualifying Examination by the posted deadline. No student is permitted to take the Qualifying Examination more than twice. A student not recommended for re-examination or who fails the exam on a second attempt may be dismissed from the doctoral program.

Preliminary Oral Examination:
The Preliminary Oral Examination is conducted by the student's dissertation committee and is a defense of the student's dissertation proposal. Passing this exam satisfies requirements for Ph.D. Candidacy. Failure on the examination may result in dismissal from the doctoral program. The student's Advisory Committee may permit one re-examination. At least one full semester must elapse before the re-examination. Failure on the second attempt will result in dismissal from the doctoral program.

Admission to Candidacy
Student will be admitted to candidacy upon successful completion of the Qualifying Exam and the Preliminary oral Exam.

Final Oral Examination:
The Final Oral Examination is conducted by the student's dissertation committee. This examination is the final dissertation defense presentation that is scheduled after a dissertation is completed. The examination may be held no earlier than one semester (or four months) after admission to candidacy. Failure on the examination may result in dismissal from the doctoral program. The student's Advisory Committee may permit one re-examination. At

least one full semester must elapse before the re-examination. Failure on the second attempt will result in dismissal from the doctoral program.

Submission of Dissertation:
Upon passing the Ph.D. Final Oral Examination, the Ph.D. student must have the dissertation approved by each member of the student's dissertation committee. The approved dissertation must be submitted to The Graduate School by the deadline given in the academic calendar, and must conform to the Graduate School's guidelines for theses and dissertations.

Directory of Faculty

- Ceola Ross Baber, Professor of Leadership Studies; B.A., California State University, M.A., Stanford University, Ph.D. Purdue University
- Elizabeth Barber, Associate Professor of Leadership Studies; B.A., Roanoke College, English, Psychology and Education, M.S., Ph.D., Virginia Tech, Literacy Studies
- Edward Fort, Chancellor Emeritus, Professor, B.S., Wayne State University; M.S., Wayne State University; Ed.D., Educational Administration/Leadership, University of California Berkeley
- William Harvey, Dean School of Education and Professor of Leadership Studies; B.A. English, West Chester University, Ed.M. Social and Philosophical Foundations, Rutgers University, Ed.D. Anthropology of Education, Rutgers University
- Daniel Miller, Associate Professor of Leadership Studies; B.S., University of Nebraska, Psychology, M.S., Ph.D., Cornell University, Organizational Behavior/Educational Leadership/Public Policy
- Comfort Okpala, Professor and Interim Chair of Leadership Studies, B.S., Accounting, Roosevelt University, MBA, Business Management, Governors State University, Ed.D., Fayetteville State University, Educational Leadership & Research
- Larry Powers, Associate Dean, School of Education and Associate Professor of Leadership Studies, B.A., MAED., Agricultural Education, Tuskegee University, Ph.D., Michigan State University, Agricultural Education
- Forrest Toms, Associate Professor of Leadership Studies B.S., M.A., Middle Tennessee State University; Ph.D., Howard University

Contributing Faculty

- Vincent W. Childress, Professor, School of Technology, B.S., M.S., Ph.D., Virginia Polytechnic Institute and State University;
- Olen Cole, Jr., Professor /Chair, History Department, B.A., M.A., California State University at Fresno; Ph.D., University of North Carolina at Chapel Hill
- Chiekewe Anyansi-Archibong, Professor of Strategic and International Management, B.S., M.B.A., Ph.D., University of Kansas
- Brian Sims, Assistant Professor, Psychology Department, B.A., Florida A&M University; Ph.D., University of Michigan
- Silvanus Udoka, Associate Professor/Chair Department of Management, B.S., Weber State University; M.S., Ph.D., Oklahoma State University

Adjunct Faculty

- Sylvia Burgess, Adjunct Assistant Professor, B.A., University of North Carolina at Greensboro, Speech Pathology and Audiology, MPA, University of North Carolina at Greensboro, Ph.D., North Carolina A&T State University, Leadership Studies
- Don Cameron, Adjunct Professor, B.S. Atlantic Christian College, MAT, University of North Carolina at Chapel Hill, Health & Physical Education, Ed.D. Nova University, Community College Education
- William Gentry, Adjunct Associate Professor, B.S., Psychology, Emory University, M.S., University of Georgia, Psychology, Ph.D., University of Georgia, Psychology

- Belinda McFeeters, Adjunct Associate Professor University of North Carolina at Greensboro, B.S., Business & Community Services, Minor: Sociology; 2nd Minor: Human Development and Family Studies, M.S., North Carolina A&T State University, Ph.D., Virginia Polytechnic Institute & State University,
- Cynthia McCauley, Adjunct Associate Professor, B.A., King College, Psychology, M.A., Ph.D., University of Georgia, Industrial Organizational Psychology;
- Philip Mutisya, Adjunct Professor, M.Ed., University of Massachusetts, Amherst, International Education, Ed.D., University of Massachusetts, Amherst, Instructional Leadership
- Abul Pitre, Adjunct Associate Professor; B.S., Southern University, Social Studies Education, M.A., Social Science/History, Southern University, Ph.D., Colorado State University, Educational Leadership
- Louie Ross, Adjunct Associate Professor, B.S. Fayetteville State University, M. A., North Carolina Central University, Sociology, Ph.D. North Carolina State University, Sociology
- Ellen Van Velsor, Adjunct Associate Professor, B.A., Southern New York University, Sociology, M.A., University of Florida, Sociology, Ph.D., University of Florida, Sociology

Master of Arts in Teaching - Biology Education, MAT

School/College: College of Arts & Sciences
Degree(s) Offered: Master of Arts in Teaching
Graduate Coordinator: Dr. Mary A. Smith Email: smithma @ncat.edu Phone: 336-285-2160
Department Chair: Dr. Mary A. Smith Email: smithma @ncat.edu Phone: 336-285-2160

Situated within the School of Education's conceptual framework of "Professional Educator: A Catalyst for Learning," the M.A.T in Biology Education program is designed for college graduates who have decided to enter the teaching profession, many of whom will already be lateral entry teachers, teachers changing fields and perspective candidates who are taking coursework before entering the classroom. It is another way of addressing the critical teacher shortage, since post baccalaureate students accepted into this program will have the academic credentials and maturity necessary to complete both introductory and advanced work in teacher education in a graduate level program. The Masters of Art in Teaching will enable prospective teachers, who bring content knowledge to the graduate degree, the opportunity to develop the knowledge, skills, and dispositions to become excellent teachers.

Teacher Education Licensure: Degree completion and obtaining a teaching license in the State of North Carolina or any other state are separate processes. Admission to this program does not guarantee admission to the Teacher Education Licensure program. To be recommended for licensure, candidates must first be formally admitted to the Teacher Education Licensure Program. Failure to complete the Teacher Education admission requirements during the first semester of enrollment may result in the student's inability register for professional core courses. Candidates should review licensure requirements at http://www.ncat.edu/academics/schools-colleges1/soe/teacher-education/index.html or visit the School of Education for guidance on specific requirements.

Additional Admission Requirements

- GRE scores

Program Outcomes

- SLO 1 Content Knowledge: Candidates in the MAT Biology Secondary Education Program will illustrate their ability to align learning theories, biological content knowledge, pedagogical content knowledge, and the Common Core and North Carolina Essential Standards as indicated by passing scores on the Praxis II Secondary Biology Exam.
- SLO 2 Communication: During CUIN 660 Clinical Practice in 21st Century Classroom course, candidates will communicate effectively orally and in writing with students from diverse backgrounds (grades 9-12) according to standards commonly practiced in the profession.
- SLO 3 Critical Thinking: In BIOL 635 and CUIN 660, candidates will effectively develop and implement the Content Area Instructional Unit Work Sample (CAIUWS).

Degree Requirements
Total Credit Hours: 39

Phase I (A Licensure)

- Take 27 credit hours: CUIN 618, 729, 715, 627, 660; BIOL 635, 722, 723

The following requirements must be met before a student can advance to Phase II:

- GPA of 3.0 or better in Phase I coursework
- Pass score on Praxis II
- Class A licensure

Phase II (M Licensure)

- Take 9 credit hours: CUIN 711, 728; BIOL 712
- Select 3 credit hours from: BIOL 600-899

Directory of Faculty

- David W. Aldridge, Professor and Associate Dean for Research and Graduate Studies, B.S., University of Texas, Arlington; Ph.D., Syracuse University
- Bernot, Kelsie, Assistant Professor, BS Duquesne University; PhD Biochemistry, Johns Hopkins University
- Goldie S. Byrd, Nathan F. Sims Endowed Professor and Dean of College of Arts & Sciences, B.S., North Carolina A&T State University; Ph.D., Meharry Medical College
- Roy J. Coomans, Associate Professor and Associate Chairperson, B.S., Eckerd College; Ph.D., University of North Carolina at Chapel Hill
- Doretha B. Foushee, Associate Professor, B.S., Shaw University; M.S., North Carolina Central University; Ph.D., University of Maryland at College Park
- Gregory D. Goins, Associate Professor, B.S., University of North Carolina at Chapel Hill; M.S., Ph.D., North Carolina State University
- Andrew G. Goliszek, Associate Professor, B.S., University of West Florida; M.S., Ph.D., Utah State University
- Jessica (Jian) Han, Assistant Professor, B.S., M.S., Nankai University; M.S.,University of Hawaii at Manoa; Ph.D., Pennsylvania State University
- Scott H. Harrison, Assistant Professor, B.S., Ph.D., Michigan State University
- Randall Hayes, Assistant Professor, B.S., University of Kentucky, Lexington; Ph.D., University of Rochester
- Shannon Z. Jones, Adjunct Associate Professor, BS Biology, Winston-Salem State University; PhD, Toxicology, University of North Carolina, Chapel Hill; SPIRE Postdoctoral Fellow, UNC-CH 2012-present.
- R. Lang-Walker, PhD, Molecular and Cellular Pharmacology, University of Miami School of Medicine
- Perry V. Mack, Adjunct Professor, B.S., South Carolina State College; M.S., North Carolina Central University; Ed.D., Rutgers University
- Patrick Martin, Assistant Professor, B.S., Virginia Union University; Ph.D., University of Virginia
- Perpetua Muganda, Professor, B.S., Lock Haven State College; M.S., Howard University; Ph.D., Indiana University School of Medicine
- Robert H. Newman, Assistant Professor, B.A., McDaniel College; Ph.D., Johns Hopkins University
- Elimelda M. Ongeri, Assistant Professor, B.S., Egerton University; M.S., Ph.D., Purdue University
- Checo Rorie, Assistant Professor, B.S., Clark Atlanta University; Ph.D., University of North Carolina at Chapel Hill
- Mary A. Smith, Associate Professor and Chairperson, B.S., M.S., Morgan State University; Ph.D. Cornell University
- Catherine D. White, Associate Professor, B.S., Johnson C. Smith University; Ph.D., Wayne State University
- Joseph J. Whittaker, Associate Professor, A.B., Talladega College; Ph.D., Meharry Medical College

Master of Arts in Teaching - Business Education, MAT

School/College: School of Business and Economics **Degree(s) Offered:** Master of Arts in Teaching
Graduate Coordinator: Lisa Gueldenzoph Snyder **Email:** lguelden@ncat.edu Phone: 336-334-7657
Department Chair: Lisa Gueldenzoph Snyder **Email:** lguelden@ncat.edu Phone: 336-334-7657

The Master of Arts in Teaching (MAT) in Business Education is designed for college graduates who have earned a bachelor's degree in a business discipline. Graduates of the program are licensed by the North Carolina Department of Public Instruction to teach business education courses in grades 7 to 12. In addition to pursuing careers in public education, graduates of the MAT in Business Education also have the opportunity to seek positions in the workplace as business trainers. The degree enables candidates to develop the knowledge, skills, and dispositions needed to become excellent instructors. All Teacher Education programs are accredited by the National Council for Accreditation of Teacher Education (NCATE) and approved by the North Carolina Department of Public Instruction. The Business Education program is accredited by AACSB International. The Master of Arts in Teaching in Business Education is accredited through the School of Education's affiliation with NCATE and TEAC.

Teacher Education Licensure: Degree completion and obtaining a teaching license in the State of North Carolina or any other state are separate processes. Admission to this program does not guarantee admission to the Teacher Education Licensure program. To be recommended for licensure, candidates must first be formally admitted to the Teacher Education Licensure Program. Failure to complete the Teacher Education admission requirements during the first semester of enrollment may result in the student's inability register for professional core courses. Candidates should review licensure requirements at http://www.ncat.edu/academics/schools-colleges1/soe/teacher-education/index.html or visit the School of Education for guidance on specific requirements.

Additional Admission Requirements

- Undergraduate major in a business discipline (or 24 credits of business coursework with a grade of C or better
- Minimum overall undergraduate GPA of 2.80 (Praxis I required if 2.50 to 2.79)
- Two years of full-time business work experience (or BUED 670/671)
- Not currently licensed to teach
- No felony convictions
- Targeted, well-written letter of intent about a career in business education
- Supportive recommendation letters from persons who know about the candidate's interaction with children and/or adolescents
- GRE or GMAT scores

Program Outcomes:

- Teacher leadership. Teacher leaders assume the roles and responsibilities of collaborative leaders in schools and communities. Teachers demonstrate leadership in their classrooms, schools, and professional organizations; they advocate for students and adhere to effective educational practices and policies; and they are role models for ethical leadership. Teacher leaders will know and be able to: (a) demonstrate effective ongoing communication, collaboration, and team-building among colleagues, (b) facilitate mentoring and coaching with novice teachers, (c) set goals and establish priorities while promoting educational initiatives that positively affect student learning, and (d) participate in professional learning communities.
- Educational Environment. Teacher leaders model leadership by establishing a positive and productive environment for a diverse population of students, their families, and the community. Teachers are knowledgeable about cultures and global issues and how they are contextualized locally. Teachers help colleagues develop effective strategies for students with special needs. They encourage positive, constructive relations among colleagues and students. Teacher leaders: (a) facilitate the development of inviting, respectful, supportive, inclusive, and flexible educational communities; (b) create collaborative partnerships with families,

schools, and communities to promote a positive school culture; (c) facilitate and model caring and respectful treatment of individuals within the learning community; (d) demonstrate knowledge and understanding of diverse world cultures and global issues; (e) encourage high expectations for all students; and (f) collaboratively design and implement curriculum and instruction that is responsive to learner differences.

- Content and Curriculum Expertise. Teacher leaders have a deep knowledge of the subjects they teach and understanding of curriculum theory and development. They value collaboration and the interconnectedness of disciplines. They understand the importance of curriculum relevance in engaging students in content. Teacher leaders: (a) demonstrate in-depth knowledge of curriculum, instruction, and assessment; (b) model the integration of 21st century content and skills into educational practices; and (c) develop relevant, rigorous curriculum.
- Student Learning. Teacher leaders facilitate student learning through evidence-based practice informed by research. They understand and apply research in child and adolescent development, cognitive development, and general and specialized pedagogy. They encourage critical reading, writing, and thinking in the learning process. They foster instructional and evaluation methods that embrace variety and authenticity. They promote student reflection and self-assessment. They encourage colleagues and students to take on leadership roles and work in teams. Teacher leaders: (a) seek and use existing research to inform school practices; (b) design action research to investigate and improve student learning and school policies and practices; (c) model technology integration that supports student learning; and (d) critically analyze student and school performance data to determine needs and plan instruction that is rigorous, coherent, and substantiated within a theoretical and philosophical base.
- Reflection. Continuous Improvement. Teacher leaders contribute to systematic, critical analysis of learning in their classrooms and beyond. They are lifelong learners who model and support ongoing professional development. Teachers embrace critical thinking, problem solving, and innovation. Teacher leaders: (a) promote an educational culture that values reflective practice; (b) model the development of meaningful professional goals; and (c) model personal and professional reflection to extend student learning and school improvement.

Degree Requirements
Total credit hours: 39

The following requirements must be met before a student can advance to Phase II:

- GPA of 3.0 or better in Phase I coursework
- Pass score on Praxis II
- Class A licensure

Core courses

- Take 27 credit hours: CUIN 618, 627, 660, 670, 729; BUED 624, 675, 682

Thesis option

- Select 6 credit hours from: ACCT 708; ECON 708; MGMT 705, 712, 718; MIS 713, 719, 744; MKTG 716; TECH 717, 660, 661, 670, 708
- Take 3 credit hours: CUIN 711
- Thesis: Take 3 credit hours: BUED 796

Project option

- Select 6 credit hours from: ACCT 708; ECON 708; MGMT 705, 712, 718; MIS 713, 719, 744; MKTG 716; TECH 717, 660, 661, 670, 708
- Take 3 credit hours: CUIN 715
- Project: Take 3 credit hours: BUED 797

Directory of Faculty

- Sherrie D. Cannoy, Assistant Professor, B.S., M.S. (Bus.Ed.), M.S. (IT Mgnt.), Ph.D., University of North Carolina at Greensboro
- Betty F. Chapman, Associate Professor, B.S., Shaw University; M.B.A., North Carolina Central University; Ph.D., Virginia Polytechnic Institute and State University
- Stephanie Kelly, Assistant Professor, B.S., M.S., Murray State University; Ph.D., University of Tennessee
- Jorge Gaytan, Associate Professor, B.B.A., Western Michigan University; M.B.A., The University of Texas at El Paso; Ed.D., The University of Texas at El Paso
- Lisa Gueldenzoph Snyder, Professor and Chairperson, B.S., Northern Michigan University; M.Ed., Ph.D., Bowling Green State University
- Thelma M. King, Associate Professor and Coordinator, Business Teacher Education Program, B.S., North Carolina A&T State University; M.S., University of North Carolina at Greensboro; Ph.D., Virginia Polytechnic Institute and 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 Vice Provost for Strategic Planning and Institutional Effectiveness, B.Ed., University of Technology, Jamaica; M.S., Ph.D., Southern Illinois University at Carbondale

Master of Arts in Teaching - Chemistry Education, MAT

School/College: College of Arts and Sciences
Degree(s) Offered: Master of Arts in Teaching, Master of Science
Graduate Coordinator: Zerihun Assefa **Email:** zassefa@ncat.edu **Phone**: 336-285-2255
Department Chair: Margaret I. Kanipes **Email:** mikanipe@ncat.edu **Phone**: 336-285-2233

Situated within the School of Education's conceptual framework of "Professional Educator: A Catalyst for Learning," the M.A.T in Chemistry Education program is designed for college graduates who have decided to enter the teaching profession, many of whom will already be lateral entry teachers, teachers changing fields and perspective candidates who are taking coursework before entering the classroom. It is another way of addressing the critical teacher shortage, since post baccalaureate students accepted into this program will have the academic credentials and maturity necessary to complete both introductory and advanced work in teacher education in a graduate level program. The Masters of Art in Teaching will enable prospective teachers, who bring content knowledge to the graduate degree, the opportunity to develop the knowledge, skills, and dispositions to become excellent teachers.

Teacher Education Licensure: Degree completion and obtaining a teaching license in the State of North Carolina or any other state are separate processes. Admission to this program does not guarantee admission to the Teacher Education Licensure program. To be recommended for licensure, candidates must first be formally admitted to the Teacher Education Licensure Program. Failure to complete the Teacher Education admission requirements during the first semester of enrollment may result in the student's inability register for professional core courses. Candidates should review licensure requirements at http://www.ncat.edu/academics/schools-colleges1/soe/teacher-education/index.html or visit the School of Education for guidance on specific requirements.

Additional Admission Requirements

- A Bachelor's Degree in Chemistry or a related discipline from an accredited institution.
- Completion of required pre-requisite courses (1 year of Physical Chemistry, Organic Chemistry, General Biochemistry, Qualitative and Quantitative Analysis)
- A passing score on Praxis I

Program Outcomes

- SLO 1 Content Knowledge: Candidates in the MAT Chemistry Secondary Education Program will illustrate their ability to align learning theories, chemistry content knowledge, pedagogical content knowledge, and the Common Core and North Carolina Essential Standards as indicated by passing scores on the Praxis II Secondary Chemistry Exam.
- SLO 2 Communication: During CUIN 660 Clinical Practice in 21st Century Classroom course, candidates will communicate effectively orally and in writing with students from diverse backgrounds (grades 9-12) according to standards commonly practiced in the profession.
- SLO 3 Critical Thinking: In CUIN 660, candidates will effectively develop and implement the Content Area Instructional Unit Work Sample (CAIUWS).

Degree Requirements
Total: 39 semester hours.

Phase I

- Take 27 credit hours: CHEM 611, 651; CUIN 618, 627, 640, 660, 715, 729

The following requirements must be met before a student can advance to Phase II:

- GPA of 3.0 or better in Phase I coursework

- Pass score on Praxis II
- Class A licensure

Phase II
- Take 6 credit hours: CHEM 722, 732
- Select 3 credit hours from: CUIN 703, 711
- Select 3 credit hours from: CHEM 623, 736; WMI 629

Directory of Faculty
- William Adeniyi, Associate Professor, B.A., Hampton University; M.S., Loyola University; Ph.D., Baylor
- University, Analytical Chemistry
- Zerihun Assefa, Associate Professor, B. S., Addis Ababa University (Ethiopia); Ph.D., University of Maine, Inorganic Chemistry
- Mufeed Basti, Associate Professor, B.S., Baath University (Homs, Syria); Ph.D., North Illinois University, Physical Chemistry
- Marion Franks, Associate Professor, B.S., Clark-Atlanta University, Ph.D., Virginia Polytechnic Institute and State University. Organic Chemistry
- Etta Gravely, Associate Professor, B.S., Howard University; M.S., North Carolina A&T State University; Ed.D., UNC-Greensboro
- Julius Harp, Associate Professor, B.S., York College (Jamaica, NY); Ph.D., Howard University, Organic Chemistry
- Margaret Kanipes, Associate Professor, B.S., North Carolina A&T State University, Ph.D., Carnegie-Mellon University
- Debasish Kuila, Professor, B.Sc. (Hons.), Calcutta University, India; M.Sc., Indian Institute of Technology, Madras, Ph.D., The City University of New York
- Claude N. Lamb, Associate Professor, B.S., Mount Union College; M.S., North Carolina Central University; Ph.D., Howard University; Organic Chemistry
- Divi Venkateswarlu, Associate Professor, B.S., Sri Venkateswara University, M.S., Kakatiya University, M.Phil. University of Hyderabad, Ph.D., North Eastern Hill University
- Alex N. Williamson, Associate Professor, B.S., Jackson State University; Ph.D., University of Illinois; Inorganic Chemistry

Master of Arts in Teaching - Child Dev, Early Edu and Family Studies B-K, MAT

School/College: School of Agriculture and Environmental Sciences
Degree(s) Offered: Master of Arts in Teaching
Graduate Coordinator: Valerie Jarvis McMillan **Email:** vmcmilla@ncat.edu Phone: 336-285-4859
Department Chair: Valerie L. Giddings **Email:** vlgiddin@ncat.edu Phone: 336-334-7850

The Master of Arts in Teaching in Child Development, Early Education and Family Studies Birth–Kindergarten prepares students to 1) master the knowledge, skills and dispositions required for the Birth–Kindergarten license; 2) analyze theoretical perspectives and current research, to conduct research and to apply this knowledge toward reflective, evidence-based practice in teaching and working with families; and 3) assume diverse professional and leadership roles in a wide variety of educational and community settings. The Master of Arts in Teaching (MAT) program is accredited by the National Council for the Accreditation of Teacher Education (NCATE) and approved by the North Carolina Department of Public Instruction (NCDPI).

Teacher Education Licensure: Degree completion and obtaining a teaching license in the State of North Carolina or any other state are separate processes. Admission to this program does not guarantee admission to the Teacher Education Licensure program. To be recommended for licensure, candidates must first be formally admitted to the Teacher Education Licensure Program. Failure to complete the Teacher Education admission requirements during the first semester of enrollment may result in the student's inability register for professional core courses. Candidates should review licensure requirements at http://www.ncat.edu/academics/schools-colleges1/soe/teacher-education/index.html or visit the School of Education for guidance on specific requirements.

Additional Admission Requirements

1. GRE Scores
2. Resume

Program Outcomes:

- Upon completion of the master's program, students will communicate clearly and effectively their knowledge of child development, early education and family studies
- Upon completion of the master's program, student will be able to assess scholarly literature for contributions to issues in the child development, early education and family studies
- Upon completion of the master's program, students will be able to design a research study using appropriate techniques
- Upon completion of the master's program, students will have knowledge of theories and their application to practical global issues related to the discipline

Degree Requirements
Total: 39 semester hours.

Core Courses
4 credit hours

- FCS 711, 760
- FCS 788 Comprehensive Examination (0)

Phase I
Select 24 credit hours from: CUIN 619, 660; FCS 629, 639, 659, 701, 702, 710, 760

The following requirements must be met before a student can advance to Phase II:

- GPA of 3.0 or better in Phase I coursework
- Pass score on Praxis II
- Class A licensure

Phase II
Select 15 credit hours from: CUIN 728, 700, 704, 711, 713, 788

Directory of Faculty
- Devona Dixon, Assistant Professor, B.S., Southern University; M.S., Colorado State University; Ph.D. Louisiana State University
- Valerie L. Giddings, Associate Professor and Chairperson, B.S., Bennett College; M.S., Ph.D., Virginia Polytechnic Institute and State University
- 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
- Sung-Jin Lee Assistant Professor, B.S., Chungnam National University; M.S Chungnam National University; M.S., Ph.D. Virginia Polytechnic Institute and State University.
- 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
- Elizabeth Newcomb, Assistant Professor, B.S., M.S., Ph.D. North Carolina State University
- Yi-Ling Pan, Assistant Professor, B.S., Chung Shan Medical University; M.S., Ph.D., Florida International University.
- Rosa S. Purcell, Associate Professor, B.S., North Carolina A&T State University; M.Ed., Ph.D., University of Illinois
- Claudette Smith, Cooperative Extension Faculty, B.S., North Carolina A&T State University; M.S., Ph.D., Ohio State University
- 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 Emiriti
- 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

Master of Arts in Teaching - Elementary Education K-6, MAT

Degree(s) Offered: Master of Arts in Teaching
Graduate Coordinator: Kimberly Erwin **Email:** kderwin@ncat.edu Phone: 336-334-7848
Department Chair: Anthony Graham **Email:** agraham@ncat.edu Phone: 336-334-7850

The mission of the Master of Arts in Teaching (MAT) in Elementary Education (K-6) degree program is to prepare highly-qualified classroom teachers for the K-6 classroom. Through courses in elementary-grades mathematics, social studies, language development, diagnostic and prescriptive reading, and assessment and evaluation, candidates in the Master of Arts in Teaching, Elementary Education program develop knowledge, skills, dispositions, and professional attitudes that empower them to become lifelong learners and exemplary educational leaders inside and outside K-6 learning contexts. The MAT program in Elementary Education is aligned with professional standards commensurate with the Interstate Teacher Assessment and Support Consortium (InTASC), the National Council for the Accreditation of Teacher Education (NCATE), the North Carolina Department of Public Instruction (NCDPI), and National Board Professional Teaching Standards (NBPTS). The Master of Arts in Teaching (MAT) program in Elementary Education is an accredited program by the National Council for the Accreditation of Teacher Education (NCATE) and by the North Carolina Department of Public Instruction (NCDPI).

Teacher Education Licensure: Degree completion and obtaining a teaching license in the State of North Carolina or any other state are separate processes. Admission to this program does not guarantee admission to the Teacher Education Licensure program. To be recommended for licensure, candidates must first be formally admitted to the Teacher Education Licensure Program. Failure to complete the Teacher Education admission requirements during the first semester of enrollment may result in the student's inability register for professional core courses. Candidates should review licensure requirements at http://www.ncat.edu/academics/schools-colleges1/soe/teacher-education/index.html or visit the School of Education for guidance on specific requirements.

Additional Admission Requirements

- Two Page Double-Spaced Statement of Purpose or Intent
- Graduate Record Examination (GRE) Scores

Program Outcomes:
Candidates in the MAT Elementary Education program will: (1) demonstrate effective oral, written, and presentation skills appropriate for K-6 classrooms, (2) demonstrate effective knowledge, skills, and attitudes in diversity issues, learning theories, technological skills, and methods of instruction, (3) demonstrate the ability to implement developmentally-appropriate instruction aligned with the North Carolina Common Core and Essential Standards with K-6 students, and (4) demonstrate their ability to positively impact K-6 student learning through responsive instruction aligned with the North Carolina Common Core and Essential Standards, and (5) demonstrate their depth of content knowledge and breadth of content pedagogy for K-6 learners from diverse backgrounds.

Degree Requirements
Total credit hours: 39

Phase I

- Take 27 credit hours: ELED 610, 611, 612, 615, 616, 617, 618, 620, 704

The following requirements must be met before a student can advance to Phase II:

- GPA of 3.0 or better in Phase I coursework
- Pass score on Praxis II
- Class A licensure

Phase II

- Take 6 credit hours: ELED 619, 755, 789
- Select 3 credit hours from: CUIN 715; ELED 714
- Select 3 credit hours from: CUIN 729; ELED 740

NBPTS Certification holder option

Up to six credit hours may be waived for students who have National Board certification.

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, Associate Professor, B.A., University of Virginia, M.Ed., Averett College, Ph.D., University of Virginia
- Debra Davidson, Adjunct Assistant Professor, B.S. Appalachian State University; M.S., University of Nebraska at Omaha; Ph.D., University of Nebraska
- Elizabeth Jane Davis, Associate Professor, B.A., Duke University; M.Ed., University of Virginia; Ph.D., University of North Carolina at Greensboro
- Charlesetta Dawson, Clinical Assistant Professor, B.A., M.A., University of Northern Iowa; Ph.D., University of North Carolina at Greensboro
- Michael Day, B.F.A and M.M., University of South Dakota; D.M.A., (Doctor of Musical Arts), University of Arizona
- Kimberly Erwin, Assistant Professor, B.S., M.S., North Carolina A&T State University, Ph.D., Virginia Polytechnic Institute and State University
- Loury Floyd, Associate Professor and Associate Dean for Undergraduate Programs, B.S., North Carolina A&T State University; M.S., University of Wisconsin-LaCrosse; Ph.D., The College of William and Mary
- Anthony Graham, Professor and Chairperson, B.A., University of North Carolina at Chapel Hill; M.Ed., Ph.D., University of North Carolina at Greensboro
- Karen D. Guy, Assistant Professor and Assistant Dean for Student Support Services, B.S., North Carolina A&T State University; M.Ed., North Carolina Central University; Ed.D., University of North Dakota
- Vivian Hampton, Associate Professor, B.A., North Carolina Central University; M.Ed., Howard University; Ph.D., University of Maryland
- Carl Haltom, Adjunct Assistant Professor, B.S. Cortland State College; M.A., San Francisco State University; Ed.D., Pennsylvania State University
- Pamela I. Hunter, Associate Professor, B.A., Livingston College; M.Ed., University of North Carolina at Greensboro; Ph.D., Ohio State University
- Sharon Hunter, Clinical Faculty, B.S., North Carolina A & T State University; M.A., University of North Carolina at Charlotte, Ed.D., Nova Southern University
- Ioney James, Associate Professor, B.A., University of West Indies, M.S., Central Connecticut State University, Ph.D., University of Albany
- Muktha Jost, Professor, B.A., Madras University; M.S., University of Kansas; Ph.D., Iowa State University
- Cathy Kea, Professor, B.A., North Carolina Central University; M.S., University of Wisconsin-LaCross; Ph.D., University of Kansas
- Thelma King, Associate Professor (Retd.), B.S. NC A&T State University; M.S., University of North Carolina at Greensboro; Ph.D., Virginia Polytechnic Institute and State University
- Dorothy D. Leflore, Associate Professor, B.S., Mississippi Valley State University; M.S., University of Oregon; Ph.D., University of Oregon
- Stephen McCary-Henderson, Associate Professor, B.S., North Carolina A&T State University; M.Ed. University of Southern Mississippi; Ph.D., Union Institute and University

- Barbara Mosley, Associate Professor, B.A., M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute & State University
- Felicia Sawyer, Clinical Faculty, B.A., North Carolina Central University; M.A.T., The Ohio State University; Ph.D., Capella University
- Nichole Smith, Assistant Professor, B.S., B.A, Appalachian State University; M.Ed., University of North Carolina at Greensboro; Ed.D., University of North Carolina at Chapel Hill
- Thomas J. Smith, Associate Professor, B.A., Manchester College; M.S., Indiana University; Ph.D., University of South Carolina
- Karen Smith-Gratto, Professor, B.A., Christopher Newport College; M.A., Ph.D., University of New Orleans
- Dawn C. Waegerle, Clinical Assistant Professor, B.A., M.A., Oral Roberts University; Ed.D. College of William and Mary
- Kendra Williamson, Adjunct Assistant Professor, B.S., North Carolina A&T State University; M.Ed., Appalachian State University; Ph.D., University of North Carolina at Greensboro
- Ereka Williams, Associate Professor, B.S., M.A.; Fayetteville State University; Ph.D., University of North Carolina at Greensboro

Contributing Faculty

- Valerie McMillian, Associate Professor of Family and Consumer Sciences, B.S., M.Ed., South Carolina State University; Ph.D., Iowa State University
- Dwana Waugh, Assistant Professor of History, Ph.D., University of North Carolina at Chapel Hill

Master of Arts in Teaching - English Education, MAT

School/College: College of Arts and Sciences
Degree(s) Offered: Master of Arts in Teaching
Graduate Coordinator: Dr. Pauline Uwakweh **Email:** pauwakwe@ncat.edu
Department Chair: Dr. Faye Spencer Maor **Email:** fsmaor@ncat.edu

The Master's programs in English offer students a wide range of skills and knowledge in the areas of African American Literature, English Education and Teaching. The programs prepare students to pursue graduate studies at the doctoral level in English or Education. They also prepare students for teaching at secondary and college levels. The M.A T. degree offers students seeking licensure through graduate studies the skills to teach in grades 9-12. The M.A.T. program has two phases: Phase I comprises course work, internship and Praxis II leading to A-licensure. Phase II includes a research component and qualifying coursework leading to advanced M-Licensure.

Teacher Education Licensure: Degree completion and obtaining a teaching license in the State of North Carolina or any other state are separate processes. Admission to this program does not guarantee admission to the Teacher Education Licensure program. To be recommended for licensure, candidates must first be formally admitted to the Teacher Education Licensure Program. Failure to complete the Teacher Education admission requirements during the first semester of enrollment may result in the student's inability register for professional core courses. Candidates should review licensure requirements at http://www.ncat.edu/academics/schools-colleges1/soe/teacher-education/index.html or visit the School of Education for guidance on specific requirements.

Additional Admission Requirements

1. Completion of prerequisite courses for those whose bachelor's degree is not in English
2. GRE Test Scores

Program Outcomes:
The Master of Arts program in English is structured to include knowledge of literature appropriate to the discipline and ensuring ongoing student engagement in research and/or appropriate professional practice and training experiences.

Degree Requirements
Total: 39 semester hours.

Phase I

- Take 24 credit hours: ENGL 627, 602, 627, 715, 660, 670
- Select 3 credit hours from: CUIN 618, 619

The following requirements must be met before a student can advance to Phase II:

- GPA of 3.0 or better in Phase I coursework
- Pass score on Praxis II
- Class A licensure

Phase II

- Take 12 credit hours: CUIN 728, 729, ENGL 755, 770

Directory of Faculty

- Ahmad, Anjail R, Associate Professor , B.A., Agnes Scott College; M.A., New York University; Ph.D., University of Missouri-Columbia

- Bonner, Patricia E, Professor, B.A., University of Alabama; M.A., Atlanta University; Ph.D., University of South Florida
- Brown, Jane G, Associate Professor, B.A., Converse College; M.A., Vanderbilt University; M.A. and Ph.D., University of Dallas
- DePolo, Jason, B.A., Indiana University of Pennsylvania; M.A., North Carolina A&T State University; Ph.D., Indiana University of Pennsylvania
- Garren, Samuel B, Professor, B.A., Davidson College; M.A., Ph.D., Louisiana State University
- Greene, Michael, Professor, B.A., Duke University; M.A., Ph.D., Indiana University
- Kamara, Gibreel M, Associate Professor, B.A., M.A., North Carolina A&T State University; Ed.D., Temple University
- Kulii, Elon, Professor, B.A., Winston-Salem State University; M.S., North Carolina A&T State University; Ph.D., Indiana University
- Levy, Michele F, Professor, B.A., George Washington University; M.A. and Ph.D., University of North Carolina at Chapel Hill
- Maor, Faye S, Professor and Chairperson, B.S., Florida A&M University; M.A., University of Colorado at Boulder; Ph.D., University of Illinois Urbana-Champaign.
- Meyerson, Gregory D, Associate Professor, B.A., Miami University of Ohio; M.A. and Ph.D., Northwestern University
- Nwankwo, Chimalum, Professor, B.A., University of Nigeria, Nsukka; M.F.A., M.A., and Ph.D., University of Texas at Austin
- Parker, Jeffrey D, Associate Professor, B.A., University of North Carolina at Greensboro; M.A., North Carolina &T State University; Ph.D., University of South Carolina
- Uwakweh, Pauline, Assistant Professor, B.A., University of Port Harcourt, Nigeria; M.A., University of Calabar, Nigeria; Ph.D., Temple University.

Master of Arts in Teaching - Family and Consumer Sciences Education, MAT

School/College: School of Agricultural and Environmental Science
Degree(s) Offered: Master of Arts in Teaching
Graduate Coordinator: Rosa Purcell **Email:** purcellr@ncat.edu Phone: 336-285-3630
Department Chair: Valerie L. Giddings **Email:** vlgiddin@ncat.edu Phone: 336-334-7850

The Master of Arts in Teaching in Family and Consumer Sciences prepares students to 1) master the knowledge, skills and dispositions required for the Family and Consumer Sciences license; 2) analyze theoretical perspectives and current research, to conduct research and to apply this knowledge toward reflective, evidence-based practice in teaching and working with families; and 3) assume diverse professional and leadership roles in a wide variety of educational and community settings. The program is accredited by the National Council for Accreditation of Teacher Education (NCATE) and approved by the North Carolina Department of Public Instruction.

Teacher Education Licensure: Degree completion and obtaining a teaching license in the State of North Carolina or any other state are separate processes. Admission to this program does not guarantee admission to the Teacher Education Licensure program. To be recommended for licensure, candidates must first be formally admitted to the Teacher Education Licensure Program. Failure to complete the Teacher Education admission requirements during the first semester of enrollment may result in the student's inability register for professional core courses. Candidates should review licensure requirements at http://www.ncat.edu/academics/schools-colleges1/soe/teacher-education/index.html or visit the School of Education for guidance on specific requirements.

Additional Admission Requirements

1. GRE Scores
2. Resume

Program Outcomes

1. Upon completion of the master's program, students will communicate clearly and effectively their knowledge of family and consumer sciences
2. Upon completion of the master's program, student will be able to assess scholarly literature for contributions to issues in the field of family and consumer sciences
3. Upon completion of the master's program, students will be able to design a research study using appropriate techniques
4. Upon completion of the master's program, students will have knowledge of theories and their application to practical global issues related to the discipline.

Degree Requirements
Total: 39 semester hours.

Phase 1: (18 hours)

- Select 12 credit hours from CUIN 618; FCS 681, 700, 701
- Select 6 credit hours from FCS 682, 683, 714, 734

The following requirements must be met before a student can advance to Phase II:

- GPA of 3.0 or better in Phase I coursework
- Pass score on Praxis II
- Class A licensure

Phase 2: (21 hours)

- Take 4 credits: FCS 711, 760

- Select 17 credit hours from: CUIN 660, 728; FCS 702, 704, 710
- Comprehensive Exam: FCS 788(0)

Directory of Faculty

- L. Brown, PhD, Nutrition, University of Maryland at College Park
- Devona Dixon, Assistant Professor, B.S., Southern University; M.S., Colorado State University; Ph.D. Louisiana State University
- Valerie L. Giddings, Associate Professor and Chairperson, B.S., Bennett College; M.S., Ph.D., Virginia Polytechnic Institute and State University
- 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
- Sung-Jin Lee Assistant Professor, B.S., Chungnam National University; M.S Chungnam National University; M.S., Ph.D. Virginia Polytechnic Institute and State University.
- 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
- Elizabeth Newcomb, Assistant Professor, B.S., M.S., Ph.D. North Carolina State University
- Yi-Ling Pan, Assistant Professor, B.S., Chung Shan Medical University; M.S., Ph.D., Florida International University.
- Rosa S. Purcell, Associate Professor, B.S., North Carolina A&T State University; M.Ed., Ph.D., University of Illinois
- Claudette Smith, Cooperative Extension Faculty, B.S., North Carolina A&T State University; M.S., Ph.D., Ohio State University
- R. Tahergorabi, PhD, Food Science, West Virginia University
- 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
- J. Yu, PhD, Food Science, Louisiana State University

Faculty Emiriti

- 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

Master of Arts in Teaching - Health and Physical Education, MAT

Degree(s) Offered: Master of Arts in Teaching
Graduate Coordinator: Teresa Dail **Email:** tkdail@ncat.edu Phone: 336-285-3545
Department Chair: Daniel Webb **Email:** dwebb@ncat.edu Phone: 336-334-7712

The MAT program in Physical Education is aligned with professional standards commensurate with the Interstate Teacher Assessment and Support Consortium (InTASC), the National Council for the Accreditation of Teacher Education (NCATE), the North Carolina Department of Public Instruction (NCDPI), and National Board Professional Teaching Standards (NBPTS). The Master of Arts in Teaching (MAT) program in Physical Education is accredited by the National Council for the Accreditation of Teacher Education (NCATE) and by the North Carolina Department of Public Instruction (NCDPI).

Teacher Education Licensure: Degree completion and obtaining a teaching license in the State of North Carolina or any other state are separate processes. Admission to this program does not guarantee admission to the Teacher Education Licensure program. To be recommended for licensure, candidates must first be formally admitted to the Teacher Education Licensure Program. Failure to complete the Teacher Education admission requirements during the first semester of enrollment may result in the student's inability register for professional core courses. Candidates should review licensure requirements at http://www.ncat.edu/academics/schools-colleges1/soe/teacher-education/index.html or visit the School of Education for guidance on specific requirements.

Additional Admission Requirements
- GRE Scores

Program Outcomes:
Candidates in the MAT Physical Education and Health program will: (1) demonstrate effective oral, written, and presentation skills appropriate for K-12 classrooms, (2) demonstrate effective knowledge, skills, and attitudes in diversity issues, learning theories, technological skills, and methods of instruction, (3) demonstrate the ability to implement developmentally-appropriate instruction aligned with the North Carolina Common Core and Essential Standards with K-12 students; and (4) demonstrate their depth of content knowledge and breadth of content pedagogy for K-12 learners from diverse backgrounds.

Degree Requirements
Total: 39 semester hours.

Phase I
- Take 27 credit hours: CUIN 618; HPED 610, 611, 612, 613, 614, 615, 631

The following requirements must be met before a student can advance to Phase II:
- GPA of 3.0 or better in Phase I coursework
- Pass score on Praxis II
- Class A licensure

Phase II
- Take 12 credit hours: CUIN 715; HPED 660, 690, 691
- Comprehensive Examination: ELED 788, HPED 788

Directory of Faculty

- Phoebe Ajibade, Associate Professor, B.S. Community Health and Biology, Radford University; M.S. Community Health, Old Dominion University; Ed.D. Higher Ed Edministration, The George Washington University
- Paul Ankomah, Professor, BA, Geography, University of Ghana; MA, Geography, Wilfris Laurier University, Canada; PhD, Rescreation and Resources Development, Texas A&M University
- Deborah J. Callaway, Associate Professor and Special Assistant to the Chancellor, B.S., Virginia State College; M.Ed., Virginia Commonwealth University; Ed.D., Virginia Polytechnic Institute and State University; Associate Professor
- Teresa K. Dail, Associate Professor and MAT Coordinator, B.S., Wake Forest University; M.A.T., University of North Carolina at Chapel Hill, Ph.D., University of North Carolina at Greensboro
- Gloria H. Elliott, Assistant Professor, B.S., Fayetteville State University; M.S., The University of Connecticut; Ph.D., The Ohio State University
- Dwedor Ford, Assistant Professor, B.S. Computer Science, Tennessee State University; M.S. Health, Physical Ed & Rec (Sport Management) and Ph.D. Human Performance, Middle Tennessee State University
- Tiffany Fuller, BS, Health and Physical Education-Psychology, NC A&T State University; M.A., Health & Physical Education-Adapted Physical Education, NC A&T State University; Ph.D., Exercise & Sport Science, University of North Carolina At Greensboro:
- Trent Larson, B.S., Psychology, Brigham Young University; M.A., Recreation Management, Brigham Young University; Ph.D., Health, Physical Education and Recreation, University of New Mexico:
- Minyong Lee, Assistant Professor, B.S. Mechanical Engineering, Chosun University, Republic of Korea; M.S. Education and Ph.D. Kinesiology, University of Connecticut
- Diana Melton, B.S., Rehabilitation, Springfield College; M.S., Exercise Physiology, University of North Carolina-Greensboro; Ed.D., Exercise and Sport Science, University of North Carolina-Greensboro
- Jerono Rotich, B.S., Physical Education, Kenyatta University, Kenya; M.S.Ed., Physical Education, SUNY Brockport, Ph.D., Exercise Science, Health and Physical Education, University of North Carolina Greensboro
- Brenda Swearingin, Assistant Professor, B. S., University of Arkansas, M.S. University of Arkansas, Ph.D, University of North Carolina at Greensboro
- Daniel Webb, B.S., Associate Professor and HPLS Chair, Coppin State University; M.S., University of Wisconsin; Ph.D., The Ohio State University

Master of Arts in Teaching - History Education, MAT

School/College: College of Arts and Sciences
Degree(s) Offered: Master of Arts in Teaching
Graduate Coordinator: James Wood **Email:** woodj@ncat.edu Phone: 285-2324
Department Chair: Olen Cole, Jr. **Email:** coleo@ncat.edu Phone: 285-2324

The Master of Arts in Teaching - History Education (M.A.T.) program builds upon the knowledge and skills already mastered by teachers at the undergraduate level and is intended to continue the History Department and School of Education's commitment to develop professional teachers for secondary schools in North Carolina. This program is designed to meet all requirements for licensure and will provide a coherent and complete curriculum that meets the highest standards. The M.A.T. is planned for the college graduate of the respective areas who seeks licensure and graduate studies in teaching grades K-12. The design of the M.A.T. program is two-tiered. The first tier includes all of the course work needed for "A" licensure, including an internship requirement and passing the appropriate examinations of Praxis II. The second tier includes a research requirement and other courses that complete requirements for the advanced master's degree and qualifies the candidate for the advanced "M" licensure.

Teacher Education Licensure: Degree completion and obtaining a teaching license in the State of North Carolina or any other state are separate processes. Admission to this program does not guarantee admission to the Teacher Education Licensure program. To be recommended for licensure, candidates must first be formally admitted to the Teacher Education Licensure Program. Failure to complete the Teacher Education admission requirements during the first semester of enrollment may result in the student's inability register for professional core courses. Candidates should review licensure requirements at http://www.ncat.edu/academics/schools-colleges1/soe/teacher-education/index.html or visit the School of Education for guidance on specific requirements.

Additional Admission Requirements

- 24 credit hours in the content area of History/Social Studies

Program Outcomes:

- Students completing the MAT in History Education shall be able to: apply advanced knowledge of pedagogical and thematic subject matter standards of the social studies curriculum to teach middle and high school social studies effectively in a culturally diverse setting; demonstrate advanced knowledge of major historiographical schools of thought and significant periods of history; demonstrate competencies essential for the teaching of history and social studies in secondary schools.
- Students completing the MAT in History shall be able to effectively communicate their knowledge of social studies and the educational concepts and theories necessary to teach middle and high school social studies in a culturally diverse setting.
- Students completing the MAT in History shall be able to: demonstrate an awareness of the contributions of historical and social research to policy analysis and decision-making; demonstrate an understanding of how students differ in their approaches to learning and be able to create teaching and learning strategies that address the needs of diverse learners; demonstrate an understanding of the impact of various groups, institutions, and nations on global history and development; demonstrate an understanding of how to select appropriate objectives consistent with state and local curriculum guidelines, the learning needs of students, and the standards established by the National Council of Social Studies and Interstate New Teacher Assessment and Support Consortium (INTASC).
- Students completing the MAT in History shall be able to: demonstrate instructional leadership as an individual and collaboratively; show improvement in performance and practice through self-evaluation, reflection, and applied research; secure employment in the field of social studies; gain admission to a variety of doctoral programs.

Degree Requirements
Total: 39 semester hours.

Phase I
- Pedagogical Foundation: Take 12 credit hours: CUIN 618, 627, 728, 729
- Pedagogical Expertise: Take 15 credit hours: CUIN 640, 660 (6), 670, 715
- Specialty Area: Take 3 credit hours: HIST 735

The following requirements must be met before a student can advance to Phase II:
- GPA of 3.0 or better in Phase I coursework
- Pass score on Praxis II
- Class A licensure

Phase II
- Take 3 credit hours: HIST 730/792
- Select 3 credit hours from: HIST 600-799
- Select 3 credit hours from: HIST 740, 750
- Comprehensive Exam: ELED 788(0)

Directory of Faculty
- Olen Cole, Jr., Professor and Chairperson, B.A., M.A., California State University at Fresno; Ph.D., University of North Carolina at Chapel Hill
- Fuabeh P. Fonge, Professor, B.A., The University of Yaounde; M.A., Ph.D., Howard University
- Karen Hornsby, Associate Professor, B.A., California State University-Sacramento; M.A., Ph.D., Bowling Green State University
- Conchita F. Ndege, Professor, B.F.A., Xavier University; M.A.., Ph.D., Howard University
- Thomas E. Porter, Professor, B.A., Loyola College; M.A., Ph.D., University of Washington
- Michael Roberto, Associate Professor, B.A., Adelphi University of Rhode Island; Ph.D., Boston College
- Philip Rubio, Associate Professor, PhD, Duke University
- Arwin D. Smallwood, Professor and Chair, PhD, Ohio State University
- Dwana Waugh, Assistant Professor of History, Ph.D., University of North Carolina at Chapel Hill
- James A. Wood, Associate Professor and Graduate Coordinator, 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

Master of Arts in Teaching - Mathematics Education, MAT

School/College: College of Arts and Sciences
Degree(s) Offered: Master of Arts in Teaching
Graduate Coordinator: Bampia Bangura **Email:** babangura@ncat.edu **Phone**: 336-285-2067
Department Chair: Guoqing Tang **Email:** tang@ncat.edu **Phone**: 336-285-2033

The mission of the MAT in Mathematics Education at North Carolina A&T State University is to provide students with educational experiences in an environment that allows them to have a sense of belonging and purpose. These educational experiences are designed to produce competent teachers who will serve their students, their schools and their communities in promoting the learning and teaching of mathematics.

Teacher Education Licensure: Degree completion and obtaining a teaching license in the State of North Carolina or any other state are separate processes. Admission to this program does not guarantee admission to the Teacher Education Licensure program. To be recommended for licensure, candidates must first be formally admitted to the Teacher Education Licensure Program. Failure to complete the Teacher Education admission requirements during the first semester of enrollment may result in the student's inability register for professional core courses. Candidates should review licensure requirements at http://www.ncat.edu/academics/schools-colleges1/soe/teacher-education/index.html or visit the School of Education for guidance on specific requirements.

Additional Admission Requirements

- Completion of required prerequisite courses of MATH 110, 131, 132, 224, 450

Program Outcomes:

- Students will develop the ability to apply their knowledge of mathematics and educational concepts and theories to teach middle and high school mathematics effectively in a culturally diverse setting.
- Students will communicate effectively and with confidence their knowledge of mathematics and educational concepts and theories to teach middle and high school mathematics effectively in a culturally diverse setting.
- Students will develop the ability to use mathematical reasoning and analysis to acquire a comprehensive understanding of Secondary Education Mathematics. Students will be able to apply analytical reasoning skills in decision making as well as mathematics based problem solving skills in secondary school mathematics teaching.
- Students will develop the ability to apply educational technology tools or computer programming techniques to construct computer programs or educational media to solve mathematical application problems appropriate for secondary school teachers.

Degree Requirements
Total: 39 semester hours.

Phase I

- Select 3 credit hours from: CUIN 618, 619
- Take 24 credit hours: CUIN 640, 660, 715, 726, 729; MATH 604, 709

The following requirements must be met before a student can advance to Phase II:

- GPA of 3.0 or better in Phase I coursework
- Pass score on Praxis II
- Class A licensure

Phase II

- Take 12 credit hours: CUIN 711; MATH 600, 608, 725
- Comprehensive Exam: ELED 788(0)

Directory of Faculty

- Bampia Bangura, B. S., Njala University College; M.S., North Carolina A&T State University; Ed.D., Louisiana State University; Associate Professor, and Mathematics Education and MAT-Mathematics Graduate Coordinator
- Burns, D. Shea, B.S., North Carolina A&T State University; M.S., Ph.D., Howard University;Associate Professor
- Gilbert Casterlow, Jr., B.S., M.S., North Carolina A&T State University; Ph.D., The PennsylvaniaState University; Professor Emeritus
- Mingxiang Chen, B.S., M.S., Huazhong Normal University; Ph.D., Georgia Institute of Technology; Associate Professor
- Dominic P. Clemence, B.S., North Carolina A&T State University; M.S., Ph.D., Virginia Polytechnic Institute and State University; Professor
- Kathy M. Cousins-Cooper, B.S., Virginia Polytechnic Institute and State University; M.S., North Carolina A&T State University; Ph.D., University of South Florida; Associate Professor
- Kossi D. Edoh, B.S., Cap Coast University-Ghana; M.S., Ph.D., Simon Fraser University-Canada; Associate Professor
- Gregory Gibson, B.A., State University of New York/College at Geneseo; M.S., Ph.D., North Carolina State University; Associate Professor
- Alexandra Kurepa, B.S., M.S., University of Zagreb, Ph.D., University of North Texas; Professor and Applied Mathematics Graduate Coordinator
- Yaw Kyei, B.S., University of Ghana; M.S., Ph.D., North Carolina State University; Associate Professor
- Liping Liu, B.S., Huazhong University of Science and Technology; Ph.D., University of Alberta; Assistant Professor
- Nicholas Luke, B.S., North Carolina A&T State University; M.S., Ph.D., North Carolina State University; Assistant Professor
- Alma El Morgrahby, B.S., University of Khartoum; M.S., Ph.D., Brown University; Assistant Professor
- Janis M. Oldham, B.A., University of Chicago; M.S., Purdue University; Ph.D., University of California-Berkeley; Associate Professor
- Yevgeniy A. Rastigeyev, M.S., Moscow Institute of Physics and Technology; M.S., Northwestern University; Ph.D., Notre Dame University; Assistant Professor
- Thomas C. Redd, B.S., Fort Valley State University; M.S., University of Oklahoma; M.S., Ph.D., Brown University; Assistant Professor
- John Paul Roop, B.S., Roanoke College, M.S., Ph.D.; Clemson University; Associate Professor
- Guoqing Tang, B.S., Anhui University; M.S., Nanjing University of Science and Technology; Ph.D., Rutgers University; Professor and Interim Chairperson
- Barbara Tankersley, B.S., Paine College; M.S., North Carolina A&T State University; M.S., Ph.D., Howard University; Associate Professor
- Paramanathan Varatharajah, B.S., University of Jaffna; M.S., Ph.D., University of Arizona; Associate Professor
- Giles Warrack, B.S., M.S., California State Polytechnic University, Ph.D., University of Iowa; Associate Professor
- Nail K. Yamaleev, M.S., Ph.D., Moscow Institute of Physics and Technology; Associate Professor

Master of Arts in Teaching - Special Education General Curriculum K-12, MAT

School/College: School of Education **Degree(s) Offered:** Master of Arts in Teaching
Graduate Coordinator: Dawn Waegerle **Email:** waegerle@ncat.edu Phone: 336-334-7848
Department Chair: Anthony Graham **Email:** agraham@ncat.edu Phone: 336-334-7848

The mission of the Master of Arts in Teaching (MAT) in Special Education: General Curriculum (K-12) degree program is to prepare highly-qualified classroom teacher leaders who serve students with mild/moderate disabilities in diverse settings. Through courses which focus on characteristics of learners with special needs, evidence based special education methods used in inclusive and other settings, diagnostic and prescriptive reading and math, assessment and IEP development, classroom and behavior management, educational and assistive technology and other content, candidates in the Master of Arts in Teaching: Special Education program develop knowledge, skills, dispositions, and professional attitudes that empower them to become lifelong learners and exemplary educational leaders inside and outside K-12 learning contexts. The MAT program in Special Education is aligned with professional standards commensurate with the North Carolina Department of Public Instruction (NCDPI), The Council for Exceptional Children, and the National Council for the Accreditation of Teacher Education (NCATE). Upon program completion, students who meet all programmatic requirements are eligible for the North Carolina "M" teaching license in Special Education: General Curriculum. The Master of Arts in Teaching (MAT) program in Special Education is an accredited program by the National Council for the Accreditation of Teacher Education (NCATE) and approved by the North Carolina Department of Public Instruction (NCDPI).

Teacher Education Licensure: Degree completion and obtaining a teaching license in the State of North Carolina or any other state are separate processes. Admission to this program does not guarantee admission to the Teacher Education Licensure program. To be recommended for licensure, candidates must first be formally admitted to the Teacher Education Licensure Program. Failure to complete the Teacher Education admission requirements during the first semester of enrollment may result in the student's inability register for professional core courses. Candidates should review licensure requirements at http://www.ncat.edu/academics/schools-colleges1/soe/teacher-education/index.html or visit the School of Education for guidance on specific requirements.

Additional Admission Requirements

- Graduate Record Examination (GRE) Scores

Program Outcomes:
Candidates in the MAT Special Education program will: (1) demonstrate effective oral, written, and presentation skills appropriate for teachers working with students with exceptionalities in K-12 classrooms, (2) demonstrate effective, research-based instruction which impacts student learning, (3) demonstrate the ability to implement research-based appropriate instruction aligned with the Common Core for K-12 students with exceptionalities from diverse backgrounds, and (4) demonstrate their depth of content knowledge and breadth of content pedagogy for K-12 students with special needs.

Degree Requirements
Total: 39 semester hours.

Phase I

- Take 27 credit hours: ELED 612; INST 731; SPED 639, 670, 748, 760, 763, 764

The following requirements must be met before a student can advance to Phase II:

- GPA of 3.0 or better in Phase I coursework
- Pass score on Praxis II

- Class A licensure

Phase II
- Take 12 credit hours: CUIN 627; ELED 617; SPED 765, 772
- Capstone project: SPED 788(0)

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, Associate Professor, B.A., University of Virginia, M.Ed., Averett College, Ph.D., University of Virginia
- Debra Davidson, Adjunct Assistant Professor, B.S. Appalachian State University; M.S., University of Nebraska at Omaha; Ph.D., University of Nebraska
- Elizabeth Jane Davis, Associate Professor, B.A., Duke University; M.Ed., University of Virginia; Ph.D., University of North Carolina at Greensboro
- Charlesetta Dawson, Clinical Assistant Professor, B.A., M.A., University of Northern Iowa; Ph.D., University of North Carolina at Greensboro
- Michael Day, B.F.A and M.M., University of South Dakota; D.M.A., (Doctor of Musical Arts), University of Arizona
- Kimberly Erwin, Assistant Professor, B.S., M.S., North Carolina A&T State University, Ph.D., Virginia Polytechnic Institute and State University
- Loury Floyd, Associate Professor and Associate Dean for Undergraduate Programs, B.S., North Carolina A&T State University; M.S., University of Wisconsin-LaCrosse; Ph.D., The College of William and Mary
- Anthony Graham, Professor and Chairperson, B.A., University of North Carolina at Chapel Hill; M.Ed., Ph.D., University of North Carolina at Greensboro
- Karen D. Guy, Assistant Professor and Assistant Dean for Student Support Services, B.S., North Carolina A&T State University; M.Ed., North Carolina Central University; Ed.D., University of North Dakota
- Vivian Hampton, Associate Professor, B.A., North Carolina Central University; M.Ed., Howard University; Ph.D., University of Maryland
- Carl Haltom, Adjunct Assistant Professor, B.S. Cortland State College; M.A., San Francisco State University; Ed.D., Pennsylvania State University
- Pamela I. Hunter, Associate Professor, B.A., Livingston College; M.Ed., University of North Carolina at Greensboro; Ph.D., Ohio State University
- Sharon Hunter, Clinical Faculty, B.S., North Carolina A & T State University; M.A., University of North Carolina at Charlotte, Ed.D., Nova Southern University
- Ioney James, Associate Professor, B.A., University of West Indies, M.S., Central Connecticut State University, Ph.D., University of Albany
- Muktha Jost, Professor, B.A., Madras University; M.S., University of Kansas; Ph.D., Iowa State University
- Cathy Kea, Professor, B.A., North Carolina Central University; M.S., University of Wisconsin-LaCross; Ph.D., University of Kansas
- Thelma King, Associate Professor (Retd.), B.S. NC A&T State University; M.S., University of North Carolina at Greensboro; Ph.D., Virginia Polytechnic Institute and State University
- Dorothy D. Leflore, Associate Professor, B.S., Mississippi Valley State University; M.S., University of Oregon; Ph.D., University of Oregon
- Stephen McCary-Henderson, Associate Professor, B.S., North Carolina A&T State University; M.Ed. University of Southern Mississippi; Ph.D., Union Institute and University
- Barbara Mosley, Associate Professor, B.A., M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute & State University

- Felicia Sawyer, Clinical Faculty, B.A., North Carolina Central University; M.A.T., The Ohio State University; Ph.D., Capella University
- Nichole Smith, Assistant Professor, B.S., B.A, Appalachian State University; M.Ed., University of North Carolina at Greensboro; Ed.D., University of North Carolina at Chapel Hill
- Thomas J. Smith, Associate Professor, B.A., Manchester College; M.S., Indiana University; Ph.D., University of South Carolina
- Karen Smith-Gratto, Professor, B.A., Christopher Newport College; M.A., Ph.D., University of New Orleans
- Dawn C. Waegerle, Clinical Assistant Professor, B.A., M.A., Oral Roberts University; Ed.D. College of William and Mary
- Kendra Williamson, Adjunct Assistant Professor, B.S., North Carolina A&T State University; M.Ed., Appalachian State University; Ph.D., University of North Carolina at Greensboro
- Ereka Williams, Associate Professor, B.S., M.A.; Fayetteville State University; Ph.D., University of North Carolina at Greensboro

Contributing Faculty

- Valerie McMillian, Associate Professor of Family and Consumer Sciences, B.S., M.Ed., South Carolina State University; Ph.D., Iowa State University
- Dwana Waugh, Assistant Professor of History, Ph.D., University of North Carolina at Chapel Hill

Master of Arts in Teaching - Technology Education, MAT

School/College: School of Technology
Degree(s) Offered: Master of Art in Teaching
Graduate Coordinator: Vincent Childress **Email**: childres@ncat.edu **Phone**: 336-334-7550
Department Chair: Vincent Childress **Email**: childres@ncat.edu **Phone**: 336-334-7550

The Master of Art in Teaching for teachers of technology and trade and industrial education provides teachers with an initial license in Phase I of the degree and an advanced license upon completion of the degree. This online program complies with INTASC, NCATE/CAEP, and the North Carolina Department of Public Instruction, and the standards of achievement for 21st Century learners. This program will prepare graduate students to provide instructional leadership and to capably deliver technology education to the public schools.

Teacher Education Licensure: Degree completion and obtaining a teaching license in the State of North Carolina or any other state are separate processes. Admission to this program does not guarantee admission to the Teacher Education Licensure program. To be recommended for licensure, candidates must first be formally admitted to the Teacher Education Licensure Program. Failure to complete the Teacher Education admission requirements during the first semester of enrollment may result in the student's inability register for professional core courses. Candidates should review licensure requirements at http://www.ncat.edu/academics/schools-colleges1/soe/teacher-education/index.html or visit the School of Education for guidance on specific requirements.

Additional Admission Requirements
- GRE scores (general test)
- 12 semester hours of coursework in a technical area

Program Outcomes:
- Teachers know the content they teach; both breadth and depth of knowlege.
- Teachers are leaders.
- Teachers facilitate learning for their students and enhance learning with instructional technology.
- Teachers create a respectful environment for students from diverse backgrounds.
- Technology and trade & industrial education teachers manage their laboratories and instructional programs to create safe learning environments.
- Teachers improve their programs by reflecting on student assessment data and program assessment data.
- Technology and trade & industrial education teachers are technologically literate in general.
- Teachers create and lead learning communities.
- Teachers are reflective researchers.

Degree Requirements
Total: 39 semester hours

Phase I
- Take 18 credit hours: CUIN 618, 627, 729; TECH 666, 669, 762
- Take 6 credit hours: CUIN 660
- Select 3 credit hours from: TECH 719, 720, 721, 722

The following requirements must be met before a student can advance to Phase II:
- GPA of 3.0 or better in Phase I coursework
- Pass score on Praxis II
- Class A licensure

Phase II

- Take 12 credit hours: TECH 764, 767, 768, 772
- Comprehensive Exam: TECH 788(0)

Directory of Faculty

- Vincent W. Childress, Professor, B.S., M.S., Ph.D., Virginia Polytechnic Institute and State University
- Sonja Draper, Assistant Professor, B.S., East Carolina, M.S. North Carolina A&T State University, Ph.D,. Virginia Polytechnic and State University
- Jerry W. Nave, Assistant Professor, B.S., M.S., Ed.D., East Tennessee State University
- Craig Rhodes, Associate Professor, B.S., M.S., North Carolina A&T State University; Ph.D., University of Wisconsin-Stout

Mechanical Engineering, MS

School/College: College of Engineering
Degree(s) Offered: Master of Science, Doctor of Philosophy
Graduate Coordinator: Mannur Sundaresan **Email:** mannur@ncat.edu Phone: 336-334-7620
Department Chair: Samuel Owusu-Ofori **Email:** ofori@ncat.edu Phone: 336-334-7620

The Mechanical Engineering master's program provides advanced level study in distinct areas of specialization such as mechanics and materials, energy and thermal/fluid systems, design and manufacturing, and aerospace. The program prepares the graduate student for Doctoral level studies or for advanced mechanical engineering practice in industry, consulting or government service. The program emphasizes the application of critical thinking skills to solve advanced engineering problems, formulate and clearly communicate technical ideas both orally and in written form, and apply appropriate research methodologies to investigate topics of interest

Additional Admission Requirements

- Bachelor of Science in Mechanical Engineering degree from an accredited institution

Program Outcomes

- Students will develop advanced critical thinking skills by solving complex and challenging problems in mechanical engineering, mathematics and the physical sciences
- Students will communicate effectively by conveying their ideas, both orally and in written form, in accordance with acceptable published standards
- Students will demonstrate their ability to perform research by generating a thesis of an original idea and publishing technical papers under the guidance of an academic advisor
- Graduates will engage in professional activities by attending conferences, presenting papers and serving various roles in professional organizations

Degree Requirements

Total credit hours: 38 (thesis option), 35 (project option), 32 (course option)

Core Courses: 12 Credit Hours

- Select 3 credit hours from: MATH 600-899 excluding MATH 625, 626
- Select 9 credit hours from: MEEN 601, 616, 631, 643

Thesis option:

- Take 14 credit hours: MEEN 792(2), 794(6), 797(6)
- Select 9 credit hours from: MEEN 600-899
- Select 3 credit hours from: MEEN 600-899; BIOL 600-799; BMEN 600-791; CHEM 600-699, 702-799 excluding 703, 788, 799; CHEN 600-785, 789; CSE 600-785; EES 600-899; ELEN 600-785; INEN 600-785; MATH 600-899; NANO 600-789, excluding 778, 788; PHYS 600-799, excluding 740, 791-792

Project Option

- Take 8 credit hours: MEEN 792(2), 794(3), 796(3)
- Select 9 credit hours from: MEEN 600-899
- Select 6 credit hours from: MEEN 600-899; BIOL 600-799; BMEN 600-791; CHEM 600-699, 702-799 excluding 703, 788, 799; CHEN 600-785, 789; CSE 600-785; EES 600-899; ELEN 600-785; INEN 600-785; MATH 600-899; NANO 600-789, excluding 778, 788; PHYS 600-799, excluding 740, 791-792

Course Option

- Take 2 credit hours: MEEN 792(2)

- Select 9 credit hours from: MEEN 600-899
- Select 9 credit hours from: MEEN 600-899; BIOL 600-799; BMEN 600-791; CHEM 600-699, 702-799 excluding 703, 788, 799; CHEN 600-785, 789; CSE 600-785; EES 600-899; ELEN 600-785; INEN 600-785; MATH 600-899; NANO 600-789, excluding 778, 788; PHYS 600-799, excluding 740, 791-792

Directory of Faculty

- Paul Akangah, Adjunct Assistant Professor, B.S., Mechanical Engineering, Kwame Nkrumah University of Science & Technology, Kumasi, Ghana; M.S., Mechanical Engineering, Royal Institute of Technology, Stockholm, Sweden; Ph.D., Mechanical Engineering, North Carolina A&T State University
- Robin Coger, Professor and Dean, B.S., Mechanical Engineering, Cornell University; M.S., Ph.D., Mechanical Engineering, University of California, Berkeley; Post-doc experience, Harvard Medical School and Department of Surgery, Massachusetts General Hospital
- DeRome O. Dunn, Associate Professor, B.S., M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University
- Frederick Ferguson, Professor and Director of Center for Aerospace Research, M.S., Kharkov State University; Ph.D., University of Maryland
- Arturo Fernandez, Assistant Professor, B.Eng., Ph.D., Universidad Politecnica de Madrid
- John Kizito, Assistant Professor, B.S., Makerere University, Uganda; M.S., Ph.D., Case Western Reserve University
- Dhananjay Kumar, Associate Professor and ORNL Joint Faculty, B.S., Bhagalpur University; M.S., Magadh University, Ph.D., Indian Institute of Technology
- Samuel P. Owusu-Ofori, Boeing Professor and Interim Chairperson, B.S., University of Science and Technology-Kumasi, Ghana; M.S., Bradley University; Ph.D., University of Wisconsin-Madison; Professional Engineer
- Devdas M. Pai, Professor and, Associate Director, NSF Engineering Research Center, B.Tech., Indian Institute of Technology Madras; M.S., Ph.D., Arizona State University; Professional Engineer
- Messiha Saad, Assistant Professor , B.S., Suez Canal University; M.S., North Carolina A&T State University; Ph.D., North Carolina State University
- Jagannathan Sankar, University Distinguished Professor and Director, NSF Engineering Research Center, B.E., University of Madras; M.E., Concordia University, Ph.D., Lehigh University
- Kunigal N. Shivakumar, Research Professor and Director of Center of Aviation Safety, B.E., Bangalore University; M.E., Ph.D., Indian Institute of Science
- Ronald C. Steed, Assistant Professor, BSc, Duke University, M.E., Ph.D., University of Florida
- Mannur Sundaresan, Professor and Graduate Program Coordinator, B.E , M.E., Bangalore University, Bangalore, India, Ph.D., Virginia Polytechnic Institute & State University
- Shih-Liang Wang Professor and Undergraduate Program Director, B.S., National Tsing Hua University; M.S., Ph.D., Ohio State University; Professional Engineer
- Sun Yi, Assistant Professor, B.S., Seoul National University; M.S., Ph.D., University of Michigan-Ann Arbor

Mechanical Engineering, PhD

School/College: College of Engineering
Degree(s) Offered: Master of Science, Doctor of Philosophy
Graduate Coordinator: Mannur Sundaresan **Email:** mannur@ncat.edu Phone: 336-334-7620
Department Chair: Samuel Owusu-Ofori **Email:** ofori@ncat.edu Phone: 336-334-7620

The Ph.D. degree in Mechanical Engineering provides both advanced instruction and independent research opportunities for students. The Ph.D. degree is the highest academic degree offered, and graduates typically are employed in research environments in government laboratories and industries, and as university faculty. The Ph.D. degree program is highly individualistic in nature, and the student is expected to make a significant contribution to the reservoir of human knowledge by investigating a significant topic within the domain of mechanical engineering.

Additional Admission Requirements

- Master of Science degree in Mechanical Engineering (MSME) or a closely related engineering discipline with a minimum GPA of 3.3 or Bachelor of Science degree in Mechanical Engineering (BSME) with a minimum cumulative GPA of 3.5
- GRE score

Program Outcomes

- Graduates of the Ph.D. program will apply their critical thinking skills to invent, analyze, and model complex engineering systems and make novel contributions to the discipline.
- Graduates of the Ph.D. program will demonstrate effective communication skills through project and dissertation work and conference presentations.
- Graduates of the Ph.D. program will perform research or undertake advanced projects in an area of mechanical engineering such as mechanical systems and materials, energy and thermal-fluid sciences, and aerospace and make novel contributions in their respective areas of research.
- Graduates of the Ph.D. program will be active and effective leaders in their professional societies.

Degree Requirements

Total credit hours: 72 (after BS), 54 (after MS)

Credit distribution after BS

- Select 24 credit hours from: MEEN 800-899
- Select 18 credit hours from: MEEN 600-899; BIOL 600-799; BMEN 600-791; CHEM 600-699, 702-799 excluding 703, 788, 799; CHEN 600-785, 789; CSE 600-785; EES 600-899; ELEN 600-785; INEN 600-785; MATH 600-899; NANO 600-789, excluding 778, 788; PHYS 600-799, excluding 740, 791-792
- Take 30 credit hours: MEEN 794 (9), 991 (3), 992 (3), 995 (3), 997 (12)

Credit distribution after MS

- Select 15 credit hours from: MEEN 800-899
- Select 9 credit hours from: MEEN 600-899; BIOL 600-799; BMEN 600-791; CHEM 600-699, 702-799 excluding 703, 788, 799; CHEN 600-785, 789; CSE 600-785; EES 600-899; ELEN 600-785; INEN 600-785; MATH 600-899; NANO 600-789, excluding 778, 788; PHYS 600-799, excluding 740, 791-792
- Take 30 credit hours: MEEN 794 (9), 991 (3), 992 (3), 995 (3), 997 (12)

Dissertation Research:

A student may not register for dissertation credits before passing Qualifying Examination. No more than 18 dissertation credits are counted toward the total credit hours requirement for the degree.

Qualifying Examination:
The Qualifying Examination is given to assess the student's competence in a broad range of relevant subject areas. Only students with unconditional status and in good academic standing may take the Qualifying Examination. A student who wants to retake the Qualifying Examination must apply to retake the Qualifying Examination by the posted deadline. No student is permitted to take the Qualifying Examination more than twice. A student not recommended for re-examination or who fails the exam on a second attempt may be dismissed from the doctoral program.

Preliminary Oral Examination:
The Preliminary Oral Examination is conducted by the student's dissertation committee and is a defense of the student's dissertation proposal. Passing this exam satisfies requirements for Ph.D. Candidacy. Failure on the examination may result in dismissal from the doctoral program. The student's Advisory Committee may permit one re-examination. At least one full semester must elapse before the re-examination. Failure on the second attempt will result in dismissal from the doctoral program.

Admission to Candidacy
Student will be admitted to candidacy upon successful completion of the Qualifying Exam and the Preliminary oral Exam.

Final Oral Examination:
The Final Oral Examination is conducted by the student's dissertation committee. This examination is the final dissertation defense presentation that is scheduled after a dissertation is completed. The examination may be held no earlier than one semester (or four months) after admission to candidacy. Failure on the examination may result in dismissal from the doctoral program. The student's Advisory Committee may permit one re-examination. At least one full semester must elapse before the re-examination. Failure on the second attempt will result in dismissal from the doctoral program.

Submission of Dissertation:
Upon passing the Ph.D. Final Oral Examination, the Ph.D. student must have the dissertation approved by each member of the student's dissertation committee. The approved dissertation must be submitted to The Graduate School by the deadline given in the academic calendar, and must conform to the Graduate School's guidelines for theses and dissertations.

Directory of Faculty
- Paul Akangah, Adjunct Assistant Professor, B.S., Mechanical Engineering, Kwame Nkrumah University of Science & Technology, Kumasi, Ghana; M.S., Mechanical Engineering, Royal Institute of Technology, Stockholm, Sweden; Ph.D., Mechanical Engineering, North Carolina A&T State University
- Robin Coger, Professor and Dean, B.S., Mechanical Engineering, Cornell University; M.S., Ph.D., Mechanical Engineering, University of California, Berkeley; Post-doc experience, Harvard Medical School and Department of Surgery, Massachusetts General Hospital
- DeRome O. Dunn, Associate Professor, B.S., M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University
- Frederick Ferguson, Professor and Director of Center for Aerospace Research, M.S., Kharkov State University; Ph.D., University of Maryland
- Arturo Fernandez, Assistant Professor, B.Eng., Ph.D., Universidad Politecnica de Madrid
- John Kizito, Assistant Professor, B.S., Makerere University, Uganda; M.S., Ph.D., Case Western Reserve University
- Dhananjay Kumar, Associate Professor and ORNL Joint Faculty, B.S., Bhagalpur University; M.S., Magadh University, Ph.D., Indian Institute of Technology

- Samuel P. Owusu-Ofori, Boeing Professor and Interim Chairperson, B.S., University of Science and Technology-Kumasi, Ghana; M.S., Bradley University; Ph.D., University of Wisconsin-Madison; Professional Engineer
- Devdas M. Pai, Professor and, Associate Director, NSF Engineering Research Center, B.Tech., Indian Institute of Technology Madras; M.S., Ph.D., Arizona State University; Professional Engineer
- Messiha Saad, Assistant Professor , B.S., Suez Canal University; M.S., North Carolina A&T State University; Ph.D., North Carolina State University
- Jagannathan Sankar, University Distinguished Professor and Director, NSF Engineering Research Center, B.E., University of Madras; M.E., Concordia University, Ph.D., Lehigh University
- Kunigal N. Shivakumar, Research Professor and Director of Center of Aviation Safety, B.E., Bangalore University; M.E., Ph.D., Indian Institute of Science
- Ronald C. Steed, Assistant Professor, BSc, Duke University, M.E., Ph.D., University of Florida
- Mannur Sundaresan, Professor and Graduate Program Coordinator, B.E , M.E., Bangalore University, Bangalore, India, Ph.D., Virginia Polytechnic Institute & State University
- Shih-Liang Wang Professor and Undergraduate Program Director, B.S., National Tsing Hua University; M.S., Ph.D., Ohio State University; Professional Engineer
- Sun Yi, Assistant Professor, B.S., Seoul National University; M.S., Ph.D., University of Michigan-Ann Arbor

Mental Health Counseling – Clinical, MS

School/College: School of Education
Degree(s) Offered: Master of Science
Graduate Coordinator: Caroline Booth **Email:** csbooth@ncat.edu **Phone**: (336) 285-4386
Department Chair: Patricia Bethea-Whitfield **Email:** betheap@ncat.edu **Phone**: (336) 285-4384

The Mental Health Counseling - Clinical program is a generalist program that is nationally accredited by the Council on the Accreditation of Counseling and Related Educational Programs (CACREP). This designation indicates curricular experiences encompassing each of the eight core areas of professional counseling including Professional Identity, Social and Cultural Diversity, Human Growth and Development, Career Development, Helping Relationships, Group Work, Assessment, and Research and Program Evaluation. Other required coursework includes clinical assessment and substance abuse. This degree prepares graduates to work in a variety of capacities such as marriage and family counseling, substance abuse counseling, clinical mental health counseling, college counseling, non-profit work, business settings, and many other areas. The U.S. Department of Labor projects that counseling is growing faster than average with some areas of clinical mental health counseling seeing growth rates up to 34% by 2016.

Additional Admission Requirements

- Overall undergraduate GPA of 3.0 or higher on a 4-point system
- Primary factors in the admissions decision include academic background, demonstrated professional and volunteer experience appropriate to Departmental programs of study, three letters of recommendation or reference forms, resume, and official transcripts of all prior academic work.
- Personal statement describing career goals, research interests and a list of publications, experience, academic honors and organizations.
- Applicants with greatest potential are also expected to participate in a pre-admission interview with departmental faculty. Pre-admission interviews can include: (a) individual interviews, (b) group interaction with observation, (c) on-site writing sample, and (d) technology survey.

Program Outcomes:

- Critical Thinking: Students will develop skills and attitudes of effective thinking that employ the use of thoughtful reflection and logical inquiry to draw evidence-based conclusions as they relate to community counseling.
- Oral Communication Skills: Students will demonstrate proficiency in communicating in individual dyads and small and large group settings and in appropriate use of grammar to communicate counseling findings, while avoiding sexist language, doublespeak and clichés. Evaluation occurs during the benchmarking process. Students must receive a satisfactory rating from the majority of faculty to earn a satisfactory rating. Faculty will evaluate 100% of the student population.
- Written Communication: Students will demonstrate proficiency in academic and scientific writing, which includes avoiding digressions, consistent tenses, using the active voice and citing sources as well as findings, professional documentation, and report writing: with emphasis on APA publishing guidelines.
- Cultural Self-Awareness and Sensitivity: Students will demonstrate awareness of self, including knowledge of macro, micro, and meso ecological systems.
- Cultural Competence: Students will demonstrate an understanding of the cultural context of relationships, issues, and trends in a multicultural society.
- Ethical Practice: Students will demonstrate understanding and application of relevant professional ethical standards.
- Professionalism: Students will demonstrate professional maturity, integrity, and discipline consistent with professional standards of practice.

- Research and Design: Graduate community counseling students will demonstrate proficiency in designing quantitative, qualitative, single case designs, action, and outcome based research, as well as co-occurring and support software packages (e.g., SPSS). Students will understand ethics surrounding Human Subjects Social and Behavioral Science research procedures and Responsible Conduct in Research.
- Research Evaluation: Students will demonstrate proficiency in evaluating empirical and non-empirical research. Students will be able to review the professional literature and glean from the review relevant information for both research and practice. Students will be able evaluate research and its application to field experiences. Students will develop a research paper that reflects their knowledge of this content. The specifics of the research paper along with the grading rubric are presented in the achievement summary.
- Statistics: Students will demonstrate proficiency in basic statistics methods including scales of measurement, measures of central tendency, indices of variability, shapes and type of distributions, correlations, reliability and validity. Students will apply supportive software packages (e.g., MS Excel, SPSS).
- Technological Competence: Students will demonstrate proficiency in implementing best technology practices.

Degree Requirements:
Total credit hours: 60

Course requirements
- HDSV 702, 707, 709, 710, 713, 735, 736, 740, 750, 758, 759, 760, 763, 765, 770, 780, 788
- Select one course from: HDSV 790, 799
- Select one elective from one track:
  - Higher Education: ADED 709, 714, 771, 772, 773, 776, 778, COSI 669
  - Substance Abuse: HEFS 613; HDSV 751, 665, 767; AGED 750, SOCI 669
  - Agency: HDSV 751; SOCI 669, 674; ADED 709, 771; SPED 660, 661; PSYC 645
  - Marriage & Family: HDSV 751, 754, 756, 757, 774, 769; SOCI 669, 701; ADED 709, 711

Internships
Internships HDSV 780 and 790 (or HDSV 799) involve supervised professional experiences in settings appropriate to the student's vocational objectives. The internships will provide practical work in the student's area of specialization. Internships include 600 hours of field experience. Students must complete a minimum of 240 hours of direct services with clients. Each week, students receive one hour of individual supervision from their site supervisors and one and one-half hours group supervision from their university supervisors during seminar.

Double major (Mental Health Counseling – Clinical and Mental Health Counseling – Rehabilitation)
Regulations on pursuing double majors are presented elsewhere in the catalog and must be followed. The student will be required to complete requirements of both programs. The programs require the following unique 18 credit hour requirements:

Mental Health Counseling – Clinical:
HDSV 707, 758, 759, 763, 780/790 or 799 (6) specific to the Clinical concentration

Mental Health Counseling – Rehabilitation:
HDSV 708, 738, 743, 764, 775, 780/790 or 799 (6) specific to the Rehabilitation concentration

Double major (Mental Health Counseling – Clinical and School Counseling)
Regulations on pursuing double majors are presented elsewhere in the catalog and must be followed. The student will be required to complete requirements of both programs. The programs require the following unique 18 credit hour requirements:

Mental Health Counseling – Clinical:
HDSV 707, 758, 759, 763, 780/790 or 799 (6) specific to the Clinical concentration

School Counseling:
HDSV 701, 704, 706, 712, 780/790 or 799 (6) specific to School Counseling

Directory of Faculty

- Patricia D. Bethea-Whitfield, B.A., North Carolina Central University; M.Ed., University of North Carolina at Chapel Hill; Ed.D, University of North Carolina at Greensboro; Associate Professor
- Kacie Blalock , B.A., Grambling State University; M.S., Southern A&M University; PhD, University of Wisconsin; Associate Professor
- Caroline Booth; B.A., Wake Forest University; M.S., PhD, University of North Carolina at Greensboro, Associate Professor
- Quintin Boston, B.A., University of South Florida; M.A., University of South Florida; Ph.D., Southern Illinois University-Carbondale, Assistant Professor
- Michael Brooks, PhD, University of Central Florida, Associate Professor
- James L. Burston, Adjunct Faculty, BA, North Carolina State University, M.ED, PhD University of North Carolina Greensboro
- Rochelle Rush Cassidy, Adjunct Faculty, Program Coordinator, BA, University of North Carolina at Chapel Hill, MS, North Carolina A&T State University, PhD, Florida State University.
- Angel Dowden; BA, Norfolk State University; M.A., Norfolk State University, Ph.D., North Carolina State University, Assistant Professor
- Glacia Ethridge, PhD, University of Maryland, Assistant Professor
- Kelly Graves; B.S., Virginia Polytechnic Institute and State University B.A., M.A., Wake Forest University; Ph.D., University of North Carolina at Greensboro, Associate Professor
- LaCheata Hall; B.S., Bennett College for Women, M.S, University of North Carolina-Greensboro, Ed.D., University of North Carolina-Greensboro, Associate Professor
- Kimberly Harris, Adjunct Faculty, BA, University of North Carolina Chapel Hill, MBA, Campbell University, PhD, North Carolina State University
- Taehee Kim, Adjunct Faculty, BA, Daegu Catholic University, MA, San Francisco, State University, PhD, University of Texas.
- Robin G. Liles, B.A., University of North Carolina at Chapel Hill; M.S., Ed.S., Ph.D., University of North Carolina at Greensboro; Associate Professor
- Linda S. Makinson, BS, University of Pittsburgh, MBA, University of Dallas, MS, EdS, PhD University of North Carolina, Greensboro
- Essie McKoy, Adjunct Faculty, BS, Winston Salem State University, MA, Appalachian State University, EdS, PhD, University of North Carolina Greensboro.
- Shirlene Smith-Augustine, B.S., M.S., Ph.D., Indiana State University; Assistant Professor
- Miriam L. Wagner, B.S., University of North Carolina at Greensboro; M.Ed., North Carolina A&T State University; Ed.D., University of North Carolina at Greensboro; Associate Professor and Interim Chairperson
- Tammy T. Webb, B.S., Coppin State College; M.S.W., Ohio State University; Ph.D., Mississippi State University; Associate Professor
- Tyra Turner Whittaker, B.S., Xavier University of Louisiana; M.S., Xavier University of Louisiana; PhD., Southern Illinois University-Carbondale; Professor

Mental Health Counseling – Rehabilitation, MS

School/College: School of Education
Degree(s) Offered: Master of Science
Graduate Coordinator: Quintin Boston **Email:** qboston@ncat.edu **Phone**: (336) 285-4396
Department Chair: Patricia Bethea-Whitfield **Email:** betheap@ncat.edu **Phone**: (336) 285-4384

The Mental Health Counseling - Rehabilitation program is accredited by the Council on Rehabilitation Education (CORE) and is designed to prepare culturally competent counselors who specialize in working with persons with physical, developmental, cognitive, psychological, and neurological disabilities and/or illnesses. Rehabilitation Counseling students are equipped with knowledge, skills, and experience to empower persons with disabilities through the counseling process. Students are further equipped with unique competencies to provide effective rehabilitation counseling services within a cultural context. Students are currently supported on RSA grants in the areas of Vocational Evaluation and Work Adjustment, Rehabilitation Psychology and Behavioral Medicine, and also Behavioral Addiction

Additional Admission Requirements

- Overall undergraduate GPA of 3.0 or higher on a 4-point system.
- Primary factors in the admissions decision include academic background, demonstrated professional and volunteer experience appropriate to Departmental programs of study, three letters of recommendation or reference forms, resume, and official transcripts of all prior academic work.
- Personal statement describing career goals, research interests and a list of publications, experience, academic honors and organizations.
- Applicants with greatest potential are also expected to participate in a pre-admission interview with departmental faculty. Pre-admission interviews can include: (a) individual interviews, (b) group interaction with observation, (c) on-site writing sample, and (d) technology survey.

Program Outcomes:

- Critical Thinking: Students will develop skills and attitudes of effective thinking that employ the use of thoughtful reflection and logical inquiry to draw evidence-based conclusions as they relate to community counseling.
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- Cultural Self-Awareness and Sensitivity: Students will demonstrate awareness of self including knowledge of macro, micro, and meso ecological systems.
- Cultural Competence: Students will demonstrate an understanding of the cultural context of relationships, issues, and trends in a multicultural society.
- Ethical Practice: Students will demonstrate understanding and application of relevant professional ethical standards.
- Professionalism: Students will demonstrate professional maturity, integrity, and discipline consistent with professional standards of practice.
- Research and Design: Graduate community counseling students will demonstrate proficiency in designing quantitative, qualitative, single case designs, action, and outcome based research, as well as co-occurring and

support software packages (e.g., SPSS). Students will understand ethics surrounding Human Subjects Social and Behavioral Science research procedures and Responsible Conduct in Research.

- Research Evaluation: Students will demonstrate proficiency in evaluating empirical and non-empirical research. Students will be able to review the professional literature and glean from the review relevant information for both research and practice. Students will be able evaluate research and its application to field experiences. Students will develop a research paper that reflects their knowledge of this content. The specifics of the research paper along with the grading rubric are presented in the achievement summary.
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- Technological Competence: Students will demonstrate proficiency in implementing best technology practices.

Degree Requirements:
Total credit hours: 60

Course requirements

- HDSV 702, 708, 709, 713, 735, 736, 738, 740, 743, 750, 760, 762, 765, 770, 775, 780, 788
- Select one course from: HDSV 790, 799
- Select one elective from one track:
  - Higher Education: ADED 709, 714, 771, 772, 773, 776, 778, COSI 669
  - Substance Abuse: HEFS 613; HDSV 751, 665, 767; AGED 750, SOCI 669
  - Agency: HDSV 751; SOCI 669, 674; ADED 709, 771; SPED 660, 661; PSYC 645
  - Marriage & Family: HDSV 751, 754, 756, 757, 774, 769; SOCI 669, 701; ADED 709, 711

Internships

Internships HDSV 780 and 790 (or HDSV 799) involve supervised professional experiences in settings appropriate to the student's vocational objectives. The internships will provide practical work in the student's area of specialization. Internships include 600 hours of field experience. Students must complete a minimum of 240 hours of direct services with clients. Each week, students receive one hour of individual supervision from their site supervisors and one and one-half hours group supervision from their university supervisors during seminar.

Double major (Mental Health Counseling – Rehabilitation and Mental Health Counseling – Clinical)

Regulations on pursuing double majors are presented elsewhere in the catalog and must be followed. The student will be required to complete requirements of both programs. The programs require the following unique 18 credit hour requirements:

Mental Health Counseling – Rehabilitation:
HDSV 708, 738, 743, 764, 775, 780/790 or 799 (6) specific to the Rehabilitation concentration

Mental Health Counseling – Clinical:
HDSV 707, 758, 759, 763, 780/790 or 799 (6) specific to the Clinical concentration

Double major (Mental Health – Rehabilitation and School Counseling)

Regulations on pursuing double majors are presented elsewhere in the catalog and must be followed. The student will be required to complete requirements of both programs. The programs require the following unique 18 credit hour requirements:

Mental Health Counseling – Rehabilitation:
HDSV 708, 738, 743, 764, 775, 780/790 or 799 (6) specific to the Rehabilitation concentration

School Counseling:
HDSV 701, 704, 706, 712, 780/790 or 799 (6) specific to School Counseling

Directory of Faculty

- Patricia D. Bethea-Whitfield, B.A., North Carolina Central University; M.Ed., University of North Carolina at Chapel Hill; Ed.D, University of North Carolina at Greensboro; Associate Professor
- Kacie Blalock , B.A., Grambling State University; M.S., Southern A&M University; PhD, University of Wisconsin; Associate Professor
- Caroline Booth; B.A., Wake Forest University; M.S., PhD, University of North Carolina at Greensboro, Associate Professor
- Quintin Boston, B.A., University of South Florida; M.A., University of South Florida; Ph.D., Southern Illinois University-Carbondale, Assistant Professor
- Michael Brooks, PhD, University of Central Florida, Associate Professor
- James L. Burston, Adjunct Faculty, BA, North Carolina State University, M.ED, PhD University of North Carolina Greensboro
- Rochelle Rush Cassidy, Adjunct Faculty, Program Coordinator, BA, University of North Carolina at Chapel Hill, MS, North Carolina A&T State University, PhD, Florida State University.
- Angel Dowden; BA, Norfolk State University; M.A., Norfolk State University, Ph.D., North Carolina State University, Assistant Professor
- Glacia Ethridge, PhD, University of Maryland, Assistant Professor
- Kelly Graves; B.S., Virginia Polytechnic Institute and State University B.A., M.A., Wake Forest University; Ph.D., University of North Carolina at Greensboro, Associate Professor
- LaCheata Hall; B.S., Bennett College for Women, M.S, University of North Carolina-Greensboro, Ed.D., University of North Carolina-Greensboro, Associate Professor
- Kimberly Harris, Adjunct Faculty, BA, University of North Carolina Chapel Hill, MBA, Campbell University, PhD, North Carolina State University
- Taehee Kim, Adjunct Faculty, BA, Daegu Catholic University, MA, San Francisco, State University, PhD, University of Texas.
- Robin G. Liles, B.A., University of North Carolina at Chapel Hill; M.S., Ed.S., Ph.D., University of North Carolina at Greensboro; Associate Professor
- Linda S. Makinson, BS, University of Pittsburgh, MBA, University of Dallas, MS, EdS, PhD University of North Carolina, Greensboro
- Essie McKoy, Adjunct Faculty, BS, Winston Salem State University, MA, Appalachian State University, EdS, PhD, University of North Carolina Greensboro.
- Shirlene Smith-Augustine, B.S., M.S., Ph.D., Indiana State University; Assistant Professor
- Miriam L. Wagner, B.S., University of North Carolina at Greensboro; M.Ed., North Carolina A&T State University; Ed.D., University of North Carolina at Greensboro; Associate Professor and Interim Chairperson
- Tammy T. Webb, B.S., Coppin State College; M.S.W., Ohio State University; Ph.D., Mississippi State University; Associate Professor
- Tyra Turner Whittaker, B.S., Xavier University of Louisiana; M.S., Xavier University of Louisiana; PhD., Southern Illinois University-Carbondale; Professor

Nanoengineering, MS

School/College: Joint School of Nanoscience and Nanoengineering
Degree(s) Offered: Master of Science, Doctor of Philosophy
Graduate Coordinator: Shyam Aravamudhan **Email:** saravamu@ncat.edu Phone: 336-285-2856
Department Chair: Ajit Kelkar **Email:** kelkar@ncat.edu Phone: 336-285-2864

The Master of Science in Nanoengineering degree program is a research master's degree, featuring coursework involving engineering at the nanoscale. It is designed for students with a strong background in engineering or applied science who seek additional, specialized training for industrial or government positions in fields that utilize nanotechnology. Students will have the opportunity to work in one or more of the following research areas: nanobiology, nanomaterials, nanometrology, nanobioelectronics, nanoenergy, and computational nanotechnology.

Additional Admission Requirements

- Unconditional admission requires a bachelor's degree in engineering or a closely related field
- Two of the three recommendation letters must be from University faculty members
- Current curriculum vitae

Degree Requirements

Total credit hours: 31

Core Courses

- 13 credit hours: NANO 701, 702, 703, 704, 792

Thesis option

- Electives: 12 credit hours from NANO 700-899 excluding 792, 796-799, 851-854; NAN 600-699 (Nanoscience/UNCG) excluding 621, 622, 628; BMEN 700-791; CHEN 700-785, 789; CSE 700-785; ELEN 700-785; INEN 700-785; MEEN 700-789, excluding 778, 788; PHYS 700-799, excluding 740, 791-792; CHEM 702-799 excluding 703, 788, 799; BIOL 700-799, excluding 701, 702, 712, 788; MATH 700-799, excluding 705, 713, 725, 730, 788
- Thesis: 6 credit hours: NANO 797

Project option

- Electives: 15 credit hours from NANO 700-899 excluding 792, 796-799, 851-854; NAN 600-699 (Nanoscience/UNCG) excluding 621, 622, 628; BMEN 700-791; CHEN 700-785, 789; CSE 700-785; ELEN 700-785; INEN 700-785; MEEN 700-789, excluding 778, 788; PHYS 700-799, excluding 740, 791-792; CHEM 702-799 excluding 703, 788, 799; BIOL 700-799, excluding 701, 702, 712, 788; MATH 700-799, excluding 705, 713, 725, 730, 788
- Project: 3 credit hours: NANO 796

Directory of Faculty

- Joseph L. Graves, Jr., Professor and Associate Dean for Research, A.S., Biology, Oberlin College; PhD, Wayne State University, Environmental, Evolutionary and Systems Biology
- Shanthi Iyer, Research Professor, B.S., M.S., Delhi University; Ph.D., Indian Institute of Technology
- Ajit D. Kelkar, Professor and Chair, Nanoengineering, B.S., Pune University, Pune, India; Mechanical Engineering, M.S., South Dakota State University; Mechanical Engineering, Ph.D., Old Dominion University; Mechanical Engineering
- Ram V. Mohan, Associate Professor, B.S., University of Madras, India, M.S., West Virginia University, Morganton, WV; Mechanical Engineering, M.S., University of Illinois at Urbana-Champaign, Urbana, IL;

Theoretical and Applied Mechanics, Ph.D., University of Minnesota, Minneapolis, MN; Mechanical Engineering

- Shyam Aravamudhan, Assistant Professor, B.S., University of Madras, India, M.S. and Ph.D, University of South Florida; Electrical Engineering
- Lifeng Zhang, Assistant Professor, B.S., Xi'an Jiaotong University, China; Polymer Materials Science and Engineering, M.S., Beijing Institute of Technology, China; Polymer Materials Science and Engineering, PhD., University of California at Davis; Fiber and Polymer Science and Engineering
- Albert M. Hung, Assistant Professor, B.S., MIT; Material Science, Ph.D., Northwestern University, Evanston, IL; Material Science

Nanoengineering, PhD

School/College:	Joint School of Nanoscience and Nanoengineering		
Degree(s) Offered:	Master of Science, Doctor of Philosophy		
Graduate Coordinator:	Shyam Aravamudhan	**Email:** saravamu@ncat.edu	Phone: 336-285-2856
Department Chair:	Ajit Kelkar	**Email:** kelkar@ncat.edu	Phone: 336-285-2864

The Ph.D. program in Nanoengineering features coursework, laboratory rotations and extensive dissertation research involving engineering at the nanoscale. It is designed for students with a strong academic track record who seek advanced-level education and training to pursue careers in academia, industrial or government organization that utilize nanotechnology. Students will have the opportunity to work in one or more of the following research areas: nanobiology, nanomaterials, nanometrology, nanobioelectronics, nanoenergy, and computational nanotechnology.

Additional Admission Requirements

- Master's degree in engineering or a closely related field or Bachelor's degree in engineering or a closely related field with minimum 3.5 GPA
- GRE scores
- Two of the three recommendation letters must be from University faculty members
- Current curriculum vitae

Degree Requirements

Total credit hours: 72 (54 after masters)

Core Courses

- 12 credit hours: NANO 701, 702, 703, 704
- Select 4 credit hours from: NANO 851-854, NAN 611 (Nanoscience/UNCG)
- NANO 991 (3), 992(2), 993 (3), 994 (3), 995 (3) 997 (12)

Electives

- Select 12 credit hours from: NANO 800-899 excluding 851-854; NAN 700-798 (Nanoscience/UNCG); CSE 800-885; ELEN 800-885; INEN 800-885; MEEN 800-885.
- Select 18 credit hours from: NANO 700-899 excluding 792, 796-799, 851-854; NAN 600-798 (Nanoscience/UNCG) excluding 621, 622, 628; BMEN 700-791; CHEN 700-785, 789; CSE 700-785, 800-885; ELEN 700-785, 800-885; INEN 700-785, 800-885; MEEN 700-789 excluding 778, 788; MEEN 800-885; PHYS 700-799, 740, 791-792; CHEM 702-799 excluding 703, 788, 799; BIOL 700-799 excluding 701, 702, 712, 788; MATH 700-799 excluding 705, 713, 725, 730, 788.

Qualifying Examination:

The Qualifying Examination is given to assess student competence in a broad range of relevant subject areas. The Qualifying Examination is given once each semester (Fall and Spring) and it is held on two consecutive days. Only students with unconditional status and in good academic standing may take the Qualifying Examination. Students must take the Qualifying Examination by the end of the second semester of enrollment. In case of failure to pass in this first attempt, students will have the opportunity to take the exam in the following semester. Failure to pass the Qualifying Examination by the end of the third enrolled semester or the second attempt will result in the termination from the program.

Preliminary Oral Examination:

The Preliminary Oral Examination is conducted by the student's dissertation committee and is a defense of the student's dissertation proposal. Students must have successfully completed the qualifying examination to be

eligible for the Preliminary Oral Examination .Passing this exam satisfies requirements for Ph.D. Candidacy. Failure on the examination may result in dismissal from the doctoral program. The student's Advisory Committee may permit one re-examination. At least one full semester must elapse before the re-examination. Failure on the second attempt will result in dismissal from the doctoral program.

Admission to Ph.D. Candidacy
A student will be admitted to candidacy upon successful completion of the Qualifying Examination and Preliminary Oral Examination.

Dissertation Research:
A student may not register for dissertation credits before passing Qualifying Examination. No more than 12 dissertation credits are counted toward the total credit hours requirement for the degree.

Final Oral Dissertation Defense:
The Final Oral Dissertation Defense is conducted by the student's dissertation committee. This examination is the final dissertation defense presentation that is scheduled after a dissertation is completed. The examination may be held no earlier than six months after admission to candidacy. Failure on the examination may result in dismissal from the doctoral program. The student's Advisory Committee may permit one re-examination. At least one full semester must elapse before the re-examination. Failure on the second attempt will result in dismissal from the doctoral program.

Submission of Dissertation:
Upon passing the Ph.D. Final Oral Dissertation Defense, the Ph.D. student must have the dissertation approved by each member of the student's dissertation committee. The approved dissertation must be submitted to The Graduate School by the deadline given in the academic calendar, and must conform to the Graduate School's guidelines for theses and dissertations.

Directory of Faculty

- Joseph L. Graves, Jr., Professor and Associate Dean for Research, A.S., Biology, Oberlin College; PhD, Wayne State University, Environmental, Evolutionary and Systems Biology
- Shanthi Iyer, Research Professor, B.S., M.S., Delhi University; Ph.D., Indian Institute of Technology
- Ajit D. Kelkar, Professor and Chair, Nanoengineering, B.S., Pune University, Pune, India; Mechanical Engineering, M.S., South Dakota State University; Mechanical Engineering, Ph.D., Old Dominion University; Mechanical Engineering
- Ram V. Mohan, Associate Professor, B.S., University of Madras, India, M.S., West Virginia University, Morganton, WV; Mechanical Engineering, M.S., University of Illinois at Urbana-Champaign, Urbana, IL; Theoretical and Applied Mechanics, Ph.D., University of Minnesota, Minneapolis, MN; Mechanical Engineering
- Shyam Aravamudhan, Assistant Professor, B.S., University of Madras, India, M.S. and Ph.D, University of South Florida; Electrical Engineering
- Lifeng Zhang, Assistant Professor, B.S., Xi'an Jiaotong University, China; Polymer Materials Science and Engineering, M.S., Beijing Institute of Technology, China; Polymer Materials Science and Engineering, PhD., University of California at Davis; Fiber and Polymer Science and Engineering
- Albert M. Hung, Assistant Professor, B.S., MIT; Material Science, Ph.D., Northwestern University, Evanston, IL; Material Science

Physics, MS

School/College: College of Arts & Sciences
Degree(s) Offered: Master of Science
Graduate Coordinator: Ashot Gasparian **Email:** agaspari@ncat.edu **Phone**: 336-285-2112
Department Chair: Abdellah Ahmidouch **Email:** abdellah@ncat.edu **Phone**: 336-285-2105

The Masters of Science program in Physics prepares students for professional careers in industrial and governmental research, developmental applications of physics, teaching, and further study toward a Ph.D. in physics. Physics Masters are trained to use their advanced knowledge and analytical skills to solve complex problems in industry and research labs. Experimental Low and Medium Energy Physics, Atmospheric Science, Chemical Physics, Physics Education, Seismic Data Processing, Computational Atomic Molecular and Optical Physics. Opportunities to collaborate exist with major research institutions such as Duke University, the University of North Carolina at Chapel Hill, North Carolina State University, Wake Forest University, Stanford University, Pennsylvania State University, Hampton University, the University of Virginia and others. Collaborations with national laboratories include the Thomas Jefferson National Accelerator Facility (JLab), NOAA-Earth System Research Laboratory (NOAA-ESRL), Lawrence Berkeley National Laboratory (LBNL), National High Magnetic Field Lab-Florida, Los Alamos National Laboratory (LANL), and Oak Ridge National Laboratory (ORNL). International collaborations include the University of Marseilles in France, the Addis Ababa University in Ethiopia, ITEF Moscow, Russia, and the Institute for High Energy Physics at Protvino, Russia.

Additional Admission Requirements

- An undergraduate degree in physics or its equivalent
- Applicant's background reflects maturity in physics from junior and senior level undergraduate courses in classical mechanics, electromagnetism, thermodynamics and statistical mechanics, and quantum physics

Program Outcomes

- Critical Thinking: Students at the MS-Physics program will be able to think critically and use relevant physics concepts to solve physics problems and analyze situations involving physics.
- Communication: MS-Physics students will be able to articulate physical concepts, research work, and findings with tact and professionalism, both orally and in writing.
- General Physics Knowledge and Analytical Reasoning: Students will acquire an in-depth knowledge and thorough understanding of physical principles. Students will develop analytical skills to combine them with their working knowledge to explain the world around us and how things work at the fundamental level.
- Physics Specialty Expertise: Students will develop a physics specialty area of expertise through course work and research.
- Scientific Methodology: Students will develop an understanding of scientific methodology, through data collection from observations, setting up laboratory experiments and data acquisition, data analysis, data interpretation and testing of model/hypothesis, and reporting of data.
- Computer and Computational Expertise: MS-Physics students will develop competency in using computers and computational methods through:
  1. use or write software code to acquire/analyze/visualize data
  2. data analysis
  3. computer simulations

Degree Requirements

Total credit hours: 30 (thesis), 33 (non-thesis)

Core Courses: 12 credit hours

- Take 12 credit hours: PHYS 600, 615, 620, 630

Thesis option

- Thesis: PHYS 797(6)
- Select 9 credit hours from: PHYS 715, 720, 735, 736, 737, 738
- Select 3 credit hours from: PHYS 651, 680, 695, 715, 720, 735, 736, 737, 738

Project option

- Project: PHYS 796 (3)
- Select 15 credit hours from: PHYS 715, 720, 735, 736, 737, 738
- Select 3 credit hours from: PHYS 651, 680, 695, 715, 720, 735, 736, 737, 738

Course option

- Select 18 credit hours from: PHYS 715, 720, 735, 736, 737, 738
- Select 3 credit hours from: PHYS 651, 680, 695, 715, 720, 735, 736, 737, 738

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
- Thomas R. Sandin, Professor Emeritus, B.S., Santa Clara University; M.S., Ph.D., Purdue University
- Jing Zhang, Associate Professor, B.S., M.S., University of Nanjing, Ph.D. Perking University, China

Reading Education K-12, MAEd

School/College: School of Education
Degree(s) Offered: Master of Arts in Education (MAEd)
Graduate Coordinator: Nichole Smith, Ed.D. **Email:** nlsmith2@ncat.edu Phone: (336) 334-7848
Department Chair: Anthony Graham, Ph.D. **Email:** agraham@ncat.edu Phone: (336) 334-7848

The Master of Arts in Education, Reading Education degree program prepares highly-qualified reading specialists for K-12 students. Through courses in literacy and language development, diagnostic and prescriptive reading, and assessment and literacy instruction, candidates in the Master of Arts in Education, Reading Education program develop knowledge, skills, dispositions, and professional attitudes that empower them to become lifelong learners and exemplary educational leaders inside and outside K-12 learning contexts. The MAEd program in Reading Education is aligned with professional standards commensurate with the Interstate Teacher Assessment and Support Consortium (InTASC), the National Council for the Accreditation of Teacher Education (NCATE), the North Carolina Department of Public Instruction (NCDPI), and National Board Professional Teaching Standards (NBPTS). The Master of Arts in Education (MAEd) program in Reading Education is an accredited program by the National Council for the Accreditation of Teacher Education (NCATE) and by the North Carolina Department of Public Instruction (NCDPI).

Teacher Education Licensure: Degree completion and obtaining a teaching license in the State of North Carolina or any other state are separate processes. Admission to this program does not guarantee admission to the Teacher Education Licensure program. To be recommended for licensure, candidates must first be formally admitted to the Teacher Education Licensure Program. Failure to complete the Teacher Education admission requirements during the first semester of enrollment may result in the student's inability register for professional core courses. Candidates should review licensure requirements at http://www.ncat.edu/academics/schools-colleges1/soe/teacher-education/index.html or visit the School of Education for guidance on specific requirements.

Additional Admission Requirements

- Graduate Record Examination (GRE) Scores
- Standard Professional 1 or 2 NC Teaching License
- Statement of Purpose

Program Outcomes:
Candidates in the MAED Reading Education program will: (1) demonstrate effective research writing skills appropriate for educational scholars, (2) demonstrate effective knowledge, skills, and attitudes in diversity issues, learning theories, technological skills, and methods of instruction, (3) demonstrate the ability to implement research-based reading strategies supported by learning theories and aligned to the North Carolina Common Core and Essential Standards with K-12 students, and (4) demonstrate their depth of literacy knowledge and breadth of literacy pedagogical skills with K-12 students from diverse backgrounds.

Degree Requirements:
Total credit hours: 36

Phase I: Professional Core Courses

- Take 12 credit hours: CUIN 711, 728, 729, READ 755
- Comprehensive Exam: ELED 788(0)

Prior to beginning Phase II, candidates must have: (1) a Planning Contract on file with the program coordinator, (2) a minimum 3.00 Grade Point Average, and (3) passing scores on the core comprehensive examination.

Phase II

- Take 24 credit hours: READ 735, 736, 737, 738, 756, 757, 759, 774; ELED 789(0)

Up to six credit hours may be waived for students who have National Board certification.

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, Associate Professor, B.A., University of Virginia, M.Ed., Averett College, Ph.D., University of Virginia
- Debra Davidson, Adjunct Assistant Professor, B.S. Appalachian State University; M.S., University of Nebraska at Omaha; Ph.D., University of Nebraska
- Elizabeth Jane Davis, Associate Professor, B.A., Duke University; M.Ed., University of Virginia; Ph.D., University of North Carolina at Greensboro
- Charlesetta Dawson, Clinical Assistant Professor, B.A., M.A., University of Northern Iowa; Ph.D., University of North Carolina at Greensboro
- Michael Day, B.F.A and M.M., University of South Dakota; D.M.A., (Doctor of Musical Arts), University of Arizona
- Kimberly Erwin, Assistant Professor, B.S., M.S., North Carolina A&T State University, Ph.D., Virginia Polytechnic Institute and State University
- Loury Floyd, Associate Professor and Associate Dean for Undergraduate Programs, B.S., North Carolina A&T State University; M.S., University of Wisconsin-LaCrosse; Ph.D., The College of William and Mary
- Anthony Graham, Professor and Chairperson, B.A., University of North Carolina at Chapel Hill; M.Ed., Ph.D., University of North Carolina at Greensboro
- Karen D. Guy, Assistant Professor and Assistant Dean for Student Support Services, B.S., North Carolina A&T State University; M.Ed., North Carolina Central University; Ed.D., University of North Dakota
- Vivian Hampton, Associate Professor, B.A., North Carolina Central University; M.Ed., Howard University; Ph.D., University of Maryland
- Carl Haltom, Adjunct Assistant Professor, B.S. Cortland State College; M.A., San Francisco State University; Ed.D., Pennsylvania State University
- Pamela I. Hunter, Associate Professor, B.A., Livingston College; M.Ed., University of North Carolina at Greensboro; Ph.D., Ohio State University
- Sharon Hunter, Clinical Faculty, B.S., North Carolina A & T State University; M.A., University of North Carolina at Charlotte, Ed.D., Nova Southern University
- Ioney James, Associate Professor, B.A., University of West Indies, M.S., Central Connecticut State University, Ph.D., University of Albany
- Muktha Jost, Professor, B.A., Madras University; M.S., University of Kansas; Ph.D., Iowa State University
- Cathy Kea, Professor, B.A., North Carolina Central University; M.S., University of Wisconsin-LaCross; Ph.D., University of Kansas
- Thelma King, Associate Professor (Retd.), B.S. NC A&T State University; M.S., University of North Carolina at Greensboro; Ph.D., Virginia Polytechnic Institute and State University
- Dorothy D. Leflore, Associate Professor, B.S., Mississippi Valley State University; M.S., University of Oregon; Ph.D., University of Oregon
- Stephen McCary-Henderson, Associate Professor, B.S., North Carolina A&T State University; M.Ed. University of Southern Mississippi; Ph.D., Union Institute and University
- Barbara Mosley, Associate Professor, B.A., M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute & State University

- Felicia Sawyer, Clinical Faculty, B.A., North Carolina Central University; M.A.T., The Ohio State University; Ph.D., Capella University
- Nichole Smith, Assistant Professor, B.S., B.A, Appalachian State University; M.Ed., University of North Carolina at Greensboro; Ed.D., University of North Carolina at Chapel Hill
- Thomas J. Smith, Associate Professor, B.A., Manchester College; M.S., Indiana University; Ph.D., University of South Carolina
- Karen Smith-Gratto, Professor, B.A., Christopher Newport College; M.A., Ph.D., University of New Orleans
- Dawn C. Waegerle, Clinical Assistant Professor, B.A., M.A., Oral Roberts University; Ed.D. College of William and Mary
- Kendra Williamson, Adjunct Assistant Professor, B.S., North Carolina A&T State University; M.Ed., Appalachian State University; Ph.D., University of North Carolina at Greensboro
- Ereka Williams, Associate Professor, B.S., M.A.; Fayetteville State University; Ph.D., University of North Carolina at Greensboro

Contributing Faculty

- Valerie McMillian, Associate Professor of Family and Consumer Sciences, B.S., M.Ed., South Carolina State University; Ph.D., Iowa State University
- Dwana Waugh, Assistant Professor of History, Ph.D., University of North Carolina at Chapel Hill

Rehabilitation Counseling and Counselor Education, PhD

School/College: School of Education
Degree(s) Offered: Doctor of Philosophy
Graduate Coordinator: Tyra Turner Whittaker **Email:** tnwhitta@ncat.edu **Phone**: (336) 285-4395
Department Chair: Patricia Bethea-Whitfield **Email:** betheap@ncat.edu **Phone**: (336) 285-4384

The Doctoral Program in Rehabilitation Counseling and Counselor Education is designed to prepare culturally competent students to work as counselor educators, researchers, clinicians, and supervisors in academic and non-academic settings. In addition to establishing a core foundation in rehabilitation counseling and research, major emphasis is provided in the area of Trauma and Trauma Informed Care. The primary educational objectives of the program are: a) to increase students' knowledge of the role and functions of rehabilitation counselor educators, researchers, and counselors, b) to equip students with unique counseling and research skills to provide effective rehabilitation counseling, education, and research within a cultural context, c) to prepare students to obtain content knowledge in cultural diversity, trauma informed care, and additional expertise in specific areas in rehabilitation education, d) to equip students with knowledge, skills, and experiences to increase the body of research addressing diversity, social justice, and disability issues, and e) to prepare students to address professional issues and become leaders and researchers in rehabilitation counselor education and disability research through professional associations, publications, and professional development.

Additional Admission Requirements

- Master's in Rehabilitation Counseling (CORE), or Counseling (CACREP), or a related profession with overall GPA of 3.5 or higher
- GRE Score
- Professional Statement, including future career plans
- Three professional letters of recommendation must include letters from professor(s) from Master's program and from supervisor(s) from professional settings
- Two years of work experience preferred
- Successful completion of an interview
- Licensure and/or certification documentation
- Submission of a 10-12 page writing sample

Program Outcomes

- Critical Thinking: Students will develop skills and attitudes of effective thinking that employ the use of thoughtful reflection and logical inquiry to draw evidence-based conclusions as they relate to community counseling.
- Oral Communication Skills: Students will demonstrate proficiency in communicating in individual dyads and small and large group settings and in appropriate use of grammar to communicate counseling findings, while avoiding sexist language, doublespeak and clichés. Evaluation occurs during the benchmarking process. Students must receive a satisfactory rating from the majority of faculty to earn a satisfactory rating. Faculty will evaluate 100% of the student population.
- Written Communication: Students will demonstrate proficiency in academic and scientific writing, which includes avoiding digressions, consistent tenses, using the active voice and citing sources as well as findings, professional documentation, and report writing: with emphasis on APA publishing guidelines.
- Cultural Self-Awareness and Sensitivity: Students will demonstrate awareness of self, including knowledge of macro, micro, and meso ecological systems.
- Cultural Competence: Students will demonstrate an understanding of the cultural context of relationships, issues, and trends in a multicultural society.

- Ethical Practice: Students will demonstrate understanding and application of relevant professional ethical standards.
- Professionalism: Students will demonstrate professional maturity, integrity, and discipline consistent with professional standards of practice.
- Research and Design: Graduate community counseling students will demonstrate proficiency in designing quantitative, qualitative, single case designs, action, and outcome based research, as well as co-occurring and support software packages (e.g., SPSS). Students will understand ethics surrounding Human Subjects Social and Behavioral Science research procedures and Responsible Conduct in Research.
- Research Evaluation: Students will demonstrate proficiency in evaluating empirical and non-empirical research. Students will be able to review the professional literature and glean from the review relevant information for both research and practice. Students will be able evaluate research and its application to field experiences. Students will develop a research paper that reflects their knowledge of this content. The specifics of the research paper along with the grading rubric are presented in the achievement summary.
- Statistics: Students will demonstrate proficiency in basic statistics methods including scales of measurement, measures of central tendency, indices of variability, shapes and type of distributions, correlations, reliability and validity. Students will apply supportive software packages (e.g., MS Excel, SPSS).
- Technological Competence: Students will demonstrate proficiency in implementing best technology practices.

Degree Requirements
Total credit hours: 79 (beyond masters degree)

Core courses (67 credit hours)
- Professional/research (48 credit hours): HDSV 800, 802, 810, 812, 815, 818, 820, 825, 830, 840, 850, 854, 860, 865, 870, 875
- Clinical Practice (7 credit hours): HDSV 885, 895
- Dissertation (12 credit hours): HDSV 900

Cognates (12 credit hours)
If a student completes a 12-hour certificate at the master's level, those hours may fulfill the cognate requirement
- Trauma Informed Care: HDSV 841, 842, 843, 844
- Rehabilitation Counseling and Behavioral Addictions in Ethno-racial and Culturally Diverse Populations: HDSV 665, 767, 768, 769
- Vocational Evaluation and Work Adjustment in Ethno-racial and Culturally Diverse Populations: HDSV 771, 772, 776, and one course from: HDSV 752, 762, 777
- Marriage and Family Counseling in Ethno-racial and Culturally Diverse Populations: HDSV 754, 756, 774, and one course from: HDSV 753, 757, 769
- Rehabilitation Psychology and Behavioral Medicine in Ethno-racial and Culturally Diverse Populations: HDSV 761, 768, 773, 778
- In consultation with advisor, a student may design his/her own cognate

Dissertation Research:
A student may not register for dissertation credits before passing Qualifying Examination. No more than 12 dissertation credits are counted toward the total credit hours requirement for the degree.

Qualifying Examination:
The Qualifying Examination is given to assess the student's competence in a broad range of relevant subject areas. Only students with unconditional status and in good academic standing may take the Qualifying Examination. A student who wants to retake the Qualifying Examination must apply to retake the Qualifying Examination by the posted deadline. No student is permitted to take the Qualifying Examination more than twice. A student not

recommended for re-examination or who fails the exam on a second attempt may be dismissed from the doctoral program.

Preliminary Oral Examination:
The Preliminary Oral Examination is conducted by the student's dissertation committee and is a defense of the student's dissertation proposal. Passing this exam satisfies requirements for Ph.D. Candidacy. Failure on the examination may result in dismissal from the doctoral program. The student's Advisory Committee may permit one re-examination. At least one full semester must elapse before the re-examination. Failure on the second attempt will result in dismissal from the doctoral program.

Admission to Candidacy
Student will be admitted to candidacy upon successful completion of the Qualifying Exam and the Preliminary oral Exam.

Final Oral Examination:
The Final Oral Examination is conducted by the student's dissertation committee. This examination is the final dissertation defense presentation that is scheduled after a dissertation is completed. The examination may be held no earlier than one semester (or four months) after admission to candidacy. Failure on the examination may result in dismissal from the doctoral program. The student's Advisory Committee may permit one re-examination. At least one full semester must elapse before the re-examination. Failure on the second attempt will result in dismissal from the doctoral program.

Submission of Dissertation:
Upon passing the Ph.D. Final Oral Examination, the Ph.D. student must have the dissertation approved by each member of the student's dissertation committee. The approved dissertation must be submitted to The Graduate School by the deadline given in the academic calendar, and must conform to the Graduate School's guidelines for theses and dissertations.

Directory of Faculty

- Patricia D. Bethea-Whitfield, B.A., North Carolina Central University; M.Ed., University of North Carolina at Chapel Hill; Ed.D, University of North Carolina at Greensboro; Associate Professor
- Kacie Blalock , B.A., Grambling State University; M.S., Southern A&M University; PhD, University of Wisconsin; Associate Professor
- Caroline Booth; B.A., Wake Forest University; M.S., PhD, University of North Carolina at Greensboro, Associate Professor
- Quintin Boston, B.A., University of South Florida; M.A., University of South Florida; Ph.D., Southern Illinois University-Carbondale, Assistant Professor
- Michael Brooks, PhD, University of Central Florida, Associate Professor
- James L. Burston, Adjunct Faculty, BA, North Carolina State University, M.ED, PhD University of North Carolina Greensboro
- Rochelle Rush Cassidy, Adjunct Faculty, Program Coordinator, BA, University of North Carolina at Chapel Hill, MS, North Carolina A&T State University, PhD, Florida State University.
- Angel Dowden; BA, Norfolk State University; M.A., Norfolk State University, Ph.D., North Carolina State University, Assistant Professor
- Glacia Ethridge, PhD, University of Maryland, Assistant Professor
- Kelly Graves; B.S., Virginia Polytechnic Institute and State University B.A., M.A., Wake Forest University; Ph.D., University of North Carolina at Greensboro, Associate Professor
- LaCheata Hall; B.S., Bennett College for Women, M.S, University of North Carolina-Greensboro, Ed.D., University of North Carolina-Greensboro, Associate Professor

- Kimberly Harris, Adjunct Faculty, BA, University of North Carolina Chapel Hill, MBA, Campbell University, PhD, North Carolina State University
- Taehee Kim, Adjunct Faculty, BA, Daegu Catholic University, MA, San Francisco, State University, PhD, University of Texas.
- Robin G. Liles, B.A., University of North Carolina at Chapel Hill; M.S., Ed.S., Ph.D., University of North Carolina at Greensboro; Associate Professor
- Linda S. Makinson, BS, University of Pittsburgh, MBA, University of Dallas, MS, EdS, PhD University of North Carolina, Greensboro
- Essie McKoy, Adjunct Faculty, BS, Winston Salem State University, MA, Appalachian State University, EdS, PhD, University of North Carolina Greensboro.
- Shirlene Smith-Augustine, B.S., M.S., Ph.D., Indiana State University; Assistant Professor
- Miriam L. Wagner, B.S., University of North Carolina at Greensboro; M.Ed., North Carolina A&T State University; Ed.D., University of North Carolina at Greensboro; Associate Professor and Interim Chairperson
- Tammy T. Webb, B.S., Coppin State College; M.S.W., Ohio State University; Ph.D., Mississippi State University; Associate Professor
- Tyra Turner Whittaker, B.S., Xavier University of Louisiana; M.S., Xavier University of Louisiana; PhD., Southern Illinois University-Carbondale; Professor

School Administration, MSA

School/College: School of Education
Degree(s) Offered: Master of School Administration
Graduate Coordinator: Alisa Taliaferro **Email:** astaliaf@ncat.edu **Phone**: 336-285-2148
Department Chair: Patricia Bethea-Whitfield **Email:** betheap@ncat.edu **Phone**: (336) 285-4384

The Master of School Administration (MSA) program prepares students to assume executive roles in schools and school systems, primarily school principals and central office leaders. Graduates of School Administration are eligible for licensure from the North Carolina State Department of Public Instruction (SDPI) and may be qualified for administration certification in other states. Students who meet the NC Principal Fellows criteria, and who are interested in full time study and full time internship may apply to the NC Principal Fellows Program for full tuition and stipend to enroll in the MSA program. Program content is aligned with the North Carolina Standards for School Executives, the Interstate School Leaders Licensure Consortium standards for school leaders (ISLLC), the Educational Leadership Constituent Council (ELCC), and the National Council for Accreditation of Teacher Education (NCATE) for advanced programs in educational leadership.

Teacher Education Licensure: Degree completion and obtaining a teaching license in the State of North Carolina or any other state are separate processes. Admission to this program does not guarantee admission to the Teacher Education Licensure program. To be recommended for licensure, candidates must first be formally admitted to the Teacher Education Licensure Program. Failure to complete the Teacher Education admission requirements during the first semester of enrollment may result in the student's inability register for professional core courses. Candidates should review licensure requirements at http://www.ncat.edu/academics/schools-colleges1/soe/teacher-education/index.html or visit the School of Education for guidance on specific requirements.

Additional Admission Requirements

- Three (3) years of recent teaching experience or professional education experience
- GRE or MAT scores
- Current resume
- Writing sample (see MSA website for topic options)
- One of the three letters of recommendation must be from a school principal
- Interview with Master of School Administration faculty (as requested in the admission process)
- Teaching or professional license (if applicable)

Degree Requirements
Total credit hours: 42

- Take 30 credit hours: MSA 770, 771, 772, 773, 774, 776, 777, 778, 779, 784
- Internship Seminar: Take 6 credit hours: MSAL 789, 792
- Internship Practicum: Take 6 credit hours: MSAL 784, 785
- Comprehensive Exam: MSA 788 (0)

The field-based internship must be completed during the fall and spring semesters.

Directory of Faculty

- Linda Hopson, Associate Professor, BS, Livingstone College; MS, North Carolina Central University; Ed.D., Columbia University
- Alisa Taliaferro, Associate Professor and MSA Program Coordinator, BS, MS, North Carolina A& T State University; Ed.D. Clark-Atlanta University

- Anissa Burgman, Adjunct Faculty, BS, Appalachian State University; MSA, Ed.D, University of North Carolina Greensboro.
- Diedria Jordan, Adjunct Faculty, BS, North Carolina A&T State University, MS, EdS, Ed.D, University of North Carolina Greensboro

School Counseling, MS

School/College: School of Education
Degree(s) Offered: Master of Science
Graduate Coordinator: Shirlene Smith-Augustine **Email:** saugusti@ncat.edu **Phone:** (336) 285-4397
Department Chair: Patricia Bethea-Whitfield **Email:** betheap@ncat.edu **Phone**: (336) 285-4384

The School Counseling program is designed for individuals seeking a professional career in elementary or secondary school counseling. The School Counseling program is a flexible and high quality evening program which offers students the opportunity to create an individualized rate of matriculation in either part-time or full-time enrollment. The School Counseling program is nationally accredited by the Council on the Accreditation of Counseling and Related Educational Programs (CACREP). Curricular experiences encompasses each of CACREP's eight core areas of professional counseling which include Professional Identity, Social and Cultural Diversity, Human Growth and Development, Career Development, Helping Relationships, Group Work, Assessment, and Research and Program Evaluation. Students are prepared to take the PRAXIS II Specialty test in School Guidance and Counseling and the National Counseling Examination (NCE) of the National Board for Certified Counselors (NBCC) which is administered twice annually at NCA&T and apply for licensure as a licensed professional counselor through the North Carolina Board of Licensed Professional Counselors upon completion of the program. Students who pass the NCE prior to graduation are recognized as board eligible by NBCC.

Teacher Education Licensure: Degree completion and obtaining a teaching license in the State of North Carolina or any other state are separate processes. Admission to this program does not guarantee admission to the Teacher Education Licensure program. To be recommended for licensure, candidates must first be formally admitted to the Teacher Education Licensure Program. Failure to complete the Teacher Education admission requirements during the first semester of enrollment may result in the student's inability register for professional core courses. Candidates should review licensure requirements at http://www.ncat.edu/academics/schools-colleges1/soe/teacher-education/index.html or visit the School of Education for guidance on specific requirements.

Additional Admission Requirements

- Overall undergraduate GPA of 3.0 or higher on a 4-point system.
- Primary factors in the admissions decision include academic background, demonstrated professional and volunteer experience appropriate to Departmental programs of study, three letters of recommendation or reference forms, resume, and official transcripts of all prior academic work.
- Personal statement describing career goals, research interests and a list of publications, experience, academic honors and organizations.
- Applicants with greatest potential are also expected to participate in a pre-admission interview with departmental faculty. Pre-admission interviews can include: (a) individual interviews, (b) group interaction with observation, (c) on-site writing sample, and (d) technology survey.

Program Outcomes

- Research Evaluation: Students will demonstrate proficiency in evaluating empirical and non-empirical research. Students will be able to review the professional literature and glean from the review relevant information for both research and practice. Students will be able evaluate research and its application to field experiences. Students will develop a research paper that reflects their knowledge of this content. The specifics of the research paper along with the grading rubric are presented in the achievement summary.
- Research and Design: Graduate community counseling students will demonstrate proficiency in designing quantitative, qualitative, single case designs, action, and outcome based research, as well as co-occurring and support software packages (e.g., SPSS). Students will understand ethics surrounding Human Subjects Social and Behavioral Science research procedures and Responsible Conduct in Research.

- Statistics: Students will demonstrate proficiency in basic statistics methods including scales of measurement, measures of central tendency, indices of variability, shapes and type of distributions, correlations, reliability and validity. Students will understand the use and availability of supportive software packages (e.g., MS Excel, SPSS).
- Oral Communication Skills: Students will demonstrate proficiency in communicating in individual dyads and small and large group settings.
- Written Communication: Students will demonstrate proficiency in academic and scientific writing, professional documentation, and report writing: with emphasis on APA publishing guidelines.
- Cultural Awareness and Sensitivity: Students will demonstrate awareness of self, including knowledge of macro, micro, and meso ecological systems.
- Cultural Competence: Students will demonstrate an understanding of the cultural context of relationships, issues, and trends in a multicultural society.
- Ethical Practice: Students will demonstrate understanding and application of relevant professional ethical standards.
- Professionalism: Students will demonstrate professional maturity, integrity, and discipline consistent with professional standards of practice.
- Technological Competence: Students will demonstrate proficiency in implementing best technology practices.

Degree Requirements:
Total credit hours: 60

Course requirements
- Take 48 credit hours: HDSV 701, 702, 704, 706, 709, 710, 712, 713, 735, 736, 740, 750, 760, 763, 765, 770
- Internship: Select 6 credit hours: HDSV 780, 790 or 799
- Comprehensive Exam: HDSV 788 (0)
- Electives: Select 6 credit hours from HDSV 705, 755, 783; SPED 748

Internships
Internships HDSV 780 and 790 (or HDSV 799) involve supervised professional experiences in settings appropriate to the student's vocational objectives. The internships will provide practical work in the student's area of specialization. Internships include 600 hours of field experience. Students must complete a minimum of 240 hours of direct services with clients. Each week, students receive one hour of individual supervision from their site supervisors and one and one-half hours group supervision from their university supervisors during seminar.

Double major (School Counseling and Mental Health Counseling – Clinical)
Regulations on pursuing double majors are presented elsewhere in the catalog and must be followed. The student will be required to complete requirements of both programs. The programs require the following unique 18 credit hour requirements:

School Counseling:
HDSV 701, 704, 706, 712, 780/790 or 799 (6) specific to School Counseling

Mental Health Counseling – Clinical:
HDSV 707, 758, 759, 763, 780/790 or 799 (6) specific to the Clinical concentration

Double major (School Counseling and Mental Health – Rehabilitation)
Regulations on pursuing double majors are presented elsewhere in the catalog and must be followed. The student will be required to complete requirements of both programs. The programs require the following unique 18 credit hour requirements:

School Counseling:
HDSV 701, 704, 706, 712, 780/790 or 799 (6) specific to School Counseling

Mental Health Counseling – Rehabilitation:
HDSV 708, 738, 743, 764, 775, 780/790 or 799 (6) specific to the Rehabilitation concentration

Licensure

The student who has completed all requirements for graduation will also be eligible to apply for state certification/licensure in School Counseling by taking the PRAXIS II Specialty test in School Guidance and Counseling. Students are also eligible to become Nationally Certified Counselors by taking the National Counselor Examination offered by the National Board of Certified Counselors prior to graduation. In addition, the North Carolina Board for Licensed Professional Counselors recognizes this exam as their licensure exam. Student pursuing a licensure in School Counseling must take the PRAXIS II Specialty test in School Guidance and Counseling. Scores needed to pass: Specialty Area Exam (School Guidance and Counseling) 570. For further information consult the PRAXIS Booklet or the School of Education Dean's Office, 380 Proctor Hall, (336) 334-7757 or visit the PRAXIS II website.

Directory of Faculty

- Patricia D. Bethea-Whitfield, B.A., North Carolina Central University; M.Ed., University of North Carolina at Chapel Hill; Ed.D, University of North Carolina at Greensboro; Associate Professor
- Kacie Blalock , B.A., Grambling State University; M.S., Southern A&M University; PhD, University of Wisconsin; Associate Professor
- Caroline Booth; B.A., Wake Forest University; M.S., PhD, University of North Carolina at Greensboro, Associate Professor
- Quintin Boston, B.A., University of South Florida; M.A., University of South Florida; Ph.D., Southern Illinois University-Carbondale, Assistant Professor
- Michael Brooks, PhD, University of Central Florida, Associate Professor
- James L. Burston, Adjunct Faculty, BA, North Carolina State University, M.ED, PhD University of North Carolina Greensboro
- Rochelle Rush Cassidy, Adjunct Faculty, Program Coordinator, BA, University of North Carolina at Chapel Hill, MS, North Carolina A&T State University, PhD, Florida State University.
- Angel Dowden; BA, Norfolk State University; M.A., Norfolk State University, Ph.D., North Carolina State University, Assistant Professor
- Glacia Ethridge, PhD, University of Maryland, Assistant Professor
- Kelly Graves; B.S., Virginia Polytechnic Institute and State University B.A., M.A., Wake Forest University; Ph.D., University of North Carolina at Greensboro, Associate Professor
- LaCheata Hall; B.S., Bennett College for Women, M.S, University of North Carolina-Greensboro, Ed.D., University of North Carolina-Greensboro, Associate Professor
- Kimberly Harris, Adjunct Faculty, BA, University of North Carolina Chapel Hill, MBA, Campbell University, PhD, North Carolina State University
- Taehee Kim, Adjunct Faculty, BA, Daegu Catholic University, MA, San Francisco, State University, PhD, University of Texas.
- Robin G. Liles, B.A., University of North Carolina at Chapel Hill; M.S., Ed.S., Ph.D., University of North Carolina at Greensboro; Associate Professor
- Linda S. Makinson, BS, University of Pittsburgh, MBA, University of Dallas, MS, EdS, PhD University of North Carolina, Greensboro
- Essie McKoy, Adjunct Faculty, BS, Winston Salem State University, MA, Appalachian State University, EdS, PhD, University of North Carolina Greensboro.
- Shirlene Smith-Augustine, B.S., M.S., Ph.D., Indiana State University; Assistant Professor

- Miriam L. Wagner, B.S., University of North Carolina at Greensboro; M.Ed., North Carolina A&T State University; Ed.D., University of North Carolina at Greensboro; Associate Professor and Interim Chairperson
- Tammy T. Webb, B.S., Coppin State College; M.S.W., Ohio State University; Ph.D., Mississippi State University; Associate Professor
- Tyra Turner Whittaker, B.S., Xavier University of Louisiana; M.S., Xavier University of Louisiana; PhD., Southern Illinois University-Carbondale; Professor

Social Work (Joint with UNCG), MSW

Degree(s) Offered: Master of Social Work

Graduate Coordinator: Dr. Jeffrey Shears **Email:** jkshears@ncat.edu **Phone**: (336)-285-2361
Department Chair: Dr. Sharon Cook **Email:** swcook1@ncat.edu **Phone**: (336)-285-2305

The Joint Master of Social Work (JMSW) program represents the efforts of faculty and administrators at North Carolina Agricultural and Technical State University (NCA&TSU) and the University of North Carolina at Greensboro (UNCG). This is a single academic program with instruction by faculty from each department. Students attend classes on the campuses of both universities and have access to all academic and support services of the two universities. The Joint Master of Social Work Program is accredited by the Council on Social Work Education. The JMSW curriculum has been designed by the joint faculty from both institutions to provide students with advanced generalist social work education. The model for the curriculum is based on contemporary, state-of-the-art theory and practice methods. Courses reflect the theme of providing effective services to families in urban and rural North Carolina communities. The curriculum is organized by foundation, area of practice, advanced generalist integrative seminars, and field instruction. The primary purpose of the MSW program is to prepare students for advanced generalist social work practice. The mission of the Joint MSW Program is to prepare professional social workers for advanced generalist practice with families and youth at risk or with people affected by health and mental health issues; to provide culturally-competent, ethical, and effective social work services to individuals, families, groups, organizations, and communities; to collaborate with consumers and colleagues in the development of practices that promote social and economic justice and benefit the citizens of North Carolina; and to conduct research and community-engaged scholarship. The context for this mission is an intentional, multicultural learning community in which difference is understood as a defining value and diversity is celebrated. The signature pedagogy is field education.

Additional Admission Requirements

- An acceptable score on the GRE.
- Evidence of a liberal arts foundation to include the following minimum 30 credit hours: 18 Social and Behavioral Sciences (Political Science, Psychology, Anthropology, Economics, Ethnic/Global Studies, History, and Sociology); 6 Humanities; 3 Human Biology or Human Development; 3 Statistics
- Applicants must demonstrate intellectual and personal qualifications considered essential to the successful practice of social work, such as sensitivity and responsiveness in relationships, concern for the need of others, adaptability, good judgment, creativity, integrity, and skill in oral and written communication. This determination shall be based on a review of the applicant's references and written personal statement.
- Applicants to the Advanced Standing plan of study must have earned a Bachelor of Social Work degree from a Council on Social Work Education accredited program, have a GPA in social work courses of 3.2 or better, and provide a letter of recommendation from his/her B.S.W. field supervisor (as one of the three recommendations required).

Program Outcomes

The JMSW Program's competency-based curriculum has been designed to comply with the Council on Social Work Education's (CSWE) Educational Policy and Accreditation Standards (EPAS), as revised in 2008. CSWE has delineated 10 core competencies, listed below, that must be adequately addressed in all BSW and MSW curricula.

Ten Core Social Work Competencies identified by CSWE:

- Identify as a professional social worker and conduct oneself accordingly.
- Apply social work ethical principles to guide professional practice.
- Apply critical thinking to inform & communicate professional judgments.
- Engage diversity and difference in practice.

- Advance human rights and social & economic justice.
- Engage in research-informed practice and practice-informed research.
- Apply knowledge of human behavior and the social environment.
- Engage in policy practice to advance social and economic well-being and to deliver effective social services.
- Respond to contexts that shape practice.
- Engage, assess, intervene, and evaluate with individuals, families, groups, organizations, and communities.

Degree Requirements
Total credit hours: 60 (two year and three year options), 36 (advanced standing option)

Two year and three year options
- Foundation Courses: Take 30 credit hours: SOWK 609, 618, 619, 621, 622, 623, 624, 626, 784, 785
- Advanced Curriculum: Select 24 credit hours: SOWK 634, 644, 652, 653, 786, 787, 789, 792
- Electives: Select 6 credit hours: SOWK 600-799

Advanced standing option
Requires full time enrollment by students with Bachelor of Social Work Degrees.
- Summer Bridge/Transition Courses: Take 6 credit hours: SOWK 624, 626
- Advanced Curriculum:
  - Take 21 credit hours: SOWK 634, 706, 716, 722, 724, 786, 789
  - Select 3 credits from: SOWK 710, 712
  - Select 3 credits from: SOWK 711, 713
- Elective: Select 3 credit hours: SOWK 600-799

Internships
The JMSW Field Instruction Program provides directed learning opportunities through social work internships. Upon completion of the of field instruction program, two and three year students will have a total of 1,008 hours in field internships. Advanced Standing students will have to complete a total of 672 hours.

Directory of Faculty
- Arnold Barnes, B.A., University of Maryland Baltimore County; M.S.W., University of Maryland at Baltimore; Ph.D., Washington University; Associate Professor
- Phillip Carey, B.S., Oklahoma State University; M.S., Oklahoma State University; Ph.D., Oklahoma State University; Professor.
- Yoko S. Crume, B.A., International Christian University; M.S., University of Cincinnati; M.S.W., University of North Carolina at Chapel Hill; Ph.D., University of North Carolina at Chapel Hill; -Associate Professor
- Terrolyn P. Carter, B.S., Xavier University of Louisiana; M.S., University of Missouri-Columbia; Ph.D., University of Missouri-Columbia; Assistant Professor
- Kevin Carter, B.A. in Psychology, University of Virginia, M.S.W., Howard University, JMSW Co-Field Director.
- Sharon W. Cook, B.A., North Carolina Central University; M.S.W., University of North Carolina at Chapel Hill; Ph.D., University of North Carolina at Greensboro; Assistant Professor & Interim Chairperson
- William Hardy, B.S.W., North Carolina A & T State University; M.S.W., University of South Carolina at Columbia; Lecturer
- Andrea N. Johnson, B.A., North Carolina A & T State University; M.S., North Carolina State University; Ph.D., North Carolina A & T State University; Lecturer
- David Johnson, B.A., Hamilton College; M.A., University of North Carolina at Chapel Hill; Ph.D., University of North Carolina at Chapel Hill; Associate Professor

- Mary T. Lewis, B.A., Davis and Elkins College; M.S.W., University of Connecticut; Ph.D., Saybrook Graduate School and Research Center; Assistant Professor
- Wayne Moore, B.S., East Carolina University; M.S.W., Ohio State University; Ph.D., University of South Carolina at Columbia; Professor
- Maura B. Nsonwu, B.S.W., University of North Carolina at Greensboro; M.S.W., University of South Carolina at Columbia; Ph.D., University of North Carolina at Greensboro; Adjunct Assistant Professor
- Jeffrey Shears, Professor and JMSW Program Director, BSW, NC A&T State University; M.Ed, NC A&T State University; Ph.D., Social Work, University of Denver
- Elizabeth D. Watson, B.A., Columbia Union College; M.S.W., Howard University; Ph.D., Andrews University; Associate Professor

Adjunct Graduate Faculty – UNCG

- Jacalyn Claes, B.S., Western Illinois University; M.S., Western Illinois University; M.S.W.,University of Iowa; Ph.D., University of Iowa; Associate Professor.
- Susan Dennison, B.S.W., University of Detroit; M.S.W., Barry University; Associate Professor
- Alicia Kaplan, Assistant Professor, B.A. Psychology and Communication Studies, University of North Carolina Chapel Hill; MSW, NC A&T State University and University of North Carolina at Greensboro
- Elizabeth Lindsey, B.A., University of North Carolina at Chapel Hill; M.S.W., University of Georgia; Ph.D., University of Georgia; Professor
- Anne F. Pearson, Program Director/Lecturer, B.S. Sociology, Appalachian State; A.A.S. Respiratory Therapy, Sandhills Community College; BSN University of North Carolina at Greensboro; MSW University of North Carolina at Greensboro
- Kelly J. Poole, B.A, University of North Carolina at Greensboro, M.S.W., North Carolina A & T State University: Ph.D., University of North Carolina at Greensboro; Assistant Professor
- Bonita Porter, B.S.W., University of North Carolina at Greensboro; M.S.W., University of South Carolina; Academic Professional Assistant Professor.
- John Rife, B.A., Hanover College; M.S.W., Indiana University; M.A., Ohio State University; Ph.D., Ohio State University; Professor
- Sue Spidell, Lecturer, B.S. Business Administration, University of North Carolina at Greensboro; MSW, University of North Carolina at Greensboro

Technology Management, MS

School/College: School of Technology
Degree(s) Offered: Master of Science
Graduate Coordinator: Musibau Shofoluwe **Email:** musibaus@ncat.edu **Phone**: 336-285-3130
Department Chair: Ji Shen **Email:** shen@ncat.edu **Phone**: 336-334-7585

The Association of Technology, Management, and Applied Engineering (ATMAE) defines Technology Management as the field concerned with the supervision of personnel across the technical spectrum and a wide variety of complex technological systems. There is an increasing demand for experienced professionals who can play leadership roles involving technology innovation; development and deployment of new technologies across a broad spectrum of industries; planning, problem solving, and decision-making to improve business performance.

Program Outcomes

- Communication: During the coursework in the program, students will be able to communicate effectively the functions performed by Technology professionals in the installation, design, and utilization of software applications and equipment with the clarity and precision required by standards commonly practiced in the profession.
- Critical Thinking: During the coursework in the program, students will be able to define technological requirements appropriate to commonly encountered problems and solutions in workplace/enterprise.
- Innovation: During the coursework in the program, students will be able to design and implement a project that meets the desired technical specification, process, component, and/or program.
- Global Awareness - Social Responsibility: During the coursework in the program, students will be able to analyze the impact of Technology, both locally and globally, on individuals, organizations, and society.
- Ethical Leadership: During the coursework in the program, students will be able to understand the professional, legal, security, and social issues and responsibilities of the technologist professions engaged in developing innovative projects/systems solutions that address specific issues.

Degree Requirements

Total credit hours: 33

Core Courses

- Take 12 credit hours: MSTM 600, 701, 702, 703, 736

Thesis option

- Take MSTM 705
- Take MSTM 791(6)
- Management electives: Select 6 credit hours from: AET 613, 673, 735, 772; CM 692, 710, 720, 781; GCS 637; TECH 670, 671, 770; ITT 620, 625, 685, 735; OSH 655, 658, 659, 708, 709, 710, 711
- Technical electives: Select 6 credit hours from: AET 610, 651, 710, 720, 760, 780; LAND 682, 705; CM 678, 708, 715, 750, 780; GCS 630, 632, 634, 636, 642, 670; ITT 615, 629, 729, 750, 745, 752; OSG 630, 632, 637, 642, 660, 672, 678, 679, 706, 731, 751

Non-thesis option

- Take MSTM 750, 789, 788
- Management electives: Select 6 credit hours from: AET 613, 673, 735, 772; CM 692, 710, 720, 781; GCS 637; TECH 670, 671, 770; ITT 620, 625, 685, 735; OSH 655, 658, 659, 708, 709, 710, 711

- Technical electives: Select 9 credit hours from: AET 610, 651, 710, 720, 760, 780; LAND 682, 705; CM 678, 708, 715, 750, 780; GCS 630, 632, 634, 636, 642, 670; ITT 615, 629, 729, 750, 745, 752; OSG 630, 632, 637, 642, 660, 672, 678, 679, 706, 731, 751
- Internship: Take MSTM 750

Directory of Faculty - MSTM

- Rajeev Agrawal, Assistant Professor, B.S., G.B. Pant University, India; M.S., Thaper University, India; Ph.D., Wayne State University
- Christian A. Bock-Hyeng, Assistant Professor, B.S., M.S., Dr. Eng., People's Friendship University, Moscow, Russia;
- DeWayne Brown, Professor, B.S., University of South Carolina; M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University
- Larry Burton, Associate Professor, B.S., M.S., Ph.D., Duke University
- Horlin Carter, Associate Professor, B.A., M.S., Marshall University; Ph.D. Michigan State University
- Vincent W. Childress, Professor and Interim Chairperson, B.S., M.S., Ph.D., Virginia Polytechnic Institute and State University
- Robert Cobb, Jr., Associate Professor, B.S., Virginia Polytechnic Institute and State University; M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University
- Sonja Draper, Assistant Professor, B.S., M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic and State University
- Naser El-Bathy, Assistant Professor, B.A., Cairo University, M.S., Wayne State University, Ph.D., Lawrence Technological University
- Brenda S. Faison, Associate Professor, B.A., North Carolina Central University; M.P.D., North Carolina State University; Ph.D., The Ohio State University
- Clay Gloster, Jr., Professor and Chair B.S., M.S., North Carolina A&T State University; Ph.D., Computer Engineering, North Carolina State University
- Tony E. Graham, Assistant Professor, B.S., North Carolina A&T State University, M.S. and Ph.D., Morgan State University
- Mitchell Henke, Assistant Professor, B.S., Ohio State University; M.S. Bowling Greene State University; Ph.D. Virginia Polytechnic and State University
- Ibraheem Kateeb, Assistant Professor, B.S., University of Science and Technology (Yarmouk University); M.S., Ph.D., North Carolina A&T State University
- Alton L. Kornegay, Assistant Professor, B.S., Savannah State University; MBA, University of Iowa; Ph.D., Iowa State University
- Devang P. Mehta, Associate Professor, B.S., University of Bombay; M.A., DIT, University of Northern Iowa
- Mahour Mellat-Parast, Assistant Professor, B.S., Sharif University of Technology, M.S., University of Science and Technology; Ph.D., University of Nebraska-Lincoln
- Hany K. Nakhla, Associate Professor, B.S. and M.S., Cairo University in Egypt; Ph.D., Rensselaer Polytechnic Institute, Troy, New York
- Robert B. Pyle, Professor and Chair, B.A., M.A., Trenton State College; Ph.D., University of Pittsburgh
- Zhaoqiong (Julie) Qin, Associate Professor, B.S., Southwest Jiaotong University, M.S., Southwest Jiaotong University, Ph.D., New Jersey Institute of Technology
- Craig Rhodes, Associate Professor, B.S., M.S., North Carolina A&T State University; Ph.D., University of Minnesota
- Cameron Seay, Assistant Professor, B.A., M.A., City University of New York; M.B.A., M.S., Ph.D., Georgia State University
- Dilip T. Shah, Associate Professor, B.E., Poona, India; M.S., Illinois State University; Ph.D., Texas A&M University

- Ji Y. Shen, Professor and Chairperson, B.S., Northwestern Polytechnic University; M.S., Nanjing Aeronautical University; Ph.D., Old Dominion University
- Musibau A. Shofoluwe, Professor, 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.
- Li-Shiang Tsay, Assistant Professor, B.A., M.S., Ph.D., Information Technology, University of North Carolina at Charlotte
- Yili Tseng, Associate Professor, B.S., National Taiwan University; M.S., University of Florida; M.S., Ph.D., University of Central Florida
- 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
- Qing-An Zeng, Assistant Professor, B.S., Chengdu University of Information Technology, China; M.S., Ph.D., Shizuoka University, Japan

Technology Management – Construction Science and Management PSM, MS

School/College: School of Technology
Degree(s) Offered: Master of Science
Graduate Coordinator: Musibau Shofoluwe **Email:** musibaus@ncat.edu **Phone**: 336-285-3130
Department Chair: Ji Shen **Email:** shen@ncat.edu **Phone**: 336-334-7585

The Construction Science and Management Professional Science Masters concentration is designed to prepare professionals to take leadership roles in the construction industry.

Program Outcomes

- Communication: During the coursework in the program, students will be able to communicate effectively the functions performed by Technology professionals in the installation, design, and utilization of software applications and equipment with the clarity and precision required by standards commonly practiced in the profession.
- Critical Thinking: During the coursework in the program, students will be able to define technological requirements appropriate to commonly encountered problems and solutions in workplace/enterprise.
- Innovation: During the coursework in the program, students will be able to design and implement a project that meets the desired technical specification, process, component, and/or program.
- Global Awareness - Social Responsibility: During the coursework in the program, students will be able to analyze the impact of Technology, both locally and globally, on individuals, organizations, and society.
- Ethical Leadership: During the coursework in the program, students will be able to understand the professional, legal, security, and social issues and responsibilities of the technologist professions engaged in developing innovative projects/systems solutions that address specific issues.

Degree Requirements

Total credit hours: 30

Core Courses

- Take 12 credit hours: MSTM 600, 701, 702, 703, 736

Disciplinary Electives

- Select 9 credit hours from: CM 704, 710, 786; LAND 682

Business/Management Electives

- Select 6 credit hours from: CM 692, 705, 781; MGMT 712

Applied Project/Experiential Education

- Take 3 credits: CM 796

Directory of Faculty - MSTM

- Rajeev Agrawal, Assistant Professor, B.S., G.B. Pant University, India; M.S., Thaper University, India; Ph.D., Wayne State University
- Christian A. Bock-Hyeng, Assistant Professor, B.S., M.S., Dr. Eng., People's Friendship University, Moscow, Russia;
- DeWayne Brown, Professor, B.S., University of South Carolina; M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University
- Larry Burton, Associate Professor, B.S., M.S., Ph.D., Duke University

- Horlin Carter, Associate Professor, B.A., M.S., Marshall University; Ph.D. Michigan State University
- Vincent W. Childress, Professor and Interim Chairperson, B.S., M.S., Ph.D., Virginia Polytechnic Institute and State University
- Robert Cobb, Jr., Associate Professor, B.S., Virginia Polytechnic Institute and State University; M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic Institute and State University
- Sonja Draper, Assistant Professor, B.S., M.S., North Carolina A&T State University; Ph.D., Virginia Polytechnic and State University
- Naser El-Bathy, Assistant Professor, B.A., Cairo University, M.S., Wayne State University, Ph.D., Lawrence Technological University
- Brenda S. Faison, Associate Professor, B.A., North Carolina Central University; M.P.D., North Carolina State University; Ph.D., The Ohio State University
- Clay Gloster, Jr., Professor and Chair B.S., M.S., North Carolina A&T State University; Ph.D., Computer Engineering, North Carolina State University
- Tony E. Graham, Assistant Professor, B.S., North Carolina A&T State University, M.S. and Ph.D., Morgan State University
- Mitchell Henke, Assistant Professor, B.S., Ohio State University; M.S. Bowling Greene State University; Ph.D. Virginia Polytechnic and State University
- Ibraheem Kateeb, Assistant Professor, B.S., University of Science and Technology (Yarmouk University); M.S., Ph.D., North Carolina A&T State University
- Alton L. Kornegay, Assistant Professor, B.S., Savannah State University; MBA, University of Iowa; Ph.D., Iowa State University
- Devang P. Mehta, Associate Professor, B.S., University of Bombay; M.A., DIT, University of Northern Iowa
- Mahour Mellat-Parast, Assistant Professor, B.S., Sharif University of Technology, M.S., University of Science and Technology; Ph.D., University of Nebraska-Lincoln
- Hany K. Nakhla, Associate Professor, B.S. and M.S., Cairo University in Egypt; Ph.D., Rensselaer Polytechnic Institute, Troy, New York
- Robert B. Pyle, Professor and Chair, B.A., M.A., Trenton State College; Ph.D., University of Pittsburgh
- Zhaoqiong (Julie) Qin, Associate Professor, B.S., Southwest Jiaotong University, M.S., Southwest Jiaotong University, Ph.D., New Jersey Institute of Technology
- Craig Rhodes, Associate Professor, B.S., M.S., North Carolina A&T State University; Ph.D., University of Minnesota
- Cameron Seay, Assistant Professor, B.A., M.A., City University of New York; M.B.A., M.S., Ph.D., Georgia State University
- Dilip T. Shah, Associate Professor, B.E., Poona, India; M.S., Illinois State University; Ph.D., Texas A&M University
- Ji Y. Shen, Professor and Chairperson, B.S., Northwestern Polytechnic University; M.S., Nanjing Aeronautical University; Ph.D., Old Dominion University
- Musibau A. Shofoluwe, Professor, 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.
- Li-Shiang Tsay, Assistant Professor, B.A., M.S., Ph.D., Information Technology, University of North Carolina at Charlotte
- Yili Tseng, Associate Professor, B.S., National Taiwan University; M.S., University of Florida; M.S., Ph.D., University of Central Florida
- 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
- Qing-An Zeng, Assistant Professor, B.S., Chengdu University of Information Technology, China; M.S., Ph.D., Shizuoka University, Japan

Certificate - Waste Management, PB

School/College: School of Agriculture and Environmental Sciences
Certificate Offered: Post Baccalaureate Certificate
Graduate Coordinator: Godfrey A, Uzochukwu **Email:** uzo@ncat.edu **Phone**: 336-334-7030
Department Chair: Dr. Louis E. Jackai **Email:** lejackai@ncat.edu **Phone**: 336- 285- 4837

The advanced interdisciplinary waste management certificate program is open to all graduate students. It is designed to create a talented pool of advanced students who will become leaders in environmental and waste management fields.

Program Requirements
Total credit hours: 12

- Capstone: Select 1 credit hour: WMI 747 (1 credit hour capstone)
- Select 5 credit hours from: WMI 617, 619, 629
- Select 6 credit hours from: Advanced environmental/waste management/related courses in major. Special topic/project courses in environmental/waste management in major are acceptable

Certificate - Community College Teaching, PB

School/College: School of Education
Certificate Offered: Post Baccalaureate Certificate
Graduate Coordinator: Miriam L. Wagner **Email:** wagnerm@ncat.edu **Phone**: 336-334-7916
Department Chair: Miriam L. Wagner **Email:** wagnerm@ncat.edu **Phone**: 336-334-7916

Additional Admission Requirements

- Available only as an add-on certificate to students admitted to the MS in Adult Education program at North Carolina A&T State University.

Certificate Requirements

Total credit hours: 15

- Take 15 credit hours: ADED 708, 718, 719, 720, 776

Certificate - Family and Consumer Sciences, PB

School/College: School of Agricultural and Environmental Science
Certificate Offered: Post Baccalaureate Certificate
Graduate Coordinator: Valerie L. Giddings **Email:** vlgiddin@ncat.edu Phone: 336-285-3624
Department Chair: Valerie L. Giddings **Email:** vlgiddin@ncat.edu Phone: 336-285-3624

The Certificate Program in Family and Consumer Sciences Education provides individuals with a strong foundation in teaching methods, classroom management, curriculum development, assessment, leadership, education technology, and content knowledge in family and consumer sciences. Graduates will accept positions as teachers at the middle and high school levels with content knowledge in family and consumer sciences. The certificate is especially designed for teachers in Jamaica who are committed to preparing students for family life, work life or for careers in family and consumer sciences.

Certificate Requirements
Total credit hours: 18

- Take 18 credit hours: FCS 641, 681, 682, 683, 701, 702, 734

Certificate - Marriage and Family Counseling, PM

School/College: School of Education
Certificate Offered: Post Masters Certificate
Graduate Coordinator: Miriam L. Wagner **Email:** wagnerm@ncat.edu **Phone**: 336-334-7916
Department Chair: Miriam L. Wagner **Email:** wagnerm@ncat.edu **Phone**: 336-334-7916

Additional Admission Requirements

- Available only as an add-on certificate to students admitted to the MS in Mental Health Counseling program at North Carolina A&T State University.

Program Requirements

Total credit hours: 12

- Take 9 credit hours: HDSV 754, 756, 774
- Select 3 credit hours from: HDSV 753, 757, 769

Certificate - Rehabilitation Counseling and Behavioral Addictions, PM

School/College: School of Education
Certificate Offered: Post Masters Certificate
Graduate Coordinator: Miriam L. Wagner **Email:** wagnerm@ncat.edu **Phone**: 336-334-7916
Department Chair: Miriam L. Wagner **Email:** wagnerm@ncat.edu **Phone**: 336-334-7916

The Certificate in Rehabilitation Counseling and Behavioral Addictions (RCBA) imparts specific knowledge and skills to its students that are required to effectively assist and counsel those who are impacted by behavioral addictions (i.e., alcohol and drugs, sexual addiction, eating disorders, criminal behaviors, and gambling). The specific emphasis on ethnic minorities serves to address the unique needs of these individuals, which may be overlooked or misunderstood during the treatment process. The RCBA Certificate has been approved by the North Carolina Substance Abuse Professional Practice Board (NCSAPPB) and meets the reduction in NCSAPPB requirements for the Licensed Clinical Addictions Specialist credential.

Additional Admission Requirements

- Available only as an add-on certificate to students admitted to the MS in Mental Health Counseling program at North Carolina A&T State University.

Certificate Requirements

Total credit hours: 12

- HDSV 716, 767, 768, 769

Certificate - Rehabilitation Psychology and Behavioral Medicine, PM

School/College: School of Education
Certificate Offered: Post Masters Certificate
Graduate Coordinator: Miriam L. Wagner **Email:** wagnerm@ncat.edu **Phone**: 336-334-7916
Department Chair: Miriam L. Wagner **Email:** wagnerm@ncat.edu **Phone**: 336-334-7916

The Certificate Program in Rehabilitation Psychology and Behavioral Medicine prepares counselors who focus on the application of psychological knowledge and skills on behalf of individuals with disabilities and chronic health conditions in order to maximize health and welfare, independence, and functional abilities. The certificate also prepares specialists who are concerned with behavioral approaches relevant to the understanding of physical health and illness, and the application of disease prevention, health promotion, treatment, and rehabilitation. There is specific emphasis on the psychological impact of disability, types of assessment tools and procedures utilized to diagnose individuals with various psychological conditions, and the appropriate techniques utilized to treat individuals with psychopathological disorders.

Additional Admission Requirements

- Available only as an add-on certificate to students admitted to the MS in Mental Health Counseling program at North Carolina A&T State University.

Certificate Requirements

Total credit hours: 12

- HDSV 761, 768, 773, 778

Certificate - School Administration, PM

School/College: School of Education
Certificate Offered: Post Masters Certificate
Graduate Coordinator: Alisa Taliaferro **Email:** astaliaf@ncat.edu **Phone**: 336-285-2148
Department Chair: Miriam L. Wagner **Email:** wagnerm@ncat.edu **Phone**: 336-334-7916

The School Administration Endorsement Licensure Program is designed for individuals who currently hold a master's degree in an educational related field (Counseling, Curriculum & Instruction, Instructional Technology, etc.) and 3 years of teaching (or other professional education experience) or have been employed by an LEA as an assistant principal.

Teacher Education Licensure: Degree completion and obtaining a teaching license in the State of North Carolina or any other state are separate processes. Admission to this program does not guarantee admission to the Teacher Education Licensure program. To be recommended for licensure, candidates must first be formally admitted to the Teacher Education Licensure Program. Failure to complete the Teacher Education admission requirements during the first semester of enrollment may result in the student's inability register for professional core courses. Candidates should review licensure requirements at http://www.ncat.edu/academics/schools-colleges1/soe/teacher-education/index.html or visit the School of Education for guidance on specific requirements.

Additional Admission Requirements

- Earned Master's Degree in Education from an accredited university
- Three (3) years of recent teaching experience or professional education experience
- Current resume
- Writing sample (see Master of School Administration website for topic options)
- One of the 3 letters of recommendation must be from a school principal
- Interview with Master of School Administration faculty (as requested in the admission process)
- Teaching License or Professional License (i.e. School Counseling, School Social Work)

Certificate Requirements
Total credit hours: 21

- Take 12 credit hours: MSA 773, 774, 776, 778,
- Internship Seminar: MSAL 789
- Internship Practicum: Take 6 credit hours: MSAL 784, 785
- Comprehensive Exam: MSA 788 (0)
- Passing grade on NC Department of Public Instruction's School Executive Evidences

The field-based internship must be completed during the fall and spring semesters.

Certificate - Supply Chain Management, PB

School/College: School of Business and Economics
Certificate Offered: Post Baccalaureate Certificate
Graduate Coordinator: Roger J. Gagnon **Email:** gagnonr@ncat.edu Phone: 336-285-3291
Department Chair: Linda S. Coley **Email:** lscoley@ncat.edu Phone: 336-285-3340

The Graduate Certificate in Supply Chain Management provides professionals with the state-of-the-art knowledge necessary to design, manage, analyze, and update entire supply chain systems or various components within them. Graduates will be prepared to accept responsibility in supply chain management, purchasing, transportation or traffic management, warehousing, inventory management, and global supply chain management. The certificate is designed for professionals in transportation, logistics, manufacturing, insurance, food processing, hospitality, retailing, and government regulatory and transportation agencies.

Certificate Requirements
Total credit hours: 15

- TSCM 701, 720, 725, 727; MIS 713

Certificate - Vocational Evaluation and Work Adjustment, PM

School/College: School of Education
Certificate Offered: Post Masters Certificate
Graduate Coordinator: Miriam L. Wagner **Email:** wagnerm@ncat.edu **Phone**: 336-334-7916
Department Chair: Miriam L. Wagner **Email:** wagnerm@ncat.edu **Phone**: 336-334-7916

The Certificate in Vocational Evaluation and Work Adjustment (VEWA) prepares students to administer, score, and interpret a variety of Psychological, Cognitive, Intelligence, Aptitude, and Career tests, especially for persons with disabilities. The certificate also prepares specialists who focus on pre-employment and employment skill development along with reintegrating persons with disabilities into the community. The VEWA program prepares students to become board eligible to obtain national certification as a Professional Vocational Evaluator (PVE).

Additional Admission Requirements

- Available only as an add-on certificate to students admitted to the MS in Mental Health Counseling program at North Carolina A&T State University.

Program Requirements

Total credit hours: 12

- HDSV 771, 772, 776
- Select one course from: HDSV 752, 762, 777