

**Request for Authorization to Establish  
Bachelor of Science (BS) in Statistics  
CIP 27.0501  
University of North Carolina at Greensboro**

**I. Program Highlights**

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- The University of North Carolina at Greensboro proposes the establishment of a Bachelor of Science in Statistics.
- The B.S. in Statistics will replace the statistics concentration under the BS in Mathematics and will have program requirements very similar to what the concentration has now.
- UNC Greensboro is a public research university in the University of North Carolina System seeking to be a “source of innovation and leadership meeting social, economic, and environmental challenges in the Piedmont Triad, North Carolina, and beyond” ([strategicplan.uncg.edu](https://strategicplan.uncg.edu)). To support the UNC System 2022-27 Strategic Plan metrics related to health sciences and STEM credentials, UNCG proposes to offer this Bachelor of Science in Statistics.
- Data analytics is becoming more and more vital in all fields of study. Formal training as a statistics major provides greater employment opportunities compared to a statistics concentration within a math major. Students completing this degree program will contribute to regional transformation by meeting growing workforce needs and improving the quality of life in the Piedmont Triad, and thus this program contributes to the mission of UNCG and its strategic goals. Most job postings are in the Charlotte area, followed by the Chapel Hill–Durham–Raleigh area, and the Piedmont Triad, where Greensboro is located. This program also prepares students for graduate degrees in statistics and data analysis at UNCG and other institutions.
- Currently for the university’s BS in Mathematics, the common degree requirements in the statistics and (advanced) mathematics concentration are calculus, linear algebra, and an introductory statistics course. Students in the statistics concentration are required to take mostly statistics courses and not higher mathematics courses. Thus, the new name, BS in Statistics, will describe the program better and attract more students.
- The projected enrollment at Year 5 is 42 full-time students.

**II. Academic Program Planning Criteria (UNC Policy 400.1)**

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1. **Relation to Campus Distinctiveness and Mission.** UNCG is a public research university in the UNC System seeking to be a source of innovation and leadership meeting social, economic, and environmental challenges in the Piedmont Triad and beyond ([strategicplan.uncg.edu](https://strategicplan.uncg.edu)). One of the goals of UNCG is to increase the number of credentials earned in STEM fields, health sciences, and K-12 education by 19.5 percent by 2021-22 ([strategicplan.uncg.edu/goals-and-initiatives/](https://strategicplan.uncg.edu/goals-and-initiatives/)). Students completing a BS in Statistics will increase the number of STEM graduates at UNCG. Graduates will also contribute to regional transformation by meeting growing workforce needs. Currently UNCG offers a data science and big data concentration in the Computer Science bachelor’s degree, a graduate certificate in business analytics, as well as an M.S. in Applied Statistics and an M.S. in Informatics and Analytics. What is missing is an undergraduate degree that emphasizes the foundations of data analytics. The BS in Statistics will fill a gap in UNCG’s data-related offerings. Additionally, the BS in Statistics will prepare students for the graduate degrees M.S. in Applied Statistics and M.S. in Informatics and Analytics at UNCG.

2. **Student Demand.** The number of completed statistics degrees in North Carolina has increased threefold since 2013 at schools like NC State University, Elon University, Duke University, and the University of North Carolina Wilmington. The nationwide enrollment in undergraduate studies, after a decrease in the past 10 years, is projected to increase again, according to the National Center for Education Statistics, especially given the growing “big data” field. UNCG surveyed the students in the BS in Mathematics with Statistics Concentration in fall 2023. All respondents (100 percent) said they would prefer to be awarded a BS in Statistics because it gives potential employers a better impression of what students studied. At Wake Forest University demand spiked when the BS in Statistics program was started. UNCG expects a similar increase to the one seen at Wake Forest.
  
3. **Employment Opportunities for Graduates.** In consultations with colleagues at NC State, Elon University, and Wake Forest University, we learned that more than 80 percent of graduates from other statistics programs had jobs or were admitted to a graduate program, in particular:
  - At least 80 percent of the students in the NC State statistics program have jobs by the time they graduate. The remainder usually find positions within a few months.
  - At Elon University, more than 80 percent of the students with statistics degrees had jobs or were admitted to a graduate program when they graduated. In most years about a quarter of them went to graduate school.
  - Anecdotal information from Wake Forest also indicates very high rates of employment for graduates.
  - NC Careers (nccareers.org) predicts a growth of 3.9 percent in job openings for data scientists (bachelor's degree) with 720 average annual openings. This is confirmed by Emsi/Lightcast data predictions.
  
4. **Impact on Access and Affordability.** The most recent data shows that UNCG students carry an average of \$23,359 in federal student loan debt. According to the NC Careers the 2022 median wage of statistical assistants was \$47,690 and the median wage of data scientists was \$121,970. These jobs represent reasonable upper and lower bounds for earnings with this credential. Thus, the debt-to-earnings ratio would be between 49 percent and 19 percent. Assuming an interest rate of 6.8 percent and a payment of \$353 (which is less than 10 percent of the lower bound of the predicted earnings) the loan would be paid back in less than seven years.

UNCG does not request any program-specific fees or tuition differential for this program. Tuition and fees for the 2023-24 full-time (12+ credit hour) rates are as follows:

Full-Time Undergraduate Tuition and Fees per Year (in Dollars)

Category	Resident	Nonresident
Tuition	\$4,422	\$20,168
Tuition Differential	--	--
Mandatory Fees (Athletics, Student Activities, Health Services, Educational & Technology, Campus Security, Debt Service, ASG)	\$3,076	\$3,076
Special Fees	--	--

5. **Expected Quality.** This program was designed following the recommendations of the American Statistical Association. The BS in Statistics will be related to the BS in Mathematics with which it shares 21 hours of coursework. There are several graduate programs at UNCG in which the graduates of the BS in Statistics can continue their studies, namely the M.S. in Applied Statistics, the statistics track in the Ph.D. in Computational Mathematics, and the M.S. in Informatics and Analytics.
6. **Faculty Quality and Number.** The statistics faculty in the Department of Mathematics and Statistics at UNCG consists of three full professors, one assistant professor, one ongoing visiting assistant professor with doctorates in statistics, and one lecturer who is pursuing a Ph.D. in computational mathematics with statistics focus. Several existing mathematics professors at UNCG have experience in data science and machine learning. Because all courses required for the BS in Statistics are already offered for the BS in Mathematics with Statistics Concentration this new program can be supported by the existing faculty.
7. **Relevant Lower-level and Cognate Programs.** Currently, UNCG offers a BS in Mathematics with a Statistics and a (Advanced) Mathematics Concentration. The common degree requirements are the calculus sequence, a course in linear algebra, and an introductory statistics course. Students in the statistics concentration take courses in probability and statistical inference and continue with higher-level statistics courses and not higher mathematics courses.

The new BS in Statistics will replace this statistics concentration in the BS in Mathematics that the Department of Mathematics and Statistics at UNCG has offered for close to 20 years. Furthermore, the department has experience with graduate programs in statistics, namely data science and statistics concentrations in its M.A. program and a doctoral minor in statistics and has offered a M.S. in Applied Statistics in fall 2020.

8. **Availability of Campus Resources (library, space, etc.)** Due to the well-established BS in Mathematics with Statistics Concentration and the M.S. in Applied Statistics, the UNCG library has a comprehensive collection of materials to support the new program and no additional physical space is needed.
9. **Existing Programs (Number, Location, Mode of Delivery).** Other UNC System institutions offer similar programs, namely: BS in Statistics at University of North Carolina Wilmington, on-campus (CIP 27.0501); BS in Statistics at NC State University, on-campus (CIP 27.0501); BS in Statistics and Analytics at University of North Carolina at Chapel Hill, on-campus (CIP 27.0501).
10. **Potential for Unnecessary Duplication.** The proposed program at UNCG adds a new geographic location. More than 44 percent of students at UNCG come from Guilford and neighboring counties, thus adding a new location would put a BS in Statistics within physical reach of these students. Also, 31 percent of the students at UNCG are first-generation students, a cohort more likely to choose a university close to their home. The BS in Statistics at UNCG would be the first such program at a minority-serving institution in the UNC System, making this degree more accessible to this demographic. Additionally, the pipelines from Piedmont area community colleges are well established. The UNCG Transfer Promise is designed to help students from Guilford Technical Community College (GTCC), Forsyth Tech, Alamance Community College,

Central Piedmont Community College, Randolph Community College, Rockingham Community College, and Wake Technical Community College matriculate.

There is a considerable need for statisticians in the Piedmont Triad area. On September 18, 2023, indeed.com listed 103 entry-level job openings for graduates with bachelor's degrees in statistics within a 50-mile radius of Greensboro and 10 openings within the city of Greensboro, reflecting the need for students with these qualifications in the Piedmont Triad.

- 11. Feasibility of Collaborative Program.** Existing collaborations within the statistics group at UNCG include collaborations through the Statistical Consulting Center with other units on campus such as nursing, biology, psychology, and others. A long-standing collaboration exists with Cone Health, the largest health care provider in Guilford County. GTCC and other community colleges will advise students who are interested in the BS in Statistics which courses to take for a smooth transfer into the BS in Statistics at UNCG. An accelerated BS to M.S. program at UNCG is planned.
- 12. Other Considerations.** The Mathematics and Statistics Department at UNCG has been running a National Science Foundation-funded Research Experiences for Undergraduates (REU) program in statistics since 2018. This REU program provides greater visibility to the statistics programs within the department.

### **III. Summary of Review Processes**

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- 1. Campus Review Process and Feedback.** The following individuals and deliberative bodies reviewed and approved the proposal for the BS in Statistics at UNCG, according to the established curriculum review process at UNCG: chair of the Undergraduate Curriculum Committee of the Department of Mathematics and Statistics, head of the Department of Mathematics and Statistics, Curriculum Committee of the College of Arts and Sciences, Undergraduate Curriculum Committee, provost, vice chancellor for finance and administration, and chancellor.
- 2. System Office Review Process and Feedback.** Throughout the review process, UNCG provided relevant information pertaining to program requirements and resources. The institution submitted appropriate documentation and research to support the statements made.

### **IV. Recommendation**

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Staff recommends that the Board of Governors approve the University of North Carolina at Greensboro's request to establish the Bachelor of Science (BS) in Statistics (CIP 27.0501) effective fall 2024.

**Request for Authorization to Establish**  
**Bachelor of Science in Business Administration (B.S.B.A.) in Business Administration**  
**CIP 52.0201**  
**University of North Carolina at Charlotte**

**I. Program Highlights**

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- The University of North Carolina at Charlotte (UNC Charlotte) proposes the establishment of a Bachelor of Science in Business Administration (BSBA) degree with a major in Business Administration. This online business administration major is specifically designed to serve students with some college but no credential and will be offered entirely in an asynchronous format.
- The purpose of the proposed program is to provide an onramp for a population of working adult students through access to a high-quality educational program in business while also providing the business community with well-prepared talent. Through an academically rigorous curriculum, graduates will satisfy the program objectives of increased competencies in (1) the fundamentals of business, (2) a global perspective, (3) ethical decision making, (4) effective communication, and (5) critical thinking and data analysis skills.
- The proposed program aligns with the missions of the college and the university. The Belk College of Business mission highlights the deep partnership with the greater Charlotte business community paired with intellectual growth, and UNC Charlotte's mission highlights access, transforming lives, exemplary programs, and innovation. This proposed program supports the missions by providing access to a quality business education in an online, accessible format which will transform students' lives through educational opportunity and excellence.
- The proposed program will complement established work experience and provide pathways to increased economic well-being and upward career mobility, an element of the university mission. Benefits will be felt at local, regional, state, and national levels, as a more educated workforce is a factor in business relocation and a motivator for states to develop a high-skilled workforce. As North Carolina attracts and retains well-paying jobs, state and local governments benefit from an increased tax base with a well-educated workforce as there is a strong correlation between the educational attainment of a state's workforce and median wages in the state.
- Given that recruitment for this program will largely target working adult students, some graduates will remain with their current employer and use the degree for career progression and upward mobility. This is consistent with the profile of a student who has some college, but no credential. Others will pursue new career opportunities. The scope of this program allows for a broad variety of employment opportunities in the business fields of management, marketing, human resources, operations, analytics, information systems, finance, among others.

**II. Academic Program Planning Criteria (UNC Policy 400.1)**

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1. **Relation to Campus Distinctiveness and Mission.** This program draws from the strength of UNC Charlotte's existing coursework and the Charlotte Advantage, providing access to the Belk College's connection to Charlotte's major business sector. The proposed program also allows students to pursue educational opportunities in an accessible format in a region with limited similar options. While other institutions in the state may offer general business administration online degree programs, they do not offer deep ties to Charlotte's business community. Charlotte is the number two banking center in the U.S., there are approximately 18 Fortune 1,000 companies located in the region, and the city boasts rapid growth in finance, healthcare,

technology, retail, advanced manufacturing, and automotive industries. The Belk College of Business has strong relationships with the broader business community that will allow students earning this generalist business administration degree exposure to these varied organizations while completing the Belk College curriculum.

2. **Student Demand.** The proposed program responds to employment market demand and availability of the target population. UNC Charlotte undertook a feasibility study report through EAS. That study showed historical and projected labor market growth which suggests strong employment opportunities for program graduates, and local and statewide employer demand growth for bachelor's-level business administration professionals increases monthly. Additionally, the online business administration degree provides a new option for the million plus learners in North Carolina who have some college and no degree.
3. **Employment Opportunities for Graduates.** This program will prepare graduates for a broad variety of employment opportunities in the business fields of management, marketing, human resources, operations, analytics, information systems, finance, and more. UNC Charlotte's business graduates are meeting the demand for skilled workers in the Charlotte metropolitan area, but there is evidence in job posting data that demonstrates an unmet need. Based on the Standard Occupational Classification (SOC) for jobs in the category of Management Occupations (11-0000), Business and Financial Operations Occupations (13-000), and Sales and Related Occupations (41-0000), there were over 61,000 job postings from March 2022 to February 2023 for full-time employment from where a bachelor's degree was included as the preferred or minimum education level. There were 156,726 total job postings for the 61,708 unique jobs meaning that for every three postings there is one unique job posting and a median posting duration of 28 days. Additionally, based on the findings of the EAB feasibility study, program graduates will likely face a favorable labor market and the topmost relevant local and regional occupations are projected to increase faster than all occupational growth. This suggests demand for program graduates will likely increase in the next 10 years.
4. **Impact on Access and Affordability.** The program will provide an affordable access to degree completion. Undergraduate UNC Charlotte students who graduated in 2020-2021 had an average of \$21,668 in direct loans compared to the national average for undergraduates of \$28,800. The National Center for Education Statistics (NCES) provides debt levels for similar programs in computer and information sciences, health care and business, and finds students in the undergraduate major in business borrow slightly less than majors in health care and computer science.

UNC Charlotte is not requesting any program-specific fees or tuition differential for this program. Tuition and fees for the 2023-2024 full-time (12+ credit hour) rates are as follows:

Full-Time 2023-2024 Undergraduate Tuition and Fees per Year (In Dollars)

Category	Resident (12+)	Non-Resident (12+)
Tuition	\$3,812	\$18,474
Tuition Differential	--	--
Mandatory Fees (Athletics, Student Activities, Health Services, Educational & Technology, Campus Security, Debt Service, ASG)	\$683	\$683
Special Fees	--	--

5. **Expected Quality.** Consistent with the other nine majors offered in the Belk College of Business, this program will be accredited by AACSB International. AACSB is the premier international organization for business school accreditation and provides quality assurance, business education intelligence, and learning and development for member schools. UNC Charlotte is among the fewer than six percent of the world's business schools achieve and maintain AACSB International accreditation for both business and accounting programs.
6. **Faculty Quality and Number.** The faculty engaged in the program are a combination of those currently serving in the Belk College of Business and Communication Studies and those who will be hired throughout the program launch. All faculty are and will meet faculty qualifications for both institutional accreditation and AACSB. When the program reaches steady state in year three, approximately 25 sections of courses taught by 3.5 full-time faculty and 2 part-time faculty will be needed.
7. **Relevant Lower-level and Cognate Programs.** In order to complete this degree, students will take Business Communications taught by the Department of Communication Studies which will assist in building communication skills needed for upper-level business courses. Additionally, this program will build on lower-level business courses such as accounting, economics, and computing, along with general education and non-business elective courses provided in various disciplines (e.g., mathematics, humanities, professional studies, etc.).
8. **Availability of Campus Resources (library, space, etc.)** This is a 100 percent online program. Therefore, existing campus physical spaces are sufficient to accommodate staff supporting the program. Library resources are sufficient as the J. Murrey Atkins Library at UNC Charlotte subscribes to multiple databases and research journals with online accessibility that would support a program in Business Administration.
9. **Existing Programs (Number, Location, Mode of Delivery).** No other UNC System institutions offer an online BSBA in Business Administration, although Appalachian State University and Western Carolina University offer online BSBA programs in Management, which carries the same CIP code as this program Western Carolina University also offers an online BSBA in Business Administration and Law. UNC Chapel Hill offers an on-campus BSBA in Business Administration.
10. **Potential for Unnecessary Duplication.** The combination of (1) the general business administration curriculum, (2) the online modality, (3) unique relationship between the Belk College and the local Charlotte business community, (4) the focus on degree completion for adult

students, and (5) the location of the physical campus in Charlotte distinguishes this program relative to the other programs in the UNC System. The curriculum allows the institution to cast a wide net designed to enroll prospective students with varied interests in business while meeting the needs of employers specifically in the Charlotte-metro area.

11. **Feasibility of Collaborative Program.** UNC Charlotte enrolls more community college transfers than any college or university in NC. We will partner with institutions in the NC Community College System by providing pathways for students to easily transfer into the online program.

### III. Summary of Review Processes

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1. **Campus Review Process and Feedback.** The proposed program was reviewed and approved by the Interim Dean of the Belk College of Business, the Undergraduate College and Curriculum Committee, and Faculty Council.
2. **UNC System Office Review Process and Feedback.** Throughout the review process, the University of North Carolina Charlotte provided relevant information pertaining to program requirements and resources. The institution submitted appropriate documentation and research to support the statements made.

### IV. Recommendation

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Staff recommends that the Board of Governors approve the University of North Carolina Charlotte's request to establish the Bachelor of Science in Business Administration (BSBA) in Business Administration (CIP 52.0201) effective Fall 2024.



**Request for Authorization to Establish  
Master of Science in Engineering Education  
CIP 14.9999  
North Carolina State University**

**I. Program Highlights**

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- NC State University proposes the establishment of a Master of Science in Engineering Education.
- The proposed program will prepare educators to teach university/college level engineering courses and create the nation's first program to prepare engineering educators at community colleges. This innovative program will integrate expertise in the cognitive, social, and cultural dimensions of teaching and learning from the College of Education with domain-specific knowledge from the College of Engineering and be unique within the University of North Carolina System.
- The proposed program is aligned with two of NC State's strategic goals. The program addresses Goal 1: Empower students for a lifetime of success and impact by adopting a reformed approach to engineering pedagogy. The program also contributes to Goal 2: Ensure preeminence in research, scholarship, innovation, and collaboration.
- This program will fill a gap in academia by offering an innovative curriculum to prepare community college instructors for engineering courses serving as transfer pathways to four-year institutions. The program will not only deepen student understanding of the challenges and opportunities in engineering education, but will also fulfill academic and industry needs and strategically position NC State for national leadership in engineering education.
- Graduates can anticipate diverse career opportunities such as community college faculty, engineering education research associates, informal engineering education content creators and educators, engineering academic advisers, industry sales professionals, and industry trainers. The Bureau of Labor Statistics (BLS) projects job growth in these areas over the next seven years. The program is timely and strategically crucial for meeting future workforce demands.
- Projected program enrollment in Year 5 is 66 students.

**II. Academic Program Planning Criteria (UNC Policy 400.1)**

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- 1. Relation to Campus Distinctiveness and Mission.** The program will provide community college teachers the preparation they need to teach engineering degrees and transfer classes, resulting in stronger partnerships between the North Carolina Community College System and NC State, expanding its service to the citizens of the state. It will also offer a pathway for engineering professionals to gain expertise in best practices for training, advising, and supporting students in engineering undergraduate programs of all types. The program builds on the existing strengths and infrastructures of the College of Engineering and the College of Education. This innovative program is set to become a national leader in engineering education, thereby elevating NC State's national and global reputation and visibility.
- 2. Student Demand.** The proposed degree would be the first in the nation to directly target the education requirements for teaching engineering at community colleges. Initial interest is robust; current related classes maintain a strong annual enrollment signaling significant interest within the engineering graduate community. A survey of worldwide programs in graduate-level

engineering education indicates none caters specifically to community college educators. Conversations with the American Association of Community Colleges further confirm the absence of such a program. The NC State faculty initiators consulted with the executive vice president of the North Carolina Community College System in the program's initial stage and established communication frameworks such as the community college advisory committee and liaison with existing advisory boards to ensure ongoing dialogue throughout the program's implementation. The proposed area of study is new and is expected to attract a previously untapped applicant pool to the university. The proposed degree is uniquely positioned to fill a critical gap in engineering education.

- 3. Employment Opportunities for Graduates.** The National Center for Education Statistics reports that the number of associate degrees awarded in engineering or engineering technology declined by 20 percent nationwide between 2010-11 and 2020-21. Given the increasing demand from industry in the state and in the nation, this trend illustrates the necessity to bolster the production of engineers through postsecondary education and to establish robust pathways from associate to bachelor's degrees in engineering. Current requirements for teaching engineering at this level include a minimum of 18 postsecondary engineering education hours and, often, a master's degree. Despite the need, no specialized degrees currently support teaching engineering transfer courses at community colleges.

Career opportunities for graduates include roles such as community college faculty, engineering teaching faculty, engineering education research associates, engineering outreach services director (companies, museums, other informal education contexts, consultancies), and industry trainers. According to the BLS's Occupational Employment and Wage Statistics, as of the most recent data, there are 36,010 engineering teachers employed at the postsecondary level across the United States. The data for May 2022 indicates that there are 1,290 employed engineering teachers at the postsecondary level in North Carolina. To respond to this need, NC State plans to add about 4,000 engineering students over the next few years and hire 100 new faculty members.

As of the latest data, 52 public universities in the United States provide master's programs categorized under the CIP code for "Engineering, Other," which includes various engineering disciplines not explicitly listed. While this categorization enables a range of educational offerings, it limits precision due to the lack of a distinct CIP code for engineering education. Moreover, the current landscape does not offer specialized degrees to equip educators for teaching engineering transfer courses at community colleges.

- 4. Impact on Access and Affordability.** Recent data indicates that 52 public universities in the U.S. offer master's degree programs under our chosen CIP code. Among these, eight programs have released student debt data ranging from \$27,259 to \$37,074. Additionally, nine programs reported median earnings data, ranging from \$71,015 to \$116,083 one year post-graduation. We estimate the median debt of the proposed program's graduate at \$35,000 and their median earnings at \$96,000. Program graduates could thus reasonably allocate 5% of their monthly income toward loan repayment, approximately \$400 monthly. Given the financial metrics, the proposed MS in Engineering Education presents a viable economic proposition for prospective students. Additionally, nine programs reported median earnings data, ranging from \$71,015 to \$116,083 one year post-graduation. Based on these earnings, program graduates could reasonably allocate three percent to five percent of their monthly income toward loan repayment, amounting to approximately \$300 monthly.

NC State is not requesting a tuition differential for this program. Tuition and fees for the 2023-24 full-time (12+/9+ credit hour) rates are as follows:

Full-Time 2023-24 Graduate Tuition and Fees per Year (In Dollars)

Category	Resident	Nonresident
Tuition	\$9,459.00	\$29,433.00
Tuition Differential	--	--
Mandatory Fees (Athletics, Student Activities, Health Services, Educational & Technology, Campus Security, Debt Service, ASG)	\$2,361.25	\$2,361.25
Special Fees	\$1,500.00	\$1,500.00

Mandatory fees for online students are \$500.28 and include the Educational & Technology, Campus Security, and ASG fees only.

5. **Expected Quality.** The curriculum blends core engineering courses and specialized engineering education courses, aiming for a holistic educational experience. A notable element is the "Practicum in Engineering Education," an apprenticeship-style course offering hands-on teaching practice. The program also features courses in educational psychology, teaching underserved populations, and research methodologies pertinent to engineering education. These courses are specifically curated to offer a comprehensive understanding of evidence-based pedagogy, ethical considerations, and current trends. The objective is to develop well-rounded educators skilled in navigating a range of teaching and learning challenges in the engineering landscape.
6. **Faculty Quality and Number.** The College of Engineering is ranked 12th in the nation among public universities while the College of Education is a recognized leader in education in the state and has several top ranked programs within North Carolina. The proposed program promotes broad and interdisciplinary scholarship in engineering, education, and other fields such as sociology, psychology, mathematics, statistics, and in the sciences. Over 30 faculty members from both colleges are involved in research in engineering education. The faculty collaborates on interdisciplinary research aimed at advancing educational methods in STEM. Supported by \$37.5 million in grants from various sponsors including the National Science Foundation and the Bill and Melinda Gates Foundation, the STEM Education department works across 36 other campus units. This approach enables the department to contribute to the advancement and expansion of engineering education globally. One new junior faculty will be hired to support the program starting in the first year. The plan is to hire three faculty by the end of the fourth year.
7. **Relevant Lower-level and Cognate Programs.** The minimum requirements for entry into the program align with general prerequisites: a Bachelor of Science in engineering or a related STEM degree requiring at least three semesters of calculus and two semesters of physics. Leveraging its broad array of undergraduate STEM programs, NC State's faculty possesses the expertise to design multidisciplinary engineering courses and specialized courses in engineering education.
8. **Availability of Campus Resources (libraries, space, etc.)** Library resources (academic journals, databases, e-books, and advanced software) needed for this program are available to current

engineering and education majors at NC State. Although enrollment is expected to increase, the effect on classroom facilities will be minimal, given the capacity of existing spaces and the additional resources available at the D.H. Hill and Hunt Libraries. The program does not necessitate additional computer labs as no lab sessions are part of the courses. Statistical analysis tools can be accessed via NC State site licenses. The management of online courses attached to the program will fall under the purview of NC State's DELTA and Engineering Online services which are well equipped to handle the corresponding load.

9. **Existing Programs (Number, Location, Mode of Delivery).** There are no similar programs in North Carolina. The Master of Education in STEM Education at NC State University is focused on K-12 engineering education, whereas the new MS in Engineering Education is focused on community college and higher education teaching of engineering.
10. **Potential for Unnecessary Duplication.** No similar program exists in North Carolina.
11. **Feasibility of Collaborative Program.** The program leadership has regular interactions with other programs addressing different aspects of engineering education. NC State expects these contacts to grow to include all aspects of best practices, shared experiences, and broad outreach. Given the unique character of the proposed program, there is currently no plan to directly collaborate with other institutions beyond frequent and meaningful exchange of information.
12. **Other Considerations.** The program addresses a critical need for North Carolina's public community college system which enrolls over 590,000 students. Community college engineering faculty must complete 18 hours of engineering coursework with no pedagogical training. The new program would add 15 hours of specialized pedagogical and interdisciplinary coursework, elevating the quality of engineering education.

### III. Summary of Review Processes

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1. **Campus Review Process and Feedback.** The proposal was reviewed and approved by the education and engineering college curriculum committees, Administrative Board of the Graduate School, Council of Deans, chief financial officer, provost, and chancellor. Approval and support were provided at all levels.
2. **UNC System Office Review Process and Feedback.** Throughout the review process, NC State provided relevant information pertaining to program requirements and resources. The institution submitted appropriate documentation and research to support the statements made.

### IV. Recommendation

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Staff recommends that the University of North Carolina Board of Governors approve NC State University's request to establish the Master of Science (MS) in Engineering Education (CIP 14.9999) effective fall 2024.

**Request for Authorization to Establish  
Master of Science (MS) in Criminal Justice  
CIP 43.0104  
North Carolina Agricultural and Technical State University**

**I. Program Highlights**

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- North Carolina Agricultural and Technical State University (N.C. A&T) proposes the establishment of a Master of Science in Criminal Justice.
- The proposed program at North Carolina A&T is designed to provide high-quality graduate education and training in criminal justice with four areas of specialization: 1) Investigative Science, 2) Digital Forensics, 3) Research Methodology, and 4) Social Justice. This program will emphasize an interdisciplinary approach to academics, research, professional development, and leadership.
- The proposed program aligns with the university's land grant-oriented mission in providing students access to a field that will advance the human condition by giving them a preeminent and diverse educational experience through teaching, research, and scholarly application of knowledge.
- The proposed program is important because it will prepare graduates to serve in leadership positions, to address rapidly evolving challenges to criminal justice systems, to assess risks and benefits ethically and creatively, and to address workforce gaps in the fast-growing criminal justice subfields of cybercrime, cyber criminology, and digital forensics.
- Program graduates will be at the vanguard of contemporary academic and professional innovation providing them the skills for advanced careers in law enforcement, finance, risk management, government agencies, and corporate agencies and the analytical skills needed to conduct basic and applied research.
- Projected enrollment in Year 5 is 100 students.

**II. Academic Program Planning Criteria (UNC Policy 400.1)**

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**1. Relation to Campus Distinctiveness and Mission.**

As a land grant institution, N.C. A&T is charged with ensuring students are provided opportunities through teaching and instruction, research and scholarship, cooperative extension services, and outreach to develop knowledge, skills, and abilities preparing them to compete with their counterparts from other institutions. The university has been a longstanding generator of African American talent, and this program positions N.C. A&T as an institution of choice for an increasingly diverse academy.

**2. Student Demand.**

The unique specializations delivered by the proposed program will attract students not previously served by N.C. A&T, including federal and state law enforcement personnel, and current undergraduate students in criminal justice, journalism and mass communication, English, liberal studies, and information technology. The four specializations will cultivate a population of accomplished students, respected scholars, and qualified professionals in criminal justice related fields and positions.

In summer 2023, the Department of Criminal Justice surveyed 138 undergraduate criminal justice students to gauge interest in graduate programs; 88 percent expressed interest in joining the

program. Specifically, 54 percent of students indicated that they are extremely likely to join the proposed Master of Science in Criminal Justice program, and 34 percent of students indicated that they are somewhat likely to join the program. Staff from the Greensboro Police Department, administrators from the Norfolk, Virginia, police department, law enforcement officers from the Richmond, Virginia, police department, and students from Norfolk State University and several other HBCUs have also expressed interest in the proposed master's program.

### 3. Employment Opportunities for Graduates

The salary range for a criminal justice master's degree holder ranges from \$34,500 to \$133,500. The average salary for a criminal justice master's degree holder is \$77,500 compared to \$52,800 for criminal justice bachelor's degree holders. Market conditions indicate competitive trends at state, regional, and national levels. The Bureau of Labor Statistics reports North Carolina ranks in the top five for states with the highest employment level for criminal justice educators and with the highest concentration of criminal justice-related jobs in the nation. Additionally, labor market data from Gray Associates suggests that graduates obtaining a master's degree in criminal justice will gain access to diverse employment opportunities nationwide. In North Carolina alone, nearly 11,000 jobs were posted from January to June 2023 for individuals seeking careers in criminal justice who had earned a master's degree. Graduates of the proposed program will be qualified to work in law enforcement, finance, risk management, government agencies, and corporate agencies.

### 4. Impact on Access and Affordability.

The proposed program offers parallel on-campus and online course delivery modalities catering to a wider population including post-traditional students, law enforcement officers, military personnel, and businesspeople who work full time. After the awarding of financial support and scholarships North Carolina residents who enroll in the proposed program can expect to incur a maximum debt of \$11,372.24 on average. Based on earnings at the low end of the salary range (\$34,500) the debt-to-earnings ratio for program graduates is 33 percent while graduates with salaries at the top end of the range will have a debt-to-earnings ratio of less than 10 percent. Additionally, program graduates are expected to benefit from high employment rates and strong job growth in criminal justice fields.

N.C. A&T is not requesting any program-specific fees or tuition differential for this program. Tuition and fees for the 2023-24 full-time (12+/9+ credit hour) rates are as follows:

Full-Time 2023-2024 Graduate Tuition and Fees per Year (In Dollars)

Category	Resident	Nonresident
Tuition	\$4,895.00	\$17,695.00
Tuition Differential	--	--
Mandatory Fees (Athletics, Student Activities, Health Services, Educational & Technology, Campus Security, Debt Service, ASG)	\$3,086.31	\$5,992.12
Special Fees	--	--

Mandatory fees for online students are \$544.05 and include the Educational & Technology, Campus Security, and ASG fees only.

## **5. Expected Quality.**

The overarching goal of the proposed program is to provide high-quality graduate education and training in criminal justice, emphasizing an interdisciplinary approach. This approach allows N.C. A&T to build on its strengths in several established departments including computer science and business. The institution is committed to expanding its criminal justice faculty by recruiting accomplished instructors and researchers with subject matter and industry expertise to support the program and guide its students to engage academically, conduct innovative research, and collaborate with other UNC System students and faculty. Faculty will impart advanced training in criminal justice, research methods, investigative science, and digital forensics, as well as best practices put forth by organizations such as the American Academy of Forensic Sciences (AAFS), Academy of Criminal Justice Sciences (ACJS), Department of Justice (DOJ), National Initiative for Cybersecurity Education (NICE), and National Institute of Standards and Technology (NIST).

## **6. Faculty Quality and Number.**

Five full-time faculty positions have been requested for this program from Year 1 through Year 5 to support the delivery of coursework, supervision, recruitment, retention, and advisement of students. New faculty will possess experience in classroom instruction, online instruction, program development, thesis and dissertation committee membership, grant-writing and research, publications, and presentations. Since February 2023, five candidates have filled positions, four of whom have terminal degrees in criminal justice or related fields. They bring expertise in research methodology, criminological theory, intersectionality, race and social control, corrections, qualitative and quantitative analysis, and juvenile justice. In September 2023, five additional positions were posted for additional faculty with terminal degrees in criminal justice.

## **7. Relevant Lower-level and Cognate Programs.**

The proposed interdisciplinary-focused program is designed to welcome students who have completed bachelor's degrees in criminal justice as well as those with degrees in journalism and mass communication, English, liberal studies, and information technology. As the largest major in the College of Arts, Humanities, and Social Sciences, the on-campus and online undergraduate criminal justice degree programs will serve to develop suitable candidates for the proposed program or any other accredited program.

## **8. Availability of Campus Resources (library, space, etc.).**

The N.C. A&T College of Arts, Humanities, and Social Sciences, the Department of Criminal Justice, and F.D. Bluford Library are well equipped to support educational, research, academic, and administrative needs of the institution and support the proposed program, with the ability to grow to meet future capacity needs. F.D. Bluford Library provides the College of Arts, Humanities, and Social Sciences with appropriate library and learning/information resources for criminal justice and the proposed areas of specialization. The collection is available seven days a week, through the library's website. Currently, there are approximately 50 criminal justice databases for students. Graduate students will have access to two new labs in Gibbs Hall, new computers, and dedicated virtual desktop infrastructure (VDI). Students will have remote access and conduct hands-on labs for the lecture-lab courses in their areas of specialization.

## **9. Existing Programs (Number, Location, Mode of Delivery).**

Currently, there are four criminal justice master's programs offered in the UNC System including University of North Carolina at Charlotte, North Carolina Central University, East Carolina University,

and Fayetteville State University. ECU and FSU offer the programs online. The other institutions offer the program only on campus.

#### **10. Potential for Unnecessary Duplication.**

A careful assessment of the different specializations, course offerings, and mode of delivery in existing MA/MS programs in criminal justice suggests that a new MS in Criminal Justice with the unique areas of specialization proposed, particularly in cybersecurity-related (i.e., digital forensics) and STEM (i.e., investigative science) fields are warranted, given the growing demand for qualified professionals. The proposed program will emphasize an interdisciplinary approach to academics, research, professional development, and leadership by offering specializations in 1) Investigative Science, 2) Digital Forensics, 3) Research Methodology, and 4) Social Justice.

#### **11. Feasibility of Collaborative Program.**

The interdisciplinary nature of the proposed program is conducive to productive and continual collaboration with UNC System academic partners. The Criminal Justice Department anticipates collaborations with other UNC System universities and institutions in the Greater Greensboro Consortium, which includes N.C. A&T, University of North Carolina at Greensboro, Bennett College, Elon University, Greensboro College, Guilford College, Guilford Technical Community College, and High Point University. Through networking, the proposed program will engage in collaborative activities for the purpose of 1) developing research efficacy among students and 2) fostering professional development among faculty.

#### **12. Other Considerations**

The proposed program will also establish partnerships with local law enforcement agencies. By establishing a relationship with the Guilford County Sheriff's Office (GCSO), the program will offer resources that benefit the agency in efforts to provide efficient and effective public safety within its jurisdiction. Specifically, the program will assist the GCSO by providing educational opportunities to address the need for 1) additional officers and staff, 2) the retention and promotion of officers, and 3) the prevention of and response to crime in the community.

### **III. Summary of Review Processes**

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#### **1. Campus Review Process and Feedback**

The proposal was reviewed by N.C. A&T Faculty Senate; the Graduate Council; the Graduate School; chairs within the College of Arts, Humanities, and Social Sciences; the dean of the College of Arts, Humanities and Social Science; the Office of Strategic Planning and Institutional Effectiveness; the provost; and the chancellor.

#### **2. UNC System Office Review Process and Feedback.**

Throughout the review process, N.C. A&T provided relevant information pertaining to program requirements and resources. The institution submitted appropriate documentation and research to support the statements made.

### **IV. Recommendation**

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Staff recommends that the Board of Governors approve North Carolina Agricultural & Technical State University's request to establish the Master of Science in Criminal Justice (CIP 43.0104) effective spring 2024.



**Request for Authorization to Establish  
Doctor of Philosophy (Ph.D.) in Criminal Justice  
CIP 43.0104  
North Carolina A&T State University**

**I. Program Highlights**

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- North Carolina A&T State University (N.C. A&T) proposes the establishment of a Doctor of Philosophy (Ph.D.) in Criminal Justice.
- The program aligns with the university's land-grant oriented mission of providing students access to a field that will advance the human condition by giving them a preeminent and diverse educational experience through teaching, research, and scholarly application of knowledge.
- The proposed program will prepare scholars to address rapidly evolving challenges to criminal justice systems ethically and creatively, increase representation of students in social science research, address workforce gaps, and address a need for more instruction and graduate degree-holders in the fast-growing criminal justice subfields of cybercrime, cyber criminology, and digital forensics.
- Graduates of the doctoral program will be at the vanguard of contemporary academic and professional innovation and become well-trained researchers. Career opportunities include teaching and conducting research at the college and university levels. Graduates will also have post-doctoral research or employment opportunities at federal, state, or local agencies. Graduates with STEM-related specializations may earn higher salaries and have significant opportunities for promotion.
- Projected enrollment in Year 5 is 28 students.

**II. Academic Program Planning Criteria (UNC Policy 400.1)**

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**1. Relation to Campus Distinctiveness and Mission.**

As a land grant institution, North Carolina A&T is charged with ensuring students are provided opportunities through teaching and instruction, research and scholarship, cooperative extension services, and public service to develop knowledge, skills, and abilities to compete with their counterparts from other institutions. This program will increase the number of underrepresented minorities, especially women, in cybersecurity and AI research. The program also provides opportunities for faculty and students to collaborate on research projects that will advance the human condition.

**2. Student Demand.**

Market conditions indicate competitive trends in North Carolina to support a new doctoral program in criminal justice. Additionally, students' interest in doctoral degrees in this discipline has increased significantly. A recent market analysis indicates "[m]arket conditions strongly support a new Ph.D. in Criminal Justice in the region as the number of programs has not yet met student demand" (Hanover Research, 2022). In summer 2023, the Department of Criminal Justice surveyed 138 undergraduate criminal justice students, 76 percent expressed interest in joining the Ph.D. program. There was 10 percent growth nationwide in the number of students completing a Ph.D. in Criminal Justice between 2017 and 2021, according to Lightcast.

### 3. Employment Opportunities for Graduates.

The Association of Doctoral Programs in Criminology and Criminal Justice (ADPCCJ) conducts annual surveys of Criminal Justice programs. In 2020, the ADPCCJ identified 36 doctoral degree-granting institutions throughout the U.S. and one outside of the U.S. with Criminal Justice doctoral programs. Combined, these 37 programs only employed 689 full-time faculty, indicating a need for more credentialed applicants for Criminal Justice programs. Additionally, 50 percent of the graduates from the surveyed programs obtained tenure track positions, 16 percent obtained positions in local, state, or federal agencies, five percent in private research, nine percent in their own doctoral programs, and 20 percent in other areas upon graduation.

The salary range for a criminal justice doctoral degree holder is \$46,400 to \$161,000 with an average salary of \$80,300. As demand for doctoral degrees in criminal justice increases, market conditions indicate competitive trends at state, regional, and national levels. The Bureau of Labor Statistics reported that North Carolina ranks in the top five states for the highest employment level for criminal justice educators and the highest concentration of criminal justice related jobs in the nation. North Carolina labor market data from Gray Associate suggests those earning a doctorate can pursue careers in academia, scientific research, advanced technology development, and policy analysis. Between January and June 2023, there were 680 job postings in North Carolina that required a doctorate in criminal justice.

### 4. Impact on Access and Affordability.

The proposed program offers on-campus and online course delivery modalities making the program accessible to a wider population including post-traditional students, law enforcement officers, military personnel, and businesspeople who work full-time. On average, graduate students in the proposed program are expected to incur a maximum debt of \$22,744.28, after the awarding of graduate student support and scholarships. Based on earnings at the low end of the salary range (\$46,400) the debt-to earnings ratio for program graduates is 44 percent while graduates with salaries at the top end of the range (\$161,000) will have a debt-to earnings ratio of less than 15 percent. Program graduates are expected to benefit from high employment rates and strong job growth in criminal justice fields.

NC A&T is not requesting any program-specific fees or tuition differential for this program. Tuition and fees for the 2023-2024 full-time (12+/9+ credit hour) rates are as follows:

Full-Time 2023-2024 Graduate Tuition and Fees per Year (In Dollars)

Category	Resident	Non-Resident
Tuition	\$4,895.00	\$17,695.00
Tuition Differential	--	--
Mandatory Fees (Athletics, Student Activities, Health Services, Educational & Technology, Campus Security, Debt Service, ASG)	\$3,086.31	\$5,992.12
Special Fees	--	--

Mandatory fees for online students are \$544.05 and include the Educational & Technology, Campus Security, and ASG fees only.

## **5. Expected Quality.**

The overarching goal of the proposed Ph.D. is to provide high-quality graduate education and training in Criminal Justice, emphasizing an interdisciplinary program. As one external evaluator wrote, “This format and curriculum are equal to (and probably exceeds) most Criminal Justice programs nationwide.” This interdisciplinary approach allows N.C. A&T to build upon its strength in several established departments. The institution is committed to expanding its criminal justice faculty by recruiting accomplished instructors and researchers with subject matter and industry expertise, to support the program and guide its students to engage academically, conduct innovative research, and collaborate with other University of North Carolina System students and faculty. Faculty will impart advanced training in criminal justice, research methods, investigative science, digital forensics, as well as best practices put forth by organizations such as the American Academy of Forensic Sciences (AAFS), Academy of Criminal Justice Sciences (ACJS), Department of Justice (DOJ), National Initiative for Cybersecurity Education (NICE), and National Institute of Standards and Technology (NIST).

## **6. Faculty Quality and Number.**

Five full-time faculty positions have been requested for this program from Year 1 through Year 5 to support the delivery of coursework, supervision, recruitment, retention, and advisement of students. New faculty will possess experience in classroom instruction, online instruction, program development, thesis and dissertation committee membership, grant-writing and research, publications, and presentations. Since February 2023, five candidates have filled positions, four of whom have terminal degrees in criminal justice or related fields. They bring expertise in research methodology, criminological theory, intersectionality, race and social controls, correction, qualitative and quantitative analysis, and juvenile justice. In September 2023, five additional positions were posted for additional faculty with terminal degrees in criminal justice and expertise in program specializations.

## **7. Relevant Lower-level and Cognate Programs.**

The proposed program is designed to welcome students who have completed a master’s degree in criminal justice. Criminal justice is the largest major in the N.C. A&T College of Arts, Humanities, and Social Sciences the undergraduate campus and online program graduates provide a qualified pool of future doctoral students.

## **8. Availability of Campus Resources (library, space, etc.).**

No additional space or infrastructure are required for the proposed program. The N.C. A&T College of Arts, Humanities, and Social Sciences, the Department of Criminal Justice, and F.D. Bluford Library are well-equipped to support educational, research, academic and administrative needs of the institution and support the proposed program, with the ability to grow to meet future capacity needs. F.D. Bluford Library provides the appropriate library and learning resources for the study of criminal justice and the proposed areas of specialization. The collection is available seven days a week, through the library’s website and provides approximately 50 criminal justice databases for students. Graduate students will have access to two new labs in Gibbs Hall, new computers, and dedicated Virtual Desktop Infrastructure (VDI). Students will have remote access to resources and conduct hands-on labs for the lecture-lab courses in their areas of specialization.

## **9. Existing Programs (Number, Location, Mode of Delivery)**

No Ph.D. in Criminal Justice is offered in the UNC System.

## **10. Potential for Unnecessary Duplication.**

There is no potential for unnecessary duplication. The UNC System currently offers no Ph.D. in Criminal Justice.

#### **11. Feasibility of Collaborative Program.**

The Criminal Justice Department anticipates collaborations with other UNC System universities. The availability of the Greater Greensboro Consortium between N.C. A&T, the University of North Carolina at Greensboro, Bennett College, Elon University, Greensboro College, Guilford College, Guilford Technical Community College, and High Point University will also allow students to enroll in the proposed doctoral program seamlessly. Moreover, a collaboration with North Carolina Central University's (NCCU) Juvenile Justice Institute will facilitate research and grant opportunities in order to advance juvenile justice research and policy. Furthermore, collaborating with Fayetteville State University (FSU) will allow doctoral students to work on initiatives and present opportunities for research, outreach, and advocacy.

#### **12. Other Considerations.**

The interdisciplinary nature of the doctoral criminal justice program allows students to collaborate internally and externally with academic departments aligned with the four program concentrations. Internal collaborations are already underway, including an interdisciplinary \$9 million grant from the Department of Defense (DoD) Office of Naval Research to investigate how to create trustworthy, reconfigurable, and secure artificial intelligence for cyber-physical defense systems and AI. The team included N.C.A&T scholars from Computer Science, Electrical and Computer Engineering, Industrial and Systems Engineering, Criminal Justice, Business and Information Systems, Sociology and Social Work, Math, and Leadership Studies and Adult Education.

The proposed program also plans to establish partnerships with local law enforcement agencies. For example, by establishing a relationship with Guilford County Sheriff's Office (GCSO), our program will offer resources and opportunities that will benefit the agency in their efforts to provide efficient and effective public safety within their jurisdiction. Specifically, our program will assist the GCSO by providing educational opportunities to address the need for 1) additional officers and staff, 2) the retention and promotion of officers, and 3) the prevention and response to crime in the community.

### **III. Summary of Review Processes**

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#### **1. Campus Review Process and Feedback.**

The proposal was reviewed by N.C. A&T Faculty Senate, the Graduate Council, the Graduate School, Department Chairs within the College of Arts, Humanities, and Social Sciences, The Dean of the College of Arts, Humanities and Social Science, and the Office of Strategic Planning and Institutional Effectiveness, Provost, and Chancellor.

#### **2. UNC System Office Review Process and Feedback**

Throughout the review process, N.C. A&T provided relevant information pertaining to program requirements and resources. The institution submitted appropriate documentation and research to support the statements made.

### **IV. Recommendation**

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Staff recommends that the Board of Governors approve North Carolina Agricultural and Technical State University's request to establish the Ph.D. in Criminal Justice (CIP 43.0104) effective fall 2024.