CALL TO ORDER
Stan Kelly, Chair

ROLL CALL
Stan Kelly, Chair

PUBLIC MEETING REMINDER AND READING OF STATE GOVERNMENT ETHICS ACT CONFLICT OF INTEREST STATEMENT
Stan Kelly, Chair

1. CONSENT AGENDA

A. Approval of November 21, 2019 Minutes (open & closed session) 7.1A

B. New Degree Program Requests 7.1B
   a. Request to Establish – Masters in Foundations of Data Science

C. Center and Institute Requests 7.1C
   a. Request to Establish - Belk Center for Community College Leadership and Research (BELK)
   b. Request to Continue - Water Resources Research Institute (WRRI)

D. Designation of Time Limited Option for Distinguished Professorships 7.1D

E. Conferral of Tenure Requests 7.4

2. REPORTS

A. Annual Report on Intercollegiate Athletics 7.2A
   Presenters: Lisa Zapata, Interim Vice Chancellor, Division of Academic and Student Affairs
   Katie Graham, Assistant Dean and Director, Academic Support Program for Student Athletes

B. Graduation Report 7.2B
   Presenter: Louis Hunt, Senior Vice Provost, Enrollment Management & Services

C. Student Body President Report 7.2C
   Presenter: Emma Carter, Student Body President

✓ Denotes full Board approval required
D. Provost Update 7.2D

Presenter: Warwick Arden, Executive Vice Chancellor and Provost

a. Academic Programs Update 7.2D.a.
   - Change in Degree Program Title – Master of Supply Chain and Engineering Management to Master of Engineering Management
   - Change to Name of an Academic Department – Department of Social Work to School of Social Work
   - New Graduate Certificates
     - ASIC Design and Verification
     - Computer Engineering
     - Electrical Engineering
     - 5G Technologies

b. Update on Leadership Position Searches and Leadership Reviews 7.2D.b.
c. Strategic Planning Update 7.2D.c.
d. Reappointment, Promotion and Tenure Process Update (no materials)

E. Faculty Senate Report 7.2E

Presenter: Hans Kellner, Chair of the Faculty

3. TOPIC OF INTEREST/COMMITTEE DISCUSSION  TAB 7.3

A. Centers and Institutes Overview

Presenter: Jon Horowitz, Associate Vice Chancellor for Research Infrastructure and Development

4. CLOSED SESSION  TAB 7.4

5. RECONVENE OPEN SESSION

6. ADJOURN
CONSENT

AGENDA

ITEMS
The University Affairs Committee of the Board of Trustees of North Carolina State University met November 21, 2019 in the Winslow Hall Conference Room.

Members Present: Stan Kelly, Committee Chair
                 Emma Carter
                 Jimmy Clark
                 Jim Harrell
                 Ven Poole
                 Ron Prestage
                 Tom Cabaniss, Board Chair

Chair Kelly called the meeting to order at 1:15 p.m. The roll was called and a quorum was present. He invited those new to attending this meeting to introduce themselves.

Chair Kelly reminded everyone that while this is a public meeting, it is not a meeting for public comment. He noted that anyone causing disruption to the business of the meeting is subject to removal from the meeting.

All members of the committee were reminded of their duty to avoid conflicts of interest and appearances of conflicts of interest under the State Government Ethics Act. It was inquired as to whether there were any known conflicts of interest or appearances of conflict with respect to any matters coming before the committee at this meeting. There being none, the meeting continued.

Consent Agenda
Chair Kelly asked Provost Arden to provide information about the supporting documentation included for research center and institute continuation requests. Provost Arden explained that the executive summary of the review team’s report, which is in the form of a letter from the Vice Chancellor for Research and Innovation to the Chancellor, is included in the materials. If at any time Trustees would like to see the full report, it will be made available. A motion was made by Mr. Clark to approve the consent agenda items which included approval of the September open and closed session meeting minutes; continuation of the North Carolina Institute for Climate Studies (NCICS) and the Kenan Institute for Engineering, Technology and Science (KIETS); and conferral of tenure to two new faculty members. Ms. Carter seconded the motion. The motion carried.

Requested Action
Tuition and Fees
Chancellor Woodson presented recommendations from the Tuition Review Advisory Committee for the 2020-2021 year. These recommendations are in keeping with the instructions provided from the UNC System Office which, for the first time in four years, allow for a campus initiated tuition increase (CITI) for resident undergraduate students up to 3%. The Tuition Review Advisory Committee, co-chaired by Provost Warwick Arden and Student Body President Emma Carter, was unanimous in its recommendation.
Chancellor Woodson stated his support for the recommendation which included the following:

- 2020-2021
  - a 2.5% tuition increase for new undergraduate residents. The guaranteed 8-10 semester fixed tuition rates for existing undergraduate resident students continues.
  - a 3% increase for undergraduate nonresidents
  - a 2.5% increase for graduate residents
  - a 4% increase for graduate nonresidents.

The Committee recommended that 33.7% of the tuition increase revenue be allocated to need-based financial aid, that 23.1% be allocated to provide funding to the Graduate Student Support Plan, that 29.1% be used to improve quality and accessibility of the NC State educational experience, and that 14.1% be used to provide funding for faculty promotional increases.
After discussion, Chair Kelly called for a motion to recommend to the full board approval of the 2020-2021 campus initiated tuition increases as outlined in Chancellor Woodson’s recommendation under Tab 7.2A. Mr. Poole made the motion to approve, seconded by Mr. Clark, and the motion carried.

Chancellor Woodson continued by reviewing recommendations of the Fee Review Committee, which was co-chaired by Interim Vice Chancellor Lisa Zapata and Student Senate President Mitchell Moravec. The committee recommended an increase in fees of $17.85, representing an increase of .70%. However, their recommendation did not include an increase for the Campus Security Fee. The Campus Security Fee was established by the UNC Board of Governors in 2016 and universities have not been allowed to request increases to the fee since its establishment. This year after the Student Government’s review process was nearly complete, the university received notification that requests to increase this fee for Fall of 2020 would be allowed. Because of the late notice, the Student Government voted to not consider the proposed increase and the Fee Review Committee voted to support the Student Government’s recommendation not to consider the request. However, given the growth of the student body and additional pressures on the safety and security of our campus, Chancellor Woodson’s recommendation is for the trustees to consider including a $10.40 increase to the Campus Security Fee. He explained that the Campus Security Fee would fund a few new positions including a new Police Officer and Interpersonal Violence Prevention (IPV) Coordinator. Since the IPV Coordinator position is similar to a position being proposed in the Student Center Programming Fee, Chancellor Woodson’s recommendation is to reduce the proposed increase to the Student Center Programming Fee by $3.00. Thus, his recommendation is a $7.40 net increase above what the committee recommended and represents a .98% increase in student fees, which is below the 3% increase cap established by the UNC Board of Governors. Student Body President Emma Carter provided input confirming that the merit of a campus security fee increase was not discussed in Student Senate because of the late submission. She noted that the Chancellor reached out to her and the Student Senate President with his recommendation and they were comfortable with the increase.

After discussion, Chair Kelly called for a motion to approve the Chancellor’s student fee recommendations as outlined under Tab 7.2A. Mr. Harrell made the motion to approve. Dr. Prestage asked for clarification on the total amount of fee increase being recommended. Chancellor Woodson answered the dollar amount of the increase is $25.25, or 0.98%. Dr. Prestage then seconded the motion, and the motion carried.

Policy Revisions
Provost Arden presented revisions to Policy 05.20.01 Appointment, Reappointment, Promotion and Permanent Tenure and Policy 05.25.01 Faculty Grievance and Non-Reappointment Review. The revisions are being made to align with changes in The Code and UNC Policy Manual pertaining to faculty grievance and non-reappointment review. The main changes are to 1) name the Boards of Trustees (not the UNC BOG) as the final level of appeal for non-reappointments and imposition of discharge or serious sanctions, and 2) clarify that faculty pay shall cease upon issuance of a discharge decision. This provided an opportunity to make two other needed changes to Policy 05.20.01: 1) remove definitions of realms of faculty responsibility, which are now found in the Statements of Faculty Responsibilities Regulation, and 2) clarify voting procedures and Departmental Voting Faculty makeup for initial faculty appointments. Mr. Clark moved to recommend to the full board approval of the proposed revisions to Policies 05.20.01 and 05.25.01. Mr. Harrell seconded the motion. The motion carried.

Reports
Staff Senate Chair Janice Sitzes provided a report about the continuing activities underway to inform and engage NC State employees. Her report highlighted employee appreciation events, ‘Learn at Lunch’ offerings and Staff Senate volunteer efforts at Packapalooza, student move-in and during International Housekeeping Week. She also noted that the Staff Senate has two collection drives in progress – one for Toys for Tots and another for Bountiful Harvest. Chair Sitzes also outlined ways the Staff Senate is meeting its objective to be more inclusive to extension staff and to make other staff members aware of the scope of extension’s efforts. Finally, she noted that the Staff Senate is working to establish protocols for its committee structure.

Provost Arden provided an update on the status of personnel searches and administrative leadership reviews underway. The College of Natural Resources Dean search is underway; Dean Paul Lunn is chairing the nomination committee and Mr. Dewayne Washington serves as the Trustee representative. The position has been advertised and the goal is to have finalists brought to campus in late February and early March. The nomination committee for the Vice Chancellor and Dean of the Division of Academic and Student Affairs has just been announced. Senior Vice Provost Louis Hunt will chair the committee and Mr. Ed Stack will serve as the Trustee representative. Provost Arden reminded the committee that all deans
and vice provosts receive comprehensive reviews every five years. Accordingly, the five-year leadership and program review of Vice Provost Katharine Stewart and the Office of Faculty Affairs will take place this academic year. He further noted that after 23 years in the Office of the Provost and 30 years of service at NC State, Assistant Vice Provost for Finance and Business Vicki Pennington is retiring. Adrian Day, previously the senior director of research fiscal affairs in the Office of Research and Innovation, has joined the office as assistant vice provost for finance and planning. The Provost gave an update on the strategic planning process and noted work is ongoing in preparation of the five-year report to SACS that is due in March 2020. Finally, Provost Arden provided an update on faculty retentions. Over the past eight years, NC State has made 124 counteroffers and 215 pre-emptive retention offers. Sixty-three percent (63%) of counteroffers were successful and 93% of the pre-emptive retentions were successful. The overall success rate of counter offers and pre-emptive retentions was 82% over this eight year period. The number of retention requests has dropped significantly over the last 5 years. Programs in place such as the University Faculty Scholars Program to recognize and retain top faculty were discussed.

**Topic of Interest**

Greg Raschke, Senior Vice Provost and Director of Libraries, provided an overview of the strategic priorities of the University Libraries with an emphasis on student success and affordability initiatives. The NC State University Libraries is a catalyst for knowledge and discovery for NC State and its partners. The Libraries serves over 45,000 students, staff and faculty, with more than 2.5 million total visits per year.

**Closed Session**

A motion was made by Dr. Prestage, and seconded by Mr. Clark, to go into closed session to establish the amount of compensation and other materials terms of an employment contract or proposed employment contract; and to consider the qualifications, competence, performance, character, fitness, conditions of appointment or conditions of initial employment of an employee or prospective employee. The motion carried.

**Reconvene in Open Session**

After coming out of closed session, Chair Kelly announced the meeting in open session.

Dr. Prestage moved to approve the personnel items discussed in Closed Session related to the approval of two head coach employment agreements. Ms. Carter seconded the motion. The motion carried.

The committee discussed the topic of faculty salaries particularly in relation to the rank of full professor. Provost Arden and Associate Vice Chancellor for Human Resources Marie Williams discussed the process in place to develop faculty salary ranges and conversations the university is having about work force planning with respect to compensation and retirements. Chair Kelly noted this was an important topic that the committee will likely hear more about.

With no further business, Chair Kelly announced the meeting adjourned at 2:51 p.m.

____________________________________
Stan Kelly, Chair
Request to Establish MS in Foundations of Data Science
North Carolina State University

This request has been reviewed and approved by the appropriate campus committees and authorities.

Endorsed By:

Gregg Rothermel, Computer Science
Head, Department/Director of Graduate Program (Printed Name and Signature) 1/31/2019

Alina Chertock, Mathematics
Head, Department/Director of Graduate Program (Printed Name and Signature) 2/11/2019

Len Stefanski, Statistics
Head, Department/Director of Graduate Program (Printed Name and Signature) 2-11-19

Recommended By:

Douglas S. Reeves
Chair, College Graduate Studies Committee (Printed Name and Signature) 2-11-2019

A. L. Lloyd
Chair, College Graduate Studies Committee (Printed Name and Signature) 2.19.2019

Endorsed By:

Douglas S. Reeves
College Dean (Printed Name and Signature) 2-11-2019

John M. Blenkin
College Dean (Printed Name and Signature) 2/19/19

Recommended By:

Thomas E. Miller
Vice Provost, DELTA (if DE degree) (Printed Name and Signature) 4/5/19

Approved By:

Peter J. Harris
Dean of the Graduate School (Printed Name and Signature) 5/13/19

Recommended By:

Dean's Council (Printed Name and Signature) 12/13/19

Approved By:

(12/17/19)

(revised August 2015)
Executive Vice Chancellor and Provost  (Printed Name and Signature)  
Approved By:  
Chancellor  (Printed Name and Signature)  
Date  

(revised August 2015)
The following approvals must be obtained prior to sending the Request to Establish a New Academic Degree Program to the UNC System Office.

Institution  
North Carolina State University

Degree Program Title (e.g. M.A. in Biology)  
Master of Science in Foundations of Data Science

Reviewed and Approved By (Name and title only. No signature required in this section.)
Check box to indicate participation in review. (Provost is required.)

☐ Provost:
☐ Faculty Senate Chair (as appropriate):
☐ Graduate Council (as appropriate):
☐ Undergraduate or Graduate Dean (as appropriate):
☐ Academic College Dean:
☐ Department Chair:
☐ Program Director/Coordinator:

New Academic Program Process

New academic programs are initiated and developed by the faculty members. Approval of the Request to Establish a New Academic Degree Program must be obtained from department chairs and college deans or equivalent administrators before submission to the UNC System Office review.

Directions: Please provide a succinct, yet thorough response to each section. Obtain the Provost’s signature and submit the proposal to the UNC System Vice President for Academic Program, Faculty, and Research, for review and approval by the UNC System Office. Once the Request to Establish is approved, UNC System Office staff can submit the proposal for review and approval by the UNC Board of Governors.
# Request to Establish a New Academic Degree Program

<table>
<thead>
<tr>
<th>Institution</th>
<th>North Carolina State University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint Degree Program (Yes or No)? If so, list partner campus.</td>
<td>No</td>
</tr>
<tr>
<td>Degree Program Title (e.g. M.A. in Biology)</td>
<td>Master of Science in Foundations of Data Science Degree</td>
</tr>
<tr>
<td>CIP Code and CIP Title (May be found at National Center for Education Statistics)</td>
<td>30.3001</td>
</tr>
<tr>
<td>Require UNC Teacher Licensure Specialty Area Code (Yes or No). If yes, list suggested UNC Specialty Area Code(s).</td>
<td>No</td>
</tr>
<tr>
<td>Proposed Delivery Mode (campus, online, or site-based distance education). Add maximum % online, if applicable.</td>
<td>The degree will be offered both on-campus and online. Online delivery will be asynchronous with on-campus courses. Maximum % online: 100.</td>
</tr>
<tr>
<td>If requesting online delivery, indicate if program (or one or more courses) will be listed in UNC Online.</td>
<td>The program will be listed in UNC Online</td>
</tr>
<tr>
<td>If requesting site-based delivery, indicate address(es), city, county, state, and maximum % offered at site.</td>
<td>N/A</td>
</tr>
<tr>
<td>Proposed Term to Enroll First Students (e.g. Spring 2019)</td>
<td>Fall 2020</td>
</tr>
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</table>

Do the following sections of your previously submitted and approved Letter of Intent to Develop a New Academic Degree Program document require any change or updated information? If yes, note the items and explain.

<table>
<thead>
<tr>
<th>Category</th>
<th>Yes or No</th>
<th>Explanation (if applicable)</th>
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<tr>
<td>SACSCOC Liaison Statement</td>
<td>No</td>
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</tr>
<tr>
<td>Review Status (campus bodies that reviewed and commented on Letter of Intent)</td>
<td>No</td>
<td></td>
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<tr>
<td>Program Summary</td>
<td>No</td>
<td></td>
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### I. Program Planning and Unnecessary Duplication:

a. List all other public and private four-year institutions of higher education in North Carolina currently operating programs similar to the proposed new degree program, including their mode of delivery. Show a four-year history of enrollments and degrees awarded in similar programs offered at other UNC institutions (using the format below for each institution with a similar program). Programs at UNC institutions may be found on the UNC System [website](#).

<table>
<thead>
<tr>
<th>Institution</th>
<th>North Carolina State University</th>
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<tbody>
<tr>
<td>Program Title</td>
<td>Master of Science in Analytics (MSA)</td>
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<tr>
<td><strong>2017-18</strong></td>
<td><strong>2016-17</strong></td>
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<tr>
<td>Enrollment</td>
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<td>119</td>
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<td>Degrees Awarded</td>
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<td>118</td>
<td>113</td>
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<tr>
<td><strong>2015-16</strong></td>
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<tr>
<td>Enrollment</td>
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<td>115</td>
<td>86</td>
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<tr>
<td>Degrees Awarded</td>
<td></td>
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<td>86</td>
<td>79</td>
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<td><strong>2014-15</strong></td>
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<tr>
<td>Enrollment</td>
<td></td>
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<th>Institution</th>
<th>UNC Charlotte</th>
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<tr>
<td>Program Title</td>
<td>PSM in Data Science and Business Analytics (DSBA) <em><strong>numbers need update</strong></em></td>
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<tr>
<td><strong>2017-18</strong></td>
<td><strong>2016-17</strong></td>
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<tr>
<td>Enrollment</td>
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<td>92</td>
<td>86</td>
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<td>Degrees Awarded</td>
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<td>57</td>
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<td><strong>2015-16</strong></td>
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<td>Enrollment</td>
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<td>61</td>
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<td>Degrees Awarded</td>
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<td><strong>2014-15</strong></td>
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<td>Program Title</td>
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<td><strong>2017-18</strong></td>
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<td>Degrees Awarded</td>
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<td>Enrollment</td>
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<td>Degrees Awarded</td>
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<td>N/A</td>
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b. Describe what was learned in consultation with other programs regarding their experience with student demand and job placement. Indicate how their experiences influenced your enrollment projections.

Enrollments have grown significantly for the above programs in the last four years. Nevertheless, and given that the proposed program is different in focus than the above programs (as explained in part I.d below), we have been more conservative in terms of enrollment growth for the MS in Foundations of Data Science.

c. Identify opportunities for collaboration with institutions offering related degrees and discuss what steps have been or will be taken to actively pursue those opportunities where appropriate and advantageous.

There are no identifiable opportunities for collaboration. All programs are designed as terminal Master’s degrees with specific curricula focused on data science applications, especially in the business realm. However, our focus is on the foundations of the discipline with an emphasis on the development of new data analytic tools.

d. Present documentation that the establishment of this program would not create unnecessary program duplication. In cases where other UNC institutions provided similar online, site-based distance education, or off-campus programs, directly address how the proposed program meets unmet need.

Although there exists a growing number of Data Science and/or Analytics programs, both within the UNC system and nationwide, the proposed program fills a void in this arena. Existing programs in Data Science and/or Analytics provide training in the usage of Data Science techniques and applications. The proposed program will instead target the rigorous underpinnings of Data Science providing a deep mathematical perspective into the underpinnings of the field. This will enable the graduates from this program to gather a more in-depth understanding of not only the usage, but also the development of the methods and the field itself. To the best of our knowledge, the MS in Statistics: Data Science program at Stanford University\footnote{https://statistics.stanford.edu/academics/ms-statistics-data-science} is the only other program whose curriculum aligns with our proposed training.

For completeness, however, we listed above (see I.a) three current programs in the UNC System that are most similar to the proposed program, noting that they are very distinct in their learning objectives and target audiences. Indeed, all three of the degrees, i.e., the App. State MS in Applied Data Analytics, the UNCC DSBA and the NC State MSA, have a pronounced emphasis towards business applications; this is true of most of a growing number of Data Science and/or Analytics programs across the nation. This is not surprising, as commercialization of analytics tools and techniques has been primarily driven by business applications. The proposed degree, on the other hand, will develop education capabilities for data science over a much broader disciplinary spectrum, including in the sciences and engineering disciplines. The need for such capabilities was
emphasized in a 2017 report by the National Academies of Sciences, Engineering and Medicine\(^2\) which states:

**“Key concepts related to developing data acumen include the following:**

- Mathematical foundations,
- Computational thinking,
- Statistical thinking,
- Data management,
- Data description and curation,
- Data modeling,
- Ethical problem solving,
- Communication and reproducibility, and
- Domain-specific considerations.”

With its strong programs in math, statistics, and computer science, NC State is well positioned to lead the nation in developing unique formal training in data science that covers all of the key concepts above, including domain-specific considerations. We note that NC State recently created a new PhD degree in Geospatial Analytics\(^3\), an interdisciplinary research program, that applies analytics to a specific discipline. This request to plan draws from existing NC State expertise to create a complementary educational program in Data Science with a science and engineering focus. We also expect that graduates of the proposed program will be qualified for further research in Geospatial Analytics or a range of other research programs in other science/engineering disciplines.

With respect to the existing NC State MSA program, we believe that the new degree does not represent an unnecessary duplication but rather a complementary educational offering that strengthens NC State’s offerings in the vibrant Data Science ecosystem. Specifically, the new MSFDS program will differ from the MSA in several dimensions:

- **Educational approach:** Our approach is science-driven in that MSFDS students will interact significantly with research active faculty in the field of Data Science. Consequently, they will be exposed to the latest developments in this fast-developing field. By contrast, the MSA is largely business-driven and most instructors do not hold regular NC State faculty positions.

- **Focus and objectives:** MSFDS graduates will receive a well-rounded education in the foundations of data science that will go beyond application of existing methods or software and enable them to make strategic decisions about problem formulations, refine overall solution approaches, as well as adapt and optimize methodologies depending on specific application domains in science and engineering. The MSA, on the other hand, is more concerned with developing expertise in existing methods and concepts.

\(^2\) [http://www.nap.edu/24886](http://www.nap.edu/24886)

\(^3\) [https://cnr.ncsu.edu/geospatial/academics/phd-in-geospatial-analytics/](https://cnr.ncsu.edu/geospatial/academics/phd-in-geospatial-analytics/)
• **Content:** The proposed MSFDS degree is organized around standard academic courses that are, and will be, available to students in other disciplines and programs. This allows significant flexibility to students in the degree program. By contrast, the MSA does not use courses but modules; these modules are strictly reserved for the students in that program.

• **Delivery modalities:** MSFDS students will have the option of completing the program either full-time (i.e., in 3-4 semesters) or part-time, and either on-campus or online. MSA employs a three-semester (Summer II, Fall, and Spring), cohort-based model and is not available via distance education.

• **Prospective students:** Prospective MSFDS students will mostly come from the quantitative sciences and computer science. On the other hand, the largest group of students in the MSA arrives with backgrounds in business, economics, and finance.

We also note that the departments of Statistics and Computer Science currently offer Data Science concentrations within their Master’s programs. These concentrations are attached to disciplinary degrees, as opposed to the proposed multidisciplinary degree, and are thus very different in nature. Nevertheless, to simplify and clarify the various degree options pertaining to Data Science at NC State, we propose to terminate these concentrations once the new degree is in place.

e. **Admission.** List the following:

i. Admissions requirements for proposed programs (indicate minimum requirements and general requirements).

Given the interdisciplinary nature of the proposed program, we expect to attract talented students with a variety of backgrounds in the quantitative sciences, computer science and engineering.

Admissions to the MS program will follow all NC State Graduate School criteria including:

- Minimum undergraduate GPA of 3.0
- GRE scores (within the last five years), with admissions standards similar to that for other students in the Math, Statistics, and Computer Science masters degree programs
- iBT TOEFL scores of at least 80 overall (18 in each section) for international applicants.

In addition, we expect our applicants to (i) hold an undergraduate degree in a field connected to the quantitative sciences, computer science or engineering, and (ii) demonstrate analytical and computational skills through appropriate coursework, professional experience or undergraduate research.

Documents to be submitted for admission (listing)

- Official transcripts from all colleges/universities attended
- Personal statement
f. Degree requirements. List the following:

i. Total hours required. State requirements for Major, Minor, General Education, etc.

A minimum of 30 semester credit hours is required. At least 18 credit hours must be graduate credits earned while the student is enrolled in the graduate program. At least 18 credit hours of letter-graded courses (“A,” “B,” “C,” etc.) must be included in the program. These must be NC State or inter-institutional courses. No more than 12 credit hours may be used to satisfy degree requirements for another Master’s degree program at NC State (unless the student did not complete the other program).

ii. Other requirements (e.g. residence, comprehensive exams, thesis, dissertation, clinical or field experience, “second major,” etc.).

None

g. Enrollment. Estimate the total number of students that would be enrolled in the program during the first year of operation and in each delivery mode (campus, online, site, etc.)

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Campus</th>
<th>Online</th>
<th>Site</th>
<th>Full-Time</th>
<th>Part-Time</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>15</td>
<td>10</td>
<td></td>
<td>Campus: 15</td>
<td>Online: 10</td>
</tr>
</tbody>
</table>

h. For graduate programs only, please also answer the following:

<table>
<thead>
<tr>
<th>Grades required</th>
<th>Students are expected to maintain a 3.000 GPA or above. Grades below C- do not count towards the completion of the requirements of the proposed degree.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of transfer credit accepted</td>
<td>Transfers of credits will be governed by the posted rules of the Graduate School.</td>
</tr>
<tr>
<td>Language and/or research requirements</td>
<td>There are no specific language or research requirements.</td>
</tr>
<tr>
<td>Any time limits for completion</td>
<td>Students must complete all requirements for the master’s degree within 6 calendar years of the first course included in the degree.</td>
</tr>
</tbody>
</table>
For all programs, provide a degree plan showing the sequence of courses to be taken each year. List courses by title and number and indicate those that are required. Include an explanation of numbering system. Indicate new courses proposed. A possible format is offered below as an example. If your institution uses a different format that provides the required information, it may be submitted instead.

The proposed degree is organized around 7 core courses which all students in the program will have to pass; these include two each in Computer Science, Mathematics and Statistics and one in machine learning:

- **Statistics core:** (6 credit hours) ST 503 (Fundamentals of Linear Models and Regression), ST 517 (Applied Statistics)
- **Mathematics core:** (6 credit hours) MA 523 (Linear Transformation and Matrix Theory), MA 797 (Convex Optimization in Data Science)
- **Computer science core:** (6 credit hours) CSC 505 (Algorithms), CSC 540 (Databases)
- **Machine learning core:** (3 credit hours) choose one of: ST 563 (Statistical Learning) or CSC 522 (Automated Learning).

All the above courses are already in existence (MA 797 has been offered two times as a special topics course and has been submitted for approval as a regular course, MA 542).

The curriculum is completed through 3 additional courses (9 credit hours) chosen from a list of approved graduate electives for the degree (see below). The students will be given the opportunity to choose a concentration, if they so desire, in computer science, mathematics, statistics, or specific science or engineering application domains. In the case where a concentration is chosen, the three electives must be chosen in the corresponding field.

<table>
<thead>
<tr>
<th>Computer Science electives</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSC 520</td>
</tr>
<tr>
<td>CSC 541</td>
</tr>
<tr>
<td>CSC 720</td>
</tr>
<tr>
<td>CSC 722</td>
</tr>
<tr>
<td>CSC 742</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mathematics electives</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA 540</td>
</tr>
<tr>
<td>MA 580</td>
</tr>
<tr>
<td>MA 784</td>
</tr>
<tr>
<td>MA 798</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statistics electives</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST 534</td>
</tr>
<tr>
<td>ST 537</td>
</tr>
<tr>
<td>ST 540</td>
</tr>
<tr>
<td>ST 558</td>
</tr>
</tbody>
</table>
II. Faculty

a. (For undergraduate and master’s programs) List the names, ranks and home department of faculty members who will be directly involved in the proposed program. The official roster forms approved by SACSCOC may be submitted. For master’s programs, state or attach the criteria that faculty must meet in order to be eligible to teach graduate level courses at your institution.

<table>
<thead>
<tr>
<th>Faculty Name</th>
<th>Rank</th>
<th>Tenure Home</th>
<th>College</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alen Alexanderian</td>
<td>Assistant Professor</td>
<td>Mathematics</td>
<td>COS</td>
</tr>
<tr>
<td>Patrick Combettes</td>
<td>Professor</td>
<td>Mathematics</td>
<td>COS</td>
</tr>
<tr>
<td>Pierre Gremaud</td>
<td>Professor</td>
<td>Mathematics</td>
<td>COS</td>
</tr>
<tr>
<td>Ilse Ipsen</td>
<td>Professor</td>
<td>Mathematics</td>
<td>COS</td>
</tr>
<tr>
<td>Arvind Saibaba</td>
<td>Assistant Professor</td>
<td>Mathematics</td>
<td>COS</td>
</tr>
<tr>
<td>Ralph Smith</td>
<td>Professor</td>
<td>Mathematics</td>
<td>COS</td>
</tr>
<tr>
<td>Souman Lahiri</td>
<td>Professor</td>
<td>Statistics</td>
<td>COS</td>
</tr>
<tr>
<td>Arnab Maity</td>
<td>Associate Professor</td>
<td>Statistics</td>
<td>COS</td>
</tr>
<tr>
<td>Ryan Martin</td>
<td>Associate Professor</td>
<td>Statistics</td>
<td>COS</td>
</tr>
<tr>
<td>Herle McGowan</td>
<td>Teaching Assoc. Prof.</td>
<td>Statistics</td>
<td>COS</td>
</tr>
<tr>
<td>Justin Post</td>
<td>Teaching Assoc. Prof.</td>
<td>Statistics</td>
<td>COS</td>
</tr>
<tr>
<td>Brian Reich</td>
<td>Professor</td>
<td>Statistics</td>
<td>COS</td>
</tr>
<tr>
<td>Min Chi</td>
<td>Assistant Professor</td>
<td>Computer Science</td>
<td>COE</td>
</tr>
<tr>
<td>Rada Chirkova</td>
<td>Professor</td>
<td>Computer Science</td>
<td>COE</td>
</tr>
<tr>
<td>Steffen Heber</td>
<td>Associate Professor</td>
<td>Computer Science</td>
<td>COE</td>
</tr>
<tr>
<td>Collin Lynch</td>
<td>Assistant Professor</td>
<td>Computer Science</td>
<td>COE</td>
</tr>
<tr>
<td>Kemafor Ogan</td>
<td>Associate Professor</td>
<td>Computer Science</td>
<td>COE</td>
</tr>
<tr>
<td>Thomas Price</td>
<td>Assistant Professor</td>
<td>Computer Science</td>
<td>COE</td>
</tr>
<tr>
<td>Nagiza Samatova</td>
<td>Professor</td>
<td>Computer Science</td>
<td>COE</td>
</tr>
<tr>
<td>Matthias Stallmann</td>
<td>Professor</td>
<td>Computer Science</td>
<td>COE</td>
</tr>
<tr>
<td>Blair Sullivan</td>
<td>Associate Professor</td>
<td>Computer Science</td>
<td>COE</td>
</tr>
<tr>
<td>Raju Vatsavai</td>
<td>Associate Professor</td>
<td>Computer Science</td>
<td>COE</td>
</tr>
</tbody>
</table>

Membership in the Graduate Faculty is governed by REG 02.40.01.

b. (For doctoral programs) List the names, ranks, and home department of each faculty member who will be directly involved in the proposed program. The official roster forms approved by SACSCOC may be submitted. Provide complete information on each faculty member’s education, teaching and research experience, research funding, publications, and experience directing student research including the number of theses and dissertations directed.

N/A

c. Estimate the need for new faculty for the proposed program over the first four years. If the teaching responsibilities for the proposed program will be absorbed in part or in whole by the present faculty, explain how this will be done without weakening existing programs.
Two faculty positions will be created to develop this degree program, provide teaching and advising capacity for the students that will be enrolled, and offer new courses. Hiring the new faculty will ensure that all core courses in the new program are regularly taught and that course sizes remain at reasonable levels to avoid affecting the quality of this program. These additional resources will be easily supported by the expected new enrollments. However, if the growth in enrollment exceeds our expectations, it may be necessary to hire additional tenure-track or teaching faculty.

d. Explain how the program will affect faculty activity, including course load, public service activity, and scholarly research.

The program will rely exclusively on existing courses or on courses in advanced stages of development. No significant impact is therefore expected on faculty teaching load (unless enrollment growth exceeds our expectations). Increased enrollment will be accommodated through additional teaching assistantships attached to the proposed program (refer to the attached budget). All core courses but one and most electives are already available online. It is however expected that faculty involved in the program will have to update some of the online material, mostly before the program’s start but also on a continuing basis through the life of the program. Funds have been budgeted to that purpose (refer to Part III.c and the attached budget).

III. Delivery Considerations. Provide assurances of the following (not to exceed 250 words per lettered item):

a. Access (online, site-based distance education, and off-campus programs). Students have access to academic support services comparable to services provided to on-campus students and appropriate to support the program, including admissions, financial aid, academic advising, delivery of course materials, and placement and counseling.

Engineering Online is one of the top ranked online engineering graduate programs in the country. Students receive excellent assistance with their needs, including help with registration, academic advising, assistance from instructors, professional quality recordings of lectures, a help line for technical problems, electronic access to all course materials, arrangement of exam proctors, and access to all software and computing resources available to on-campus students. Admissions are handled the same as for on-campus students, through an online web portal. Financial aid is available through the university’s Financial Aid office. Student services are gathered into an online, self-service hub (https://studentservices.ncsu.edu/). Delivery of course materials also is handled online, through the Moodle learning management system and Mediasite, accessible via a web portal at https://wolfware.ncsu.edu/. Academic advising is provided by the Directors of Graduate Program for each individual program, as is the case for on-campus students.

The teaching will also be supported by five additional teaching assistants. These assistants will be assigned to courses being taken by distance education students and will be part of the academic support for those students, by holding office hours (reachable by phone or videoconference for distance students), answering questions by email or message board, etc. These additional resources will be easily supported by the expected new enrollments.
b. *Curriculum delivery* (online and site-based distance education only). The distance education technology to be used is appropriate for the program and compatible with its nature and objectives. The content, methods and technology for each online course provide for adequate interaction between instructor and students.

The online courses will be identical to the corresponding on-campus courses and will be delivered to distance students via either Engineering Online (Computer Science courses) or DELTA (Distance Education and Learning Technology Applications; Math and Statistics courses). These online courses are already available to distance students in the Computer Science, Mathematics, and Statistics programs. Specifically, the online courses will use the Mediasite platform for classroom and content capture and streaming to distance students, and the Moodle course management system for interaction between instructor and students.

c. *Faculty development* (online and site-based distance education only). Faculty engaged in program delivery receive training appropriate to the distance education technologies and techniques used.

Both Engineering Online and DELTA regularly offer workshops, seminars, and training sessions on distance education technologies and techniques, including Mediasite and Moodle. Faculty engaged in online course delivery will be required to complete such training the first time they offer an online course and periodically thereafter.

d. *Security* (online and site-based distance education only). The institution authenticates and verifies the identity of students and their work to assure academic honesty/integrity. The institution assures the security of personal/private information of students enrolled in online courses.

As mentioned above, the online courses are already available to students in the Computer Science, Mathematics, and Statistics programs, and meet the University’s requirements regarding authentication, academic integrity, security, and privacy by applying appropriate best practices. The new program will work with the corresponding departments to ensure that any new online courses will follow these same practices.

IV. Library

a. Provide a statement as to the adequacy of present library holdings for the proposed program to support the instructional and research needs of this program.

The existing library infrastructure at NC State is comprehensive and state-of-the-art. The expansive visualization facilities, literature, data collection, and staff of the Hunt and D.H. Hill libraries provide an outstanding environment and resources for study in this field.

b. If applicable, state how the library will be improved to meet new program requirements for the next four years. The explanation should discuss the need for books, periodicals, reference material, primary source material, etc. What additional library support must be added to areas supporting the proposed program?
The existing library infrastructure is comprehensive and will be able to provide us with the necessary resources for the foreseeable future.

c. Discuss the use of other institutional libraries.

Inter-institutional library resources are readily available through existing relationships and agreements with other university libraries within the UNC system as well as private institutions, such as Duke, and will be leveraged in coursework and research projects for this program.

d. For doctoral programs, provide a systematic needs assessment of the current holdings to meet the needs of the program.

N/A.

V. Facilities and Equipment

a. Describe facilities available for the proposed program.

D.H. Hill and Hunt Libraries on campus provide multiple workstations, collaborative spaces, and visualization studios for teaching and research.

b. Describe the effect of this new program on existing facilities and indicate whether they will be adequate, both at the commencement of the program and during the next decade.

We expect to be able to absorb the addition of 30 students taking various combinations of existing on-campus sections with current resources.

c. Describe information technology and services available for the proposed program.

The students will have access to all the necessary software through NC State’s site licenses. Online courses and corresponding web access and proctoring will be handled through NC State’s DELTA and Engineering Online services.

d. Describe the effect of this new program on existing information technology and services and indicate whether they will be adequate, both at the commencement of the program and during the next decade.

Given the resources already in place, we do not expect this program to have a significant impact on the existing IT infrastructure and services at least for the first few years. If enrollment ultimately exceeds expectations, this may need to be re-evaluated.

VI. Administration

a. Describe how the proposed program will be administered, giving the responsibilities of each department, division, school, or college. Explain any inter-departmental or inter-unit administrative plans. Include an organizational chart showing the "location" of the proposed new program.
The proposed MS program will be administered by a Program Director. It is expected that the Director will have Computer Science, Mathematics or Statistics as his/her tenure home. The Director will be compensated through 1 summer month of salary and a yearly 1 course buyout. The Director will be assisted by a Graduate Service Coordinator (0.5 FTE). These additional resources will be easily supported by the expected new enrollments.

b. For joint programs only, include documentation that, at minimum, the fundamental elements of the following institutional processes have been agreed to by the partners:

N/A

i. Admission process

ii. Registration and enrollment process for students

iii. Committee process for graduate students

iv. Plan for charging and distributing tuition and fees

v. Management of transcripts and permanent records

vi. Participation in graduation

vii. Design of diploma

VII. Additional Program Support

a. Will additional administrative staff, new master’s program graduate student assistantships, etc. be required? If so, please briefly explain in the space below each item, state the estimated new dollars required at steady state after four years, and state the source of the new funding and resources required.

A Graduate Service Coordinator (0.5 FTE) will assist the Graduate Program Director. In addition, the teaching will be supported by three teaching assistantships (0.5 FTE each), one in each of Computer Science, Mathematics and Statistics. The program will also make $20K available for course buyout to relevant faculty fellows interested in developing or updating courses for the program. These additional resources will be easily supported by the expected new enrollments.

VIII. Accreditation and Licensure

a. Where appropriate, describe how all licensure or professional accreditation standards will be met, including required practica, internships, and supervised clinical experiences.

N/A.
b. Indicate the names of all accrediting agencies normally concerned with programs similar to the one proposed. Describe plans to request professional accreditation.

N/A.

c. If the new degree program meets the SACSCOC definition for a substantive change, what campus actions need to be completed by what date in order to ensure that the substantive change is reported to SACSCOC on time?

N/A

d. If recipients of the proposed degree will require licensure to practice, explain how program curricula and title are aligned with requirements to “sit” for the licensure exam.

N/A.

IX. Supporting Fields

a. Discuss the number and quality of lower-level and cognate programs for supporting the proposed degree program.

There are no lower-level programs supporting this program. Computer Science, Mathematics and Statistics will be valuable in supporting this program in terms of faculty serving as instructors and advisors to students.

b. Are other subject-matter fields at the proposing institution necessary or valuable in support of the proposed program? Is there needed improvement or expansion of these fields? To what extent will such improvement or expansion be necessary for the proposed program?

The recognized strengths of NC State in quantitative sciences and engineering will be valuable to the proposed program which will both benefit from them and contribute to them.

X. Additional Information. Include any additional information deemed pertinent to the review of this new degree program proposal.

XI. Budget

a. Complete and insert the Excel budget template provided showing incremental continuing and one-time costs required each year of the first four years of the program. Supplement the template with a budget narrative for each year.

b. Based on the campus’ estimate of available existing resources or expected non-state financial resources that will support the proposed program (e.g., federal support, private sources, tuition revenue, etc), will the campus:
i. Seek enrollment increase funds or other additional state appropriations (both one-time and recurring) to implement and sustain the proposed program? If so, please elaborate.

Enrollment increase funds are requested to sustain this program. Combined with differential tuition, the funds generated by this program are more than sufficient to pay the projected costs.

ii. Require differential tuition supplements or program-specific fees? If so, please elaborate.

1. State the amount of tuition differential or program-specific fees that will be requested.

A Request for Authorization of Premium Tuition was filed through the appropriate channels at NC State during Fall 2018. Our request of a $2,800 per semester premium tuition has been approved by the NC State Board of Trustees.

2. Describe specifically how the campus will spend the revenues generated.

As shown in the attached budget, differential tuition funds will cover compensation for the Graduate Program Director and the Graduate Services Coordinator, part of the faculty fellow funds as well as some smaller program related expenses. Five Teaching Assistants will be hired to help with the instructional duties in this program. A portion of the differential tuition is reserved for financial aid for students. In addition, two faculty positions will be created to develop this degree program, provide teaching and advising capacity for the students that will be enrolled, and offer new courses.

3. Does the campus request the tuition differential or program-specific fees be approved by the Board of Governors prior to the next Tuition and Fee cycle?

The Premium Tuition request approved by the NC State Board of Trustees will be submitted to the UNC-SO simultaneously with the Request to Establish in hopes that they will be approved by the Board of Governors at the same time.

c. If enrollment increase funding, differential tuition, or other state appropriations noted in the budget templates are not forthcoming, can the program still be implemented and sustained and, if so, how will that be accomplished? Letters of commitment from the Chancellor and/or Chief Academic Officer should be provided.

The program cannot be implemented without the support noted in the budget templates.

XII. Evaluation Plans
a. What student learning outcomes will be met by the proposed program and how will student proficiency be measured? These items may be updated as necessary to meet student and program needs.

<table>
<thead>
<tr>
<th>Program Student Learning Outcomes</th>
<th>Measurement Instrument</th>
<th>Criteria for Proficiency (score, percentage, level of performance, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design efficient data modeling and processing methods by using mathematical and algorithmic tools</td>
<td>Selected problems on the Final exams in corresponding courses</td>
<td>A score of 80% or higher</td>
</tr>
<tr>
<td>Construct conceptual data models, optimize query languages, and implement principles of information integrity, security and confidentiality</td>
<td>Selected problems on the Final exams in corresponding courses</td>
<td>A score of 80% or higher</td>
</tr>
<tr>
<td>Quantify appropriate measures of uncertainty associated with the methods of analysis</td>
<td>Selected problems on the Final exams in corresponding courses</td>
<td>A score of 80% or higher</td>
</tr>
<tr>
<td>Perform core predictive/descriptive data mining tasks and design and implement strategies for real-world data mining problems</td>
<td>Selected problems on the Final exams in corresponding courses</td>
<td>A score of 80% or higher</td>
</tr>
<tr>
<td>Develop appropriate data structures and algorithm design techniques including recursion, divide-and-conquer, distributed and parallel optimization, and dynamic programming for analysis of emerging data types</td>
<td>Projects in corresponding courses</td>
<td>A score of 80% or higher</td>
</tr>
<tr>
<td>Apply statistical learning principles to a variety of data analysis problems</td>
<td>Projects in corresponding courses</td>
<td>A score of 80% or higher</td>
</tr>
<tr>
<td>Use relevant software packages and tools and gain insight into how knowledge discovery and data use occurs in practice</td>
<td>Projects in corresponding courses</td>
<td>A score of 80% or higher</td>
</tr>
</tbody>
</table>

b. The plan and schedule to evaluate the proposed new degree program prior to the completion of its fourth year of operation (to include types of measurement, frequency, and scope of program review).

The program will initially be assessed after Year 1 by consulting with the initial cohort of students, as well as faculty involved to determine if the various elements of the program are achieving not only the assessment goals, but also to ensure that students and faculty believe that the program is functioning as designed. The program will again be assessed at Years 2, 3, and 4 to examine student
progress and assess the effect any modifications may have had after the Year 1 and subsequent reviews. At the end of Year 4, we will have a continuous assessment plan in place to coincide with the Graduate School external program assessment schedule to assess the program’s objectives and student outcomes on a rotating basis as required by the Provost’s Office.

XIII. Attachments. Attach the final approved Letter of Intent as the first attachment following this document.

This proposal to establish a new program has been reviewed and approved by the appropriate campus committees and authorities.

<table>
<thead>
<tr>
<th>Position Title</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chancellor</td>
<td>Randy Wood</td>
<td>1/15/2020</td>
</tr>
<tr>
<td>Chancellor (Joint Partner Campus)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provost</td>
<td></td>
<td>1/15/2020</td>
</tr>
</tbody>
</table>
# Degree Name Foundations of Data Science

ON-CAMPUS STUDENT CREDIT-HOUR (SCH) PRODUCTION OVER FOUR YEARS*

INSTRUCTIONAL Enrollment increase only

<table>
<thead>
<tr>
<th>Category # I &amp; III</th>
</tr>
</thead>
<tbody>
<tr>
<td>551.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>year</th>
<th>full-time</th>
<th>credits</th>
<th>SCH</th>
<th>part-time</th>
<th>credits</th>
<th>SCH</th>
<th>total SCH</th>
<th>each year</th>
</tr>
</thead>
<tbody>
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<td>1</td>
<td>15</td>
<td>18</td>
<td>270</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>270</td>
<td>$ 148,770.00</td>
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<tr>
<td>2</td>
<td>first-yr</td>
<td>20</td>
<td>18</td>
<td>360</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>0</td>
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<tr>
<td></td>
<td>second-yr</td>
<td>14</td>
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<td>168</td>
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<td></td>
<td>total</td>
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<tr>
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<td>first-yr</td>
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<td>0</td>
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<tr>
<td></td>
<td>second-yr</td>
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<td>12</td>
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<td>9</td>
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<td></td>
<td>third-yr</td>
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<td>0</td>
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<td>9</td>
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<tr>
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<td>second-yr</td>
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<td>276</td>
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<td>0</td>
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<tr>
<td></td>
<td>third-yr</td>
<td>0</td>
<td>18</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>0</td>
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<tr>
<td></td>
<td>fourth-yr</td>
<td>0</td>
<td>18</td>
<td>0</td>
<td>0</td>
<td>3</td>
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<td>9</td>
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<td>1256,280.00</td>
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</table>

* Colleges will receive 50% of INSTRUCTIONAL SALARY enrollment increase $ from Provost
$/SCH INSTRUCTIONAL Requirement calculated as the average of Cat I (576.98) and III (525.21) and assumes SCHs split 50:50. This represents potential new budget available for Colleges to invest.
## Degree Name - Foundations of Data Science

### DE STUDENT CREDIT-HOUR (SCH) PRODUCTION OVER FOUR YEARS

Ref.  [http://oirp.ncsu.edu/ir/fin](http://oirp.ncsu.edu/ir/fin)  In-state %  50%

<table>
<thead>
<tr>
<th>Year</th>
<th>On-Campus</th>
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<th>SCH</th>
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Note: Assumes 50% in-state (fundable) and 50% out-of-state (non-fundable). College actually receive 80% of $/SCH Total Academic Requirement (Instructional Salary plus Other @ 44.89%) less 11.28% to Benefits Pool. Calculated as the average of Cat I (835.99) and III (760.98) with SCHs split 50:50 but then benefits charged only to salary lines (i.e. did not use 11.28%).
# Degree Name - Foundations of Data Science

DE OUT-OF_STATE STUDENT TUITION GENERATED OVER FOUR YEARS

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Note: Assumes 50% in-state (fundable) and 50% out-of-state (non-fundable). College actually receive 80% of $/SCH Total Academic Requirement (Instructional Salary plus Other @ 44.89%) less 11.28% to Benefits Pool. Calculated as the average of Cat I ($355.99) and Cat II ($760.98) with SCHs split 50:50 but then benefits charged only to salary lines (i.e. did not use 11.28%). For 19-20, purpose 101 was $752.11 per graduate non-fundable SCH. (Of which DELTA allocated 80%, net of benefits at 11.28%, or $533.82 to colleges per graduate non-fundable SCH.)
Degree Name - Foundations of Data Science

TOTAL STUDENT CREDIT-HOUR (SCH) PRODUCTION OVER FOUR YEARS*

Ref: [http://oiprc.ncsu.edu/ir/fin](http://oiprc.ncsu.edu/ir/fin)

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Total |

| 3408 | $2,130,542.04 |

$/SCH Combined (DE Total Academic Requirement and On-Campus Instructional Requirement). Colleges receive 80% of DE Total Academic Req $ and 50% of On-Campus Instructional Salary $.
## SUMMARY OF ESTIMATED ADDITIONAL COSTS FOR PROPOSED PROGRAM

**Institution:** NC State University  
**Date:** 12-Aug-19  
**Program Year:** Year 1 (201X-201X)

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### Assumptions

1. **Enrollment**
   - full-time admissions: 15
   - full-time continuing: 270
   - part-time admissions: 10
   - part-time continuing: 90
   - TOTAL new SCH: 360
   - Enrolment increase funds Purpose 101: $218,525

2. **Student Support**
   - TAships: 0
   - Out of state admissions: 0

**Source of Funds**

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<th>DELTA Enrollment Increase $</th>
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**Notes:**
- Funding is done 1 year in the areas so enrollment increase generated in Yr 1 is available starting in Yr2. 50% of INSTRUCTIONAL SALARY enrollment increase funding distributed to Colleges. Colleges must commit these funds to the program.
- Funding is done 1 year in the areas so 50% of Total Academic Requirement enrollment increase generated in Yr 1 is available starting in Yr2 from DELTA.
- **Negotiated with College Dean(s).**
- Value in 002 cannot exceed value in 012.
- Year 1, CDE program enhancement fee (PEF) should be $15 * $1000 = $15,000 = 10 * $56.12 = $72616 for the two colleges. The PEF $ cannot be used for instruction covered by tuition. Therefore, it has not been included in these budget calculations.

**Assumptions**

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### SUMMARY OF ESTIMATED ADDITIONAL COSTS FOR PROPOSED PROGRAM

**INSTITUTION:** NC State University  
**Program (CIP, Name Level):** 
**Desire(s) to be Granted:** 
**Projected annual Full-Time (18 credits):** 20  
**Projected annual part-time (12 credits):** 14  
**Projected annual DE SCH:** 216  
**Differential tuition requested per student per academic yr:** $5,600  
**Projected annual differential tuition:** $230,094  
**Projected annual differential tuition for financial aid:** $34,720  
**Differential tuition remainder:** $195,374

#### Assumptions

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#### Source of Funds

**YEAR 2**

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<th>13XX GPA salaries</th>
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<th>Total 18XX</th>
<th>2-SXXXX Operating</th>
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<td>73,789</td>
<td>28,726</td>
<td>2,672</td>
</tr>
</tbody>
</table>

*50% of INSTRUCTIONAL SALARY enrollment increase funding from Yr 1 distributed to Colleges. Colleges must commit these funds to the program.
**80% of Total Academic Requirement enrollment increase funding from year 1 from DELTA.
***Negotiated with College Deans.
Value in 00s cannot exceed value in 812.
Year 2: COE program enhancement fee (PEF) should be 34 * $1500 + 14 * $456.12 = $57,386 for the two colleges. The PEF cannot be used for instruction covered by tuition. Therefore, it has not been included in these budget calculations.

**Assumptions**

<table>
<thead>
<tr>
<th>Rate</th>
<th>Link</th>
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<tbody>
<tr>
<td>RA/TA Health Insurance</td>
<td><a href="https://studentaffairs.nccu.edu/out-more/financial-aid/graduate-students/">https://studentaffairs.nccu.edu/out-more/financial-aid/graduate-students/</a></td>
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<tr>
<td>In-State Tuition</td>
<td><a href="https://studentaffairs.nccu.edu/out-more/financial-aid/graduate-students/">https://studentaffairs.nccu.edu/out-more/financial-aid/graduate-students/</a></td>
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</tr>
</tbody>
</table>
### Summary of Estimated Additional Costs for Proposed Program

**INSTITUTION**
- NC State University
- Program (CIP, Name Level): [Details]
- Degree(s) to be Granted: [Details]
- Program Year: Year 3 (201X-201X)

#### Assumptions
1. **Enrollment**
   - Full-time: 25 admissions, 18 continuing
   - Part-time: 17 admissions, 22 continuing
   - Total New SCH: 351

2. **Student Support**
   - TA ships: 0
   - Out of state admissions: 0

**Source of Funds**
- YEAR 3

### Cost Description

<table>
<thead>
<tr>
<th>Cost Description</th>
<th>Number of Students</th>
<th>Provost Enrollment Increase $</th>
<th>Delta Enrollment Increase $</th>
<th>Non-Fundable DE Tuition</th>
<th>Contracts &amp; Grants</th>
<th>Other (Premium)</th>
<th>Additional Funding Needed***</th>
<th>Total</th>
<th>Total New This Year</th>
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<tbody>
<tr>
<td>AVAILABLE BUDGET</td>
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<td>68,947</td>
<td>105,596</td>
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<td>264,464</td>
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</table>

| 12XX SPA salaries        |                   | 1,000                       | 0                           | 0                      | 40,000            | -              | -                           | 50,000 |

| 13XX EPA salaries        |                   | 0.200                       | 23,000                      | 81,000                 | 9,000             | -              | 113,000                    | 135,000 |

| Graduate Student Assistants @ 32K | 4,000 | 22,000 | 69,000 | 88,000 | - |

| TOTAL 13XX               |                   | 5,700                       | 23,000                      | 81,000                 | -              | 136,867        | 202,667                    | 135,000 |

| 18XX Fringes             |                   | 6,210                       | 24,570                      | 29,860                 | 6,270            | -              | 60,660                     | - |

| Graduate Student Assistants @ 9.5% | 0 | 2,090 | 6,270 | - | - |

| TOTAL 18XX               |                   | 6,210                       | 24,570                      | 36,650                 | -              | 66,020         | 32,600                     | - |

| 2-5XX Operating         |                   | 41                          | 9,595                       | 6,000                  | -              | -              | -                          | - |

| TOTAL 2-5XX              |                   | 41                          | 9,595                       | -                      | 6,000           | -              | -                          | - |

| 6XX Graduate Student Support Plan (GSSP) | 4 | 0 | $2,504 | 7,512 | 10,016 |

| In-State Tuition         |                   | 4                           | 0                           | $9,955                 | 27,285          | 36,380         | 34,652                     | - |

| Tuition Remission        |                   | 2                           | 0                           | $17,326                | 17,326          | -              | -                          | - |

| Tuition Remission Matching @ 25% | 0 | $23,925 | 52,123 | 81,048 | 28,925 |

| TOTAL 6XX                |                   | 0                           | $23,925                     | 52,123                 | 81,048          | 28,925         | -                          | - |

**NOTES**

- **50% of INSTRUCTIONAL SALARY** enrollment increase funding from Year 2 distributed to Colleges. Colleges must commit these funds to the program.
- **80% of Total Academic Requirement enrollment increase funding from year 2 from DELTA**

*All values in $53 cannot exceed value in $53.

**Year 3: OPE program enhancement fee (PEF) should be 43 * $1500 = 64 * $450 = $64,950 for the two colleges. The PEF $ cannot be used for instruction covered by tuition. Therefore, it has not been included in these budget calculations.

### Assumptions

- **RATA Health Insurance**
  - Rate: $2,504
  - Link: [RATA Health Insurance link]

- **In-State Tuition**
  - Rate: $9,955
  - Link: [In-State Tuition link]

- **Tuition Remission**
  - Rate: $17,326
  - Link: [Tuition Remission link]

- **Tuition Remission Matching**
  - Rate: $4,332
  - Link: [Tuition Remission Matching link]
### SUMMARY OF ESTIMATED ADDITIONAL COSTS FOR PROPOSED PROGRAM

**INSTITUTION**: NC State University  
**Program (CIP, Name Level)**:  
**Degree(s) to be Granted**: Program Year, Year 4 (201X-201X)  
**Projected annual Full-Time (18 credits)**: 30  
**Projected annual part-time (12 credits)**: 23  
**Projected annual DE SCH**: 471  
**Differential tuition requested per student per academic yr**: $5,600  
**Projected annual differential tuition**: $393,894  
**Projected annual differential tuition for financial aid**: $58,660  
**Differential tuition remainder**: $335,234

### Assumptions

1. **Enrollment**
   - **admissions continuing**
   - **full-time**
   - **part-time**
   - **TOTAL new SCH**
   - **Enrollment increase funds Purpose 101**

2. **Student support**
   - **total**
   - **TAships**
   - **Out of state admissions**

### Source of Funds

<table>
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<tr>
<th>Cost Description</th>
<th>Number</th>
<th>Provost Enrollment increase $</th>
<th>DELTA Enrollment increase $</th>
<th>Non-Fundable fund $</th>
<th>Tuition &amp; Grants</th>
<th>Other (Premium Tuition)</th>
<th>Additional funding needed**</th>
<th>Total</th>
<th>Total New This Year</th>
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</table>

*50% of INSTRUCTIONAL SALARY enrollment increase funding from Yr. 3 distributed to Colleges. Colleges must cover these funds to the program.

**60% of Total Academic Requirement enrollment increase funding from year 3 from DELTA.

***Negotiated with College Deans.***

Value in G64 cannot exceed value in J12.

Year 4: COE program enhancement fee (PEF) should be 53 * $1650 + 59 * $450 = $108,411 for the two colleges. The PEF cannot be used for instruction covered by tuition. Therefore, it has not been included in these budget calculations.

### Assumptions

<table>
<thead>
<tr>
<th>Rate</th>
<th>Link</th>
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<tbody>
<tr>
<td>RATA Health Insurance @</td>
<td>$2,504 <a href="https://studentservices.ncsu.edu/your-money/tuition-and-fees/graduate-students/">Link</a></td>
</tr>
<tr>
<td>In-State Tuition @</td>
<td>$9,095 <a href="https://studentservices.ncsu.edu/your-money/tuition-and-fees/graduate-students/">Link</a></td>
</tr>
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<td>Tuition Remission @ (diff)</td>
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# Degree Name - Foundations of Data Science

## Summary of Costs

### SUMMARY OF TOTAL COSTS EACH YEAR

<table>
<thead>
<tr>
<th>Period</th>
<th>Source of Funds</th>
<th>Provost Enrollment Increase $</th>
<th>DELTA Enrollment Increase **</th>
<th>Non-Fundable DE Tuition</th>
<th>Contracts &amp; Grants</th>
<th>Other (Premium Tuition)</th>
<th>Additional Funding Needed***</th>
<th>Cumulative Totals</th>
<th>Total New Each Year</th>
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</thead>
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### SUMMARY OF NEW COSTS EACH YEAR

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<th>Period</th>
<th>Source of Funds</th>
<th>Provost Enrollment Increase $</th>
<th>DELTA Enrollment Increase **</th>
<th>Non-Fundable DE Tuition</th>
<th>Contracts &amp; Grants</th>
<th>Other (Premium Tuition)</th>
<th>Additional Funding Needed***</th>
<th>Total New Each Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td></td>
<td>$</td>
<td>$</td>
<td>$23,550</td>
<td>$</td>
<td>$-</td>
<td>$107,058</td>
<td>$53,015</td>
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<tr>
<td>Year 2</td>
<td></td>
<td>$73,789</td>
<td>$28,728</td>
<td>(20,878)</td>
<td>$</td>
<td>$-</td>
<td>$59,963</td>
<td>(53,015)</td>
</tr>
<tr>
<td>Year 3</td>
<td></td>
<td>$44,538</td>
<td>$40,246</td>
<td>$102,898</td>
<td>$</td>
<td>$-</td>
<td>$97,919</td>
<td>$-</td>
</tr>
<tr>
<td>Year 4</td>
<td></td>
<td>$63,012</td>
<td>$43,104</td>
<td>$27,430</td>
<td>$</td>
<td>$-</td>
<td>$73,645</td>
<td>$-</td>
</tr>
<tr>
<td>Grand Total</td>
<td></td>
<td>$92,263</td>
<td>$112,078</td>
<td>$133,000</td>
<td>$</td>
<td>$-</td>
<td>$338,585</td>
<td>$-</td>
</tr>
</tbody>
</table>

### PERMANENT FUNDS REQUESTED AT STEADY STATE (Yr 4)

- Provost enrollment increase $: $92,263
- DELTA enrollment increase $: $112,078
- Non-Fundable DE Tuition: $133,000

### SUMMARY OF TOTAL PURPOSE 101 FUNDS GENERATED

<table>
<thead>
<tr>
<th>Period</th>
<th>Source of Funds</th>
<th>DELTA Enrollment Increase</th>
<th>Non-Fundable DE Tuition</th>
<th>Premium Tuition Generated</th>
<th>Total New Each Year</th>
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</thead>
<tbody>
<tr>
<td>Year 1</td>
<td></td>
<td>0</td>
<td>0</td>
<td>$33,845</td>
<td>$184,551</td>
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<tr>
<td>Year 2</td>
<td></td>
<td>$148,770</td>
<td>$35,910</td>
<td>$81,228</td>
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<tr>
<td>Year 3</td>
<td></td>
<td>$290,928</td>
<td>$86,184</td>
<td>$131,995</td>
<td>$509,609</td>
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<tr>
<td>Year 4</td>
<td></td>
<td>$366,966</td>
<td>$140,049</td>
<td>$177,122</td>
<td>$568,222</td>
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<tr>
<td>Total</td>
<td></td>
<td>$606,664</td>
<td>$262,143</td>
<td>$424,190</td>
<td>$1,086,647</td>
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</table>

Program Gain (Loss) Yr 4: **$402,105**
Degree Name - Foundations of Data Science

Table 1: Estimated Annual Budget for the Program

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Percentage</th>
</tr>
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<tr>
<td>Academic Costs</td>
<td>$181,623</td>
<td>$277,210</td>
<td>$468,735</td>
<td>$675,926</td>
<td>56%</td>
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<tr>
<td>Library Costs</td>
<td>$26,096</td>
<td>$52,640</td>
<td>$73,390</td>
<td>$93,064</td>
<td>1) typical range 40% to 60% by YR 4</td>
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<tr>
<td>Delta specific</td>
<td>$118,111</td>
<td>$247,733</td>
<td>$343,856</td>
<td>$440,327</td>
<td>2) can not exceed 60% for DE only programs</td>
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<tr>
<td>Instructional Support</td>
<td>$7,182</td>
<td>$17,237</td>
<td>$28,010</td>
<td>$37,686</td>
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<td>Provost Office</td>
<td>$74,385</td>
<td>$145,454</td>
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<tr>
<td>Total</td>
<td>$332,011</td>
<td>$654,255</td>
<td>$1,009,984</td>
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Table 2: Projected Annual Requirements ($ Generated)

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Master's</td>
<td>360</td>
<td>744</td>
<td>1,017</td>
<td>1,287</td>
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<td>SCH generated</td>
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<tr>
<td>State Appropriation</td>
<td>0</td>
<td>$25,096</td>
<td>$52,640</td>
<td>$73,390</td>
<td></td>
</tr>
<tr>
<td>to Campus Library</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(11.485% of purpose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>101 funds)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Academic</td>
<td>0</td>
<td>$118,111</td>
<td>$247,733</td>
<td>$345,365</td>
<td>$193,837</td>
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<tr>
<td>Requirements Generated*</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Estimated Premium</td>
<td>$150,706</td>
<td>$311,953</td>
<td>$393,804</td>
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<tr>
<td>Tuition</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESTIMATED TOTAL</td>
<td>$150,706</td>
<td>$660,757</td>
<td>$1,206,396</td>
<td>$1,624,724</td>
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<tr>
<td>ANNUAL FUNDING</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

*Total Academic Requirement Generated = # credits generated x 798.48 (798.48 is avg on MII and MILI) Total Academic Requirement

Funding

Difference (State Appropriation + Premium Tuition - Academic cost) Comments

$193,837 1) must be = by YR 4
Budget Guidelines for New Distance Education Graduate Programs (2014-2015)

Internal use only

Suggest developing a preliminary budget as a supplement to Appendix A and F
Appendix C Section XI Budget: Insert worksheets labeled Year, 1, 2, 3, and 4 into the budget section. Add a narrative explaining any major
Appendix G Section 8 Financial Support Insert worksheets yr 1, yr 2, yr 3, yr 4, and UNC GA summary
Hide sections in yellow before pasting into Appendix C and G
The template is not locked. Add/delete rows/columns as needed. Modify formulas as needed.
See comments associated with individual cells in worksheets
The complete Excel Budget Template is routed within NCSU for reviews.

SCH Production over four years worksheet
This worksheet shows the SCH generated which is then used to calculate revenue based on formula funding. Only include NEW students. Do not include students who are in off-model programs.
Category: refer to the web site for the enrollment category of courses (for example engineering courses are typically Category IV)
http://upa.ncsu.edu/sites/upa.ncsu.edu/files/PDF/ga_funding_category_to_course_code_0.pdf
Total SCH each Year: refer to the website for $ value of purpose 101 funding Table 2 column 2. http://upa.ncsu.edu/ir/fin/2013-2014-funding-
If your program is significantly divided among several programs add extra rows to represent other categories and corresponding SCH.
Alternatively, develop a weighted $/SCH value for budget purposes.
Based on the student credit hours reported in Appendix C Section II.C, for Year 1 record:
- number of full time students each year (only include NEW students not students who are moving from an existing program)
- typical credit hours per year for full time students (18 credit hours for graduate programs)
- number of part time students each year (only include NEW students not students who are moving from an existing program)
- typical credit hours per year for part time students (9 credit hours for graduate programs)
For years 2, 3, and 4 record similar data.
First -year represents new students
Second, third, fourth-year represents continuing students
In most graduate programs full time students would complete the program in 2 years.
Assume no attrition from the program

Year 1 Budget worksheet.
Assumption 1: Enrollment is automatically calculated from SCH worksheet.
Assumption 2: Student support: Include TA/RA or other support
SPA Salary: List position title, not personnel names
EPA Salaries: List position title, not personnel names
GSSP provides funding for health insurance and tuition for eligible students (depends on funding source and appointment type). See:
http://www.ncsu.edu/grad/support-plan/index.php
Source of Funds: years 1, 2, and 3 are initial development of program and year 4 should represent steady state cost
Reallocation from college: indicate expenses to be covered by college
Enrollment increase: purpose 101 formula funding. Percentage allocated to program to be negotiated.
Contracts & Grants: indicate the source(s) of funds
Other: Other possible sources of funds include DE (distance education), CITI (campus initiated tuition increase) and GSSP. Add columns to the spreadsheet as needed.

Years 2, 3, and 4 worksheets
Assume no inflation.

Summary worksheet
This worksheet is automatically generated from the previous worksheets. (If you have modified the previous worksheets then this worksheet may also need modifying)

UNC-GA Summary Worksheet
This worksheet is automatically generated. (If you have modified the previous worksheets then this worksheet may also need modifying.)
Tuition receipts are based on an average $/SCH for full time and part time NC resident students. This can be modified with either an estimate of all out of state tuition or a weighted value based a proportion of in-state to out-of-state.
Estimated Total Appropriation is the difference between the Estimated Total Requirements and the Tuition Receipts.
Campus Initiated Tuition is not calculated. This would need to be added for approved program.
MEMORANDUM

TO: W. Randolph Woodson  
Chancellor  
NC State University

FROM: Mladen A. Vouk  
Vice Chancellor for Research and Innovation  
NC State University

SUBJECT: Recommendation to approve the request to establish the Belk Center for Community College Leadership and Research (BELK) under Regulation 10.10.04

DATE: November 20, 2019

In keeping with NC State Regulation 10.10.04, this memo requests your approval of the request by the College of Education (CoED) to establish the Belk Center for Community College Leadership and Research (BELK). BELK’s mission is to bring together executive leadership development and actionable research to increase student success in community colleges.

BELK was approved for planning on September 18, 2018, and is funded by a generous philanthropic gift of more than $10 million dollars from the John M. Belk Endowment. The CoED has a long-standing interest in adult and community college education, as well as research is this burgeoning and increasingly important field. Indeed, community colleges face significant challenges due to a declining population of experienced leaders and constrained resources. The Belk Center is committed to provide research, knowledge, and skills to support community college presidents and their institutions in improving student success outcomes and enhancing institutional performance.

BELK has already established itself as a leader in its area of focus, and is an important resource for the citizens of North Carolina and the nation. I request your approval of the proposal to establish this Center.

MAV/mh

cc: Mary Ann Danowitz, Dean, College of Education  
Audrey J. Jaeger, Executive Director, BELK  
Paola Sztajn, Associate Dean for Research  
Jonathan Horowitz, Associate Vice Chancellor for Research  
Larisa Slark, Centers and Institutes Specialist
MEMORANDUM

TO: Mladen Vouk  
   Vice Chancellor for Research and Innovation

FROM: W. Randolph Woodson  
      Chancellor

SUBJECT: Recommendation to approve the request to establish the Belk Center for Community College Leadership and Research (BELK) under Regulation 10.10.04

DATE: November 21, 2019

In response to your Memorandum dated, November 20, 2019, authorization is hereby granted to forward the request to establish the Belk Center for Community College Leadership and Research (BELK) to the Board of Trustees for approval.

WRW/mh

cc: Mary Ann Danowitz, Dean, College of Education  
    Audrey J. Jaeger, Executive Director, BELK  
    Paola Sztajn, Associate Dean for Research  
    Jonathan Horowitz, Associate Vice Chancellor for Research  
    Larisa Slark, Centers and Institutes Specialist
North Carolina State University

BELK CENTER FOR COMMUNITY COLLEGE LEADERSHIP AND RESEARCH

Request for Authorization to Establish

Strategic Opportunity

North Carolina's long-term vitality is largely dependent on the development and growth of a workforce that is highly skilled. Today, the state has one of the most vibrant high-end knowledge economies in the country. The rates of population, job, and wage growth this decade have made it one of the fastest growing states in both the South and the nation. However, North Carolina's growing prosperity is not shared with all segments of North Carolina’s population. Research suggests that those who are born poor in North Carolina are among the nation’s most limited when it comes to economic opportunities. North Carolina’s community colleges are a critical driver in preparing and diversifying the workforce. At the same time, community colleges face significant challenges with a declining population in their service area and constrained resources. The proposed Belk Center for Community College Leadership and Research (Belk Center) is committed to equipping exceptional community college leaders with the tools and approaches to address these urgent needs. This is a critical time in the history of North Carolina’s community colleges as 35 of the 58 community college presidents have been in office less than three years. Through a strategic partnership with the North Carolina Association of Community College Presidents, the Belk Center will provide research, knowledge, and skills to support presidents and their institutions in improving student success outcomes and enhancing institutional performance.

Mission

The Belk Center for Community College Leadership and Research at North Carolina State University’s College of Education will develop and sustain exceptional community college leaders who are committed to advancing college access, the social and economic mobility of their colleges’ students, and the economic competitiveness of their regions. The Center conducts and disseminates research to address current and emerging student success challenges facing community college leaders and policymakers in North Carolina and beyond.
The Belk Center has three major focal points of activity:

1. **Conduct and Disseminate Applied Research to Support Knowledge Development and Evidence-Based Decisions Regarding Community Colleges, Their Leadership, and Their Performance**

In line with NC State’s land grant mission and its “Think and Do” motto, the Belk Center’s research addresses critical problems of practice that matter to the state and its citizens. Creating research capacity that focuses on action and applied research of relevance to the field of practice is a focal point of activity for the Belk Center. The Belk Center produces new knowledge that is utilized to improve student success outcomes at institutions across the state and country. The Belk Center works with its community college partners to identify research issues and questions that are critical to community colleges. The Belk Center develops and disseminates research findings to produce timely, accessible, and actionable information that executive leaders can use to make informed improvements at their colleges. Further, the Belk Center has incorporated the work of the National Initiative for Leadership and Institutional Effectiveness (NILIE). NILIE provides actionable data to support institutions in developing strategies to enhance institutional effectiveness and improve student success. For the past 25 years, NILIE accomplished this by using a campus climate assessment process that is tailored to each institution’s individual needs and goals. NILIE has engaged over 120 community colleges in the past 5 years with its Personnel Assessment of the College Environment (PACE) Survey and supports North Carolina community colleges through its Home State Initiative (HSi) which serves small, rural schools with declining enrollments.

Belk Center research informs and improves practice in the field, including the identification of best practices that move the needle in college completion and post-college success. One critical issue is influencing teaching and learning professional development in the state and analyzing where the “leaks” are in the college transfer pipeline that are barriers to increasing baccalaureate completion. The Center is also evaluating the relative success of statewide efforts such as developmental education redesign, early college and dual enrollment, and the delivery of the Finish Line Grants emergency aid program that is led by the Department of Commerce and Office of the Governor.

The Center’s work with Reinforced Instruction for Student Excellence (RISE), NC Guided Pathways to Success (NCGPS), and Finish Line Grants has connected the Belk Center with all 58 community colleges in North Carolina in a specific research related project or evaluation process. The Belk Center also works on specific, tailored projects with individual colleges. This list of colleges evolves and changes, some current partners include: Catawba Valley Community College (teaching and learning; SkillsUSA), Durham Technical Community College (teaching and learning), Lenoir Community College (teaching and learning), Forsyth Technical Community College (FOCUS - recruitment strategy), Wake Technical Community College (Wake Invests in Women; NILIE; Finish First; Equity), Pitt Community College (NILIE), Edgecombe
Community College (NILIE), Piedmont Community College (NILIE), and Wilkes Community College (SkillsUSA).

Seeking additional grants to support research continues to be a priority for the Center. Research focus areas include student completion and transfer outcomes, labor market outcomes, teaching and learning, rural issues and social/economic mobility, equity, and organizational climate. For example, the Belk Center collaborates with the North Carolina Student Success Center (NCSSC) on a $1.2 million Gates Foundation-funded grant that was received in the summer of 2018 and focuses on teaching, learning, and equity.

2. Provide Community College Presidents and Trustees with the Knowledge and Skills Needed to Achieve Higher Levels of Student Success at Their Colleges

A second focal point of activity for the Belk Center is the creation of leadership development programs. Informed by our research and connecting our research to practice, the Belk Center offers leadership development for community college presidents and trustees through the Presidents’ Academy and Trustees’ Institute. The creation of this research-informed professional development includes a collaborative process with the North Carolina Association of Community College Presidents (NCACCP), the North Carolina Association of Community College Trustees (NCACCT), the North Carolina Community College System Office (NCCCS), and the NCSSC. The Belk Center also offers professional development opportunities for other community college leaders, as directed by the NCACCP and NCSSC, to support the work of increasing student success outcomes in North Carolina.

Center leadership development programs include:

- **Presidents’ Academy:** The Presidents’ Academy programs are designed to develop the knowledge and skills community college presidents need to lead their institutions to higher levels of equitable college access and outcomes, student learning, credential completion, and strong labor market outcomes for their students. Technical assistance organizations, such as Achieving the Dream and the Aspen Institute’s College Excellence Program, provide expert resource personnel and program delivery. The Belk Center also works with the NCCCS to provide focused leadership development for new presidents. This occurs in face-to-face venues, as well as on-line modules jointly developed with EducationNC (EdNC). Modules address topics such as system level governance, financing community colleges, statewide performance metrics, president and board chair communication, etc.

- **Trustees’ Institute:** The Trustees’ Institute develops programs targeted at assisting community college trustees in learning about their role in supporting higher levels of institutional performance. Also, the Trustees’ Institute emphasizes the role of the board of trustees in the selection and evaluation of the college president, strategic planning, and the use of evidence-based decision making. The Trustees’ Institute work in collaboration with the NCACCT and the NCCCS. The Belk Center utilizes current meetings to facilitate
leadership development opportunities for trustees, including regular NCACCT gatherings, and develops an annual Trustees’ Institute with teams of trustees from each college and their presidents. Initial feedback on these efforts has been extremely positive and helped shape upcoming engagements.

3. **Strengthening the Preparation of the Next Generation of Executive Leaders for North Carolina’s Community Colleges**

   Over the past four years, NC State’s College of Education has redesigned and tested its Doctor of Education program in Community College Leadership. The doctoral degree focuses on developing transformational leaders in community colleges who have the tools and vision needed to lead community colleges to improved student outcomes.

   Doctoral students focus their dissertations on critical challenges confronting community colleges, and dissertation committees include research faculty, as well as experienced community college executive leaders. The curriculum is offered in an executive format and is completed in 3.5 to 4 years while students continue their full-time professional careers.

   Doctoral cohorts typically meet in Charlotte or Raleigh and are mentored by full-time university faculty and accomplished community college executive leaders. Each doctoral course in the cohort is either team-taught or integrates executive community college leaders. Syllabi for each course include specific content linking course material to American Association of Community College (AACC) Standards, Aspen Competences, and/or Aspen Leadership Curricular modules.

   The Belk Center provides additional support to the Community College Leadership Doctoral Program through data and writing coaches, travel funding, and executive mentoring. These supports are unique to NC State and build on the strong curriculum. The academic program resides in the Educational Leadership, Policy, and Human Development and this additional support is offered through the Belk Center. The redesigned doctoral program was developed in partnership with the Aspen Institute’s College Excellence Program.

**Contribution to the University’s Mission**

As a research and public service unit, aligned with NC State’s land-grant mission, the Belk Center is uniquely positioned to address real-world problems in a real-time manner. The Center’s scholars bring foundational knowledge in research and extensive knowledge of practice to support community colleges in the myFutureNC statewide attainment goal. The work of myFutureNC has pushed North Carolina’s community colleges into the forefront of the statewide education and economic discussion. myFutureNC is a “statewide nonprofit organization focused on educational attainment and is the result of cross-sector collaboration between North Carolina leaders in education, business, and government.” With the endorsement of the Governor, legislators, all sectors of education, Chamber of
Commerce, and many other entities, North Carolina is positioned to reach its goal of 2 million North Carolinians with a high-quality postsecondary degree or credential by 2030. The Belk Center is an integral partner with the North Carolina Association of Community College Presidents as they define their role in the statewide goal. The Belk Center provides research and executive leadership development that will help North Carolina close the educational attainment gap.

**Closing the Gap**

Less than half of North Carolinians aged 25-44 hold a postsecondary degree or high-quality credential at a time in which nearly 70% of new jobs require education beyond a high school diploma. North Carolina’s community colleges are in a prime position to fill the 400,000 worker gap in credentials that is expected if the state does nothing over the next 10 years to change this trajectory. In addition, “educational opportunities are not equitably distributed across the state: far fewer North Carolina students from economically disadvantaged backgrounds earn postsecondary credentials than do students with greater economic stability” (myFutureNC.org). Again, this positions NC community colleges as leaders and one of the state’s greatest assets to address the equity gap in credentials.

When it comes to this economic opportunity gap, North Carolina faces a critical choice: will it build its 21st century economy by continuing to import talent from outside the state—thus continuing the trend of growing income inequality that has left many of its residents behind—or will it invest in a “grow-our-own” talent strategy, so that economic expansion can be a rising tide that lifts all boats? The Belk Center contends that the state of North Carolina can close the opportunity gap for its citizens and lead the South in the growth of a robust high-skills workforce if it focuses on developing talent from within its own state population, rather than importing workers from the outside. North Carolina’s community colleges represent the one resource that serves all segments of the population at the intersection of school systems, higher education, and employers. These institutions can serve as an ever-expanding gateway to prosperity and self-sufficiency for tens of thousands of the state’s citizens who otherwise will be left with little hope of economic mobility.

The Belk Center is uniquely positioned to support community colleges in claiming and delivering on the additional high-value credentials that have been identified by the myFutureNC Commission for North Carolina in 2030.

**Building a Talent Pipeline**

Community colleges serve as a critical talent pipeline for employers in search of workers with needed job skills. To achieve this goal, North Carolina will need exceptional executives and trustees leading the state’s community colleges. The Center's research efforts to institute systemic change pivots from more traditional approaches—which are often jargon-laden and slow to reach decision-makers— to modes of scholarship that are timely, accessible and digestible. The research we conduct addresses community college practitioner needs and provides actionable data that leaders can use to make informed improvements at their institutions. This innovative approach to applied educational research positions NC State to better support, and deepen connections with, North Carolina community colleges.
Leadership development programs delivered through the Belk Center offer presidents the knowledge and skills in areas such as: (1) working with employers and aligning training programs with labor market demand, (2) creating partnerships with school systems and universities to see that greater numbers of high school students continue their education and acquire in-demand job skills, and (3) leading their institutions to higher levels of post-secondary credential completion. Leadership development for trustees focuses on: (1) understanding the critical role community colleges play in the broader state economy and (2) hiring and supporting presidents to lead transformational change in their community.

**Existing Synergies and Partnerships**

As a land-grant institution, NC State shares the mission of North Carolina’s community colleges to democratize higher education by making it accessible to everyone regardless of race, ethnicity, income status, and other potential barriers. The Belk Center fills a critical need by providing data, new knowledge, and resources to support leaders in their decision making. No other center focuses on action and applied research that has immediate relevance to the field of community college practice. North Carolina State University will lead the nation in community college leader preparation and research through the Belk Center.

The College of Education is the home for faculty that support education at all levels, and the Belk Center seeks to bridge those educational divides. For example, community colleges work closely with their county public school superintendents. Leadership development for community colleges must include skills, tools, and resources that support these leaders in working with their local educators. As all the key legislative, education, and business entities have supported myFutureNCs goal of 2 million high-quality credentials by 2030, the Belk Center supports community colleges in their efforts to partner with superintendents to reach the statewide myFutureNC goal. Collaborating with colleagues like Dr. Bonnie Fusarelli is a natural connection for the Belk Center. Dr. Fusarelli’s work on educational leadership and policy, educational equity, and organizational change make her a critical partner in work that connects community colleges to their K-12 partners.

Belk Center staff and faculty are also working with faculty outside of the College of Education who share common goals. For example, Dr. Carolyn Bird, Professor and Family Resource Management Specialist in the College of Agricultural and Life Sciences (CALS), has expertise in working with families in rural areas. This population is central to the community college community. The majority of community colleges in the state are in rural counties and serve economically disadvantaged students. As the Belk Center works to support community college leaders, an integral connection to the success of the community college is the health and well-being of the communities in which they are located. Dr. Bird’s expertise provides the Belk Center with an important link to families and communities. At the same time, the Belk Center seeks to engage all levels of faculty and types of expertise. Dr. Joy Morgan, Instructor in CALS, is working NC State’s Office of Assessment and the Executive Director of the Center on research that examines the needs, challenges, and successes of rural students. The Belk Center seeks to build relationships with Colleges and Administrative Units across NC State, ranging from the Enrollment Management and Services division in the Provost’s
Office on collaborative research addressing transfer (credit efficiency and pathways) to the College of Design faculty and Associate Dean, Dr. Celen Pasalar, on design thinking.

The work of the Belk Center supports current cross-college collaborations. The College of Education and College of Engineering are working toward a seamless partnership through an online Masters in Engineering Education for community college faculty who are seeking a graduate degree that will provide both required disciplinary and pedagogical knowledge and skills. This partnership will help NC State better serve our community colleges through the credentialing of faculty who will also then be aware of the curriculum at NC State and can better serve their community college students as they seek to transfer to NC State and other universities across the University of North Carolina (UNC) system.

The Belk Center collaborates with Carolina Demography, which is part of the Carolina Population Center at UNC-Chapel Hill. Carolina Demography is a well-developed resource that has the data capacity to support our executive leadership development, as well as applied research initiatives. The Belk Center collaborates with Carolina Demography to provide population-related data to community college presidents and trustees. The Belk Center also works closely with the UNC System Office. Several UNC System Office (UNC-SO) vice presidents have been engaged with the Belk Center on transfer research. This research crosses academic, data analytics, and policy entities at the UNC-SO.

In addition to partners within NC State and the UNC SO, the Belk Center seeks expertise and partnership with community college researchers at the state, national, and international level. The Belk Center serves as a home for affiliated researchers. Faculty outside of NC State hold a Research Affiliate title and work with the Belk Center to accomplish its goals. For example, Dr. Pamela Eddy, distinguished scholar at the University of William and Mary, is working with the Belk Center to develop a research agenda around executive leadership development. As the most notable scholar in the area of presidential leadership, Dr. Eddy and the Belk Center team have identified a long-term research strategy focused on understanding how presidents lead their institutions to increased student success outcomes. Faculty and colleagues from UNC-Charlotte, Portland State University, Columbia University, University of Utah, and other universities have committed to sharing their knowledge and expertise to support Belk Center initiatives.

The Postsecondary Career and Technical Research Fellows program, sponsored by the ECMC Foundation, is housed in the Belk Center, which extends the reach of the Center across the state and country. This $2 million grant sponsors 15 to 20 Career and Technical Education (CTE) Research Fellows annually at the postdoctoral, dissertation, and doctoral level. The purpose of this project is to provide professional development, mentoring, and support for research projects by CTE Fellows that examine student success in terms of student learning, completion, equity, and labor market outcomes, or how postsecondary career and technical education can address significant issues such as creating economic mobility. Fellows execute one major research project that will be disseminated through research presentations and publications. The project has an advisory board that includes experts from business, community colleges, proprietary career and technical schools, and universities. Representation includes companies such as Siemens Energy, community colleges such as
Harper College (Illinois), career and technical schools such as the Aviation Institute of Maintenance, and researchers from universities such as the University of Illinois, Urbana-Champaign and the University of Georgia. The current Fellows represent major research universities across the country including UCLA, Vanderbilt, UNLV, University of Alabama, and Kansas State University. A complete list of fellows is available at https://cte-fellows.ced.ncsu.edu/2019-research-fellows/. The project also strengthens the Center’s work in the state as some researchers, mentors (https://cte-fellows.ced.ncsu.edu/community-of-experts#RM), and/or fellows also reside in North Carolina. Due to the small community of professionals researching postsecondary CTE, some of our partners play a variety of roles on the project such as Dr. Mark D’Amico from the UNCC-Charlotte, who serves as an advisory board member, sponsors a fellow, and serves as a mentor. This project is creating a network of research experts that will continue to support community college-related CTE research projects and the development of researchers.

**Center Leadership, Responsible Administrator, and Support for Faculty & Students**

The Belk Center will be administered by the College of Education at NC State and report to the Dean. Dr. Audrey J. Jaeger, Alumni Distinguished Graduate Professor, serves as the Belk Center’s Executive Director. Dr. Jaeger has been at NC State for more than 18 years. She directs the National Initiative for Leadership and Institutional Effectiveness (NILIE) within the College of Education and has served on dozens of college and universities committees. Dr. Jaeger is a University Faculty Scholar and has led the Envisioning Excellence for Community College Leadership initiative for the past four years and secured the funding from the Belk Endowment. Dr. Jaeger implements the mission of the Belk Center through the following activities:

- Provides leadership and ensure operational success;
- Serves as an influential voice on community college leadership and student success;
- Develops a state and national reputation for the Belk Center as a key resource for the delivery of community college leadership and research;
- Provides financial leadership and supervision of staff;
- Convenes an external advisory board to provide support and expertise in the development of the Belk Center; and
- Engages with the John M. Belk Endowment on a regular basis.

The National Advisory Board monitors the Belk Center’s progress. In particular, the Advisory Board consists of current and former community college presidents, non-profit leaders whose work supports community colleges, and community college system leaders. Information about the membership of the board can be found at this link. In particular, the Advisory Board:

- Provides guidance to the Executive Director to ensure continuous improvement of the Belk Center;
- Assures executive leadership development offerings are in line with current demand;
- Provides research agenda recommendations that meet the needs of the field;
- Serves as an advocate to key external stakeholders to increase the visibility of the Belk Center.
● Supports the Belk Center in developing new funding streams; and
● Attends the annual Dallas Herring Lecture and National Advisory Board Meeting.

The Belk Center is committed to the preparation of future faculty through its postdoctoral scholar positions. Center postdocs have individual development plans (IDPs), engage with NC State’s PostDoc Association, and receive significant mentoring from the Executive Director. The Center also includes junior faculty to support work related to the Center’s mission. One line of inquiry gaining attention is cost studies. This work at the Center involves Dr. Brooks Bowden, former assistant professor in the College of Education who recently moved to the University of Pennsylvania, and Dr. Cameron Sublett formerly of Pepperdine University. The Belk Center supports research scholars whose interests align with the mission of the Center.

The Belk Center supports students enrolled in the doctoral program in Community College Leadership with data and writing coaches, professional development, and some scholarship opportunities through the Belk Endowment grant. Data collected from prospective students indicates these support mechanisms serve as a recruitment tool.

**Organizational Structure**

The Executive Director of the Center serves as an expert on community college leadership and student success, while developing a reputation across the state and nation for the delivery of community college research. The Executive Director reports to the Dean of the College of Education and has administrative authority of the operation of the Belk Center, including fiscal management, policy decisions, and management of research projects and appointment of the technical and administrative staff.

The Executive Director consults with the leadership team that includes the Director of Academic Programs, Director of Executive Leadership Programs, Director of Strategic Initiatives and Communication, and Professors of Practice on the mission, vision, and values of the Center. In addition, the leadership team facilitates decisions on policies and procedures, faculty affiliation, sustainability, and other key operational decisions (See Appendix A for Belk Center Organizational Chart).

**Director of Academic Programs**

Support the following activities of the Belk Center:
● Work with the Center Executive Director to plan and implement Center projects; and
● Oversee and coordinate with other Center staff regarding events and initiatives related to academic programs.

**Professors of Practice**

Support the following activities of the Belk Center:
● Work with Center leadership to plan and implement Center projects, including the Presidents’ Academy and Trustee Institute;
Mentor graduate students;
Teach/Co-Teach courses as needed; and
Serve on dissertation committees.

Director of Executive Leadership Development
Support the following activities of the Belk Center:
Coordinate executive leadership development activities;
Work with Center leadership to develop fee-for-service leadership development opportunities; and
Support the Executive Director with budget and financially related projects.

Director of Strategic Initiatives and Communication
Support the following activities of the Belk Center:
Coordinate activities and initiatives that cross over executive leadership development and research;
Work with Executive Director on communications; human relations; and development; and
Coordinate reporting and evaluation for the Center.

Assistant Director of Research
Support the following activities of the Belk Center:
Work with Center Executive Director on research activities;
Oversee the National Initiative for Leadership and Institutional Effectiveness;
Initiate and develop research grants; and
Coordinate outside evaluation projects.

Post-Docs (Senior Research Associates)
Support the following activities of the Belk Center:
Work with the Center Executive Director to support the research pillars; and
Manage projects, as assigned.

Graduate Research Associates
Support the activities of the Belk Center:
Work with the Assistant Director of Research Director and Center leadership to undertake research projects that align with the Center research pillars; and
Manage projects, as assigned.

Program Specialist
Support the activities of the Belk Center:
Support the day-to-day activities of the Executive Director;
Support functions of the Center relating to schedules, building, and other areas; and
Manage Center related projects, as directed by the Executive Director.

Faculty Roles
Senior Fellows: faculty at NC State that secure grant funding administered through the Belk Center.
Faculty Scholars: faculty at NC State that coordinate a project for the Belk Center.
Faculty Affiliates: faculty at organizations other than NC State that coordinate a project for the Belk Center.
Leadership Affiliates: community college professionals that support the work of the Belk Center.

**Business Plan**

Budget estimates for the first year as well as four additional years are provided in Appendix B. Belk Center activities are supported by grants and contracts totaling more than $13 million. Recurring administrative positions are covered through year 4 and will be supported thereafter by grants and contracts. Funding for positions for strategic initiatives will be dependent on revenue generated and the requirements of the grants received. Starting in Year 5, the composition and work of the Center will be supported through new grants.

The Belk Endowment required NC State to offer a sustainability plan in year 5 of the grant (noted as year 4 on Appendix B). The College of Education offered $791,788 to support various activities and salaries. The majority of these revenues were expected to come from distance education funds generated by the Community College Leadership Doctoral Program. In addition, the Belk Center houses the National Initiative for Leadership and Institutional Effectiveness, which supports graduate students and part of the Executive Director's salary through revenues of approximately $200,000 each year. These funds and interest generated from the Belk Endowment Grant will cover all expenses in year 4. Operational expenses will also be supported by returned Facilities and Administrative Costs (F&A). Currently, 48% of Center-generated F&A that is returned to the College of Education reverts back to the Center, and will continue beyond the grant based on Center generated external funding.

The Belk Center offers executive professional development currently supported by grant funding. Center staff are developing a fee for service for professional development offered in year 3 and continuing post Belk Endowment grant funding. These services will be similar to the revenues generated by NILIE, which offers survey services to community colleges.

The College of Education and John M. Belk Endowment have provided support for Center space, which was secured at 706 Hillsborough Street. A 5-year lease has been fully executed. The space currently houses 7 full-time staff (two additional expected by 2019), 10 graduate students, and 6 faculty. Initial set-up expenses were provided by the College of Education to furnish the space as well as attain capital equipment including technology (3-Series 4K Digital Media Presentation System 350).
## Appendix B

<table>
<thead>
<tr>
<th>Belk Center for Community College Leadership &amp; Research</th>
<th>Yr 1</th>
<th>Yr 2</th>
<th>Yr 3</th>
<th>Yr 4</th>
<th>Yr 5</th>
<th>Totals</th>
</tr>
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<td><strong>RECURRING PERSONNEL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Executive Director (% of faculty salary)</td>
<td>50,000</td>
<td>52,500</td>
<td>55,125</td>
<td>57,881</td>
<td>60,775</td>
<td></td>
</tr>
<tr>
<td>Executive Assistant</td>
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<td>44,100</td>
<td>46,305</td>
<td>48,620</td>
<td>51,051</td>
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<td>Estimated Accounting</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3,615</td>
<td>48,796</td>
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<td>Estimated HR</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>19,853</td>
<td>20,846</td>
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<td>Communication Personnel</td>
<td>45,000</td>
<td>47,250</td>
<td>49,613</td>
<td>52,093</td>
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<tr>
<td>Fringe Benefits</td>
<td>45,210</td>
<td>47,471</td>
<td>49,844</td>
<td>60,081</td>
<td>77,935</td>
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<td><strong>Total Recurring Personnel</strong></td>
<td>182,210</td>
<td>191,321</td>
<td>200,887</td>
<td>242,143</td>
<td>314,101</td>
<td>1,130,662</td>
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<td><strong>OTHER PERSONNEL - Strategic Initiatives Positions Grant Funded</strong></td>
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<td></td>
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<td>Directors (4)</td>
<td>218,000</td>
<td>228,900</td>
<td>250,345</td>
<td>262,862</td>
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<td>Postdocs (2)</td>
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<td>126,000</td>
<td>132,300</td>
<td>138,915</td>
<td>145,861</td>
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<tr>
<td>Professor of Practice (2)</td>
<td>150,000</td>
<td>157,500</td>
<td>165,375</td>
<td>173,644</td>
<td>182,326</td>
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<tr>
<td>Fringe Benefits</td>
<td>161,040</td>
<td>169,092</td>
<td>180,847</td>
<td>189,889</td>
<td>199,383</td>
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<tr>
<td>Graduate Students (Tuition, Fees, Fringe &amp; Health)</td>
<td>160,000</td>
<td>168,000</td>
<td>176,400</td>
<td>185,220</td>
<td>194,481</td>
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<tr>
<td><strong>Total Other Personnel</strong></td>
<td>809,040</td>
<td>849,492</td>
<td>905,267</td>
<td>950,530</td>
<td>998,056</td>
<td>4,512,385</td>
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<tr>
<td><strong>OPERATIONAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Office Supplies</td>
<td>8,200</td>
<td>8,610</td>
<td>9,041</td>
<td>9,493</td>
<td>9,967</td>
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<tr>
<td>Travel</td>
<td>80,000</td>
<td>84,000</td>
<td>88,200</td>
<td>92,610</td>
<td>97,241</td>
<td></td>
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<tr>
<td>Rent</td>
<td>103,000</td>
<td>108,150</td>
<td>113,558</td>
<td>119,235</td>
<td>125,197</td>
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<td>Telephone, connectivity, technology</td>
<td>32,172</td>
<td>33,781</td>
<td>35,470</td>
<td>48,763</td>
<td>51,201</td>
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<tr>
<td>Marketing &amp; Communication</td>
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<td>55,125</td>
<td>57,881</td>
<td>60,775</td>
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<tr>
<td><strong>Total Operational</strong></td>
<td>273,372</td>
<td>287,041</td>
<td>301,393</td>
<td>327,982</td>
<td>344,382</td>
<td>1,534,169</td>
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<td><strong>Total Estimated Expenditures (Personnel &amp; Operational)</strong></td>
<td>1,264,622</td>
<td>1,327,853</td>
<td>1,407,546</td>
<td>1,520,655</td>
<td>1,656,540</td>
<td>7,177,216</td>
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<td><strong>SOURCES OF FUNDING</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Nat’l Initiative for Leadership &amp; Inst. Effectiveness (NILIE)</td>
<td>190,000</td>
<td>190,000</td>
<td>200,000</td>
<td>210,000</td>
<td>222,000</td>
<td></td>
</tr>
<tr>
<td>Institutes &amp; Workshops</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>75,000</td>
<td>150,000</td>
<td>200,000</td>
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<tr>
<td>Belk Endowment Grant*</td>
<td>2,720,000</td>
<td>2,720,000</td>
<td>2,720,000</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>F&amp;A**</td>
<td>9,663</td>
<td>50,426</td>
<td>49,255</td>
<td>34,427</td>
<td>-</td>
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<tr>
<td>ORI***</td>
<td>5,522</td>
<td>28,815</td>
<td>28,146</td>
<td>19,673</td>
<td>-</td>
<td></td>
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<tr>
<td>Expected future grant funding</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>791,788</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>College Matching (from grant; depending on enrollment)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>791,788</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>College Support for Connectivity (during grant period)</td>
<td>7,636</td>
<td>8,018</td>
<td>8,419</td>
<td>-</td>
<td>-</td>
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<tr>
<td>College Personnel Support (during the grant period)</td>
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<td>63,852</td>
<td>67,045</td>
<td>-</td>
<td>-</td>
<td></td>
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<tr>
<td><strong>Total Sources of Funding</strong></td>
<td>2,993,632</td>
<td>3,061,110</td>
<td>3,147,864</td>
<td>3,105,887</td>
<td>1,722,000</td>
<td>12,130,493</td>
</tr>
</tbody>
</table>

*By naming the Center the Belk Endowment has shown it’s long term commitment to the Center, which will be determined over the course of the next 2 years.

**Calculated based on actual for Year 1 and as proposed in grant for following years; Center will receive 48% of approximate 22% that comes to the college (approximately 10.6% of F&A generated)

***Calculated based on actual for Year 1 and as proposed in grant for following years; Center will receive 50% of 12% that comes to ORI (approximately 6% of F&A generated)
MEMORANDUM

TO: W. Randolph Woodson
Chancellor
NC State University

FROM: Mladen A. Vouk
Vice Chancellor for Research and Innovation
NC State University

SUBJECT Recommendation to continue the Water Resources Research Institute of the University of North Carolina (WRRI) under Regulation 10.10.04

DATE: January 24, 2020

The Water Resources Research Institute of the University of North Carolina (WRRI) was established by the UNC System Board of Governors in July 1964. The Institute is one of 54 state water institutes that were authorized by the federal Water Resources Research Act of 1964 to administer and promote federal/state partnerships in research and information transfer on water-related issues. WRRI is a multi-campus Institute of the University of North Carolina System.

In accord with Regulation 10.10.04, a periodic (five-year) review of WRRI was conducted in Spring 2019 by a panel of experts selected by the US Geological Survey (USGS) of the US Department of the Interior. The consensus review provided by the Review Team indicates that the "Institute is performing at an outstanding level and is eligible for continued support". Indeed, the USGS called-out for commendation the work of the Director, Deputy Director and NC State University for the continuing long-term effort to build an inclusive, effective state-wide program that addresses water issues of interest to government agencies and the public.

Given the effectiveness of ongoing operations within the Institute, the NC State Office of Research and Innovation and the Provost's Office request continuance of WRRI as a multi-campus Institute based at NC State University as sanctioned by the Board of Trustees. I request your approval of this recommendation.

MAV/mh

cc: Susan White, Executive Director, WRRI
Jonathan Horowitz, Associate Vice Chancellor for Research
Larisa Slark, Centers and Institutes Specialist
MEMORANDUM

TO: Mladen Vouk
    Vice Chancellor for Research and Innovation

FROM: W. Randolph Woodson
    Chancellor

SUBJECT: Recommendation to continue the Water Resources Research Institute of the University of North Carolina (WRRI) under Regulation 10.10.04

DATE: January 27, 2020

In response to your Memorandum dated January 24, 2020, authorization is hereby granted to forward the request to continue Water Resources Research Institute of the University of North Carolina (WRRI) to the Board of Trustees for approval.

WRW/mh

cc: Susan White, Executive Director, WRRI
    Jonathan Horowitz, Associate Vice Chancellor for Research
    Larisa Slark, Centers and Institutes Specialist
Designation of Time Limited Option for Distinguished Professorships

**Background:** Donors who endow a distinguished professorship at NC State University may elect to pursue matching funds available through the state’s Distinguished Professors Endowment Trust Fund (DPETF). In accordance with state statutes, as well as University of North Carolina system and NC State University policies, the NC State University Board of Trustees (BoT) is authorized to designate that endowed distinguished professorships seeking DPETF matching funds may be time limited.

We request this designation from the BoT when a donor agreement indicates intent that a distinguished professorship be awarded, or potentially awarded, at a rank other than professor (i.e. assistant, associate professor) and/or for a period other than an individual’s full career.

This designation provides the university with the maximum flexibility in awarding the distinguished professorship over time. Still, the overwhelming majority of NC State’s distinguished professorships are offered to professors for the duration of their career at NC State.

**Recommended Action:** We request designation of the following distinguished professorships which may be time limited:

James W. Owens Distinguished Chair, Executive Vice Chancellor and Provost (managing unit), $2.667M endowment

**Policy References:**
- [UNC Policy 600.2.3 - Distinguished Professors Endowment Trust Fund](#)
- [NCSU Policy 01.05.01 – Board of Trustees Bylaws](#)
- [NCSU Regulation 05.20.17 – Professorships of Distinction](#)
Conferral of Academic Tenure:

The information regarding conferral of academic tenure is included in the Closed Session Materials - Tab 7.4A.
REPORTS
Intercollegiate Athletics Annual Report
2018 - 2019

Dr. Lisa Zapata
Interim Vice Chancellor and Dean
Division of Academic and Student Affairs

Katie Graham
Assistant Dean and Associate Athletic Director
Academic Support Program for Student-Athletes

2018 - 2019 Intercollegiate Athletics Annual Report

UNC System Office Policy 1100.1, related to intercollegiate athletics, “requires that chancellors submit an annual report to the Board of Trustees of the constituent institutions with a copy to the president, who will report to the Board of Governors.”

Annual Reporting Requirement

Reporting Requirements

- Undergraduate Student-Athlete Admission Profiles
- Graduate Student-Athlete Enrollment
- Undergraduate Student-Athlete Enrollment
- NCAA Academic Progress Rate
- NCAA Graduation Success Rate

Freshmen Enrollment Profile
Fall 2018 and Spring 2019
Recruited Freshmen Student-Athletes
2018 - 2019

<table>
<thead>
<tr>
<th>Sport</th>
<th>Total Enrolled</th>
<th>Avg. Core HS GPA</th>
<th>Avg. SAT</th>
<th>Avg. ACT</th>
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<td>Student-Athletes</td>
<td>157</td>
<td>3.79</td>
<td>1131</td>
<td>25</td>
</tr>
<tr>
<td>Men's Basketball</td>
<td>3</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Women's Basketball</td>
<td>3</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Football</td>
<td>43</td>
<td>3.39</td>
<td>1079</td>
<td>22</td>
</tr>
</tbody>
</table>

Minimum Course and Admission Requirements

- Minimum Course Requirements (MCR)
  - Completion of specific courses at high school level prior to enrollment

- Minimum Admission Requirements (MAR)
  - Minimum high school GPA and test scores

MCR and MAR Exceptions
2018 - 2019

<table>
<thead>
<tr>
<th>Type</th>
<th>Enrolled</th>
<th>MCR Exceptions</th>
<th>MAR Exceptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-Time Freshmen</td>
<td>4,845</td>
<td>10</td>
<td>6</td>
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<tr>
<td>Recruited Freshmen</td>
<td>157</td>
<td>5</td>
<td>6</td>
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</table>

Graduate Student-Athlete Enrollment
Graduate Enrollment

Graduate Enrollment by Sport

<table>
<thead>
<tr>
<th>Sport</th>
<th>2014-15</th>
<th>2015-16</th>
<th>2016-17</th>
<th>2017-18</th>
<th>2018-19</th>
<th>5-Year Total</th>
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<tr>
<td>Men's Football</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Men's Track &amp; CC</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Men's Basketball</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Women's Track &amp; CC</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Men's Wrestling</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Women's Basketball</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Women's Volleyball</td>
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<td>2</td>
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<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Graduate Programs

- Applied Statistics and Data Management
- Communications
- Global Luxury Management
- Industrial Engineering
- Liberal Studies
- Physiology
- Sport Management
- Sport and Entertainment Venue Management
- Textiles
- Youth Development and Leadership

Undergraduate Student-Athlete Majors and Progress
### Undergraduate Top Majors

1. Business Administration  
2. Mechanical & Aerospace Engineering  
3. Biological Sciences  
4. Computer Science  
5. Electrical & Computer Engineering  
6. Psychology  
7. Animal Science  
8. Forestry  
9. Civil Engineering  
10. Communication

### Student-Athlete Top Majors

1. Business Administration  
2. Sport Management  
3. Communication  
4. Psychology  
5. Biological Sciences  
6. Nutrition Science  
7. Civil Engineering  
8. Criminology  
9. Accounting  
10. Electrical & Computer Engineering  
11. Industrial Engineering  
12. Political Science

### Average Cumulative GPA

<table>
<thead>
<tr>
<th>Year</th>
<th>Undergraduates</th>
<th>Student-Athletes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>155.0</td>
<td>155.0</td>
</tr>
<tr>
<td>2014</td>
<td>155.0</td>
<td>155.0</td>
</tr>
<tr>
<td>2015</td>
<td>155.0</td>
<td>155.0</td>
</tr>
<tr>
<td>2016</td>
<td>155.0</td>
<td>155.0</td>
</tr>
<tr>
<td>2017</td>
<td>155.0</td>
<td>155.0</td>
</tr>
<tr>
<td>2018</td>
<td>155.0</td>
<td>155.0</td>
</tr>
<tr>
<td>2019</td>
<td>155.0</td>
<td>155.0</td>
</tr>
</tbody>
</table>

### Top 10 Undergraduate Majors

1. Business Administration  
2. Sport Management  
3. Communication  
4. Psychology  
5. Biological Sciences  
6. Nutrition Science  
7. Civil Engineering  
8. Criminology  
9. Accounting  
10. Electrical & Computer Engineering  
11. Industrial Engineering  
12. Political Science
Academic Progress Rate

- Team-based metric that tracks the eligibility and retention of student-athletes each term.
- How APR is calculated:
  - Each student-athlete receiving athletically related financial aid earns one point for being academically eligible and one point for returning the next term or graduating.
  - A team’s total points are divided by points possible and then multiplied by 1,000 to equal the team’s Academic Progress Rate.
  - The rolling four-year APR is used to determine accountability.

Multi-Year APR

<table>
<thead>
<tr>
<th>Year</th>
<th>Men's Sports</th>
<th>Women's Sports</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NC State</td>
<td>FBS Avg.</td>
</tr>
<tr>
<td>2017-18</td>
<td>Baseball</td>
<td>977</td>
</tr>
<tr>
<td></td>
<td>Basketball</td>
<td>944</td>
</tr>
<tr>
<td></td>
<td>Cross Country</td>
<td>996</td>
</tr>
<tr>
<td></td>
<td>Football</td>
<td>922</td>
</tr>
<tr>
<td></td>
<td>Golf</td>
<td>982</td>
</tr>
<tr>
<td></td>
<td>Soccer</td>
<td>984</td>
</tr>
<tr>
<td></td>
<td>Swimming</td>
<td>993</td>
</tr>
<tr>
<td></td>
<td>Gymnastics</td>
<td>981</td>
</tr>
<tr>
<td></td>
<td>Track &amp; Field</td>
<td>955</td>
</tr>
<tr>
<td></td>
<td>Wrestling</td>
<td>991</td>
</tr>
<tr>
<td></td>
<td>Men’s rifle</td>
<td>989</td>
</tr>
</tbody>
</table>

Graduation Success Rate

- Metric created by the NCAA to measure graduation progress of student-athletes
- Includes:
  - First-time, full-time freshmen
  - Students who enter midyear
  - Transfers into institution
- Excludes:
  - Students who leave institution in good standing prior to graduation with athletics eligibility remaining
- Reported as a 4-class average
Graduation Success Rate
2009 - 2012

<table>
<thead>
<tr>
<th>Men's Sports</th>
<th>NC State</th>
<th>D1 Avg</th>
<th>Women's Sports</th>
<th>NC State</th>
<th>D1 Avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseball</td>
<td>100</td>
<td>84</td>
<td>Women's Track</td>
<td>82</td>
<td>83</td>
</tr>
<tr>
<td>Basketball</td>
<td>83</td>
<td>91</td>
<td>CC/Track</td>
<td>91</td>
<td>91</td>
</tr>
<tr>
<td>CC/Track</td>
<td>50</td>
<td>83</td>
<td>Golf</td>
<td>100</td>
<td>91</td>
</tr>
<tr>
<td>Football</td>
<td>71</td>
<td>79</td>
<td>Golf</td>
<td>100</td>
<td>97</td>
</tr>
<tr>
<td>Golf</td>
<td>69</td>
<td>89</td>
<td>Men's Track</td>
<td>100</td>
<td>84</td>
</tr>
<tr>
<td>Soccer</td>
<td>90</td>
<td>86</td>
<td>Softball</td>
<td>86</td>
<td>92</td>
</tr>
<tr>
<td>Swimming</td>
<td>96</td>
<td>90</td>
<td>Swimming</td>
<td>91</td>
<td>96</td>
</tr>
<tr>
<td>Tennis</td>
<td>100</td>
<td>92</td>
<td>Tennis</td>
<td>100</td>
<td>95</td>
</tr>
<tr>
<td>Voleyball</td>
<td>72</td>
<td>79</td>
<td>Voleyball</td>
<td>82</td>
<td>83</td>
</tr>
</tbody>
</table>

NC State 87%
D1 Avg 88%

Questions?
Graduation Update 2020

Louis Hunt
Senior Vice Provost
Enrollment Management and Services

Growth in Degrees Awarded
2010-2019

% increase in degrees awarded:
- Bachelor's Degrees: 15%
- Master's Degrees: 33%
- Doctoral Degrees: 44%

Source: Department of Registration and Records, 1/30/2020
Freshman Graduation Rates 2002-2015

Source: Department of Registration and Records (2002-2015)

Six-Year Freshman Graduation Rates by Gender

Source: Department of Registration and Records (2002-2013)
**Six-Year Freshman Graduation Rates of Tier 1 and Tier 2**


**Six-Year Freshman Graduation Rates of Underrepresented Students**

* (African American, Native American, and Hispanic)  

Source: University Planning and Analysis (1999-2005), Department of Registration and Records (2006-2012) [http://www2.acs.ncsu.edu/UPA/Internaldatabase/intentionat_cone2011_ethnic.htm](http://www2.acs.ncsu.edu/UPA/Internaldatabase/intentionat_cone2011_ethnic.htm)
Six-Year Graduation Rates
UNC System and Peer Comparisons

Graduation Rate Projections
Based on First-Term GPA Performance
QUESTIONS?

ldhunt@ncsu.edu
Pack the Polls Ambassador Program

In collaboration with Leadership and Civic Engagement, we have created the Pack the Polls Ambassador program. This program allows students who have a passion for voting and voter engagement to team up and educate students on the importance of voting. There will be a kick-off event on February 7th to promote the program and get students excited about voting.

Wellness Wednesdays

Teaming up with Wellness and Recreation, our Wellness department held a Wellness Wednesday event on Centennial Campus. This event promoted Well Rec programs and resources as well as educated students of the importance of wellness. Sharing these resources with students will help to bring awareness to the forefront of our university and allow us to improve students on-campus experience while they are here at NC State.

Graduation Picture Initiative

Students will now be able to get free photos taken for their graduation. This resource will now be held with the Graduation Robe Closet and allows students to have something to commemorate their time here at NC State.

Howl-n-Hoop Collaboration

In the effort of continuing a tradition like CampOut. Student Government, UAB, Alumni Association Student Ambassador Program, IRC, and Athletics hosted an event pre- Primetime with the Pack with games, photo opportunities for the Brick Traditions app, and prizes.

Respect the Pack: The Series

Director of Diversity Outreach Zakiya Covington created a program for Spring Connect Students and is currently working on a program that these students can attend that discusses diversity. The fall admitted students have an opportunity to attend symposiums to connect with other students but we want to extend this program to spring admitted students. These programs will address all aspects of diversity across the university.

Student Organization Registration Commission

Following an Executive Order, Student Government members sat down with student organization members and Student Involvement to discuss the student organization registration
process. Previously, this process has taken several months to complete and has been time consuming on the part of student organizations. We have shortened and streamlined the process without sacrificing student safety and now have over 650 registered student organizations.

Advisory Council
Student Government has looked upon past members of student government and professionals here at NC State to create and Advisory Council. This council will help to bring institutional knowledge back to student government and will assist members of SG in whatever way they need. This council is comprised of members from all branches and will serve in the absence of our Student Government Advisor.

I-Connect Spring Planning
With the need for a cultural competency training arising, working with the Office of Institutional Equity and Diversity, we will be making a trip to the University of Illinois At Urbana-Champagne to research the impact of this program. After the culmination of this trip, we will work together to bring this workshop here to NC State.

Coming Up for Students:
- ASG Spring Initiative
- Restructure of Appropriations Process
- Elections for the 100th Session
- Judicial Branch reinstatement
- Accessibility Excursion
- Open Syllabi Archive
- Wellness Resources in the OnCampus App

Executive Branch Goals
As a branch with 10 Directors, we want to work together this year to build community and relationships here at NC State. Our directors have been working this summer to create and curate ideas and programs that relate to We promise to serve as allies to all students, connect the Student Body to Student Government, collaborate with students, administration, faculty, and staff through inclusive, sustainable efforts that can be continued beyond just this year.

Updates as of 02/20
January 20, 2019

North Carolina State University
The Graduate School
1020 Main Campus Drive
Room 2300A
Raleigh, N 27695-7102

To: Dean Peter Harries, Graduate School
From: Dr. Julie Swann, Department Head, Industrial and Systems Engineering
Re: Request for Degree Program Name Change

This proposal requests to change the name of the existing Master of Supply Chain Engineering and Management (MSCEM) degree program to the Master of Engineering Management (MEM) degree program. I am submitting the request on behalf of faculty involved with the program including Dr. Julie Ivy (Professor in Industrial and Systems Engineering), Dr. Russell King (Foscue Professor and Distinguished Professor in ISE), Dr. Don Warsing (Associate Professor of Operations and Supply Chain Management in Poole College of Management), and others. I also endorse the request. The name change request has been reviewed with the Deans in the Colleges of Engineering and Management and relevant Associate Deans in the two colleges. All were supportive of the name change for the program.

Background: The existing degree program MSCEM (CIP 52.0203, 14SCEMMR/20SCEMMR) was approved as a collaboration between the College of Engineering (COE) and the Poole College of Management (PCOM) in approximately 2014. Poor timing and a narrow focus area led to low student interest. The colleges chose to suspend admitting new students in 2016. All students who entered have graduated, so there is not a teach-out plan for current students.

The name change would broaden the appeal and audience of the program to attract more students and better align with other similar programs nationally. This would allow the program to be more recognizable to both students and potential employers. In addition, the program would be consistent with nomenclature used by various ranking reports including the US News and World Report, which ranks Engineering Management programs annually. The degree requirements are consistent with those of other MEM programs throughout the country. Supply chain remains an area of concentration within the degree but the name change will also provide flexibility for future concentrations to be developed. Faculty and staff who participated in designing the program or have newly developed interests in it will determine how best to market the program in the future, using the name with the broad appeal and high recognition. There is already interest from several organizations who have heard about the potential name change. Discussions are also ongoing with the College of Engineering on timing and plan for marketing and readmittance.

Justification
Changing the name of the graduate degree to Master of Engineering Management is appropriate because:

- Master of Engineering Management is a recognized name for a degree that is often collaborative between engineering and management including at universities such as Purdue, Texas A&M, Arizona State, Duke, and Penn State.
• Interest in Engineering Management is high and it is a valuable degree to both engineers and management professionals.
• Enrollment in graduate programs in supply chain management is dropping, so revising the name to be consistent with nationally accepted and ranked names is likely to increase interest in the program.
• Master of Engineering Management is a name that is sufficiently broad to allow supply chain engineering and management to be contained within it while allowing a framework under which other concentrations could be added in the future to respond to market needs (e.g., healthcare).

Please do not hesitate to contact me if you have questions (jlswann@ncsu.edu or 919-515-6423).

Sincerely,

Julie L. Swann
A. Doug Allison Distinguished Professor and Head
Request for Degree Name Change to Engineering Management
North Carolina State University

This request has been reviewed and approved by the appropriate campus committees and authorities.

Endorsed By:

Julie L. Swann _______________________________ 3/15/2019
Head, Department/Director of Graduate Program (Printed Name and Signature) Date

Seb Heese ____________________________ 4/15/2019
Head, Department/Director of Graduate Program (Printed Name and Signature) Date

Recommended By:

Ranji Ranjithan ____________________________ 4/26/19
Chair, College Graduate Studies Committee (Printed Name and Signature) Date

Steven Allen ____________________________ 5/15/19
Chair, College Graduate Studies Committee (Printed Name and Signature) Date

Endorsed By:

College Dean _______________________________ 5/15/2019
(Printed Name and Signature) Date

Recommended By:

Vice Provost, DELTA (if DE degree) _______________________________ Date
(Printed Name and Signature)

Approved By:

Pete J. Harris ____________________________ 5/22/19
Dean of the Graduate School (Printed Name and Signature) Date

Recommended By:

Dean's Council _______________________________ 8/26/19
(Printed Name and Signature)

Approved By:

Executive Vice Chancellor and Provost _______________________________ 9/27/19
(Printed Name and Signature) Date

Approved By:

Chancellor _______________________________ 11/28/19
(Printed Name and Signature) Date

(revised August 2015)
To: Dr. Jeffery P. Braden, Dean  
College of Humanities and Social Sciences  

From: Professor Karen Bullock, PhD, MSW  
College of Humanities and Social Sciences, Department of Social Work, Head  

Re: Name Change from Department of Social Work to School of Social Work  
Date: October 4, 2019  

Dear Dean Braden,

I write to request a name change for the Department of Social Work to the School of Social Work. This change will not require any changes in the names of CIP codes of any of the Department’s degrees.

The reasons for the proposed name change, which has the unanimous support of the departmental faculty, are as follows:

(1) To align the academic unit’s reputation and the success of the professional degree program(s) with our peer institutions. We have earned the reputation of a nationally “top 100 ranked” graduate program, according to U.S. News & World Report and other ranking sources. Given the academic success and the projections to continue such achievements, the name change with such prominence and stature among its peer institutions of higher education, and the discipline overall is a major. All of the top 50 social work programs in the US are “Schools” of Social Work. The requested name change will help improve NC State’s Social Work programs’ prominence and distinction. Nationwide, professional programs in social work are known as “Schools,” as with Law Schools and Architecture Schools.

(2) To attract more highly qualified students to apply to our program. Some applicants have voiced concerns about earning a master’s degree in social work degree from a program not in a professional school. Many prospective students to whom we offer admission choose UNC-Chapel Hill or UNC-Charlotte because those social work programs (and most other social work programs in the state of North Carolina) carry the name of School rather than Department.

Thank you,

Karen Bullock, PhD, LCSW  
Professor/ Department Head  
Phone: 919-515-0438  
Fax: 919-515-4403
Name Change: Department of Social Work

Jeffery Braden <jpbraden@ncsu.edu>  
Cc: "Larick, Duane" <dklarick@ncsu.edu>, Reva Dunn <rfdunn@ncsu.edu>, Karen Bullock <kbulloc2@ncsu.edu>, Deanna Dannels <dpdannel@ncsu.edu>, Amy Jinnette <arjinnet@ncsu.edu>

Warwick:

Attached you will find a formal letter requesting permission to change the name of the Department of Social Work to the School of Social Work. The letter provides a justification for the change. No programs, personnel, funding, administrative, or other changes are requested as part of the name change beyond the costs of updating the name in communications (e.g., stationery, website changes, pamphlets).

This request was reviewed and endorsed for consideration by the Associate Deans of Academic Affairs under Dr. Dannels's leadership.

Thank you for your consideration. Please let me know if you have any questions, etc.

Jeff

--
Jeffery P. Braden, PhD
Dean and Professor of Psychology

Humanities and Social Sciences

Letter to Request Department Name Change (10.pdf

All electronic mail messages in connection with state business which are sent to or received by this account are subject to the NC Public Records Law and may be disclosed to third parties.
North Carolina State University
Routing for On-Campus Approval of a Department Name Change

This request has been reviewed and approved by the appropriate campus committees and authorities.

Recommended By: [Signature] 12/3/19
Council of Deans Date

Approved By: [Signature] 12/13/19
Executive Vice Chancellor and Provost Date

Approved By: [Signature] 1/8/19
Chancellor
NC State University
Certificate Proposal Form

Certificate Title: Graduate Certificate in AIISC Design and Verification
New: X
Revision: □

Classification of Instructional Programs (CIP) Discipline # (6 digits): 14.1001
*Please ensure that you select the appropriate CIP code for your certificate program. Please consult this website for more information about CIP codes: https://nces.ed.gov/ipeds/cipcode/default.aspx?v=55

Certificate Type:
- On-Campus: □
- Distance: □
- On-Campus & Distance: X

Proposed Effective Date: Spring 2020

Director of the Certificate Program: Paul Franzon
Program Coordinator (if different from Director): N/A
Graduate Services Coordinator: Fenile Jones
College: College of Engineering
Department/Program: Electrical and Computer Engineering

Catalog Description:
The Graduate Certificate in ADV Technologies provides students with advanced academic credentials in the algorithmic, chip, circuit, system and antenna technologies that will underpin ADV Wireless systems.

Enrollment:
- On-Campus
  - Continuing: Yr. 1-0 Yr. 2-3 Yr. 3-5 Yr. 4-8
  - New: Yr. 1-5 Yr. 2-7 Yr. 3-10 Yr. 4-12
- Distance
  - Yr. 1-0 Yr. 2-5 Yr. 3-7 Yr. 4-10
  - Yr. 1-5 Yr. 2-5 Yr. 3-8 Yr. 4-10

Attachments:
- Proposal Document
- Statement of other departments likely to be affected and summary of consultation with those departments
- Program-level assessment
- Campus Routing Form
- Signature Page
Graduate Certificate in ASIC Design and Verification

Program Justification
The Electrical and Computer Engineering (ECE) department proposes to offer a Graduate Certificate Program (GCP) in ASIC Design and Verification (ADV).

ASIC stands for “Application Specific Integrated Circuit”. It refers to a digital silicon chip designed and optimized for a small range of functions. ASIC Design and Verification courses have long been a strong feature of our MS offerings in ECE. Every year over 100 on-campus students and several EOL students take this combination. By creating a Graduate Certificate in this area, we hope to signal to a broader community that NCSU is a market leader in the teaching of these technologies. In addition, there are a number of employers that will pay for their employees to take graduate certificates but not a full MS degree and we hope to capture more of that market.

It will be available to both on-campus students and distance education students through Engineering Online (EOL).

Program Objectives
1. In this certificate program, students will learn advanced concepts, methods and tools underlying the design and verification of digital ASICs.
2. The certificate program will provide an educational experience that satisfies the expectations of its graduates.

Program of Study
The ADV GCP requires a total of 12 credit hours consisting of four graduate-level Electrical and Computer Engineering courses taken for a letter grade. (EOL = course offered via EOL as well to residential students)

I. All students must complete the following four courses:
   - ECE 564 ASIC and FPGA Design with Verilog (EOL)
   - ECE 745 ASIC Verification (EOL)
   - ECE 748 ASIC Verification with Universal Verification Methodology (EOL)
   - ECE 546 VLSI Design (EOL) or ECE 720 Electronic System Level and Physical Design (EOL)

Note, ECE 720 and ECE 745 require ECE 564. ECE 748 requires ECE 745. All these courses are offered every year. All these courses have required projects.

Admission Requirements
Students must meet ONE of the following requirements for admission into the ADV Graduate Certificate Program:

- Have a BS degree in Electrical or Computer Engineering from a regionally accredited four-year college or university, and have an overall GPA of at least 3.0 on a 4-point scale.
• Have a BS or a BA degree in the sciences or engineering from a regionally accredited four-year college or university with an overall GPA of at least 3.0 on a 4-point scale. The student needs to have taken and passed the background courses appropriate for their proposed plan of study. The requirements will be the same as for an MS student as per our application website https://www.ece.ncsu.edu/grad/apply/

• Be a degree-seeking student in good standing in an NC State University graduate program in the sciences or engineering.

• Premium tuition is charged on this certificate, students who are currently pursuing other degrees and/or certificates will not be admitted to this certificate until they complete those other programs. Once they are enrolled in this certificate, credit hours will be subject to the Electrical and Computer Engineering MS tuition premium\(^1\), until the certificate is received.

**Application and Completion Process**

An application for acceptance into the GCP is required for all new students. Students must complete the Graduate School application, found at https://grad.ncsu.edu/apply/.

Those applicants who are currently enrolled in an NC State graduate degree program need only provide the graduate student Certificate Plan Data Entry form, found at https://grad.ncsu.edu/wp-content/uploads/2015/12/grad-cert-plan-data-entry.pdf.

New applications will be reviewed at the department/program level.

Registration procedures, registration dates and course availability for each semester can be found on the NCSU Registration and Records webpage at http://www.ncsu.edu/registrar/.

Additional information regarding the ADV GCP can be found on the Electrical and Computer Engineering (http://www.ece.ncsu.edu) website. Questions regarding Engineering Online can be found at http://engineeringonline.ncsu.edu.

**Admission to Other Graduate Programs**

Academic success in the ADV GCP might have a strong bearing on admission to a graduate degree program. However, completion of a graduate certificate program *in no way* guarantees entry into a graduate degree program, which must be done through a separate application process.

**Academic Performance Requirements**

• The ADV GCP requires a total of 12 credit hours.

• To receive a Graduate Certificate, a student must maintain a minimum 3.00 grade point average (GPA) on Graduate Certificate coursework taken at NCSU. All grades on courses taken towards the GCP in courses numbered 500 and above are included in the GPA. Any courses taken at the 400 level and below are not eligible for certificate credit.

• All courses taken for certificate credit must be completed with a grade of “B-” or better.

---

\(^1\) Premium tuition is charged based on a student’s program of study, not individual courses the student takes, and this policy is outside the department’s control. For instance, ECE Masters students pay the ECE premium even if in a given semester they take one, two, or three courses outside the ECE department. Similarly, once a student is admitted to the ADV GCP and the certificate is added to their program of study, they will be charged the premium. We plan to include this information on the certificate website so that students make an informed decision.
• All courses at the 500- or 700-level taken for certificate credit must be letter-graded. Credit-only courses cannot be used for certificate credit.

• Transfer credit from other institutions is not allowed for the GCP. All coursework must be registered through NC State University.

• Up to three (3) credit hours of NDS coursework, if not already used in another graduate program, may be transferred into the GCP. All transfer credit must carry a grade of B or better.

• Graduate Certificate courses taken by students who are enrolling after completion of a degree program may be double-counted towards that degree (1) to the extent that the courses unique to the degree remain at 18 hours for a Masters degree or 36 hours for a PhD degree and (2) subject to the course requirements of that degree.

• All GCP requirements must be completed within four (4) calendar years, beginning with the date the student commences courses applicable to the GCP. In addition, students must maintain continuous enrollment every semester until all coursework is completed. A one-semester leave of absence may be granted if the student is unable to enroll in a course due to extenuating circumstances. The leave of absence must be approved in writing by the ECE DGP before the start of the semester.

Program Administration
The ADV GCP will be administered by the Director of Graduate Programs in the Department of Electrical and Computer Engineering, in cooperation with the NCSU Engineering Online program for distance-education students.

All certificate courses are existing courses in Electrical and Computer Engineering. The implementation and presentation of the certificate is not expected to require effort outside the normal academic activities of the course instructors. No additional staff or resources are required to support the administration of this program.

Enrollment Projection
On campus | Yr 1 | 5 | Yr 2 | 10 | Yr 3 | 15 | Yr 4 | 20
Distance Education | Yr 1 | 5 | Yr 2 | 10 | Yr 3 | 15 | Yr 4 | 20

These projections are based on (1) discussions with industry members of the Electrical and Computer Engineering Strategic Advisory Board and (2) repeated unsolicited requests and questions received by our program, and taking into account the different pace of on-campus vs. online students.

Tuition and Fees
The department will seek approval for a tuition structure that is identical to that of the Electrical and Computer Engineering Master’s program, i.e., that includes the tuition premium. Tuition premium is charged based on the student’s program.

Faculty Participants
All faculty who teach courses listed in the Certificate will participate in the ADV GCP.
Departments likely to be affected

No other department is affected.

Outcomes Assessment Plan

Objectives

1. In this certificate program, students will learn advanced concepts, methods and tools underlying the design and verification of digital ASICs.
2. The certificate program will provide an educational experience that satisfies the expectations of its graduates.

Outcomes

1. By the time they complete this certificate program, graduates should be able to:
   • Apply the methods and tools learned during the certificate studies to tackle ADV problems and tasks
   • Use relevant software packages and tools to tackle ADV problems and tasks

2. At the time they complete this certificate program, graduates are expected to:
   • Be satisfied with the usefulness of the certificate program in enabling them to achieve their professional goals
   • Be sufficiently satisfied with the certificate program to recommend it to others with the same professional goals
   • Be satisfied with the appropriateness of the courses in providing the knowledge or training they anticipate needing for their professional goals
   • Be satisfied with the frequency and timeliness of courses offered for the certificate
   • Be satisfied with the quality of teaching in certificate courses
   • Be satisfied with the overall educational experience of the certificate program

Objective 1 will be measured by having students upload class project reports to a specially constructed Moodle or similar site. A sample of these will be evaluated against the following rubric:

• To what extent do the project reports demonstrate that students learned to apply concepts, methods and tools to tackle ADV problems and tasks? (1=Not at all, 5=high).
• To what extent do the project reports demonstrate that students learned relevant software packages to tackle ADV problems and tasks? (1=Not at all, 5=high).

Objective 2 will measure student satisfaction of their experience in the certificate by questions on the Graduate School’s graduating student exit survey.
Objective 1. Students will learn advanced concepts, methods and tools underlying the design and verification of digital ASICs.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Evidence to be Collected</th>
<th>Source of Evidence</th>
<th>Frequency of Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply the concepts, methods, and tools learned during the certificate studies to tackle ADV problems and tasks</td>
<td>Student project reports</td>
<td>Uploaded project reports</td>
<td>Bi-Annually</td>
</tr>
<tr>
<td>Use relevant software packages to tackle ADV problems and tasks</td>
<td>Student project reports</td>
<td>Uploaded project reports</td>
<td>Bi-Annually</td>
</tr>
</tbody>
</table>

Note: Each of the certificate courses have a required class.

Objective 2. The certificate program will provide an educational experience that satisfies the expectations of its graduates.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Evidence to be Collected</th>
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<tbody>
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</tr>
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<td>Bi-Annually</td>
</tr>
<tr>
<td>timeliness of courses offered for the certificate</td>
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<td>-----------------------------------------------</td>
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<td>To be satisfied with the quality of teaching in certificate courses</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Bi-Annually</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Graduate Certificate in ASIC Design and Verification
North Carolina State University

This request has been reviewed and approved by the appropriate campus committees and authorities.

Endorsed By: 

Paul D. Franzon  
DGP ECE  
paulf@ncsu.edu  
919-513-0501  
11/12/18

Head, Department/Director of Graduate Program (Printed Name and Signature)  
Date

Recommended By: 

Chair, College Graduate Studies Committee (Printed Name and Signature)  
Date

Endorsed By: 

College Dean  
(Date)  

Recommended By: 

Vice Provost, DELTA (if DE degree)  
(Date)

Approved By: 

Dean of the Graduate School  
(Date)

Recommended By: 

Dean's Council  
(Date)

Approved By: 

Executive Vice Chancellor and Provost  
(Date)

Approved By: 

Chancellor  
(Date)

(revised August 2015)
NC State University
Certificate Proposal Form

Certificate Title: Graduate Certificate in Computer Engineering
New: X
Revision: □

Classification of Instructional Programs (CIP) Discipline # (6 digits): 14.0901
*Please ensure that you select the appropriate CIP code for your certificate program. Please consult this website for more information about CIP codes: https://nces.ed.gov/ipeds/cipcode/default.aspx?y=55

Certificate Type:
On-Campus: □ Distance: □ On-Campus & Distance: X

Proposed Effective Date: Fall 2019

Director of the Certificate Program: Paul Franzon
Program Coordinator (if different from Director): N/A
Graduate Services Coordinator: Fenile Jones
College: College of Engineering
Department/Program: Electrical and Computer Engineering

Catalog Description:

The Graduate Certificate in Computer Engineering provides students with advanced academic credentials in Computer Engineering. The program is intended for professional development and may be tailored to individual requirements.

<table>
<thead>
<tr>
<th>Enrollment</th>
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<td>Yr. 2-5</td>
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<td>Yr. 4-10</td>
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<td>Yr. 1-5</td>
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<td>Yr. 2-7</td>
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</tr>
<tr>
<td></td>
<td>Yr. 4-12</td>
<td>Yr. 4-10</td>
</tr>
</tbody>
</table>

Attachments:

☐ Proposal Document
☐ Statement of other departments likely to be affected and summary of consultation with those departments
☐ Program-level assessment
☐ Campus Routing Form
☐ Signature Page
Graduate Certificate in Computer Engineering

Program Justification
The Electrical and Computer Engineering (ECE) department proposes to offer a Graduate Certificate Program (GCP) in Computer Engineering (CPE). This program is primarily intended for individuals who wish to increase their knowledge and skills in Computer Engineering either for future career opportunities or in preparation for graduate studies. Students who complete the certificate will gain in-depth knowledge in Computer Engineering concepts, methods and tools. We anticipate that professionals interested in the CPE GCP will enroll as distance education students through Engineering Online (EOL). Many Computer Engineering courses are already being offered through EOL as part of the existing Master of Computer Engineering distance education degree program. The CPE GCP will also be available to on-campus graduate students in the sciences and engineering who want to expand their knowledge of the field.

Program Objectives
1. In this certificate program, students will learn advanced concepts, methods and tools of Computer Engineering and apply them to a variety of computer engineering problems and tasks.
2. The certificate program will provide an educational experience that satisfies the expectations of its graduates.

Program of Study
The CPE GCP requires a total of 12 credit hours of graduate-level Computer Engineering courses taken for a letter grade. There is no prescribed list of courses for the certificate; students may take a combination of courses tailored to their interests and needs, subject to course prerequisites.

The following courses are permitted to be counted towards the degree.

- Any course listed in the ECE Graduate handbook in Appendices A, B or C as falling into the “CPE” major or the “EE/CPE” major, EXCEPT for the following courses:
  - Special topics courses, i.e. courses with numbers starting with ECE 592, ECE 791 or ECE 792
  - 600 and 800 level course including ECE 600, 633, 634, 650, 695, 699, 833, 834, 895, 896 or 899

A list of courses the currently satisfy these rules are as follows:

CPE COURSES
ECE(CSC) 506 - Architecture Of Parallel Computers
ECE 517 - Object-Oriented Design and Development
ECE 546 - VLSI Systems Design
ECE(CSC) 547 - Cloud Computing Technology
ECE 560 - Embedded System Architectures
ECE 561 - Embedded System Analysis and Optimization
ECE 563 - Computer Design and Technology
ECE 564 - ASIC and FPGA Design with Verilog
ECE 566 - Compiler Optimization and Scheduling
ECE(CSC) 570 - Computer Networks
ECE(CSC) 573 - Internet Protocols
ECE(CSC) 574 - Computer And Network Security
ECE(CSC) 575 - Introduction To Wireless Networking
ECE(CSC) 576 - Networking Services: Qos, Signaling, Processes
ECE(CSC) 577 - Switched Network Management
ECE(CSC)(OR) 579 - Introduction To Computer Performance Modeling
ECE 705 - Memory Systems
ECE 706 - Advanced Parallel Computer Architecture
ECE 720 - Electronic System Level and Physical Design
ECE 721 - Advanced Microarchitecture
ECE 745 - ASIC Verification
ECE(CSC) 773 - Advanced Topics In Internet Protocols
ECE(CSC) 774 - Advanced Network Security
ECE(CSC) 775 - Advanced Topics In Wireless Networking
ECE(CSC) 776 - Design & Performance Evaluation Of Network Systems & Services
ECE(CSC) 777 - Telecommunications Network Design

CPE Online

ECE (CSC) 506 - Architecture of Parallel Computers
ECE (CSC) 517 - Object-Oriented Design and Development
ECE 546 - Vlsi Design Systems
ECE 560 - Embedded System Architectures
ECE 561 - Embedded System Optimization
ECE 564 - Asic and Fpga Design with Verilog
ECE (Csc) 570 - Computer Networks
ECE (CSS) 573 - Internet Protocols
ECE (CSC) 574 - Computer and Network Security
ECE (CSC) 575 - Introduction to Wireless Networking
ECE (CSC) 576 - Networking Services: Qos, Signaling, Processes
ECE (CSC, OR) 579 - Introduction to Computer Performance Modeling
ECE 706 - Advanced Parallel Computer Architecture
ECE 720 - Electronic System Level And Physical Design
ECE 745 - Application Specific Integrated Circuit Verification
ECE 773 - Advanced Topics in Internet Protocols
Admission Requirements
Students must meet ONE of the following requirements for admission into the CPE Graduate Certificate Program:

- Have a BS degree in Electrical or Computer Engineering from a regionally accredited four-year college or university, and have an overall GPA of at least 3.0 on a 4-point scale.
- Have a BS degree in the sciences or engineering from a regionally accredited four-year college or university with an overall GPA of at least 3.0 on a 4-point scale.
- Be a degree-seeking student in good standing in an NC State University graduate program in the sciences or engineering.
- Premium tuition is charged on this certificate, students who are currently pursuing other degrees and/or certificates will not be admitted to this certificate until they complete those other programs. Once they are enrolled in this certificate, credit hours will be subject to the Electrical and Computer Engineering MS tuition premium\(^1\), until the certificate is received.

Application and Completion Process
An application for acceptance into the GCP is required for all new students. Students must complete the Graduate School application, found at [https://grad.ncsu.edu/apply/](https://grad.ncsu.edu/apply/).


New applications will be reviewed at the department/program level.

Registration procedures, registration dates and course availability for each semester can be found on the NCSU Registration and Records webpage at [http://www.ncsu.edu/registrar/](http://www.ncsu.edu/registrar/). Additional information regarding the EE GCP can be found on the Electrical and Computer Engineering ([http://www.ece.ncsu.edu](http://www.ece.ncsu.edu)) website. Questions regarding the EE GCP can be directed to the certificate coordinator. Information regarding Engineering Online can be found at [http://engineeringonline.ncsu.edu](http://engineeringonline.ncsu.edu).

Admission to Other Graduate Programs
Academic success in the EE GCP might have a strong bearing on admission to a graduate degree program. However, completion of a graduate certificate program in no way guarantees entry into a graduate degree program, which must be done through a separate application process.

Academic Performance Requirements
- The EE GCP requires a total of 12 credit hours.

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\(^1\) Premium tuition is charged based on a student's program of study, not individual courses the student takes, and this policy is outside the department's control. For instance, ECE Masters students pay the ECE premium even if in a given semester they take one, two, or three courses outside the ECE department. Similarly, once a student is admitted to the CPE GCP and the certificate is added to their program of study, they will be charged the premium. We plan to include this information on the certificate website so that students make an informed decision.
To receive a Graduate Certificate, a student must maintain a minimum 3.00 grade point average (GPA) on Graduate Certificate coursework taken at NCSU. All grades on courses taken towards the GCP in courses numbered 500 and above are included in the GPA. Any courses taken at the 400 level and below are not eligible for certificate credit.

- All courses taken for certificate credit must be completed with a grade of “B-” or better.
- All courses at the 500- or 700-level taken for certificate credit must be letter-graded. Credit-only courses cannot be used for certificate credit.
- Transfer credit from other institutions is not allowed for the GCP. All coursework must be registered through NC State University.
- Up to three (3) credit hours of NDS coursework, if not already used in another graduate program, may be transferred into the GCP. All transfer credit must carry a grade of B or better.
- Graduate Certificate courses taken by students who are enrolling after completion of a degree program may be double-counted towards that degree (1) to the extent that the courses unique to the degree remain at 18 hours for a Masters degree or 30 hours for a PhD degree and (2) subject to the course requirements of that degree.
- All GCP requirements must be completed within four (4) calendar years, beginning with the date the student commences courses applicable to the GCP. In addition, students must maintain continuous enrollment every semester until all coursework is completed. A one-semester leave of absence may be granted if the student is unable to enroll in a course due to extenuating circumstances. The leave of absence must be approved in writing by the ECE DGP before the start of the semester.

Program Administration
The CPE GCP will be administered by the Director of Graduate Programs in the Department of Electrical and Computer Engineering, in cooperation with the NCSU Engineering Online program for distance-education students.

All certificate courses are existing courses in Electrical and Computer Engineering. The implementation and presentation of the certificate is not expected to require effort outside the normal academic activities of the course instructors. No additional staff or resources are required to support the administration of this program.

Enrollment Projection
<table>
<thead>
<tr>
<th>On campus</th>
<th>Yr 1</th>
<th>Yr 2</th>
<th>Yr 3</th>
<th>Yr 4</th>
<th>Yr 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance Education</td>
<td>Yr 1</td>
<td>Yr 2</td>
<td>Yr 3</td>
<td>Yr 4</td>
<td>Yr 5</td>
</tr>
</tbody>
</table>

These projections are based on (1) discussions with industry members of the Electrical and Computer Engineering Strategic Advisory Board and (2) repeated unsolicited requests and questions received by our program, and take into account the different pace of on-campus vs. online students.
Tuition and Fees
The department will seek approval for a tuition structure that is identical to that of the Electrical and Computer Engineering Masters program, i.e., that includes the tuition premium. Tuition premium is charged based on the student’s program.

Faculty Participants
All faculty who teach graduate-level Computer Engineering courses will participate in the CPE GCP.

Departments likely to be affected
No other departments are likely to be affected by the proposed graduate certificate.

Outcomes Assessment Plan

Objectives

1. The certificate program will provide a graduate level working knowledge of current Computer Engineering concepts and methods.
2. The certificate program will provide an educational experience that satisfies the expectations of its graduates.

Outcomes

1. By the time they complete this certificate program, graduates should be able to:
   - Identify and describe the major principles, methods, and tools of one field of Computer Engineering
   - Apply the methods and tools learned during the certificate studies to tackle computational problems and tasks
   - Use relevant software packages and tools in their own professional activities

2. At the time they complete this certificate program, graduates are expected to:
   - Be satisfied with the usefulness of the certificate program in enabling them to achieve their professional goals
   - Be sufficiently satisfied with the certificate program to recommend it to others with the same professional goals
   - Be satisfied with the appropriateness of the courses in providing the knowledge or training they anticipate needing for their professional goals
   - Be satisfied with the frequency and timeliness of courses offered for the certificate
- Be satisfied with the quality of teaching in certificate courses
- Be satisfied with the overall educational experience of the certificate program

Objective 1. Students will learn advanced concepts, methods and tools of Computer Engineering and apply them to a variety of computational problems tasks.

<table>
<thead>
<tr>
<th>Outcome</th>
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<th>Frequency of Collection</th>
</tr>
</thead>
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<tr>
<td>Identify and describe the major principles, methods, and tools of one field of Computer Engineering</td>
<td>Final exams in corresponding courses</td>
<td>Students</td>
<td>Annually</td>
</tr>
<tr>
<td>Apply the concepts and methods learned during the certificate studies to tackle computational problems and tasks</td>
<td>Projects in corresponding courses</td>
<td>Students</td>
<td>Annually</td>
</tr>
<tr>
<td>Use relevant software packages and tools in their own professional activities</td>
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Objective 2. The certificate program will provide an educational experience that satisfies the expectations of its graduates

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Graduate Certificate in Computer Engineering
North Carolina State University

This request has been reviewed and approved by the appropriate campus committees and authorities.

Endorsed By:

[Signature]

Head, Department/Director of Graduate Program (Printed Name and Signature)

Date

Recommended By:

[Signature]

Chair, College Graduate Studies Committee (Printed Name and Signature)

Date

Endorsed By:

[Signature]

College Dean (Printed Name and Signature)

Date

Recommended By:

[Signature]

Vice Provost, DELTA (if DE degree) (Printed Name and Signature)

Date

Approved By:

[Signature]

Dean of the Graduate School (Printed Name and Signature)

Date

Recommended By:

[Signature]

Dean's Council (Printed Name and Signature)

Date

Approved By:

[Signature]

Executive Vice Chancellor and Provost (Printed Name and Signature)

Date

Approved By:

[Signature]

Chancellor (Printed Name and Signature)

Date

(revised August 2015)
NC State University
Certificate Proposal Form

Certificate Title: Graduate Certificate in Electrical Engineering
   New: X
   Revision: □

Classification of Instructional Programs (CIP) Discipline # (6 digits): 14.1001
   *Please ensure that you select the appropriate CIP code for your certificate program. Please consult this
   website for more information about CIP codes: https://nces.ed.gov/ipeds/cipcode/default.aspx?v=55

Certificate Type:
   On-Campus: □ Distance: □ On-Campus & Distance: X

Proposed Effective Date: Fall 2019

Director of the Certificate Program: Paul Franzon
Program Coordinator (if different from Director): N/A
Graduate Services Coordinator: Fenile Jones
College: College of Engineering
Department/Program: Electrical and Computer Engineering

Catalog Description:
The Graduate Certificate in Electrical Engineering provides students with advanced academic credentials in
Electrical Engineering. The program is intended for professional development and may be tailored to
individual requirements.

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<td>Yr. 1-0 Yr. 2-5 Yr. 3-7 Yr. 4-10</td>
</tr>
<tr>
<td>New</td>
<td>Yr. 1-5 Yr. 2-7 Yr. 3-10 Yr. 4-12</td>
<td>Yr. 1-5 Yr. 2-5 Yr. 3-8 Yr. 4-10</td>
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</table>

Attachments:
□ Proposal Document
□ Statement of other departments likely to be affected and summary of consultation with those
departments
□ Program-level assessment
□ Campus Routing Form
□ Signature Page
Graduate Certificate in Electrical Engineering

Program Justification
The Electrical and Computer Engineering (ECE) department proposes to offer a Graduate Certificate Program (GCP) in Electrical Engineering (EE). This program is primarily intended for individuals who wish to increase their knowledge and skills in Electrical Engineering either for future career opportunities or in preparation for graduate studies. Students who complete the certificate will gain in-depth knowledge in Electrical Engineering concepts, methods and tools. We anticipate that professionals interested in the EE GCP will enroll as distance education students through Engineering Online (EOL). Many Electrical Engineering courses are already being offered through EOL as part of the existing Master of Electrical Engineering distance education degree program. The EE GCP will also be available to on-campus graduate students in the sciences and engineering who want to expand their knowledge of the field.

Program Objectives
1. In this certificate program, students will learn advanced concepts, methods and tools of Electrical Engineering and apply them to a variety of electrical engineering problems and tasks.
2. The certificate program will provide an educational experience that satisfies the expectations of its graduates.

Program of Study
The EE GCP requires a total of 12 credit hours of graduate-level Electrical Engineering courses taken for a letter grade. There is no prescribed list of courses for the certificate; students may take a combination of courses tailored to their interests and needs, subject to course prerequisites.

The following courses are permitted to be counted towards the degree.

- Any course listed in the ECE Graduate handbook in Appendices A, B or C as falling into the “EE” major or the “EE/CPE” major, EXCEPT for the following courses:
  o Special topics courses, i.e. courses with numbers starting with ECE 592, ECE 791 or ECE 792
  o 600 and 800 level course including ECE 600, 633, 634, 650, 695, 699, 833, 834, 895, 896 or 899

The EE courses that currently satisfy these rules are:

EE COURSE
ECE 511 - Analog Electronics
ECE 513 – Digital signal processing
ECE 515 -Digital Communications
ECE 516 – Systems Control Engineering
ECE 522 (BME) – Medical Instrumentation
ECE 523 - Photonics and Optical Communications
ECE 524 - Radio System Design
ECE 530 - Physical Electronics *(Required For Nep Majors)*
ECE 531 - Principles of Transistor Devices
ECE 532 - Principles of Microwave Circuits
ECE 533 - Power Electronics Design & Packaging
ECE 534 - Power Electronics
ECE(MAE) 535 - Design Of Electromechanical Systems
ECE 540 - Electromagnetic Fields
ECE 542 - Neural Networks
ECE 544 - Design of Electronic Packaging and Interconnects
ECE 546 - VLSI System Design
ECE 549 - RF Design For Wireless
ECE 550 - Power System Operation and Control
ECE 551 - Smart Electric Power Distribution Systems
ECE 552 - Renewable Electric Energy Systems
ECE 553 - Semiconductor Power Devices
ECE 555 - Computer Control of Robots
ECE 556 - Mechatronics
ECE 557 - Principles of Mos Transistors
ECE 558 - Digital Imagining Systems
ECE (CHE) 568 - Conventional and Emerging Nanomanufacturing Techniques and Their Applications In Nanosystems
ECE 581 - Electronic Power System Protection
ECE 582 - Wireless Communication Systems
ECE 583 - Electronic Power Engineering Practicum I
ECE 584 - Electronic Power Engineering Practicum II
ECE 585 - The Business of the Electric Utility Industry
ECE 586 - Communications and SCADA Systems for Smart Grid
ECE (MSE)(PY) 589 - Solid State Solar And Thermal Harvesting
ECE 712 - Integrated Circuit Design For Wireless Communications
ECE 718 - Computer-Aided Circuit Analysis
ECE 719 - Microwave Circuit Design Using Scattering Parameters
ECE 722 - Electronic Properties of Solid State Materials
ECE 723 - Optical Properties of Semiconductors
ECE 724 - Electronic Properties of Solid State Devices
ECE 725 - Quantum Engineering
ECE 726 - Advanced Feedback Control
ECE 732 - Dynamics and Control of Electric Machines
ECE 733 - Digital Electronics
ECE 734 - Power Management Integrated Circuits
ECE 736 – Power System Stability and Control
ECE 739 - Integrated Circuit Technology & Fabrication Laboratory
ECE 751 - Detection and Estimation Theory
ECE 752 - Information Theory
ECE 753 – Computational Methods for Power Systems
ECE 756 - Advanced Mechatronics
ECE 759 – Pattern Recognition
ECE 762 - Advanced Digital Communications Systems
ECE 763 – Computer Vision
ECE 766 - Signal Processing For Communications and Networking
ECE 767 - Error-Control Coding

EE Online

ECE 511- Analog Electronics
ECE 513 - Digital Signal Processing
ECE 514 - Random Processes
ECE 515 - Digital Communications
ECE 516 - Systems Control Engineering
ECE 530 - Physical Electronics
ECE 534 - Fundamentals of Power Electronics and Utility Applications
ECE (MAE) 535 - Design Of Electromechanical Systems
ECE 542 - Neural Networks
ECE 544 - Design of Electronic Packaging and Interconnects
ECE 546 - VlSi Design Systems
ECE 549 - Rf Design For Wireless
ECE 550 - Power System Operation and Control
ECE 551 - Smart Electric Power Distribution Systems
ECE 552 - Renewable Electric Energy Systems
ECE 556 - Agent-Based Mechatronics Systems
ECE 568 - Conventional and Emerging Nanomanufacturing Techniques and Their Applications In Nanosystems
ECE 581 - Electric Power System Protection
ECE 583 - Electric Power Engineering Practicum I
ECE 584 - Electric Power Engineering Practicum II
ECE 585 - The Business of yhe Electric Utility Industry
ECE 586 - Communication and Scada Systems for Smart Grid
ECE 589 - Solid State Solar and Thermal Energy Harvesting
ECE 712 - Integrated Circuit Design For Wireless Communications
ECE 719 - Advanced Microwave Design
ECE 723 - Optical Properties of Semiconductors
ECE 732 - Dynamics and Control of Electric Machines
ECE 736 - Power Systems Stability and Control  
ECE 751 - Detection and Estimation Theory  
ECE 753 - Computational Methods for Power Systems  
ECE 759 - Pattern Recognition

Admission Requirements
Students must meet ONE of the following requirements for admission into the EE Graduate Certificate Program:

- Have a BS degree in Electrical or Computer Engineering from a regionally accredited four-year college or university, and have an overall GPA of at least 3.0 on a 4-point scale.
- Have a BS degree in the sciences or engineering from a regionally accredited four-year college or university with an overall GPA of at least 3.0 on a 4-point scale.
- Be a degree-seeking student in good standing in an NC State University graduate program in the sciences or engineering.
- Premium tuition is charged on this certificate, students who are currently pursuing other degrees and/or certificates will not be admitted to this certificate until they complete those other programs. Once they are enrolled in this certificate, credit hours will be subject to the Electrical and Computer Engineering MS tuition premium, until the certificate is received.

Application and Completion Process
An application for acceptance into the GCP is required for all new students. Students must complete the Graduate School application, found at https://grad.ncsu.edu/apply/.

Those applicants who are currently enrolled in an NC State graduate degree program need only provide the graduate student Certificate Plan Data Entry form, found at https://grad.ncsu.edu/wp-content/uploads/2015/12/grad-cert-plan-data-entry.pdf.

New applications will be reviewed at the department/program level.

Registration procedures, registration dates and course availability for each semester can be found on the NCSU Registration and Records webpage at http://www.ncsu.edu/registrar/. Additional information regarding the EE GCP can be found on the Electrical and Computer Engineering (http://www.ece.ncsu.edu) website. Questions regarding the EE GCP can be directed to the certificate coordinator. Information regarding Engineering Online can be found at http://engineeringonline.ncsu.edu.

---

1 Premium tuition is charged based on a student's program of study, not individual courses the student takes, and this policy is outside the department's control. For instance, ECE Masters students pay the ECE premium even if in a given semester they take one, two, or three courses outside the ECE department. Similarly, once a student is admitted to the ECE GCP and the certificate is added to their program of study, they will be charged the premium. We plan to include this information on the certificate website so that students make an informed decision.
Admission to Other Graduate Programs
Academic success in the EE GCP might have a strong bearing on admission to a graduate degree program. However, completion of a graduate certificate program in no way guarantees entry into a graduate degree program, which must be done through a separate application process.

Academic Performance Requirements
- The EE GCP requires a total of 12 credit hours.
- To receive a Graduate Certificate, a student must maintain a minimum 3.00 grade point average (GPA) on Graduate Certificate coursework taken at NCSU. All grades on courses taken towards the GCP in courses numbered 500 and above are included in the GPA. Any courses taken at the 400 level and below are not eligible for certificate credit.
- All courses taken for certificate credit must be completed with a grade of “B-” or better.
- All courses at the 500- or 700-level taken for certificate credit must be letter-graded. Credit-only courses cannot be used for certificate credit.
- Transfer credit from other institutions is not allowed for the GCP. All coursework must be registered through NC State University.
- Up to three (3) credit hours of NDS coursework, if not already used in another graduate program, may be transferred into the GCP. All transfer credit must carry a grade of B or better.
- Graduate Certificate courses taken by students who are enrolling after completion of a degree program may be double-counted towards that degree (1) to the extent that the courses unique to the degree remain at 18 hours for a Masters degree or 30 hours for a PhD degree and (2) subject to the course requirements of that degree.
- All GCP requirements must be completed within four (4) calendar years, beginning with the date the student commences courses applicable to the GCP. In addition, students must maintain continuous enrollment every semester until all coursework is completed. A one-semester leave of absence may be granted if the student is unable to enroll in a course due to extenuating circumstances. The leave of absence must be approved in writing by the ECE DGP before the start of the semester.

Program Administration
The EE GCP will be administered by the Director of Graduate Programs in the Department of Electrical and Computer Engineering, in cooperation with the NCSU Engineering Online program for distance-education students.

All certificate courses are existing courses in Electrical and Computer Engineering. The implementation and presentation of the certificate is not expected to require effort outside the normal academic activities of the course instructors. No additional staff or resources are required to support the administration of this program.

Enrollment Projection

<table>
<thead>
<tr>
<th></th>
<th>On campus</th>
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<th>Distance Education</th>
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<td>Yr 4</td>
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These projections are based on (1) discussions with industry members of the Electrical and Computer Engineering Strategic Advisory Board and (2) repeated unsolicited requests and questions received by our program, and take into account the different pace of on-campus vs. online students.

Tuition and Fees
The department will seek approval for a tuition structure that is identical to that of the Electrical and Computer Engineering Masters program, i.e., that includes the tuition premium. Tuition premium is charged based on the student's program.

Faculty Participants
All faculty who teach graduate-level Electrical Engineering courses will participate in the EE GCP.

Departments likely to be affected
No other departments are likely to be affected by the proposed graduate certificate.

Outcomes Assessment Plan

Objectives

1. The certificate program will provide a graduate level working knowledge of current Electrical Engineering concepts and methods.
2. The certificate program will provide an educational experience that satisfies the expectations of its graduates.

Outcomes

1. By the time they complete this certificate program, graduates should be able to:
   • Identify and describe the major principles, methods, and tools of one field of Electrical Engineering
   • Apply the methods and tools learned during the certificate studies to tackle computational problems and tasks
   • Use relevant software packages and tools in their own professional activities

2. At the time they complete this certificate program, graduates are expected to:
- Be satisfied with the usefulness of the certificate program in enabling them to achieve their professional goals
- Be sufficiently satisfied with the certificate program to recommend it to others with the same professional goals
- Be satisfied with the appropriateness of the courses in providing the knowledge or training they anticipate needing for their professional goals
- Be satisfied with the frequency and timeliness of courses offered for the certificate
- Be satisfied with the quality of teaching in certificate courses
- Be satisfied with the overall educational experience of the certificate program

Objective 1. Students will learn advanced concepts, methods and tools of Electrical Engineering and apply them to a variety of computational problems tasks.

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<th>Frequency of Collection</th>
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Objective 2. The certificate program will provide an educational experience that satisfies the expectations of its graduates

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<td>Annually</td>
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</table>
Graduate Certificate in Computer Engineering
North Carolina State University

This request has been reviewed and approved by the appropriate campus committees and authorities.

Endorsed By:
P. D. FRANKEN
Date: 10/31/18
Head, Department/Director of Graduate Program (Printed Name and Signature)

Recommended By:
KANISHAN
Date: 11/6/18
Chair, College Graduate Studies Committee (Printed Name and Signature)

Endorsed By:
Dennis B. Reedy
Date: 11/16/2018
College Dean (Printed Name and Signature)

Recommended By:
Thomas L. C. J. III
Date: 11/15/19
Vice Provost, Delta (if DE degree) (Printed Name and Signature)

Approved By:
Pete Harriss
Date: 8/22/19
Dean of the Graduate School (Printed Name and Signature)

Recommended By:
Sarah J. Dorgan
Date: 8/26/19
Dean's Council (Printed Name and Signature)

Approved By:
W. Randy Woodson
Date: 9/27/19
Executive Vice Chancellor and Provost (Printed Name and Signature)

Approved By:
W. Randy Woodson
Date: 11/31/19
Chancellor (Printed Name and Signature)

(revised August 2015)
NC State University
Certificate Proposal Form

Certificate Title: Graduate Certificate in 5G Technologies
   New: X
   Revision: 

Classification of Instructional Programs (CIP) Discipline # (6 digits): 14.1001
*Please ensure that you select the appropriate CIP code for your certificate program. Please consult this
website for more information about CIP codes: https://nces.ed.gov/ipeds/cipcode/default.aspx?v=55

Certificate Type:
   On-Campus: X   Distance: X   On-Campus & Distance: X

Proposed Effective Date: Fall 2019

Director of the Certificate Program: Paul Franzon
Program Coordinator (if different from Director): N/A
Graduate Services Coordinator: Fenlie Jones
College: College of Engineering
Department/Program: Electrical and Computer Engineering

Catalog Description:

The Graduate Certificate in 5G Technologies provides students with advanced academic credentials in the
algorithmic, chip, circuit, system and antenna technologies that will underpin 5G Wireless systems.

<table>
<thead>
<tr>
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<td>Yr. 3-10</td>
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<td></td>
<td>Yr. 4-12</td>
<td>Yr. 4-10</td>
</tr>
</tbody>
</table>

Attachments:

☐ Proposal Document
☐ Statement of other departments likely to be affected and summary of consultation with those
departments
☐ Program-level assessment
☐ Campus Routing Form
☐ Signature Page
Graduate Certificate in 5G Technologies

Program Justification
The Electrical and Computer Engineering (ECE) department proposes to offer a Graduate Certificate Program (GCP) in 5G Technologies (5GT). “5G” refers to the wireless data communications system that will replace the 4G LTE systems that your phone uses now. However, 5G is not an update on 4G. It is a radically new system, using many different architectures, algorithms, circuits, chips and antenna than the previous system. It is also a major business opportunity creating the need for several new generations of small cell base stations and smart phones. 5G will enable faster streaming to your mobile device than you probably enjoy to your home today.

Right now industry is working out how to build these systems. Thus, there is a high demand for engineers who know what 5G means, how it is different than 4G and how the technological need is different from 4G. We’ve been strongly encouraged by our Strategic Advisory Board to offer this certificate as a way to educate these engineers and stake our claim of early leadership in this area.

This program is primarily intended for individuals who wish to contribute to designing the chips, software and hardware that will be needed for the 5G rollout. It will be available to both residential students and distance education students through Engineering Online (EOL).

Program Objectives
1. In this certificate program, students will learn advanced concepts, methods and tools underlying 5G technologies and apply them to designing 5G hardware/software systems.

Program of Study
The 5GT GCP requires a total of 12 credit hours consisting of four graduate-level Electrical and Computer Engineering courses taken for a letter grade. Courses labeled “EOL” will be offered both as live classes and also through EOL. Those without “EOL” are only offered to on campus students. (Note some of these are planned EOL offerings, not current.).

I. All students must complete the following course:
   • ECE 592 LTE and 5G Communications (EOL)

II. Students must then choose three 5G-related courses, taking at least two courses from a single track:
   • Circuits Track
     a. ECE 511 Analog Electronics (EOL)
     b. ECE 712 Integrated Circuit Design for Wireless Communications (EOL)
     c. ECE 792 Design of Millimeter-Wave Circuits and Systems (EOL)
• Microwave Systems and Applied EM Track  
  a. ECE 524 Radio System Design  
  b. ECE 549 RF Design for Wireless (EOL)  
  c. ECE 592 Antennas and Arrays (EOL)

• Communications Track  
  a. ECE 575 - Wireless Networks  
  b. ECE 766 - Signal Processing for Communications and Networking  
  c. ECE 570 - Computer Networking (EOL)

Note, due to the timely nature of this technology not all of these courses are regular numbered courses yet but are special topics. We request University permission to go ahead with the Certificate with Special topic courses included so we don’t have to wait the long times it takes to turn these into regularly numbered courses. We are planning to convert the special topics courses to become regular numbered courses.

Admission Requirements
Students must meet ONE of the following requirements for admission into the 5G Graduate Certificate Program:

• Have a BS degree in Electrical or Computer Engineering from a regionally accredited four-year college or university, and have an overall GPA of at least 3.0 on a 4-point scale.
• Have a BS degree in the sciences or engineering from a regionally accredited four-year college or university with an overall GPA of at least 3.0 on a 4-point scale.
• Be a degree-seeking student in good standing in an NC State University graduate program in the sciences or engineering.
• Premium tuition is charged on this certificate, students who are currently pursuing other degrees and/or certificates will not be admitted to this certificate until they complete those other programs. Once they are enrolled in this certificate, credit hours will be subject to the Electrical and Computer Engineering MS tuition premium1, until the certificate is received.

Application and Completion Process
An application for acceptance into the GCP is required for all new students. Students must complete the Graduate School application, found at https://grad.ncsu.edu/apply/.

Those applicants who are currently enrolled in an NC State graduate degree program need only provide the graduate student Certificate Plan Data Entry form, found at https://grad.ncsu.edu/wp-content/uploads/2015/12/grad-cert-plan-data-entry.pdf.

New applications will be reviewed at the department/program level.

Registration procedures, registration dates and course availability for each semester can be found on the NCSU Registration and Records webpage at http://www.ncsu.edu/registrar/.

---

1 Premium tuition is charged based on a student’s program of study, not individual courses the student takes, and this policy is outside the department’s control. For instance, ECE Masters students pay the ECE premium even if in a given semester they take one, two, or three courses outside the ECE department. Similarly, once a student is admitted to the ADV GCP and the certificate is added to their program of study, they will be charged the premium. We plan to include this information on the certificate website so that students make an informed decision.
Additional information regarding the 5G GCP can be found on the Electrical and Computer Engineering (http://www.ece.ncsu.edu) website. Questions regarding the 5G GCP can be directed to the certificate coordinator. Information regarding Engineering Online can be found at http://engineeringonline.ncsu.edu.

Admission to Other Graduate Programs
Academic success in the 5G GCP might have a strong bearing on admission to a graduate degree program. However, completion of a graduate certificate program in no way guarantees entry into a graduate degree program, which must be done through a separate application process.

Academic Performance Requirements
- The 5G GCP requires a total of 12 credit hours.
- To receive a Graduate Certificate, a student must maintain a minimum 3.00 grade point average (GPA) on Graduate Certificate coursework taken at NCSU. All grades on courses taken towards the GCP in courses numbered 500 and above are included in the GPA. Any courses taken at the 400 level and below are not eligible for certificate credit.
- All courses taken for certificate credit must be completed with a grade of "B-" or better.
- All courses at the 500- or 700-level taken for certificate credit must be letter-graded. Credit-only courses cannot be used for certificate credit.
- Transfer credit from other institutions is not allowed for the GCP. All coursework must be registered through NC State University.
- Up to three (3) credit hours of NDS coursework, if not already used in another graduate program, may be transferred into the GCP. All transfer credit must carry a grade of B or better.
- Graduate Certificate courses taken by students who are enrolling after completion of a degree program may be double-counted towards that degree (1) to the extent that the courses unique to the degree remain at 18 hours for a Masters degree or 30 hours for a PhD degree and (2) subject to the course requirements of that degree.
- All GCP requirements must be completed within four (4) calendar years, beginning with the date the student commences courses applicable to the GCP. In addition, students must maintain continuous enrollment every semester until all coursework is completed. A one-semester leave of absence may be granted if the student is unable to enroll in a course due to extenuating circumstances. The leave of absence must be approved in writing by the ECE DGP before the start of the semester.

Program Administration
The 5G GCP will be administered by the Director of Graduate Programs in the Department of Electrical and Computer Engineering, in cooperation with the NCSU Engineering Online program for distance-education students.
All certificate courses are existing courses in Electrical and Computer Engineering. The implementation and presentation of the certificate is not expected to require effort outside the normal academic activities of the course instructors. No additional staff or resources are required to support the administration of this program.

**Enrollment Projection**

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<thead>
<tr>
<th></th>
<th>Yr 1</th>
<th>Yr 2</th>
<th>Yr 3</th>
<th>Yr 4</th>
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These projections are based on (1) discussions with industry members of the Electrical and Computer Engineering Strategic Advisory Board and (2) repeated unsolicited requests and questions received by our program, and take into account the different pace of on-campus vs. online students.

**Tuition and Fees**
The department will seek approval for a tuition structure that is identical to that of the Electrical and Computer Engineering Master’s program, i.e., that includes the tuition premium. Tuition premium is charged based on the student’s program.

**Faculty Participants**
All faculty who teach courses listed in the Certificate will participate in the 5G GCP.

**Departments likely to be affected**

ECE 570 is often taught by CSC. Students in this certificate will need to be able to be enrolled in those sections. The DGP of CSC was consulted and agreed to permit that.

**Outcomes Assessment Plan**

**Objectives**

1. The certificate program will provide a graduate level working knowledge of current Computer Engineering concepts and methods.
2. The certificate program will provide an educational experience that satisfies the expectations of its graduates.

**Outcomes**

1. By the time they complete this certificate program, graduates should be able to:
   - Identify and describe the major principles, methods, and tools of one field of 5G systems Engineering
   - Apply the methods and tools learned during the certificate studies to tackle computational problems and tasks
   - Use relevant software packages and tools in their own professional activities
2. At the time they complete this certificate program, graduates are expected to:
   - Be satisfied with the usefulness of the certificate program in enabling them to achieve their professional goals
   - Be sufficiently satisfied with the certificate program to recommend it to others with the same professional goals
   - Be satisfied with the appropriateness of the courses in providing the knowledge or training they anticipate needing for their professional goals
   - Be satisfied with the frequency and timeliness of courses offered for the certificate
   - Be satisfied with the quality of teaching in certificate courses
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Objective 1. Students will learn advanced concepts, methods and tools of 5G Engineering and apply them to a variety of computational problems tasks.

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Objective 2. The certificate program will provide an educational experience that satisfies the expectations of its graduates

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Graduate Certificate in 5G Technologies
North Carolina State University

This request has been reviewed and approved by the appropriate campus committees and authorities.

Endorsed By: 
Paul D. Franzon  
DGP ECE  
paul@ncsu.edu  
919.513.0501  
11/12/18

Head, Department/Director of Graduate Program (Printed Name and Signature)

Recommended By: 
S. L. PANJITTHAN
Chair, College Graduate Studies Committee (Printed Name and Signature)  
11/16/18

Endorsed By: 
Johnson, Douglas  
College Dean  
11/16/18

Recommended By:  
conditional - see attached  
1/15/19

Vice Provost, DELTA (if DE degree)  
(Printed Name and Signature)

Approved By:  
Peter J. Harries  
Dean of the Graduate School  
9/25/19

(Printed Name and Signature)

Recommended By:  
Duane Larick  
Dean's Council  
10/10/19

(Printed Name and Signature)

Approved By:  
Warwick Arden  
Executive Vice Chancellor and Provost  
10/11/19

(Printed Name and Signature)

Approved By:  
W. Randy Woodson  
Chancellor  
11/13/19

(Printed Name and Signature)

(revised August 2015)
Job Prospectus for the Vice Chancellor and Dean, Division of Academic and Student Affairs

NC State University
Raleigh, NC | Winter 2020
The Division of Academic and Student Affairs

The Division of Academic and Student Affairs (DASA) helps students discover connections and community. Here, students live, gather, improve themselves, each other, and their university. DASA is where students seek guidance and support, both in and outside of the classroom. The division serves all students at NC State.

DASA formed in 2012 from the merger of the Division of Undergraduate Academic Programs and the Division of Student Affairs. In the seven years since its inception, the division has quickly become an integral part of the university community. With nearly 50 individual programs, DASA integrates curricular and co-curricular programming to improve the academic performance of our students and the quality of the student experience at NC State. The division also supports student success, advising, and undergraduate curriculum and assessment processes.

The division’s 574 full-time employees, 70 faculty, and 2,500 student employees serve all 36,000 NC State students through campuswide services such as student health and counseling, wellness and recreation, academic enrichment programs, leadership and civic engagement, and student involvement. The division impacts students from before they arrive at NC State through various “pathways” programs such as TRIO, College Advising Corps, and Juntos, to when they first arrive on campus at New Student Orientation. DASA supports NC State students throughout their college experience and provides career development support for their plans after college and ROTC programs for students pursuing military involvement.

Within DASA, the University College (UC) brings together all academic and curricular functions of the division. The UC provides leadership for a number of departments and programs, including the Exploratory Studies program, Academic Advising Programs and Services, Undergraduate Research, and several other units. There are 10 minors offered through the UC, as well as the Global Perspectives certificate. The UC serves as the home of approximately 1,200 students, including nearly 700 incoming first-year students each year who start in Exploratory Studies.

Also part of UC within DASA is Arts NC State, whose programs include the Crafts Center, NC State LIVE, the Dance Program, University Theatre, and the Department of Music. These programs provide an artistic outlet for all students at NC State, regardless of their major. Also within the division’s arts programs is the Gregg Museum of Art and Design, which opened in 2017. The collecting and exhibiting museum has more than 35,000 objects in its permanent collection and provides unique educational opportunities to students.

DASA also leads many universitywide initiatives, including Pack Essentials, a program developed to centralize all campus resources dedicated to support students in need of food, housing, financial, and educational security.

The division has an annual budget of $107 million. It is also vast and covers 3,130,284 square feet over 81 buildings on main and Centennial campuses, including space for over 10,000 students living in residence halls, apartments and Greek Village houses.

The Opportunity

NC State invites applications and nominations for the position of Vice Chancellor and Dean of the Division of Academic and Student Affairs. The Vice Chancellor and Dean — who is committed to seamless integration in all aspects of undergraduate education — is a key strategic advisor to the Executive Vice Chancellor and Provost and works to support the success of the whole student. Working closely with the Chancellor’s Cabinet, the deans, the faculty, and
administrative colleagues, the Vice Chancellor and Dean will lead all aspects of the implementation of an innovative and coordinated delivery of student services.

The Position

The Vice Chancellor and Dean plays a significant leadership role and has the opportunity to direct staff and resources to maximize impact on the curricular and co-curricular programs of the university. The Vice Chancellor and Dean oversees the programs and services of:

- University College: Academic Advising Programs and Services; Academic Enrichment Programs (First Year Inquiry, Fellowship Advising, Undergraduate Research, and University Honors and Scholars Programs); Exploratory Studies; Cross-College Interdisciplinary and Multidisciplinary Programs; Advising Technology; Health and Exercise Studies; Music; Undergraduate Courses, Curricula and Academic Standards; and Arts NC State (NC State LIVE, Crafts Center, Dance Program, Gregg Museum, University Theater, Arts Marketing, and Ticket Central)
- Academic Success Programs: Pathway Programs (College Advising Corps, TRIO programs, and Juntos); Disability Resources; New Student Programs; University Tutorial Center; and Rural Works!
- Business Administration, Residential Programs, and Engagement: Facilities Planning and Management; Finance; Human Resources; Technology Services; Fraternity and Sorority Life; Leadership and Civic Engagement; Student Involvement; and University Housing and Living and Learning Initiatives
- Student Development, Health, and Wellness: Career Development Center; ROTC; Wellness and Recreation; Student Conduct; Student Legal Services; Student Media; Student Health Services; Counseling and Prevention Services; and Military and Veterans Services
- In addition to these areas, the Vice Chancellor and Dean oversees Academic Support Programs for Student Athletes; Assessment; Development; Student Ombuds; and Marketing and Communications.
Qualifications
The successful candidate will have demonstrated success as a senior academic, administrative, and fiscal leader, with 10+ years of experience gained through leadership of a large administrative or academic unit; demonstrated support of cultural and ethnic diversity; and readiness to provide leadership at a complex doctoral/research extensive university. Candidates must be committed to ensuring successful student academic and non-academic experiences.

A relevant post-baccalaureate degree from an appropriately accredited institution with a minimum of 10 years or greater of related professional experience is required. Preference will be given to those with a terminal degree in related field. Tenure consideration with appropriate faculty appointment will be given to candidates with distinguished records in teaching and scholarship.

How to Apply
Inquiries, nominations and applications are invited and may be directed to Justin Lang, Director, NC State Executive Search Services, at (919) 513-1963 or jdlang2@ncsu.edu.

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About NC State
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NC State is a powerhouse in science, technology, engineering and math. We lead in agriculture, education, textiles, business and natural resources management. We’re at the forefront of teaching and research in design, the humanities and the social sciences. And we’re home to one of the world’s best colleges of veterinary medicine.

Our more than 35,000 undergraduate and graduate students learn by doing. They pursue original research and start new companies. They forge connections with top employers and serve communities local and global. Through it all, they enjoy an outstanding return on investment.

Whether it’s Princeton Review ranking NC State among the nation’s best values for universities, Money magazine naming it the No. 1 best college for your money in North Carolina, or Kiplinger’s Personal Finance ranking NC State No. 9 among the best values in public higher education, the university has many reasons to be proud.

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North Carolina’s rapid growth makes the state a diversity leader and top spot for young professionals and families. Raleigh reflects statewide growth as a city on the rise:

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- One of America’s most digitally inclusive tech cities (Brookings, 2018)
- No. 2 hotspot for tech jobs (Forbes, 2016)
- No. 3 best city for young professionals (Forbes, 2016)

With Durham and Chapel Hill, the capital city anchors the Research Triangle, a national hotspot for high-tech enterprise. The region’s top companies — including IBM, Cisco Systems, SAS Institute, Biogen Idec and GlaxoSmithKline — rank among the country’s best employers. NC State also maintains strong agricultural partnerships with Bayer, BASF and Syngenta, companies that lead the way in hiring new NC State graduates.

Celebrating its 132nd year in 2019, NC State continues to make its founding purpose a reality. Every day our career-ready graduates and world-leading faculty make the fruits of learning, discovery and engagement available to people across the state, throughout the nation and around the world.
NC State provides equal opportunity and affirmative action efforts, and the university prohibits all forms of unlawful discrimination, harassment and retaliation that are based upon a person's race, color, religion, sex (including pregnancy), national origin, age (40 or older), disability, gender identity, genetic information sexual orientation or veteran status.
The College of Natural Resources

Founded in 1929, the College of Natural Resources educates tomorrow’s leaders and professionals working to address global challenges in natural resources management, sustainable manufacturing, and healthy and resilient communities. Award-winning faculty and staff work side-by-side with students to generate new knowledge and technology, leverage interdisciplinary partnerships, and strengthen both industries and communities. The College maintains a tradition of excellence in education, research, and extension and outreach, and aims to build on NC State’s land-grant mission of creating economic, social and intellectual prosperity.

For almost a century, the College has served vital industries in North Carolina — including the state’s largest manufacturing sector, forest and wood products; its largest service sector, tourism; and more than half a million forest landowners. Together, these industries sustain more than half a million jobs and generate $50 billion in annual economic impact.

The College’s 235 faculty and staff educate approximately 1,500 undergraduate and 435 graduate students per year in three academic departments: Forest Biomaterials; Forestry and Environmental Resources; and Parks, Recreation and Tourism Management. The Center for Geospatial Analytics also administers graduate programs. Overall, the College offers 10 bachelor's degrees, 10 master’s degrees, four distance education master’s degrees and four doctoral degrees.

A comprehensive array of programs explores all aspects of natural resource management and sustainability, including: environmental science; environmental technology and management; fisheries, wildlife and conservation biology; forest management; natural resources; parks, recreation and tourism management; sport management; PGA golf management; sustainable materials and technology; paper science and engineering; geospatial analytics; and public science.

The College is a close-knit diverse and inclusive community where students enjoy reduced class size and direct access to faculty and staff support from application to graduation. Faculty and staff work to ensure that all graduates leave campus career ready. 100 percent of students in the College graduate with hands-on experience through internships, co-ops, in-the-field summer programs, or study abroad.

The College has an annual budget of $42.3 million, with research expenditures totaling $10 million and endowment assets of $31 million. In addition, 85,000 acres of forest provide the largest university-owned forestland in the nation for teaching, research and demonstration.

Through cooperatives, consortia and centers, the College collaborates to create solutions to real-world issues impacting our communities and industries. Research efforts not only lead to new breakthroughs in natural resource management and industry practices, but also serve as a valuable training ground for students interested in working on the frontlines of their chosen fields.

The College’s outreach, extension and continuing education programs and services spread knowledge throughout the state and the nation. Distance education, certificate programs, workshops and short courses are delivered to thousands of professionals each year. Because of these efforts, more than 100 county extension agents funnel forestry and tourism programming and resources to the communities that need them.
The Opportunity
NC State invites applications and nominations for the position of Dean of the College of Natural Resources. The university seeks a visionary leader with a bold commitment to refine and enhance the College’s international leadership in the use and stewardship of renewable resources.

The Position
The Dean of the College of Natural Resources must be an experienced, innovative, creative and collaborative leader who understands domestic and international natural resources issues in the broadest sense. The Dean should have a strong commitment to student achievement, faculty scholarship and staff development, and possess the drive to move the College forward nationally and internationally. The Dean is the chief academic, administrative and budgetary officer of the College. He or she is the spokesperson for the College and reports directly to the Executive Vice Chancellor and Provost. The Dean is responsible for the following:

• Providing strong leadership and strategic direction for the College;
• Representing the College within the university at a skilled, politically astute level with respect to campus resources and issues;
• Representing the diverse clientele, programs and interests of the College persuasively to both internal and external constituencies;
• Promoting a culturally competent and welcoming environment, with a strong commitment to recruiting and retaining diverse faculty, staff and students;
• Openly communicating in a transparent manner that provides clarity in financial management and decision-making;
• Being a successful fundraiser and a visible, interactive participant in foundation and industry events;
• Recognizing and valuing the contributions of everyone in the College;
• Fostering high-impact interdisciplinary collaboration and partnership within the College and externally with other programs;
• Integrating three diverse departments under one vision for the College;
• Promoting, recognizing and rewarding excellence in teaching and mentoring undergraduate and graduate students;
• Providing programs and opportunities for students to develop research, leadership and communication skills;
• Serving faculty and supporting their research, extension and engagement activities;
• Providing transparent supplemental support of the departments; and
• Encouraging the high-performance and excellence of faculty, staff and units within the College and the delivery of high-quality academic programs.
Qualifications

The successful candidate will possess most, if not all, of the following qualities or experience:

- Evidence of working effectively and collaboratively with faculty, university administration, and other constituent groups and partners both within and outside the university;
- Ability to play a key role in university leadership, advocating for the College and forging advantageous and strategic connections across colleges;
- A clear commitment to excellence in research, teaching and undergraduate and graduate education;
- A commitment to educating students who enter the university through diverse pathways, fostering a healthy and respectful community, and recruiting and supporting diverse faculty, staff, and administration;
- Outstanding communication skills, including interpersonal, written, verbal, presentation and listening capabilities;
- A proven record of success in setting priorities, allocating resources and achieving specific goals;
- An affinity for fundraising, and the ability to contribute to and lead development efforts;
- Ability to function in a complex, high-demand environment, balancing and executing internal and external responsibilities;
- Distinguished record in research, teaching, extension, and outreach/engagement; and,
- A terminal degree in their field and qualifications for an appointment as a full professor with tenure in at least one of the departments within the College.

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2019-20 STRATEGIC PLANNING TASK FORCES

Advancing Inclusion and Well-Being to Enhance Excellence

Co-chairs:
- Monica Osburn, Executive Director, Counseling Center and Prevention Services
- Sheri Schwab, Vice Provost, Institutional Equity and Diversity

committees.provost.ncsu.edu/advancing-inclusion-and-well-being-to-enhance-excellence/

Continuing to Advance the Brand and Reputation of NC State

Co-chairs:
- Brad Bohlander, Associate Vice Chancellor, University Communications
- Benny Suggs, Associate Vice Chancellor, Alumni Relations

committees.provost.ncsu.edu/continuing-to-advance-the-brand-and-reputation-of-nc-state/

Envisaging the Next Generation Land-Grant University

Co-chairs:
- Audrey Jaeger, Alumni Distinguished Graduate Professor, Educational Leadership, Policy and Human Development
- Rich Linton, Dean, College of Agriculture and Life Sciences

committees.provost.ncsu.edu/envisaging-the-next-generation-land-grant-university/

Graduating the Successful Student

Co-chairs:
- Emma Carter, Student Body President
- Louis Hunt, Senior Vice Provost, Enrollment Management and Services

committees.provost.ncsu.edu/graduating-the-successful-student/

Leading the Digital Transformation of Higher Education

Co-chairs:
- Tom Miller, Senior Vice Provost, Academic Outreach and Entrepreneurship
- Greg Raschke, Senior Vice Provost, Director of Libraries

committees.provost.ncsu.edu/leading-the-digital-transformation-of-higher-education/
Leveraging Partnerships to Advance Engagement

Co-chairs:
- David Hinks, Dean, Wilson College of Textiles
- Thomas White, Director, Economic Development Partnership

Pursuing Operational Excellence

Co-chairs:
- Katharine Stewart, Vice Provost, Faculty Affairs
- Marie Williams, Associate Vice Chancellor, Human Resources

Re-envisioning Life-Long Education and Credentialing

Co-chairs:
- Frank Buckless, Stephen P. Zelnak Jr. Dean, Poole College of Management
- Ruben Carbonell, Director, Kenan Institute for Engineering, Technology and Science

Strengthening University-Wide Interdisciplinarity

Co-chairs:
- Paul Lunn, Dean, College of Veterinary Medicine
- Fred Wright, Goodnight Innovation Distinguished Professor, Statistics and Biological Sciences

committees.provost.ncsu.edu/leveraging-partnerships-to-advance-engagement/
committees.provost.ncsu.edu/pursuing-operational-excellence/
committees.provost.ncsu.edu/re-envisioning-life-long-education-and-credentialing/
committees.provost.ncsu.edu/strengthening-university-wide-interdisciplinarity/
Report from the NC State Faculty Senate -- February 2020

FACULTY SENATE MEETINGS

The Faculty Senate has met five times since my last report. Much of the general discussion has been about the upcoming Strategic Planning process. Senate discussion on this topic, led by Senate Executive Committee members, focused on the method of including faculty in the planning process and on interdisciplinarity. Louis Hunt spoke to the Senate with enrollment news that is familiar to you, in particular the majority female entering class. The next meeting (19 November) also had a familiar topic, the Pack Essentials plan to address student (and staff and faculty) food and housing insecurity, presented by Professor Yoon from the Pack Essentials Steering Committee. Roy Baroff, Faculty and Staff Ombuds, spoke about his current work and the concerns of faculty as he sees it.

On 3 December, former Chair of the Faculty Margery Overton, Interim Senior Vice Provost for Institutional Research and Planning and Vice Provost for Academic Strategy described the process that has been chosen for the Strategic Plan, essentially the same as for the last plan. At the same meeting Bret Smith, Interim Dean of University College and Senior Associate Dean, DASA, spoke about revisions to syllabus policy. The new Vice Chancellor of Finance and Administration Charles Maimone attended the next meeting (7 January) and discussed the many facets of his job, the vast array of areas that a small city like NCSU requires to function smoothly. On 21 January, the four committees of the Senate (Academic Policy, Governance-Communication-Recruitment, Personnel Policy, and Resources
and Environment) reported on the work they have been doing so far this year (primarily investigating issues of concern). And finally, the 4 February meeting featured Allison Newhart, Vice Chancellor and General Counsel of the university, in a most informative look at the legal structure, its various tasks and challenges for the future. At the same meeting the Senate passed a resolution in support of the efforts of Pack Essentials.

ISSUES OF CONCERN

The role of the faculty in the selection of academic officers, such as dean, is an important matter of concern that appeared in several forms this year. One of these concerns is that the faculty of University College, which comprises Music and Health and Exercise Sports, has no position on the search committee for the new head of the Division of Student and Academic Affairs (DASA), who will also be dean of their college. The irregular situation of the faculty of University College remains an issue, just as it was 8 years ago at the time of the last Strategic Plan.

Other issues concern faculty (and everyone’s) safety: scooters and their hazards, speeding on Centennial Camus, the pedestrian crossing by the roundabout at Pullen Drive, and the door locks in Poe Hall. All of these issues were investigated by Resources and Environment. Concern was expressed that Faculty copyrights may be infringed by a certain Internet website that loads course materials. And there is a concern that benefits may be overlooked in the Strategic Planning process.

The Senate rooms, as I mentioned before, need considerable refurbishing, including
expensive audio-visual equipment which our budget cannot afford. We are currently consulting with the Director of Libraries about finding funds to bring the lighting, furniture, and curtains to a better level, and to repair some of the loss caused by unfortunate past renovation of our space. The Senate rooms, devoted to faculty use for 66 years, are as historic as almost any other space on campus. We need to take care of them.

FACULTY ASSEMBLY

The Faculty Assembly with representatives from the 17 institutions in the UNC System has met twice since the last report. The day-long meetings entail reports from many System officers, including the President. Government Relations and Academic Affairs are important components of the meeting, as are the comments of the Chair of the Assembly, David Green, whose insight and relationships bring the Assembly a valuable look at what is going on in the Board of Governors.

In his remarks at the last meeting (23 January) President Roper responded with some emotion to questions about the Silent Sam controversy, while several members of the HMI institutions asserted that, from their point of view, the issue is a distraction from the things that matter to minorities in the UNC System. These include, in particular, the chronic lack of resources for the minority schools, which were described as a Jim Crow situation. A second concern expressed was about access, and the move to amend the Minimum Admission Requirement (MAR).
The Chair of the Faculty, acting for the General Faculty rather than the Senate, has been included in the process of interviewing candidates for Chief of Campus Police, obviously a most important and sensitive position. Two senators who have background in police or public safety matters joined me in private meetings with the candidates, and evaluations of their merits.

In addition, the selection of a number of honorees and awards -- Watauga, Holladay, Board of Governor's Teaching Award, Alumni Distinguished Teaching Award, and so forth -- took place. All but the Watauga Award were selected by predominantly faculty committees.

Elections for Senate, Faculty Assembly, Grievance and Hearing pools, and Athletic Council occur every spring, and the Chair-Elect of the Faculty every even-numbered year. Because of the amount of work involved in even normal Senate work -- three hours every week at a minimum, with no tangible reward -- recruitment is difficult in some instances. I speak often of the "Coalition of the Willing," but finding and appealing to colleagues who might wish to serve is never automatic. Fortunately, there are outstanding individuals in the faculty and administration who understand the importance of having a strong voice for the faculty and an open line of communication to upper administration.

Recruiting a Chair of the Faculty is another matter. Although the Provost supports the position and although it is a fairly public job, the commitment of four years,
including two as chair, is daunting. (This is the reason that the current chair is repeating in the job after eight years.) We are still seeking qualified candidates.

The Commencement ceremony took place on 19 December, as the Trustees will all remember, and this Chair of the Faculty was again honored to lead the procession, carrying the University Mace. This is the fifth time I have had that role, more than any other Chair, and I shall end with this expression of my respect for the Mace, its story and symbolism (found on the Faculty Senate website), and for the institution it guards.
TOPIC OF INTEREST
NC State’s Centers and Institutes By the Numbers (FY2019)

NC State is the home of 34 Centers and 12 Institutes (C/I’s)

C/I primary missions are Research (30), Service (14) and Instruction (2)

C/I’s are affiliated with 891 Faculty and 614 Staff, with 182 FTE supported by State funds

12 C/I’s offer academic programs

C/I’s support, educate and train:
1,473 graduate students
5,438 undergraduates
20,543 K-12 students

C/I’s had R&D expenditures of >$145M

13 C/I’s partner with >280 member companies
Responsible Administrators of NC State Centers and Institutes

Office of Research and Innovation
October 30, 2019
NC State University Centers and Institutes

**Advanced Self Powered Systems of Sensors and Technologies Center** (ASSIST)

**Director:** Dr. Veena Misra

The mission of ASSIST is to transform health informatics, electronics, and biomedical engineering; to develop nanotechnologies for energy harvesting, battery-free energy storage, and ultra-low-power computation/communication; to integrate low power physiological and environmental nanosensors using biocompatible materials; to empower personal environmental and health monitoring.

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**Animal & Poultry Waste Management Center** (APWMC)

**Director (Interim):** Dr. M. Todd See

The Animal & Poultry Waste Management Center (APWMC) provides infrastructure, programs, and assistance for innovative basic and applied approaches to animal waste management with emphasis on development of knowledge and waste management options contributing toward the enhancement of North Carolina's and the nation's animal production industries, as well as to the improvement of the environment and quality of life for all citizens.

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**Bioinformatics Research Center** (BRC)

**Director:** Dr. Fred Wright

The mission of Bioinformatics Research Center (BRC) is to develop and implement methods for the management and interpretation of genomic data, with an emphasis on agriculture, forestry and veterinary medicine.

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**Center for Additive Manufacturing and Logistics** (CAMAL)

**Director:** Dr. Ola Harrysson

The goals of the Center are to provide comprehensive research capabilities in additive manufacturing spanning polymers, metals and ceramics as well as the finishing of these components. In addition, the Center will study the distributed supply chain that will be inherent in these distributed networks of manufacturers.
Center for Dielectrics and Piezoelectrics (CDP)

Director: Dr. Elizabeth C. Dickey

The CDP aims to develop an international leadership position in the fundamental material science and engineering that underpins dielectric and piezoelectric materials. Innovations in these areas often arise from research advances in materials chemistry, synthesis and processing that enable new materials and device functionality.

Center for Educational Informatics (CEI)

Director: Dr. James Lester

The mission of the North Carolina State University Center for Educational Informatics is to lead national efforts to design, develop, and deploy next-generation adaptive learning systems for K-12 education, post-secondary education, and training.

Center for Environmental and Resource Economic Policy (CEnREP)

Director: Dr. Harrison Fell

The mission of the Center for Environmental and Resource Economic Policy (CEnREP) is to link economics to science, agriculture and technology to improve public understanding and enhance public and private management of environmental resources.

Center For Family and Community Engagement (CFACE)

Director: Dr. Sarah Desmarais

The Center For Family and Community Engagement (CFACE) is dedicated to advancing safe, healthy, and productive families and communities. It promotes strategies that widen the circle of supports around families and communities. This is accomplished through emphasizing family leadership, community partnerships, cultural safety, and inclusive planning.

Center for Geospatial Analytics (CGA)

Director: Dr. Ross Meentemeyer

The mission of the Center is to promote graduate education and research in geospatial science and technology.
**Center for Human Health and the Environment** (CHHE)

**Director: Dr. Robert Smart**

The mission of CHHE is to serve as the nexus of environmental health science research at NC State by providing focus and leadership for interdisciplinary research aimed at understanding how human health, at both the individual and population levels, is impacted by environmental factors and to utilize this understanding to reduce the adverse impacts of environmental factors on human health.

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**Center for Integrated Fungal Research** (CIFR)

**Director: Dr. Ignazio Carbone**

The Center for Integrated Fungal Research (CIFR) provides leadership in research and educational objectives in the field of fungal parasitism and mycotoxins aimed to achieve significant breakthroughs in fungal research that will impact human welfare worldwide.

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**Center for Integrated Pest Management** (CIPM)

**Directors (Interim): Drs. Danesha Seth Carley and Yulu Xia**

The Center for Integrated Pest Management (CIPM) serves a lead role in technology development, program implementation, training, and public awareness for IPM at the state, regional, and national level.

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**Center for Marine Sciences and Technology** (CMAST)

**Director: Dr. David Eggleston**

The principal mission of the Center for Marine Sciences and Technology (CMAST) is to discover innovative solutions to questions and problems in marine systems and provide effective communication of these discoveries, by promoting multidisciplinary studies among research scientists, educators and extension specialists from the participating NC State University colleges, enhancing interaction with other educational institutions and agencies concerned with marine sciences and coastal natural resources, and providing a focal point for citizen contact with NC State University's marine science and extension faculty.

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**Center for Nuclear Energy Facilities and Structures** (CNEFS)

**Director: Dr. Abhinav Gupta**

The mission of the Center for Nuclear Energy Facilities and Structures (CNEFS) is to perform
research on innovative but rigorous solutions to problems in nuclear power plants and to transfer this technology to the industry.

**Center for Research in Scientific Computation (CRSC)**

**Director:** Dr. Hien Tran

The Center for Research in Scientific Computation (CRSC) is a formally recognized, multidisciplinary center administered by North Carolina State University. Its purpose is to foster research in scientific computing and provide a focal point for research in computational science, engineering and applied mathematics.

**Center for Research on Textile Protection and Comfort (TPACC)**

**Director:** Dr. Roger Barker

The Center for Research on Textile Protection and Comfort (TPACC) provides faculty and students with a coordinated environment where interdisciplinary problems related to textile comfort and protection performance can be studied and solved.

**Center for Turfgrass Environmental Research and Education (CENTERE)**

**Director:** Dr. Grady Miller

The Center for Turfgrass Environmental Research and Education (CENTERE) promotes research on the turfgrass systems and works on creating a multidisciplinary research 'culture' that develops new, environmentally sustainable management strategies. Emphasis is on basic research to resolve underlying processes that can lead to long-term solutions.

**Comparative Medicine Institute (CMI)**

**Director:** Dr. Jorge Piedrahita

The mission of the Comparative Medicine Institute (CMI) is to enhance collaborative, translational, interdisciplinary approaches for the comparative study of animal/human diseases.

**Ergonomics Center of North Carolina (The) (TECNC)**

**Director:** Ms. Julia G. Abate

The Ergonomics Center of North Carolina (TECNC) is a Public Service Membership Center specifically authorized by the North Carolina General Assembly and established in October 1994 with the original name North Carolina Ergonomics Resource Center through a partnership between
North Carolina State University (NCSU) and the North Carolina Department of Labor (NCDOL), Division of Occupational Safety and Health (OSHNC) to assist employees and employers in the prevention of occupational musculoskeletal disorders (MSDs) and the optimization of human-machine work systems design from safety and performance perspectives.

**Future Renewable Electric Energy Delivery and Management Systems Center (FREEDM)**

**Director: Dr. Iqbal Husain**

The Future Renewable Electric Energy Delivery and Management Systems Center (FREEDM) partners with universities, industry, and national laboratories in 28 states and nine countries to develop technology to revolutionize the nation's power grid and speed renewable electric-energy technologies into every home and business.

**General H. Hugh Shelton Leadership Center (SLC)**

**Director: Barbara H. Mulkey**

The mission of the General H. Hugh Shelton Leadership Center is to inspire, educate, and develop values-based leaders committed to personal integrity, professional ethics, and selfless service.

**Genetic Engineering and Society Center (GES)**

**Directors: Drs. Jennifer Kuzma and Fred Gould**

The GES Center serves as a key regional, national and international hub of interdisciplinary analyses and inclusive dialogue surrounding emerging technologies and society. It will take the lead in using in-depth research and dialogue-based approaches to provide public with rigorous, trustworthy analyses of how products of GE technologies may impact society and the environment.

**Golden Leaf Biomanufacturing Training and Education Center (BTEC)**

**Director: Gary Gilleskie**

The mission of Golden Leaf Biomanufacturing Training and Education Center (BTEC) is to fuel prosperity by positioning North Carolina as a global leader in bioprocess education and biomanufacturing workforce development.
Industry Research Programs in Forestry (IRPF)

Director: Dr. Rich Venditti

The Industry Research Programs in Forestry Center (IRPF) increases value to landowners and citizens through continuous genetic improvement of forest trees; creates innovative solutions to enhance forest productivity and value through sustainable management of site resources; leads in conservation and domestication of forest genetic resources for sustainable economic, ecological, and social benefits for present and future generations.

Institute for Advanced Analytics (IAA)

Director: Dr. Michael Rappa

The mission of the Institute for Advanced Analytics (IAA) is to promote graduate education in the emerging field of analytics. Its objective is to educate the citizens of North Carolina and beyond in the concepts, methods, software tools, and applications of analytics that have direct and practical relevance to industry.

Institute for Emerging Issues (IEI)

Director: Leslie Boney

The Institute for Emerging Issues (IEI) is a think-and-do tank that convenes leaders from business, government, nonprofit organizations, and higher education to tackle the biggest issues facing North Carolina.

Institute for Nonprofit Research, Education and Engagement (INPREE)

Director: Dr. Traciel Reid

The Institute for Nonprofit Research, Education and Engagement (INPREE) benefits the university through its presence as an expert source for information on nonprofits, respected partner in research and practice collaborations, recipient of external funding, and developer and manager of educational and research initiatives.

Institute for Transportation Research and Education (ITRE)

Director: Dr. Billy Williams

The Institute for Transportation Research and Education (ITRE) carries out research, training and technical support activities in the areas of surface and air transportation for a host of national, state, and local clients to address the nation’s critical transportation issues.
**Kenan Institute for Engineering, Technology & Science (KIETS)**

**Director: Dr. Ruben Carbonell**

The Kenan Institute for Engineering, Technology & Science (KIETS) develops partnerships in basic research, education, commercialization and public outreach with individuals and organizations dedicated to the advancement of science, engineering and technology as a force in improving the economic and social well-being of the nation and the world.

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**Khayrallah Center for Lebanese Diaspora Studies (KCLDS)**

**Director: Dr. Akram Khater**

The mission of the Khayrallah Center is to research, preserve and publicize the history of the Lebanese diaspora communities in the United States and beyond.

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**Next Generation Power Electronics Manufacturing Innovation Institute (NGPEMII)**

**Director: Dr. Victor Veliadis**

The Next Generation Power Electronics Manufacturing Innovation Institute ("Power America") is accelerating the adoption of advanced semiconductor components made with silicon carbide (SiC) and gallium nitride (GaN) into a wide range of products and systems.

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**Nonwovens Institute (NWI)**

**Director: Dr. Behnam Pourdeyhimi**

The Nonwovens Institute (NWI) is the world's first accredited academic program for the interdisciplinary study of engineered fabrics through an innovative partnership of industry, government, and academe. Operating on an 'open' platform, The Nonwovens Institute enables industry and university experts to develop the next generation of nonwoven applications while educating and training future industry leaders.
**North Carolina Clean Energy Technology Center (NCCETC)**

**Director: Mr. Steve Kalland**

The mission of the North Carolina Clean Energy Technology Center (NCCETC) is to advance a sustainable energy economy by educating, demonstrating and providing support for clean energy technologies, practices, and policies.

**North Carolina Institute for Climate Studies (NCICS)**

**Director: Otis Brown**

The mission of the North Carolina Institute for Climate Studies (NCICS) is to promote the discovery of new knowledge about global, regional, and local climate variability and its impacts and to provide information that is critical for determining trends and validating climate forecasts at all of these spatial scales.

**North Carolina Japan Center (NCJC)**

**Director: Dr. Jonathan Brewster**

The North Carolina Japan Center (NCJC) is a statewide resource, which serves to promote mutual understanding and closer relations between the people of North Carolina and Japan in academic, business cultural, educational, scientific, and technical matters, to the benefit of our state and its people.

**North Carolina Sea Grant College Program (NCSG)**

**Director: Dr. Susan Norma White**

The North Carolina Sea Grant (NCSG) program is one of 33 university-based programs across the United States authorized through the National Sea Grant College Program Act of 1966. Through research, outreach and education programs, NCSG provides unbiased, science-based information to enhance the sustainable use and conservation of ocean and coastal resources to benefit communities, the economy and the environment. NCSG is a multi-campus program of the University of North Carolina system.
**Nuclear Reactor Program (NRP)**

**Director: Dr. Ayman Hawari**

The Nuclear Reactor Program (NRP) applies reactor and nuclear techniques in supporting efforts to provide high quality undergraduate and graduate education, perform basic and applied research, disseminate knowledge, and provide training and specialized analytical services in support of institutions, agencies and industries in the State of North Carolina and the Nation.

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**Secure Computing Institute (SCI), former Institute for NEXT Generation IT Systems ITNG**

**Directors: Drs. Laurie Williams and William Enck**

The Secure Computing Institute (SCI) provides information technology professional services to state and federal agencies, private and public sector corporations, and research organizations.

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**Small Business and Technology Development Center (SBTDC)**

**Director: Dr. Scott Daugherty**

The multi-campus Small Business and Technology Development Center (SBTDC) is committed to providing knowledge, education and other supportive resources that enable existing small and mid-sized businesses, emerging entrepreneurs and local/state leaders to innovate and succeed.

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**Southeast Dairy Foods Research Center (SDFRC)**

**Director: Dr. MaryAnne Drake**

The Southeast Dairy Foods Research Center (SDFRC) conducts research, educates scientists, and develops and applies new technologies for processing of milk and its components into dairy products and ingredients with improved health, safety, quality and expanded functionalities that facilitate strategic decisions in the industry.

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**State Climate Office of North Carolina (SCONC)**

**Director: Dr. Kathie Dello**

The State Climate Office of North Carolina (SCO) is the primary source for NC weather and climate information and is involved in all aspects of climate research, education, and extension services.
**W. M. Keck Center for Behavioral Biology (The) (CBB)**

**Director: Dr. Brian Langerhans**

The goal of the Keck Center for Behavioral Biology (CBB) is to establish a multidisciplinary environment for interdepartmental training and collaborative research in the fundamental principles that govern animal behavior.

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**Water Resources Research Institute (WRRI)**

**Director: Dr. Susan Norma White**

The Water Resources Research Institute (WRRI) is one of 54 state water institutes that were authorized by the Water Resources Research Act of 1964 to administer and promote federal/state partnership in research and information transfer on water-related issues. WRRI is a multi-campus Institute.

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**William and Ida Friday Institute for Educational Innovation (WIFIEI)**

**Director: Dr. Hiller Spires**

The mission of the William and Ida Friday Institute for Educational Innovation (WIFIEI) is to advance education through innovation in teaching, learning, and leadership.

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**Belk Center for Community College Leadership and Research (BELK) pending BOT approval to establish**

**Director: Dr. Audrey Jaeger**

The Belk Center for Community College Leadership and Research brings together executive leadership development and actionable research to increase student success in community colleges. Its commitment is to develop the next generation of community college leaders in North Carolina and the nation who are committed to improving student success. Center will answer critical problems of practice that support leaders in making better decisions that improve student success.