September 9, 2021 University Affairs Committee Meeting

University Affairs Committee Meeting

September 9, 2021

Winslow Hall Conference Room

Raleigh, NC 27607

https://go.ncsu.edu/botmeeting
September 9, 2021 University Affairs Committee Meeting

Meeting Agenda

1:30pm

1. Call to Order, Public Meeting Notice, Reading of Ethics Statement
   Dewayne Washington, Chair

2. Roll Call
   Amy Jinnette, Board Professional

3. Review Committee Responsibilities and Plan of Work for 2021-2022 Year
   Dewayne Washington, Chair and Warwick Arden, Executive Vice Chancellor and Provost
   
   A. Committee Responsibilities and Plan of Work

4. Consent Agenda

   A. July 15, 2021 Meeting Minutes

      a. UAC Minutes 07/15/21 OPEN SESSION

   B. Center and Institute Requests

      a. Continuation - The Southeast Dairy Foods Research Center (SDFRC)

      b. Continuation - Center for Geospatial Analytics (CGA)

      c. Continuation - Bioinformatics Research Center (BRC)

   C. Conferral of Academic Tenure Requests

      a. Conferral of Academic Tenure Title Page
5. Reports

A. Fall Enrollment Report  
Don Hunt, Senior Vice Provost for Enrollment Management and Services  
   a. BOT-2021-Enrollment

B. Student Body President Report  
McKenzy Heavlin, Student Body President  
   a. SBP Sept. BOT Report

C. Provost Update  
Warwick Arden, Executive Vice Chancellor and Provost  
   a. September 9, 2021 Academic Programs Update  
      a. Academic Programs 09/09/2021  
      b. 2021-2022 Academic Year Initiatives

6. Committee Discussion

7. Closed Session

8. Reconvene in Open Session

9. Adjourn  
Dewayne Washington, Chair
COMMITTEE RESPONSIBILITIES
Board of Trustees - University Affairs Committee

Delegated Authority and Assignments
Based on Board of Trustees Bylaws - POL 01.05.01, Appendix 1, Section V

Academic Programs
Review and recommend academic degree proposals requiring BOG approval*
Receive notification of other academic program proposals (ex. certificates)

Student Affairs
Review and recommend campus initiated tuition increases and student fees

EHRA Personnel (Exempt from the State Human Resources Act)
Conferral of permanent tenure*
- New faculty hires tenured at a previous institution
- Faculty candidates reviewed through annual reappointment, promotion, and tenure process

Salary matters
- Establish salary ranges for SAAO employees that are not otherwise established by UNC-SO
- Recommend any salary increase for an EHRA employee, other than for Vice Chancellors, that requires approval by the Board of Governors

Non-salary compensation
- Approve non-salary compensation for all EHRA employees other than Vice Chancellors

Designation of particular Distinguished Professorships as time limited*
Conferral of Emeritus status to SAAO Tier I employees
Appoint or extend the contract of the Athletic Director and Head Coaches

Appointment of Deans
Review and recommend petitions relating to employees seeking political candidacy and/or public office holding

Administrative separation and retreat rights
- "Retreat rights" are those conditions of employment that would apply should the administrator leave his/her administrative position.
- Review and approve any administrative separation or retreat rights subject to BOT approval under UNC and NC State policies.
Employee Appeals
Hear appeals of discharged or suspended employees
Hear and render a decision on appeals from the disposition of grievances

Honorary Degrees, Awards and Distinctions
Honorary Degrees and Holladay Medals
• Receive and review nominations
• Recommend nominees to Board of Trustees for approval
Provide advice in Chancellor’s selection of a commencement speaker

Planning
Review and recommend changes in the university’s mission statement
Advise Chancellor on development of plans to carry out the university’s mission
Review and approve establishment, continuation and discontinuation of Centers and Institutes

Policy Development
Recommend to Board policies related to:
• Personnel
• Collection of tuition, fees and other monies from students
• Administration of scholarships and other financial aid to students
• Provision of student services activities, including government and intercollegiate athletics
• Research, Centers and Institutes

Reports
Hear reports from the Chair of Faculty, Chair of Staff Senate, and Student Body President

| Rajade M. Berry-James, Chair, Faculty | Helen DiPietro, Chair, Staff Senate | McKenzy Heavlin, Student Body President |

Other reports include:
• Enrollment
• Faculty retention
• Graduation statistics
• Intercollegiate athletics
• Residency for full scholarship undergraduate students
• Students requiring special consideration for admission
• Strategic Plan
NC STATE BOARD OF TRUSTEES
UNIVERSITY AFFAIRS COMMITTEE
2021-2022 PLAN OF WORK (DRAFT)

September
- Centers and Institutes Requests (UNC Pol. 400.5 (R) (NC State Pol. 01.05.01 App. 1, V.f.iii) (as needed)
  Review and approve the establishment, continuation and discontinuation of Centers and Institutes.
- Committee Responsibilities and Plan of Work (Annually)
  Review committee’s delegated authority and assignments and develop plan of work for the year.
- Degree Program Proposals (NC State Pol. 01.05.01, App.1, V.c.i.) (as needed)
  Review and recommend approval to the BOT.
- Fall Enrollment Report / Progress Toward Enrollment Planning (NC State Pol. 01.05.01, App 1, V.f.ii)
  Receive report and comment as warranted.
- Honorary Degree Recommendations (UNC Pol. Ch. 100.1, Appendix 1 (IV) (NC State Pol 01.05.01, App.1, V.e.i)
  Receive and review nominations as needed. Recommend nominees for approval to the BOT.
- Personnel Requests (NC State Pol. 01.05.01, App 1.V.a.i.ii.iii.iv.vi.vii.viii.ix.b.i.ii) (as needed)
  Approve or recommend approval to the BOG.
- Salary Ranges for Faculty (Annually) [If not shared at July meeting]
  The Chancellor has delegated authority for faculty salary ranges. Upon the Chancellor’s approval, these ranges are shared with the committee.
- Student Body President Report (NC State Pol. 01.05.01 App.1, V.h.i.)
  Receive report and comment as warranted.

November
- Campus Initiated Tuition Increase and Student Fees (UNC Pol. 1000.11, II, 3.A. iii) (NC State Pol. 11.00.01 and 01.05.01, App. 1, V.d.i) Review and recommend approval to the BOT.
- Centers and Institutes Requests (UNC Pol. 400.5 (R) (NC State Pol. 01.05.01 App. 1, V.f.iii) (as needed)
  Review and approve the establishment, continuation and discontinuation of Centers and Institutes.
- Commencement Speaker – December (NC State Pol. 01.05.01 App. 1, V.e.ii)
  Provide advice in Chancellor’s selection of Commencement Speaker.
- Degree Program Proposals (NC State Pol. 01.05.01, App.1, V.c.i) (as needed)
  Review and recommend approval to the BOT.
- Faculty Retention Report
  Receive report and comment as warranted.
NC STATE BOARD OF TRUSTEES
UNIVERSITY AFFAIRS COMMITTEE
2021-2022 PLAN OF WORK (DRAFT)

- Faculty Senate Report (NC State Pol. 01.05.01 App.1, V.h.i.)
  Receive report and comment as warranted.
- Honorary Degree Recommendations (UNC Pol. Ch. 100.1, Appendix 1 (IV) (NC State Pol. 01.05.01, App.1, V.e.i)
  Receive and review nominations as needed. Recommend nominees for approval to the BOT.
- Personnel Requests (NC State Pol. 01.05.01, App 1.V.a.i.ii.iii.iv.vi.vii.viii.ix.b.i.ii)) (as needed)
  Approve or recommend approval to the BOG.
- Staff Senate Report (NC State Pol. 01.05.01 App.1, V.h.i.)
  Receive report and comment as warranted.

February
- Centers and Institutes Overview (Informational report provided every 2 years.)
  Receive report and comment as warranted.
- Centers and Institutes Requests (UNC Pol. 400.5 (R) (NC State Pol. 01.05.01 App. 1, V.f.iii)) (as needed)
  Review and approve the establishment, continuation and discontinuation of Centers and Institutes.
- Degree Program Proposals (NC State Pol. 01.05.01, App.1, v.c.i) (as needed)
  Review and recommend approval to the BOT.
- Graduation Report
  Receive report and comment as warranted.
- Holladay Medal Recommendations (NC State Pol. 01.05.01, App.1, V.e.i) (Annually)
  Receive and review nominations. Recommend nominees for approval to the BOT.
- Honorary Degree Recommendations (UNC Pol. Ch. 100.1, Appendix 1 (IV) (NC State Pol. 01.05.01, App.1, V.e.i)
  Receive and review nominations as needed. Recommend nominees for approval to the BOT.
- Personnel Requests (NC State Pol. 01.05.01, App 1.V.a.i.ii.iii.iv.vi.vii.viii.ix.b.i.ii) (as needed)
  Approve or recommend approval to the BOG.
- Reappointment, Promotion and Tenure Process
  Receive report and comment as warranted.
- Student Body President Report (NC State Pol. 01.05.01 App.1, V.h.i.)
  Receive report and comment as warranted.
- UNC Report on Intercollegiate Athletics (UNC Pol. 1100.1) (Annually)
  Receive and review report prior to submission to UNC System Office.
April

- Annual Human Resources Compliance Report (UNC Pol. 600.3.4.)
  Review report prior to submission to UNC System Office.
- Centers and Institutes Requests (UNC Pol. 400.5 (R) (NC State Pol 01.05.01 App. 1, V.f.iii) (as needed)
  Review and approve the establishment, continuation and discontinuation of Centers and Institutes.
- Commencement Speaker – May (NC State Pol. 01.05.01 App. 1, v.e.ii)
  Provide advice in Chancellor’s selection of Commencement Speaker.
- Degree Program Proposals (NC State Pol. 01.05.01, APP1, v.c.i)(as needed)
  Review and recommend approval to the BOT.
- Distinguished Professorship Update
  Receive information about recently awarded professorships of distinction as applicable.
- Faculty Senate Report (NC State Pol. 01.05.01 App.1, V.h.i.)
  Receive report and comment as warranted.
- Honorary Degree Recommendations (UNC Pol. Ch. 100.1, Appendix 1 (IV) (NC State Pol 01.05.01, App.1, V.e.i)
  Receive and review nominations as needed. Recommend nominees for approval to the BOT.
- Nepotism Report (UNC Pol. 300.4.2) (Annually)
  Receive annual report on university’s compliance with UNC Policy 300.4.2.
- Personnel Requests (NC State Pol. 01.05.01, App 1.V.a.i.ii.iii.iv.vi.vii.viii.ix.x.i.ii) (as needed)
  Approval or recommend approval to the BOG.
- Residency for Full Scholarship Undergraduate Students (§ 116-143.6) (UNC Pol. 900.4 [G])(NC State Reg 02.70.03)
  Receive report and comment as warranted.
- Staff Senate Report (NC State Pol. 01.05.01 App.1, V.h.i.)
  Receive report and comment as warranted.
- Students Requiring Special Consideration (UNC Pol. 700.1.1.1[R] and UNC Pol. 1100.1)(NC State Reg 02.10.04)
  Receive report and comment as warranted.
- Salary Ranges for Senior Academic and Administrative Officers (SAAO) (UNC Pol. 600.3.4) (NC State Pol. 01.05.01, App. 1, V.a.ii)
  Review and approve recommended ranges.
NC STATE BOARD OF TRUSTEES
UNIVERSITY AFFAIRS COMMITTEE
2021-2022 PLAN OF WORK (DRAFT)

Special Meetings (called as needed)
- There may be items that need the committee’s consideration in between the regularly scheduled meetings. In these cases, a special meeting of the committee will be held.

Additional Topics for Discussion
- Topics associated with implementation of the strategic plan/other topics of interest
- Updates from the Provost

Desired Outcomes
- To comply with delegated authority and assignments as prescribed by N.C. General Statutes, UNC Board of Governors Policies and NC State University Policies.
- To keep the Board fully informed of major issues and policies associated with the governance of the university.
- To solicit the Board’s input on policy, strategy and goal-setting for the university.
CONSENT
AGENDA
ITEMS
OPEN SESSION MINUTES

University Affairs Committee
Board of Trustees
North Carolina State University
July 15, 2021

The University Affairs Committee of the Board of Trustees of North Carolina State University held a meeting in person in Winslow Hall Conference Room and via Zoom teleconferencing on July 15, 2021.

Members Present: Dewayne Washington, Committee Chair
Jim Harrell
McKenzy Heavlin
Ven Poole
Stan Kelly
Perry Safran

Chair Washington called the meeting to order at 9:00 a.m. The roll was called and a quorum was present.

Chair Washington reminded all attendees that this is a public meeting but not a meeting for public comment and read the State Government Ethics Act to remind all members of their duty to report conflicts of interest or appearances of conflict.

Consent Agenda
Chair Washington reviewed the list of items on the consent agenda and asked Provost Arden to provide brief remarks on the two Center disestablishment requests. Provost Arden explained that key members of the Keck Center for Behavioral Biology (CBB) have left NC State leaving a leadership vacuum that has been challenging to fill. In addition, there has also been a loss of funding curtailing capacity to sustain Center activities. The Center’s Executive Committee, with concurrence from the College of Sciences, has requested disestablishment of the Center; remaining activities of the Center members will be administered by their colleges and departments. The North Carolina Japan Center (NCJC) was established in 1980 and reports to the Office of the Executive Vice Chancellor and Provost. It has been determined that the mission of the Center better aligns with the Office of Global Engagement, thus the Center will cease from being a standalone University unit that is governed by the University’s Regulation on Centers and Institutes and will continue its important work functioning at the unit level within the Office of Global Engagement.

A motion was made by Trustee Kelly, and seconded by Trustee Harrell, to approve the consent agenda items which included approval of the April 15, 2021 open and closed session minutes; Center and Institute requests, including two disestablishment requests and five continuation requests; designation that four distinguished professorships may be awarded on a time-limited basis; and conferral of tenure to eight (8) new faculty members. Chair Washington called for a vote by roll call.

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<td>Washington</td>
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The motion passed.
Provost Update
In his report, Provost Arden notified the committee of three academic program updates: a request to add a 100% online delivery mode for the B.S. in Agricultural Science; a request to add a 100% online delivery mode for the Master of Operations Research and an update on the Masters in Advanced Architectural Studies (MAAS) degree program title change. In order to remain in compliance with the National Architectural Accrediting Board’s standards, last year the School of Architecture proposed changing the Master of Architecture Track 2 program to the Master of Advanced Architectural Studies (MAAS) effective Fall 2021. The UNC System Office determined that rather than change the degree title it would be better to split the MAAS degree into two degrees and submit a new Request to Establish. On May 27, 2021 the Board of Governors approved establishment of the Master of Advanced Architectural Studies.

Next, Provost Arden introduced Lori Preiss, Director of Classification and Compensation in University Human Resources, to share information about the 2021-2022 Faculty Salary Ranges. The ranges have been approved by Chancellor Woodson and are being presented to the Board of Trustees as an informational item. Ms. Preiss shared information about the purpose of the ranges and the source data and methodology used to form the ranges. She also shared key takeaways pertaining to the overall movement of the 213 faculty salary ranges. While the data indicate improvement in some areas, overall we continue to be in a challenging situation with respect to competitiveness of faculty salaries.

Finally, the Provost shared the following updates regarding campus leadership positions:
- Dr. Don Hunt has been appointed Senior Vice Provost for Enrollment Management and Services.
- Dr. Donna Petherbridge has been appointed Interim Vice Provost for DELTA.
- Dr. Debbie Acker has been named Interim Director of the Shelton Leadership Center.
- Dean Mary Ann Danowitz will step down as Dean of the College of Education effective October 5; Dr. Paola Szajn will serve as Interim Dean. An announcement will be made in the fall about a national search for a permanent dean.
- Dean Paul Lunn has announced he will step down from his position at NC State in mid-January 2022 to become dean of his alma mater, the University of Liverpool School of Veterinary Science.
- Dr. Deanna Dannels began her appointment as Dean of the College of Humanities and Social Sciences on July 1, 2021.

Closed Session
With no further business in open session, at 9:29 a.m. Trustee Poole made the motion, seconded by Trustee Heavlín to go into closed session to establish the material terms of an employment contract and to consider the qualifications, competence, performance, character, fitness, conditions of appointment or conditions of initial employment of an employee or prospective employees.

Chair Washington called for a vote by roll call.

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<td>Washington</td>
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The motion passed.
Reconvene in Open Session
After coming out of closed session, Chair Washington announced the meeting in open session.

Trustee Poole made a motion to approve the Addendum to the Employment Agreement for the Head Coach of Swimming and Diving. Trustee Harrell seconded the motion. Chair Washington called for a vote by roll call.

Harrell AYE
Heavlin AYE
Kelly AYE
Poole AYE
Safran AYE
Washington AYE

The motion passed.

Trustee Heavlin made a motion to approve the Addendum to the Employment Agreement for the Head Coach of Women’s Track and Field and Cross Country. Trustee Harrell seconded the motion. Chair Washington called for a vote by roll call.

Harrell AYE
Heavlin AYE
Kelly AYE
Poole AYE
Safran AYE
Washington AYE

The motion passed.

Trustee Poole made a motion to approve the Addendum to the Employment Agreement for the Head Coach of Men’s Basketball. Trustee Harrell seconded the motion. Chair Washington called for a vote by roll call.

Harrell AYE
Heavlin AYE
Kelly AYE
Poole AYE
Safran AYE
Washington AYE

The motion passed.

Trustee Heavlin made a motion to approve the non-salary compensation request for the Head Coach of Swimming and Diving. Trustee Harrell seconded the motion. Chair Washington called for a vote by roll call.

Harrell AYE
Heavlin AYE
Kelly AYE
Poole AYE
Safran AYE
Washington AYE

The motion passed.
With no further business, Chair Washington announced the meeting adjourned at 9:56 a.m.

Submitted by ________________________________

Secretary to the Committee

Approved by ________________________________

Chair of the Committee
MEMORANDUM

TO: W. Randolph Woodson  
   Chancellor  
   NC State University

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

SUBJECT: Recommendation to continue the Southeast Dairy Foods Research Center (SDFRC) under Regulation 10.10.04

DATE: June 29, 2021

The Southeast Dairy Foods Research Center (SDFRC) was established by the UNC System Board of Governors in September 1988 as a UNC System sanctioned Center administered by NC State’s College of Agriculture and Life Sciences (CALS). SDFRC’s mission is to conduct research, educate scientists, and develop and apply 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.

In accordance with NC State Reg. 10.10.04, a Periodic Review of Center activities in fiscal years 2016-2020 was completed by an external Review Team on April 7-8, 2021. Following the receipt of the Review Team’s report, a detailed response from the Center and a request for continuance from CALS, this memo requests your approval of continuance.

The Report delivered by the Review Team strongly supports the mission and direction of the Center. Indeed, the Report states that “The SDFRC is unique among dairy and non-dairy centers with which we are familiar, in that the SDFRC has developed, over many years, strong connections within NC State University and externally with the dairy industry, other universities, and dairy centers across the US. This strong connection has led to significant increases, in the last five years, in budget, the number of research projects, peer-reviewed publications, and the number of industry members in the Center.”

The Review Report provides two broad recommendations to ensure that the Center’s upward trajectory continues: (1) New faculty should be quickly integrated into Center operations both locally and nationally, and (2) The Center should work with CALS to relieve current space constraints that limit the continued growth of SDFRC operations.

The Office of Research and Innovation recommends that SDFRC should continue as a University Center as sanctioned by the NC State Board of Trustees, and requests your approval of this recommendation.

MAV/mh

cc: Richard Linton, Dean, College of Agriculture and Life Sciences  
    Steve Lommler, Associate Dean for Research  
    MaryAnne Drake, Director, SDFRC  
    Carl Hollifield, Associate Director, SDFRC  
    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 Southeast Dairy Foods Research Center (SDFRC)
         under Regulation 10.10.04

DATE: June 30, 2021

In response to your Memorandum dated June 29, 2021, authorization is hereby granted to forward the
request to continue the Southeast Dairy Foods Research Center (SDFRC) to the Board of Trustees for
approval.

WRW/mh

cc: Richard Linton, Dean, College of Agriculture and Life Sciences
    Steve Lommel, Associate Dean for Research
    MaryAnne Drake, Director, SDFRC
    Carl Hollifield, Associate Director, SDFRC
    Jonathan Horowitz, Associate Vice Chancellor for Research
    Larisa Slark, Centers and Institutes Specialist
MEMORANDUM

TO: W. Randolph Woodson
   Chancellor
   NC State University

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

SUBJECT: Recommendation to continue the Center for Geospatial Analytics (CGA) under Regulation 10.10.04

DATE: August 9, 2021

The Center for Geospatial Analytics (CGA) was established by the UNC System Board of Governors in August 1983 as a UNC System-sanctioned Center administered by NC State's College of Natural Resources (CNR). CGA's mission is to promote graduate education and research in geospatial science and technology.

In accordance with NC State Reg. 10.10.04, a Periodic Review of Center activities in fiscal years 2016-2020 was completed by an external Review Team on May 26, 2021. Following the receipt of the Review Team's report, a detailed response from the Center and a request for continuance from the CNR, this memo requests your approval of continuance.

The Report delivered by the Review Team strongly supports the mission and direction of the Center. Indeed, the Report states that "We were very impressed by all aspects of the center, which appears to us well managed and with a clear vision of its role on the campus, in the state, and nationally. We heard from the faculty that the Center is a great community and a collegial place to work; the faculty and PhD students expressed appreciation for the commitment and capabilities of the staff; and the PhD students were complimentary about the dedication of the faculty."

The Review Report provides a number of broad recommendations to ensure that the Center's upward trajectory continues: (1) Increase outreach to State of NC agencies and NC university campuses to identify new collaborative opportunities, (2) Review graduate education programs to ensure that they are current, (3) Plan for the future expansion of the Center, (4) Revitalize the Center's External Advisory Board, and (5) Consider the recruitment of an Advancement officer.

The Office of Research and Innovation recommends that the CGA should continue as a University Center as sanctioned by the NC State Board of Trustees, and requests your approval of this recommendation.

MAV/mh

cc: Myron F. Floyd, College of Natural Resources
    Robert Scheller, Interim Associate Dean for Research
    Ross Meentemeyer, Director, CGA
    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 Center for Geospatial Analytics (CGA) under Regulation 10.10.04

DATE: August 10, 2021

In response to your Memorandum dated August 9, 2021, authorization is hereby granted to forward the request to continue the Center for Geospatial Analytics (CGA) to the Board of Trustees for approval.

WRW/mh

cc: Myron F. Floyd, College of Natural Resources
    Robert Scheller, Interim Associate Dean for Research
    Ross Meentemeyer, Director, CGA
    Jonathan Horowitz, Associate Vice Chancellor for Research
    Larisa Slark, Centers and Institutes Specialist
MEMORANDUM

TO: W. Randolph Woodson
    Chancellor
    NC State University

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

SUBJECT: Recommendation to continue the Bioinformatics Research Center (BRC) under Regulation 10.10.04

DATE: August 9, 2021

The Bioinformatics Research Center (BRC) was established by the UNC System Board of Governors in August 2000 as a UNC System-sanctioned Center administered jointly by NC State's College of Sciences (COS) and College of Agriculture and Life Sciences (CALS). The BRC's mission is to develop and implement methods for the management and interpretation of genomic data, with an emphasis on agriculture, forestry and veterinary medicine.

In accordance with NC State Reg. 10.10.04, a Periodic Review of Center activities in fiscal years 2016–2020 was completed by an external Review Team on May 20-21, 2021. Following the receipt of the Review Team's report, a detailed response from the Center and a request for continuance from the COS, this memo requests your approval of continuance.

The Report delivered by the Review Team strongly supports the mission and direction of the Center. Indeed, the Report states that "the committee is very enthusiastic about [the] BRC and hopes to see it flourish further." Additionally, the Review Team "commends the BRC team for the excellent progress made since the birth of the Center. The Center coordinates the efforts of a very diverse group of researchers and getting everybody to push in a common direction is a huge challenge, which seems to be met with success so far."

The Review Report provides two broad recommendations to ensure that the Center's upward trajectory continues: (1) Additional personnel and resources are needed to support ongoing and new (e.g., NC Plant Sciences Initiative) University initiatives, and (2) Student training should be enhanced by providing more basic instruction on how to effectively use the computing cluster, advanced training in computing concepts, and fundamentals of computing.

The Office of Research and Innovation recommends that the BRC should continue as a University Center as sanctioned by the NC State Board of Trustees, and requests your approval of this recommendation.

MAV/mh

cc: Chris McGahan, College of Sciences
    Heather Patlau, Associate Dean for Research
    Fred Wright, Director, BRC
    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 Bioinformatics Research Center (BRC) under Regulation 10.10.04

DATE: August 10, 2021

In response to your Memorandum dated August 9, 2021, authorization is hereby granted to forward the request to continue the Bioinformatics Research Center (BRC) to the Board of Trustees for approval.

WRW/mh

cc: Chris McGahan, College of Sciences
Heather Patisaul, Associate Dean for Research
Fred Wright, Director, BRC
Jonathan Horowitz, Associate Vice Chancellor for Research
Larisa Slark, Centers and Institutes Specialist
Conferral of Academic Tenure:

The information regarding conferral of academic tenure is included in the Closed Session Materials.
REPORTS
EXECUTIVE SUMMARY

- Meeting 2025 enrollment goals
- Fall 2021 updates
- Working towards student success
  - Retention rates
  - Graduation rates
- Wrap up and questions

2025 GOALS
## 2025 Enrollment Goals

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<th>Category</th>
<th>2015 Baseline</th>
<th>2021 Current</th>
<th>2025 Target</th>
<th>% to Target</th>
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<td>Total Undergraduate (Bachelor)</td>
<td>22,131</td>
<td>24,663</td>
<td>24,720</td>
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<td>Total Ag Institute</td>
<td>330</td>
<td>226</td>
<td>355</td>
<td>36.3%</td>
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<tr>
<td>Total Master's</td>
<td>5,316</td>
<td>5,727</td>
<td>6,695</td>
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<td>Total Doctoral</td>
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<td>Total DVM</td>
<td>396</td>
<td>399</td>
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<td>Total Degree Seeking</td>
<td>31,534</td>
<td>34,564</td>
<td>36,400</td>
<td>5.0%</td>
</tr>
<tr>
<td>Certificates in Colleges</td>
<td>282</td>
<td>490</td>
<td>625</td>
<td>21.8%</td>
</tr>
<tr>
<td>Total Non-Degree Seeking</td>
<td>2,199</td>
<td>1,924</td>
<td>1,675</td>
<td>+14.9%</td>
</tr>
<tr>
<td><strong>GRAND TOTAL</strong></td>
<td><strong>34,015</strong></td>
<td><strong>36,978</strong></td>
<td><strong>38,700</strong></td>
<td><strong>4.4%</strong></td>
</tr>
</tbody>
</table>

Source: data.emas.ncsu.edu as of Aug 16th, 2021

---

**FALL 2021**
FALL 2021 SNAPSHOT

36,978 total enrollment

0.4% increase in total undergraduate enrollment

4.9% increase in total graduate enrollment

Source: data.emas.ncsu.edu as of Aug 16th, 2021

FALL 2021 COURSE MODES

279,173 total undergraduate in-person total credit hours

<table>
<thead>
<tr>
<th>Mode</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Person</td>
<td>79.9%</td>
</tr>
<tr>
<td>Online</td>
<td>18%</td>
</tr>
<tr>
<td>Hybrid</td>
<td>2%</td>
</tr>
</tbody>
</table>

57,982 total graduate in-person total credit hours

<table>
<thead>
<tr>
<th>Mode</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Person</td>
<td>75.8%</td>
</tr>
<tr>
<td>Online</td>
<td>23%</td>
</tr>
<tr>
<td>Hybrid</td>
<td>1%</td>
</tr>
</tbody>
</table>

86.3% in Person (Fall 2019) Undergrad Credit Hours
81.3% in Person (Fall 2019) Graduate Credit Hours

Source: data.emas.ncsu.edu as of Aug 16th, 2021 – Updated figures will be provided

NC STATE
FALL 2021 NEW STUDENT TRENDS

37,000+ total applications  
▲ 4.6% increase

17,000+ total admitted  
▲ 4.6% increase

6,400+ total accepted  
▲ 6.0% increase

Incoming students are majority female and more diverse

Increases in Hispanic (22%), Black or African American (11%) and underrepresented minorities (13%)

Source: data.emas.ncsu.edu as of Aug 16th, 2021

FALL 2021 NEW STUDENT TRENDS

Increased Tier 1 and 2 incoming student enrollment

Increased In-State incoming student enrollment by 3%

PERCENT OF INCOMING STUDENTS BY RESIDENCY

85.90% In-State

11.78% Out-of-State

2.30% International

Source: data.emas.ncsu.edu as of Aug 16th, 2021
STUDENT SUCCESS

STUDENT SUPPORT PROGRAMS

- Goodnight Scholars Program
- Community College Collaboration
- Pre-College Programs
- Provost’s Professional Experience Program
- Student Services Center
- Veterans Education Benefits

- Summer START
- Academic Success Center
- Career Development Center
- Disability Resources Office
- Military Veteran Services
- TRIO Programs
## Retention Rates
Retention rates for all incoming undergrads students:

<table>
<thead>
<tr>
<th>Year</th>
<th>1 Year</th>
<th>2 Year</th>
<th>3 Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2016</td>
<td>92.8%</td>
<td>89.2%</td>
<td>87.1%</td>
</tr>
<tr>
<td>Fall 2017</td>
<td>93.0%</td>
<td>89.0%</td>
<td>87.2%</td>
</tr>
<tr>
<td>Fall 2018</td>
<td>93.4%</td>
<td>89.7%</td>
<td>86.8%*</td>
</tr>
<tr>
<td>Fall 2019</td>
<td>93.2%</td>
<td>88.8%*</td>
<td></td>
</tr>
<tr>
<td>Fall 2020</td>
<td>93.0%*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Estimated

Source: data.eras.ncsu.edu as of Aug 19th, 2021

## Graduation Rates
Graduation rates increased for all incoming undergrads students by:

<table>
<thead>
<tr>
<th>Year</th>
<th>4 Year</th>
<th>5 Year</th>
<th>6 Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2013</td>
<td>62.2%</td>
<td>80.1%</td>
<td>82.5%</td>
</tr>
<tr>
<td>Fall 2014</td>
<td>62.7%</td>
<td>81.1%</td>
<td>83.7%</td>
</tr>
<tr>
<td>Fall 2015</td>
<td>67.1%</td>
<td>82.7%</td>
<td>84.6%*</td>
</tr>
<tr>
<td>Fall 2016</td>
<td>68.3%</td>
<td>83.2%*</td>
<td></td>
</tr>
<tr>
<td>Fall 2017</td>
<td>69.2%*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Estimated

Source: data.eras.ncsu.edu as of Aug 19th, 2021
WRAP UP

- Increases in overall enrollment
- 79.9% of undergraduate courses are offered in-person
- Increases in new student enrollment
  - Diversity increases (Hispanic and Black or African American)
  - Tier 1 and Tier 2 increases
- Student support to drive success
- Increases in overall graduation rates
DATA APPENDICES – INCOMING FIRST YEAR

ACCEPTED ENROLLMENT BY RACE

- Two or more races: 4.3%
- Unknown: 2.3%
- Nonresident Alien: 8.0%
- Native Hawaiian/Pacific Islander: 8.0%
- Hispanic: 8.7%
- Black or African American: 6.1%
- Asian: 6.4%
- American Indian or Alaskan Native: 0.0%

Fall 2021 vs Fall 2020
DATA APPENDICES – INCOMING FIRST YEAR

TIER 1 AND 2 ACCEPTED

<table>
<thead>
<tr>
<th>Year</th>
<th>Tier 1</th>
<th>Tier 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>257</td>
<td>218</td>
</tr>
<tr>
<td>2018</td>
<td>266</td>
<td>256</td>
</tr>
<tr>
<td>2019</td>
<td>855</td>
<td>875</td>
</tr>
<tr>
<td>2020</td>
<td>770</td>
<td></td>
</tr>
<tr>
<td>2021</td>
<td>322</td>
<td>1,017</td>
</tr>
</tbody>
</table>

NC STATE

DATA APPENDICES – INCOMING FIRST YEAR

- **32,907** Total Applications
- **75%** Top 20% of HS Class
- **29.2** Average ACT
- **15,602** Total Admitted
- **45%** Top 10% of HS Class
- **1340** Average SAT
- **5,030** Total Accepted
- **4.31** Average GPA (weighted)
- **3.83** Average GPA (unweighted)

NC STATE
Founded and funded by students, the NC State Student Government encourages students to express their concerns and ideas, promotes an environment of open discourse and academic excellence, and proactively represents the student voice to the University administration and Board of Trustees through ethical and accountable public service.
COVID-19

- Three students engaged with the Chancellor’s Post COVID-19 Innovation Task Forces to identify positive lessons and practices implemented during COVID-19
- Student Government’s COVID-19 Select Department released their report on Fall 2021 on June 28 with three main themes:
  - Increased Flexibility for Students in the Classroom
  - Continued Commitment to Address Food/Housing Insecurity
  - Access to Resources for Student Wellbeing Outside the Classroom
- Select Department will continue to engage and gather feedback from the student body regarding Fall operations
- Student Government attempting to lead by example for how to safely participate and host in-person events and meetings
RETURN TO CAMPUS

- Students tend to fall into two categories:
  - Excited to be back, but anxious the university will have to pivot
  - Excited to be back and happy everything has some in-person component
- Students following university guidelines well, but still have concerns regarding occupancy density in both classroom and social settings
- Orientation sessions were well organized and highly successful at welcoming new students to NC State
- Wolfpack Welcome Week was extremely successful with high participation at all events
- Student Government hosted the 11th annual Respect the Pack on August 19th, 2021 which focused on exploring the ‘us’ in inclusion
  - We welcomed Nick Courmon as the guest speaker for this event
STUDENT SENATE and TREASURY

- 101st Session Senate Meeting Schedule:
  - Previous Meetings: April 14, April 28, July 28 (special meeting), August 18
  - September Meetings: Sept. 1, Sept. 15, Sept. 29
- Student Senate passed SB 01 in the Spring which established a standing committee on Inclusion and Outreach
- Student Body Treasurer Harrison Andrews and our Treasury Branch have reorganized our Student Appropriations information and website to increase access for registered student organizations
- Student Government Board of Elections facilitating Fall Elections for students to join Student Senate
- Engagement with Student Government is high with numerous student appointments to internal and university committees
VISION and GOALS

- **Student Government** spent the summer solidifying our goals
  - Return to Campus
  - Increase and Support Recruitment and Retention Efforts
  - Address Student Connection to Campus
  - Create Lasting Systems to Support Students
  - Strong presence at the Association of Student Governments

- **ACC Advocacy Days**
  - NC State Student Government will be hosting and planning the 2021 ACC Advocacy Days in Washington, DC this fall for all ACC institutions

- **The Blood Connection Blood Wars**
  - In partnership with The Blood Connection, NC State will participate in a blood drive competition on September 14-16, 2021 against East Carolina University

- **SG100 Celebration**
  - To celebrate Student Government reaching 100 years and all the work of student leaders over the years, Student Government will be hosting an in-person weekend celebration for alumni and current members
Questions?

McKenzy Heavlin, Student Body President
sbp@ncsu.edu
Notification of Academic Degree – Related Proposals  
September 9, 2021 University Affairs Committee/Board of Trustees

- New Graduate Certificate – Agriculture Data Science
- New Graduate Certificate – Cybersecurity
- New Graduate Certificate - Health Physics
- New Graduate Certificate – Leadership in Agricultural & Human Sciences
- Request to Deliver (new delivery mode) – MS in Textile Engineering
- Request to Deliver (new delivery mode) – Graduate Certificate in Renewable Electric Energy Systems
Certificate Title: **Graduate Certificate in Agriculture Data Science**

New: ☑️
Revision: ☐

Classification of Instructional Programs (CIP) Discipline # (6 digits): 01.9999

*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](https://nces.ed.gov/ipeds/cipcode/default.aspx?y=55)*

Certificate Type:
- On-Campus: ☐
- Distance: ☐
- On-Campus & Distance: ☑️

Proposed Effective Date: **March 1, 2021**

Director of the Certificate Program: **Daniela Jones**
Program Coordinator (if different from Director): **N/A**
Graduate Services Coordinator: **Heather Austin**
College: **College of Agriculture and Life Science**
Department/Program: **Biological and Agricultural Engineering**

Catalog Description:

The Graduate Certificate in Agriculture Data Science is an interdisciplinary graduate certificate program that applies the power of data science to agriculture, food and life science issues. In this program students will learn data collection, management and analysis methods and how to apply them to practical agriculture, food and life science questions in industry, governmental, nongovernmental and academics settings. Where necessary, students will be able to develop additional skills in data mining and artificial intelligence using real-world agriculture, food and life science situations.

<table>
<thead>
<tr>
<th>Enrollment</th>
<th>On-Campus</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuing</td>
<td>Yr. 1-0</td>
<td>Yr. 1-0</td>
</tr>
<tr>
<td></td>
<td>Yr. 2-5</td>
<td>Yr. 2-10</td>
</tr>
<tr>
<td></td>
<td>Yr. 3-5</td>
<td>Yr. 3-10</td>
</tr>
<tr>
<td></td>
<td>Yr. 4-5</td>
<td>Yr. 4-15</td>
</tr>
<tr>
<td>New</td>
<td>Yr. 1-5</td>
<td>Yr. 1-10</td>
</tr>
<tr>
<td></td>
<td>Yr. 2-5</td>
<td>Yr. 2-10</td>
</tr>
<tr>
<td></td>
<td>Yr. 3-5</td>
<td>Yr. 3-15</td>
</tr>
<tr>
<td></td>
<td>Yr. 4-5</td>
<td>Yr. 4-15</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 Agriculture Data Science

Introduction

The Graduate Certificate in Agriculture Data Science is an interdisciplinary graduate certificate program that applies the power of data science to agriculture, food and life science issues. The certificate is housed in the College of Agriculture and Life Science at North Carolina State University and brings together faculty and coursework from three colleges: Agriculture and Life Science (CALS), College of Engineering (COE), and College of Science (COS) and 15 departments from those colleges.

Program Overview

All areas of agriculture, food, and life science have seen an explosion in data collection, ranging from plant breeders collecting phenotypic information to drones imaging fields to companies accumulating sales information. Professionals in industry, governmental, non-governmental and academics need post-baccalaureate training on how to properly collect, manage and analyze the data and then make appropriate decisions using the data.

Students will be able to take their training in this certificate in many different directions depending on their educational and employment needs. In data mining and predictive modeling, our students look for useful patterns in large data sets that would allow them to understand the past and better predict the future. In artificial intelligence and the related processes of machine learning and deep learning, our students will go several steps further, creating machines and algorithms that not only analyze and understand data, but also take the next logical steps dictated by the data.

This program will combine SAS data management and analysis techniques with computer science and statistical training to allow students to apply the processes of data mining and artificial intelligence to critical agriculture, food and life science issues. This certificate is intended for those students who have completed a BS degree in agriculture, food or life science and need additional training to be able to manage and use data in their fields. This certificate is also intended for those students who have completed a BS degree in computer science, mathematics or statistics and need additional training in how to apply data science techniques to agriculture, food and life science data issues. Students currently enrolled in a graduate program will also be eligible to complete the certificate.

 Intent of the Graduate Certificate

In this program students will learn data collection, management and analysis methods and how to apply them to practical agriculture, food and life science questions in industry, governmental, non-governmental and academics settings. Where necessary, students will be able to develop additional skills in data mining and artificial intelligence using real-world agriculture, food and life science situations.
Market for Graduates

The Certificate for Agriculture Data Science will support students who have completed a BS degree either in agriculture, food or life science or in computer science, statistics or a related field. There is also a potential market for students currently enrolled in a graduate program.

Searches of CareerShift, a national job database, using the keywords “agriculture regulatory science” produced 167 available full-time positions on February 3, 2021. The results included such positions as “Consumer Safety Officer (USDA) (12 open positions)” and “Regulatory Coordinator (Grace Federal Solutions).” In reference to this certificate, Sara Lane, CALS Coordinator of Career Service stated “I’ve talked to so many employers in our industry who are desperate to hire professionals in regulatory affairs and data science, but they have tremendous difficulty finding people who have those skillsets and who understand agriculture and life science.”

To provide a more specific estimation of potential market for a data science certificate, CALS surveyed 254 individuals working in a broad range of agriculture and life science companies. CALS conducted the survey in 2018 and received 104 completed surveys, representing a 41% return rate. The high response rate is likely indicative of high interest in this topic. Of respondents, 87% said that one or more of employees in their company would like to get additional training in agriculture data science management with 25% indicating that 11 or more employees would be interested, 35% for one to two employees and 26% for 3 to 10 employees.

Estimate for future demand was higher with 93% of respondents indicating that one or more future position in their company would require or benefit from training in agricultural data science management. Of these, 34% estimated the demand at 11 or more employees, 27% at 1 to 2 employees and 32% at 3 to 10 employees.

The vast majority of respondents (71%) thought that the need for people with training in agricultural data management will increase substantially over the next 5 to 10 years and 25% thought demand would increase slightly. Only 4% thought demand would stay the same. No one thought demand would decrease.

Of the areas within agriculture, respondents were most interested in digital and precision agriculture (81%), followed by business and consumer data (60%) and breeding and genomics (46%) (respondents were allowed to select more than one area of interest). A broad array of other areas were received from 14 respondents, including soil microbiome, socioeconomic status and commodity use, residue and environmental fate data, pesticide usage data, and data governance/curation/stewardship.

Of the areas with data science, respondents were most interested in data analytics (88%), followed by predictive modeling (75%), data management (74%), data mining (57%), data collection (55%), machine learning (47%), and artificial intelligence (47%).

Enrollment Projection (including new and continuing students):

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>On campus</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Via distance education</td>
<td>10</td>
<td>20</td>
<td>25</td>
<td>30</td>
</tr>
</tbody>
</table>
Academic Requirements for Participants

A minimum of twelve credits must be completed; six credits from foundation courses and six from one of two tracks: Track A - Data science fundamentals. Track B - Data science applications in agriculture, food, life science and agricultural economics (Table 1).

Foundation Courses (students must complete both 3-credit foundation courses):

ST 525: Statistical Methods and Computing for Data Science
BAE 542: SAS Advanced Analytics to Agriculture, Food and Life Sciences Data

Students will select one of two tracks depending on their interests and background. Students who have completed a BS degree in agriculture, food or life science and need additional training to be able to manage and use data in their fields will be interested in Track A. Students who have completed a BS degree in computer science, statistics or in engineering other than biological/agricultural/biosystems engineering and need additional training in how to apply data science techniques to agriculture, food and life science data issues will be interested in Track B.

Table 1 Available Tracks in the Graduate Certificate in Agriculture Data Science

<table>
<thead>
<tr>
<th>Required B.S. Degree*</th>
<th>Track A: Data science fundamentals</th>
<th>Track B: Data science applications in agriculture, food, life science and agricultural economics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Agriculture science/engineering, agricultural economics, biology, food or life science, genetics, or related field</td>
<td>Computer science, mathematics or statistics or related field</td>
</tr>
<tr>
<td>Certificate outcomes</td>
<td>Training to manage big data in their fields</td>
<td>Training on how to apply data science techniques to agriculture, food and life science data issues</td>
</tr>
</tbody>
</table>

* Students currently enrolled in a graduate degree are also eligible to complete the certificate.

Track A: Data science fundamentals. Students must complete at least 6 credits from Table 2. Only one of the courses may be 400 level.

Track B: Data science applications in agriculture, food, life science and agricultural economics. Students must complete at least 6 credits from Table 3. Courses have a significant focus on data collection, management or analysis in a food, agricultural or life science context.
<table>
<thead>
<tr>
<th>Course Prefix and Number</th>
<th>Course Title</th>
<th>Term Offered</th>
<th>Delivery Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAE 555</td>
<td>R Coding for Data Management and Analysis</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>BAE 565</td>
<td>Environmental and Agricultural Data Analytics and Modeling</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>CSC 440</td>
<td>Database Management Systems</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>CSC/ST 442</td>
<td>Introduction to Data Science</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>CSC 505</td>
<td>Design and Analysis of Algorithms</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>CSC 520</td>
<td>Artificial Intelligence I</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>CSC 522</td>
<td>Automated Learning and Data Analysis</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>CSC 530</td>
<td>Computational Methods for Molecular Biology (co-requisite with CSC 505)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>CSC 540</td>
<td>Database Management Concepts and Systems</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>CSC 541</td>
<td>Advanced Data Structures</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>ST 563</td>
<td>Introduction to Statistical Learning</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>ECE/PB 488 or ECE/PB 588</td>
<td>Systems Biology Modeling of Plant Regulation</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>ECE 542</td>
<td>Neural Networks</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Table 2: Elective courses for the Graduate Certificate in Agriculture Data Science - Track A
<table>
<thead>
<tr>
<th>Course Prefix and Number</th>
<th>Course Title</th>
<th>Term Offered</th>
<th>Delivery Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEE 777</td>
<td>Qualitative Research Methods in the Agricultural &amp; Life Sciences</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>AEC 550</td>
<td>Conservation Genetics</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>AEC 510</td>
<td>Machine Learning in Biological Sciences</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>AEC/FW 726</td>
<td>Quantitative Fisheries Management</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ANS/GN 713</td>
<td>Quantitative Genetics and Breeding</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>ANS/CS/FOR 726</td>
<td>Advanced Topics in Quantitative Genetics and Breeding</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>BAE 535</td>
<td>Precision Agriculture Technology</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>BAE 536</td>
<td>GIS Applications in Precision Agriculture</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>CS 714</td>
<td>Crop Physiology</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>CS/ANS/FOR 726</td>
<td>Advanced Topics in Quantitative Genetics and Breeding</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>CS/HS/GN 745</td>
<td>Quantitative Genetics in Plant Breeding</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>CS 755</td>
<td>Applied Research Methods and Analysis for Plant Sciences</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ECG/ST 561</td>
<td>Applied Econometrics I</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>ECG 562</td>
<td>Applied Econometrics II</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ECG 563</td>
<td>Applied Microeconometrics</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ECG 590</td>
<td>Big Data Econometrics or other appropriate special topics courses</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ECG/ST 750</td>
<td>Introduction to Econometric Methods</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ECG/ST 751</td>
<td>Econometric Methods</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>ECG/ST 752</td>
<td>Time Series Econometrics</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ECG/ST 753</td>
<td>Microeconometrics</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ECG 766</td>
<td>Computational Methods in Economics and Finance</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>ECG 739</td>
<td>Empirical Methods for Development Economics and Applied Microeconomics</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ENT/GES 506</td>
<td>Principles of Genetic Pest Management</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>GN/HS/ST 757</td>
<td>Quantitative Genetics Theory and Methods</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>PP/MB 715</td>
<td>Applied Evolutionary Analysis of Population Genetic Data</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>SSC 540</td>
<td>Geographic Information Systems (GIS) in Soil Science and Agriculture</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>SSC 545</td>
<td>Remote Sensing Applications in Soil Science and Agriculture</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Proposing Departments and Program Coordinators

Graduate Certificate in Agriculture Data Science will be housed in the Department of Biological and Agricultural Engineering (BAE) and the BAE Certificate Coordinator, in cooperation with the Coordinators in Computer Science and Statistics, will take the lead on coordinating admissions and confirming student completion. Each Coordinator will work with the certificate students in their departments to select course, answer questions, etc.

Daniela Jones  
Certificate Faculty Coordinator  
Department of Biological and Agricultural Engineering  
College of Agriculture and Life Sciences

George Rouskas  
Certificate Faculty Coordinator  
Department of Computer Science  
College of Engineering

Wenbin Lu  
Certificate Faculty Coordinator  
Department of Statistics  
College of Science

Application and Admission Process

Apply for admission to the graduate certificate program via the Graduate Application Portal (grad.ncsu.edu/apply/). To register for courses as a non-degree student, go to the Non-Degree Studies website (registrar.ncsu.edu/nds/). The foundation courses for the certificate are offered on-campus and online in the Fall and Spring semesters. Additional required courses for the certificate are offered on-campus or online and in the Fall, Spring and/or Summer semesters.

To qualify for admission to the Graduate Certificate in Agriculture Data Science, students must have completed a BS degree in the sciences or engineering, including agriculture, biology, computer science, economics, food, genetics, life sciences, mathematics, and statistics. Students selecting Track A should have appropriate work experience or course prerequisites from their prior degree. Students selecting Track B should have prior experience with a high level programming language or the appropriate course prerequisites from their previous degree. Considering the number of courses that can be taken for this certificate, it is possible that students may not have all of the appropriate prerequisites for one or more of the courses. In this case, students should select other courses or contact the instructor to determine if the course(s) would be appropriate for them. Students currently enrolled in a graduate degree are also eligible to complete the certificate.

Students must have a 3.0 grade point average in their BS degree at the time of application.

Please note that academic success in the certificate might have a strong bearing on admission to a degree program, but completion of a certificate program in no way guarantees entry into a graduate degree program, which is done through a separate application process.
Assessment Plan

This graduate level program will 1) train students to use data collection, management and analysis methods and 2) teach them how to apply the methods to practical agriculture, food and life science questions in industry, governmental, non-governmental and academics settings. In addition, depending on the courses they select, students will be able to develop additional skills in data mining and artificial intelligence using real-world agriculture, food and life science situations.

Outcomes

1. Upon completion graduates will be able to:

<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>Identify and describe the major data science principles</td>
<td>Examinations, assignments and written reports/projects or case studies in foundation courses for this certificate</td>
<td>Students</td>
<td>Annual</td>
</tr>
<tr>
<td>Apply various data science methods/algorithms such as decision tree, neural networks, random forest, regression, and support vector machine</td>
<td>Examinations, assignments and written reports/projects or case studies in foundation courses for this certificate</td>
<td>Students</td>
<td>Annual</td>
</tr>
<tr>
<td>Utilize different software technologies to apply data science techniques such as SAS, R, and Python programming platforms</td>
<td>Examinations, assignments and written reports/projects or case studies in foundation courses for this certificate</td>
<td>Students</td>
<td>Annual</td>
</tr>
<tr>
<td>Apply the methods, software, and technology to practical agriculture, food and life science questions in industry</td>
<td>Projects in foundation courses for this certificate</td>
<td>Students</td>
<td>Annual</td>
</tr>
<tr>
<td>Apply the methods, software, and technology to practical agriculture, food and life science questions in governmental databases</td>
<td>Projects in foundation courses for this certificate</td>
<td>Students</td>
<td>Annual</td>
</tr>
<tr>
<td>Apply the methods, software, and technology to practical agriculture, food and life science questions in academic databases</td>
<td>Projects in foundation courses for this certificate</td>
<td>Students</td>
<td>Annual</td>
</tr>
</tbody>
</table>
2. Upon completion graduates will:

<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>Be satisfied with the usefulness of the certificate program in enabling them to achieve their professional goals</td>
<td>Exit survey administered by Graduate School</td>
<td>Graduate School</td>
<td>Annual</td>
</tr>
<tr>
<td>Be satisfied with the certificate program to recommend it to others with the same professional goals</td>
<td>Exit survey administered by Graduate School</td>
<td>Graduate School</td>
<td>Annual</td>
</tr>
<tr>
<td>Be satisfied with the appropriateness of the courses in providing the knowledge or training they anticipate needing for their professional goals</td>
<td>Exit survey administered by Graduate School</td>
<td>Graduate School</td>
<td>Annual</td>
</tr>
<tr>
<td>Be satisfied with the frequency and timeliness of courses offered for the certificate</td>
<td>Exit survey administered by Graduate School</td>
<td>Graduate School</td>
<td>Annual</td>
</tr>
<tr>
<td>Be satisfied with the quality of teaching in certificate courses</td>
<td>Exit survey administered by Graduate School</td>
<td>Graduate School</td>
<td>Annual</td>
</tr>
<tr>
<td>Be satisfied with the overall educational experience of the certificate program</td>
<td>Exit survey administered by Graduate School</td>
<td>Graduate School</td>
<td>Annual</td>
</tr>
</tbody>
</table>
Graduate certificate proposal

This form is for the creation of a new graduate certificate at NC State University; it is meant to be filled by faculty in the academic unit(s) to be associated with the certificate. As a first step in the process, please, contact grad-curriculum@ncsu.edu to receive additional guidance and information on routing and the approval process. The form must be submitted to the above email address along with this routing form.

<table>
<thead>
<tr>
<th>Certificate title</th>
<th>The Graduate Certificate in Cybersecurity is designed for students with prior training in Computer Science and/or Electrical and Computer Engineering. The certificate will provide students with the latest technical knowledge and skills in cybersecurity and privacy principles and the engineering aspects of software and hardware security to build secure systems that are resistant to attack.</th>
</tr>
</thead>
</table>
| Classification of Instructional Programs (CIP) Discipline # | 11.1003  
Please ensure that you select the appropriate 6 digit 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 |
| Type | On-campus: ☐ Distance: ☐ On-campus & Distance: ☒ |
| Personnel | Director of the certificate program: Thierry Wandji  
Program coordinator: Thierry Wandji |
| Academic units | College(s): College of Engineering  
Unit(s)/program: Computer Science; Electrical and Computer Engineering |
| Proposed effective date | Spring 2022 |

Catalog description (suggested length: no more than 150 words)

Give a short description of the proposed certificate.

The Graduate Certificate in Cybersecurity (CYS GCP) is designed for students with prior training in Computer Science and/or Electrical and Computer Engineering. The certificate will provide students with the latest
technical knowledge and skills in cybersecurity and privacy principles and the engineering aspects of software and hardware security to build secure systems that are resistant to attack.

Admission requirements (suggested length: no more than 150 words)

Outline the admission requirements, as established by the department/program.

Applications will be reviewed by the graduate office in the Computer Science department. Students must meet the following requirements for admission to the Cybersecurity Graduate Certificate Program:
- Have a BS degree in Computer Science, Electrical Engineering, Computer Engineering, or a related field from a regionally-accredited four year college or university, and have an overall GPA of at least 3.0 on a 4-point scale.

Enrollment projections

<table>
<thead>
<tr>
<th>On-campus</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuing</td>
<td>0</td>
<td>8</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>New</td>
<td>10</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Distance</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuing</td>
<td>0</td>
<td>8</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>New</td>
<td>10</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

Objectives (suggested length: no more than 500 words)

Describe the educational objectives of the certificate.

In this certificate program:
- students will learn advanced concepts, methods, and tools of cybersecurity and will apply them to the design, development, and analysis of secure and privacy-aware systems.
- students will be able to relate theoretical cybersecurity concepts to solve practical problems

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

Curriculum (suggested length: no more than 500 words)

Describe the requirements for the graduate certificate. If the curriculum includes proposed new courses, the department/program must submit course actions to create those new courses.

The graduate certificate will require a total of 12 credit hours of graduate level Computer Science and/or Electrical and Computer Engineering courses taken for a grade, as outlined below. Offering a spectrum of elective courses will allow students to focus on specific areas of cybersecurity of interest to them. All of the courses are taught on-campus and are currently offered online or will be offered online by Fall 2021.
The following two security courses must be taken:
  - CSC574: Computer and Network Security
  - CSC591: Cybersecurity Practicum (course action form submitted)

Any two of the following courses must be taken:
  - CSC514: Foundations of Cryptography
  - CSC515: Software Security
  - CSC533: Privacy
  - CSC591: System Attacks and Defenses (course action form in process)
  - CSC705: Operating Systems Security
  - CSC774: Advanced Network Security
  - ECE592: Cryptographic Engineering and Hardware Security

Participants

If the Graduate Certificate Program uses a unique group of faculty participants, a list of such faculty program participants and a method for identification of future faculty should be included with the proposal. The list of current faculty will be approved at the College and Graduate School level.

<table>
<thead>
<tr>
<th>Laurie Williams</th>
<th>Alessandra Scafreo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Will Enck</td>
<td>Brad Reaves</td>
</tr>
<tr>
<td>Thierry Wandji</td>
<td>Aydin Aysu</td>
</tr>
<tr>
<td>Anupam Das</td>
<td>Chau-Wai Wong</td>
</tr>
<tr>
<td>Alexandros Kapravelos</td>
<td>Enter participant name</td>
</tr>
</tbody>
</table>

Outcomes (suggested length: no more than 500 words)

Include a list of learning outcomes and an outcome assessment plan.

Learning Outcomes:

Upon completion of the CyS Graduate Certificate Program, the students will be able to:
  - Design, develop, and analyze computer systems using adversarial analysis, including developing realistic threat models for computer systems
  - Read and interpret bleeding-edge academic research papers on computer and network security and privacy, and describe how the results impact real systems and people
  - Identify and address ethical concerns in computer security design, operations, research, and auditing.
  - Secure critical infrastructure (e.g. network, cloud, telephony)
  - Enhance the security and privacy of end-user technologies (e.g. mobile, web, Internet of Things, blockchain)

Assessment Plan

Student success will be assessed as follows:
  - Final exams in chosen courses
- Projects in chosen courses
- Exit surveys

**Objective:** Students will learn advanced concepts, methods, and tools of cybersecurity and will apply them to the design, development, and analysis of secure and privacy-aware systems.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Evidence to be Collected and Source of Evidence</th>
<th>Frequency</th>
<th>Last Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe potential system attacks and the actors that might perform them.</td>
<td>Course exams and/or projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analyze common security failures and identify specific design principles that have been violated.</td>
<td>Course exams and/or projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Given a specific scenario, identify the design principles involved or needed.</td>
<td>Course exams and/or projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify and reason about solutions for ethical concerns in computer security design, operations, research, and auditing.</td>
<td>Course projects</td>
<td>Every Two Years</td>
<td>N/A</td>
</tr>
<tr>
<td>Identify and explain challenges for securing critical infrastructure (e.g. network, cloud, telephony)</td>
<td>Course exams and projects</td>
<td>Every Two Years</td>
<td>N/A</td>
</tr>
<tr>
<td>Identify limitations of and reason about enhancements to the security and privacy of end-user technologies (e.g. mobile, web, Internet of Things, blockchain)</td>
<td>Course exams and projects</td>
<td>Every Two Years</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Objective:** Students will be able to relate theoretical cybersecurity concepts to solve practical problems.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Evidence to be Collected and Source of Evidence</th>
<th>Frequency</th>
<th>Last Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skill Description</td>
<td>Method</td>
<td>Frequency</td>
<td>Duration</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
<td>-------------</td>
<td>----------</td>
</tr>
<tr>
<td>Apply modeling and vulnerability assessment to create a secure design.</td>
<td>Course projects</td>
<td>Every Two</td>
<td>N/A</td>
</tr>
<tr>
<td>Read and interpret bleeding-edge academic research papers on computer and network security and privacy, and explain how the results impact real systems and people</td>
<td>Course projects, Exit interviews</td>
<td>Every Two</td>
<td>N/A</td>
</tr>
<tr>
<td>Apply knowledge of secure programming practices, development processes, and methodologies that lead to secure software to create secure systems or lead to tools to understand a fundamental cybersecurity challenge</td>
<td>Course projects</td>
<td>Every Two</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Proposal for a Graduate Certificate in Health Physics
January, 2020
North Carolina State University
College of Engineering

Introduction
The Graduate Certificate in Health Physics (GCHP) is intended to support industry, government, military and the national laboratories with expertise in radiation safety for workers who have not had formal education in the same. Many engineers and specialists work in the nuclear field who might be mechanical, electrical or civil engineers, etc. and may seek to supplement this education with radiation safety science and technology. Even graduate nuclear engineering students often have interest in health physics and obtaining this credential will enable them to demonstrate to future employers a meaningful commitment and basic competence in the same. It is further intended that this curriculum will assist students seeking to eventually become certified as health physicists through the American Board of Health Physics. This certificate is intended to help prepare students for the Board exam, and to qualify them to obtain professional experience that is also required for certification.

Potential students include those doing any graduate degree program including the ABM, MNE, MS, PhD or even the online version of the MNE. Returning students from government, the military, industry and professionals of any kind with an interest in radiological safety and radiation protection would be appropriate for this credential to serve their career goals to the extent that this knowledge and skillset will enable them to attain their goals. Alumni of the NE department have commented they were forced to cross train to be health physicists in industry, as there was such a great need. This certificate will provide such cross training, and give our current students a path to follow while they are still in school.

The curriculum contains material to support nuclear risk mitigation throughout the entire fuel cycle including industrial, medical and research applications involving the use of radioactive materials and ionizing radiation.

By bringing the GCHP into fruition, students can become equipped with the knowledge, skills and abilities afforded by this credential to support the safe use of ionizing radiation and radioactive materials in their professional careers.

Description
The objective of this program is to educate our graduate students about health physics. This discipline is effectively that of radiation safety or radiological protection from ionizing radiation. In obtaining the certificate, students will learn the technical basis for implementing federal regulations throughout the nuclear fuel cycle for protection of workers, the public and the environment from the effects of radioactive materials and other ionizing radiation sources. This
certificate program will include courses which will teach many relevant topics to this field. Courses will include the engineering design for radiological air monitoring, sample assay, radiation detection as well as shielding physics. Students will learn how to calculate dose from both internal and external sources along with those from background radiation. These topics will be reinforced by course assignments which will in some cases include research projects to fully equip students to serve society in this capacity.

Program of Study

The GCHP will require four courses totaling 12 credit hours as outlined in Table 1. Students are required to take NE504 and NE590 but may select any additional two courses from the list. Due to the lab requirement of some courses offered (e.g., NE521), some courses will not be available to distance education students.

Courses will be taken both by MNE (online and on campus) and PhD students, GHCP students, and undergraduate students enrolled in the Health Physics minor, and ABM students. The department will carefully consider the scheduling of these courses to ensure the timeliness and availability requirements of all of these groups are satisfied. This may require some adjustment in the current schedules, and in faculty teaching assignments.

Requirements for Admission

Students must complete the application for the certificate, and be accepted into the graduate school, through the standard application beginning at; https://grad.ncsu.edu/programs/how-to-apply/. There are separate processes for persons not currently studying at NC State, and those currently pursuing other degrees at NC State.

Students are required to meet at least ONE of the following requirements for admission to the GCHP program:

- Have an undergraduate STEM degree
- Be a degree seeking student in good academic standing in any NC State graduate program in engineering

An application for acceptance into the GCHP will be required for all new students as follows;

Application to the graduate school for admission into the GCHP.

Those applicants who are enrolled in an NCSU graduate degree program must submit the graduate student certificate plan data entry form to the faculty certificate coordinator for review and approval.

Registration procedures, registration dates and course availability for each semester can be found on the NCSU registration and records webpage at http://ncsu.edu/registrar/. Additional questions regarding the GCHP can be directed to the GCHP coordinator Robert Hayes (rbhayes@ncsu.edu, 919-515-2321).
Students may obtain more than one certificate. However, each certificate must have at least nine (9) credit hours that are unique to it.

Academic success in the GCHP 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**

- To receive a GCHP, students must maintain an overall 3.00 grade point average (GPA) on all NCSU graduate coursework. Courses at the 400 level and below are not eligible for the GCHP; where applicable, 400/500-level courses must be taken at the 500 level for inclusion in the certificate. Courses taken at the 400 level are not to be considered toward the GPA requirement for receipt of the credential.
- All courses taken toward the GCHP must receive a grade of B- or better.
- All courses taken toward the GCHP must be letter graded and cannot be taken for credit only.
- No transfer credit from other institutions is allowed; all coursework must be completed at NCSU.
- All credits toward the GCHP must be completed within four years beginning with the start of the earliest course.
- Up to two graduate certificate courses (6 hours) can be taken by students who are also enrolled in a graduate degree program which can be double-counted with the degree courses, to the extent that the courses unique to the degree remain at 18 hours for a MS degree or 36 hours for the PhD degree.

**Program Administration**

The GCHP will be administered by a coordinator from the Department of Nuclear Engineering. The initial coordinator will be Prof. Robert Hayes.

The Nuclear Engineering administrative faculty and staff (DGP, GSC) will assist Prof. Hayes as part of their normal duties.

The GCHP will be promoted to undergraduate and graduate students in Nuclear Engineering at NC State. In addition, a press release will be sent out announcing the program when approved. This will be only the 2nd such certificate in the country, and the only one from a tier 1 research institution.

**Enrollment Projection**

Initial enrollment is expected to mostly come from current students in the graduate Nuclear Engineering program, including online students. We estimate this will start out with no more than 5-7 students and asymptotically approach 10-15 students within 4 or 5 years, which would make it one of the larger graduate certificate programs at NC State.
All course instructors are members of the graduate faculty. Minor changes in the instructors for individual courses may change from year to year based on teaching load balance but are not expected to affect certificate requirements or availability.

Faculty Participants

The faculty teaching the courses listed in Table 1 will participate in the GCHP. The most recent faculty who have taught these courses or are scheduled to teach these them in 2021-2022 are listed in Table 2. All listed faculty are members of the graduate faculty. Instructors for any given course may change over time to accommodate teaching loads and faculty responsibilities.

Distance Education Consultation

Robert Hayes is the point of contact for the GCHP with Linda Krute, the director of distance engineering education programs. The proposal requests approval for distance education as we expect at least half of all those obtaining this credential will come from the same pool of students who have been obtaining the online Masters of Nuclear Engineering degree. It will generate more students taking courses to obtain both credentials or even just the GCHP.

Table 1. Nuclear Engineering Courses for the Graduate Certificate in Health Physics. All courses are available on campus and only indicated courses are available online

<table>
<thead>
<tr>
<th>Course Designation</th>
<th>Required for HPGC certificate</th>
<th>Course Title</th>
<th>Semester Offered</th>
<th>Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>NE504</td>
<td>Yes</td>
<td>Radiation Safety and Shielding</td>
<td>Fall</td>
<td>Yes</td>
</tr>
<tr>
<td>NE520</td>
<td>No</td>
<td>Radiation and Reactor Fundamentals</td>
<td>Fall &amp; Summer</td>
<td>Yes</td>
</tr>
<tr>
<td>NE521</td>
<td>No</td>
<td>Principles of Radiation Measurement</td>
<td>Fall</td>
<td>No</td>
</tr>
<tr>
<td>NE531</td>
<td>No</td>
<td>Nuclear Waste Management</td>
<td>Fall (odd years)</td>
<td>Yes</td>
</tr>
<tr>
<td>NE590</td>
<td>Yes</td>
<td>Health Physics and Radiological</td>
<td>Fall (even years)</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Emergency Response</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NE777</td>
<td>No</td>
<td>Radiological Assessment</td>
<td>Spring (even years)</td>
<td>By instructor permission only</td>
</tr>
</tbody>
</table>

Table 2. Faculty Teaching Courses for the Graduate Certificate in Health Physics

<table>
<thead>
<tr>
<th>Course Designation</th>
<th>Instructor(s)</th>
<th>Email(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Outcomes Assessment Plan

Objectives

1. In this certificate, students will learn about radiation safety, radiological protection and control of nuclear systems from a health risk perspective. Course content options include radiological emergency response, nuclear waste management and radiation detection. The credential is intended to enable students to serve society through industry, medicine or even research by safely controlling ionizing radiation fields.

2. The certificate will provide an educational experience that support the career expectations of its graduates throughout the nuclear fuel cycle and radiological sciences.

Outcomes

1. When completed, graduates will be able to do the following:
   a. Define and quantify radiological risk
   b. Discriminate radiation sources and appropriate control mechanisms for the same
   c. Determine quantification methods for airborne, liquid and solid radioactive materials in terms of measurement, limitations and their uncertainties
   d. Understand and describe full compliance to relevant federal regulations in radiation safety

2. At the time students complete the GCHP, they are expected to;
   a. Be satisfied with the usefulness of the certificate program in enabling them to attain their professional goals
   b. Be sufficiently satisfied with the GCHP to recommend it to others with the same professional goals
   c. Be satisfied with the appropriateness of the courses in providing their anticipated knowledge or training for their professional goals.
   d. Be satisfied with the frequency and timeliness of courses offered for the certificate.
   e. Be satisfied with the quality of the teaching in the requisite courses
   f. Be satisfied with the overall educational experience of the GCHP
Objective 1. Students will learn about health physics, radiation safety and radiological protection. Students will be exposed to state-of-the-art techniques and will develop an understanding of the technical and operational challenges to protect workers, the public and the environment from the effects of ionizing radiation.

<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>Understand and quantify radiological risk</td>
<td>Course exams and projects</td>
<td>Students</td>
<td>Annually</td>
</tr>
<tr>
<td>Discriminate radiation sources and appropriate control mechanisms</td>
<td>Course exams and projects</td>
<td>Students</td>
<td>Annually</td>
</tr>
<tr>
<td>Determine quantification methods for airborne, liquid and solid radioactive materials</td>
<td>Course exams and projects</td>
<td>Students</td>
<td>Annually</td>
</tr>
<tr>
<td>Understand and describe full compliance to relevant federal regulations in radiation safety</td>
<td>Course exams and projects</td>
<td>Students</td>
<td>Annually</td>
</tr>
</tbody>
</table>

Objective 2.

<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>Be satisfied with the usefulness of the certificate program in enabling them to attain their professional goals</td>
<td>Exit survey administered by ISA.</td>
<td>ISA</td>
<td>Annually</td>
</tr>
<tr>
<td>Be sufficiently satisfied with the GCHP to recommend it to others with the same professional goals</td>
<td>Exit survey administered by ISA.</td>
<td>ISA</td>
<td>Annually</td>
</tr>
<tr>
<td>Be satisfied with the appropriateness of the courses in providing their anticipated knowledge or training for their professional goals.</td>
<td>Exit survey administered by ISA.</td>
<td>ISA</td>
<td>Annually</td>
</tr>
<tr>
<td>Be satisfied with the frequency and timeliness of courses offered for the certificate.</td>
<td>Exit survey administered by ISA.</td>
<td>ISA</td>
<td>Annually</td>
</tr>
<tr>
<td>Be satisfied with the quality of the teaching in the requisite courses</td>
<td>Exit survey administered by ISA.</td>
<td>ISA</td>
<td>Annually</td>
</tr>
<tr>
<td>Be satisfied with the overall educational experience of the GCHP</td>
<td>Exit survey administered by ISA.</td>
<td>ISA</td>
<td>Annually</td>
</tr>
</tbody>
</table>
PROPOSAL: Graduate Certificate in Leadership in Agricultural & Human Sciences (GCLAHS) (CIP 01.0101- Agricultural Leadership)

Justification
There is a lack of leadership skills among college graduates, and this is especially problematic given that senior personnel are retiring at a rate that has made it impossible for companies across all industries to replace them with capable leaders (https://fidelisleadership.com/americas-leadership-shortage-your-opportunity/). Some 44% of managers report a lack of leadership qualities among their new hires, and 36% report a deficiency in both interpersonal and teamwork skills (https://www.forbes.com/sites/karstenstrauss/2016/05/17/these-are-the-skills-bosses-say-new-college-grads-do-not-have/#7d4ba8b95491). These concerns are not just focused on recent college graduates; only 4% of U.S. employers report having confidence that their leadership pipeline will cover most of their management needs (https://fidelisleadership.com/americas-leadership-shortage-your-opportunity/).

More directly, the CALS Leadership Office has experienced first-hand requests from across industries and North Carolina Cooperative Extension to strengthen the leadership skills of current and future graduates. Current employees in agricultural industries and North Carolina Cooperative Extension have expressed both a desire and a need to develop the competencies to lead their constituencies, specifically iterating that leadership courses were unavailable to them as undergraduates. As North Carolina, and the Raleigh area specifically, are rich with agricultural technology companies and scientists, there is ample opportunity to provide leadership development for the agricultural workforce. The Research Triangle Park (RTP) alone has 200 companies and over 50,000 workers (https://www.bizjournals.com/triangle/news/2016/09/06/the-list-largest-rtp-employers.html) while North Carolina has over 170 ag tech companies and hundreds of ag tech scientists (https://www.ncbiotech.org/transforming-life-science/sectors-of-attention/agriculture) and over 130,000 workers (https://oshr.nc.gov/work-for-nc/who-are-we) and the state of North Carolina has close to 40,000 non-profit organizations that employ over 400,000 workers (https://independentsector.org/resource/state-profile-north-carolina/). These industries provide the opportunity to recruit graduate students who are invested in leadership development to further their careers.

Why is a leadership development certificate being housed within an Agricultural & Human Science Department in the College of Agricultural & Life Science? Historically, community development work -- particularly in rural areas-- was the domain of the Cooperative Extension Service. In the beginning, Family and Consumer Science Agents also found themselves educating community leaders in ways to effectively build coalitions, create effective partnerships, build organizations, lead teams and communicate well with individuals outside their communities. As society changed and shifted, the need for leadership development work did not, and Cooperative Extension continued to recruit individuals with the academic preparation to engage in leadership education and community development. And while our roots are in rural communities and agricultural industries, the reach of leadership education extends far beyond those communities to include diverse audiences in large and small communities, in
governments, non-profit organizations, educational institutions, and across industries, and for all ages. It is essential that leadership development is grounded in research-based, contemporary leadership theories; thus, a mastery of such theories is essential for graduates across industries and can be provided through a leadership development certificate.

Given the leadership development expertise and knowledge that currently exists among faculty in the Agricultural and Human Sciences (AHS) Department where an undergraduate leadership minor and graduate minor (which could be focused in leadership) is housed, it is proposed that AHS provide an avenue to meet the need for leadership development for individuals entering into the workforce, as well as for those who are already in positions, wishing to move into leadership roles.

Catalog Description
As we look at the grand challenges our world faces, the need to train and prepare leaders in every sector of society is urgent. For those interested in developing and strengthening their leadership skills, the Agricultural and Human Sciences (AHS) Department in the College of Agriculture and Life Sciences offers the Graduate Certificate in Leadership in Agricultural & Human Sciences (GCLAH). The GCLAH will consist of five 3-credit courses that focus on theory, organizational leadership, community leadership, critical and creative thinking, and change management. This certificate is designed for the individual who is either currently in a leadership role or who aspires to serve in a leadership capacity in education, industry, non-profit or government. The curriculum allows for a strong base in theory and practice, under the direction of leadership scholars who will work with students to take the knowledge gained in the classroom and apply that knowledge to their respective contexts. In fact, this is the essential nature of leadership development, for students to be able to contextualize the work to their own specific context. Courses are offered online to accommodate the busy schedules of working professionals.

Program Administration
Dr. Jackie Bruce, Associate Professor and Director of Graduate Programs for Agricultural and Human Sciences (AHS), will serve as program director. Ms. Desiree Mallon will serve as the program coordinator and be responsible for the administration of the certificate program.

Admission Requirements
The Agricultural and Human Sciences (AHS) Department will adhere to the admissions requirements as outlined by NC State University’s Graduate School. For admission into the GCL, students must have a bachelor’s degree from regionally accredited institution college or university recognized by the Accrediting Commission for Community and Junior Colleges (ACCJC) Western Association of Schools and Colleges, Higher Learning Commission (HLC), Middle States Commission on Higher Education (MSCHE), New England Commission of Higher Education (NECHE), Northwest Commission on Colleges and Universities (NWCCU), Southern Association of Colleges and Schools Commission on Colleges (SACSCOC), WASC Senior College and University Commission (WSCUC) or an international university deemed to have equivalent credentials as determined by one of our pre-approved foreign institution evaluation servicers, with an overall GPA of at least 3.0 on a 4.0 scale. The GCLAH will be open to all students who have a bachelor’s degree. Exceptions to the 3.0 minimum GPA will be made for students

Last update: 5.17.2021
who bring significant relevant experience (e.g., a student who graduated 10 years ago with a 2.8 GPA but who has significant, relevant work experience would be considered a strong candidate for admission). Degree seeking and non-degree seeking (NDS) students will be admitted to the program.

Curriculum Requirements
The courses for the GCL are:

- AEE 545: Methods of Change in Agricultural and Human Sciences (Spring)
- AEE 550: Advanced Leadership Theory (Fall)
- AEE 555: Critical and Creative Thinking (will be in CIM by end of May) (Fall)
- AEE 560: Organizational and Administrative Leadership (Spring)
- AEE 565: Community Leadership (Spring)

Students are encouraged to start with AEE 550, but it is not required, and students may take the courses in any order that makes sense for their enrollment. Students could take more than one course at a time if that option is financially available to them. At this time, none of the courses are being taught in the summer, however, if there is demand for that, all instructors are open to moving a course to the summer session or teaching it in summer and during a regular semester. All courses in the certificate will be delivered online.

Enrollment Projection

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>25</td>
</tr>
</tbody>
</table>

Businesses, industries, nonprofits and organizations affiliated with the College of Agriculture and Life Sciences will receive information about the GCLAHS with the goal of attracting those employees who desire to develop and strengthen their leadership skills. The CALS Leadership Office will assist with the dissemination of information regarding the GCLAHS.

Academic Success Statement
Academic success might have a strong bearing on admission to a degree program, but completion of a certificate program in no way guarantees entry into a graduate degree program as this type of admission is completed through a separate application process.

Faculty Participants
Faculty teaching these courses are current tenure line and adjuncts within the AHS Department including Dr. Jackie Bruce (Associate Professor and Director of Graduate Programs), Dr. Katie McKee (Assistant Professor), and Dr. Rhonda Sutton (adjunct and Director of Leadership Programs for CALS).

Learning Outcomes
Students will:
- Identify methods of change and apply these methods to appropriate contexts from the lens of a leader.

Last update: 5.17.2021
• Deconstruct and reconstruct theoretical models of leadership, creating more just and equitable systems.
• Synthesize the components of organizational systems, particularly in leadership and administrative contexts.
• Apply strategies for building leadership skills and relationships to address identified community issues.
• Analyze elements of critical thinking, related to leadership development, and apply these critical thinking elements to creative strategies in problem solving.

Outcomes Assessment Plan
The certificate will utilize the assessment methodology described here. In even years, assessment data will be collected in each course using culminating student projects as described in the table below. In odd years, the use of the Graduate School Exit survey will be used. The use of the Exit Survey as an assessment tool is in line with the assessment methodology for the other certificates in the department.

Year 1
At the completion of the GCLAHS, students will be expected to:

<table>
<thead>
<tr>
<th>Identify methods of change and apply to appropriate contexts.</th>
<th>In each respective course, students will complete a final project that demonstrates mastery of the learning outcome. Final projects include, but are not limited to, research papers, final reflection papers, video diaries, multimedia projects, action research, group and team facilitation, and/or advocacy plans.</th>
<th>Every two years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deconstruct and reconstruct theoretical models of leadership, creating more just and equitable systems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Synthesize components of organizational systems, particularly in leadership and administrative contexts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apply strategies for building skills and relationships that are needed for effective community leadership.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analyze elements of critical thinking, related to leadership development, and apply to creative strategies in problem solving.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Year 2
At the completion of the GCLAHS, the student is expected to be satisfied with the:

<table>
<thead>
<tr>
<th>Exit survey administered by the Graduate School (Source: Students)</th>
<th>Every two years</th>
</tr>
</thead>
<tbody>
<tr>
<td>...appropriateness of the course in providing the knowledge or training they anticipate needing for their professional goals</td>
<td></td>
</tr>
<tr>
<td>...frequency and timeliness of courses offered for the certificate</td>
<td></td>
</tr>
<tr>
<td>...overall educational experience of the program</td>
<td></td>
</tr>
<tr>
<td>...quality of teaching in certificate courses</td>
<td></td>
</tr>
<tr>
<td>...usefulness of the certificate program in enabling them to achieve their professional goals</td>
<td></td>
</tr>
<tr>
<td>...certificate program to recommend it to others with the same or similar professional goals</td>
<td></td>
</tr>
</tbody>
</table>

Last update: 5.17.2021
UNIVERSITY OF NORTH CAROLINA
REQUEST TO DELIVER
EXISTING DEGREE PROGRAM – NEW DELIVERY MODE OR SITE

Date: March 9, 2021

Constituent Institution: North Carolina State University

Is the program a joint degree program? Yes ________ No ________

Joint Partner campus ___ n/a ___

Title of Authorized Program: MS in Textile Engineering Degree Abbreviation: MS

CIP Code (6-digit): 142801 Level: B ___ M ___ X ___ I ___ D ___

CIP Code Title: Textile Sciences and Engineering

Proposed term to enroll students in alternate delivery method: term ___ fall ___ year ___ 2022 ___

Provide a brief statement from the university SACSCOC liaison regarding whether the new delivery mode does or does not constitute a substantive change.

Identify the objective of this request (select one or more of the following)

☐ Add on campus delivery
☒ Add online delivery; Maximum percent offered online 100%
☐ Program will be listed in UNC Online
☐ One or more online courses in the program will be listed in UNC Online
☐ Add site-based delivery (list new sites below; add lines as needed)
☐ Instructor present (off-campus delivery)
☐ Instructor remote (site-based distance education)

Site #1

(address, city, county, state)

Site #2

(address, city, county, state)

Site #3

(address, city, county, state)
Supply basic program information needed for UNC Academic Program Inventory (API), UNC Online
Minimum credit hours required  
Expected number of full-time terms to completion  

I. Justification for New Delivery Mode

1. Description and Purpose.
   a. Provide a 250-word or less description of the proposed program, including target audience, delivery method, hours required, program core and concentrations (if applicable), opportunities for which graduates will be prepared, and other special features. For online programs, describe whether the delivery is synchronous with an on-campus course, partially synchronous, asynchronous, other, and using what platform(s).

   Over the last few years the department of Textile Engineering, Chemistry and Science (TECS) has received regular interest in its MS in Textile Engineering (MSTE) program from people working in industry or government organizations in the US. These potential students do not have the ability to come to campus, and the online degree would be a logical extension of current course offerings. It may be expected, however, that a successful DE program will attract international students as well.

   The DE degree is intended as an “Option B: non-thesis degree,” similar to the existing MS in Textile Chemistry DE degree. The requirements will be exactly the same as the currently existing MS TE Option B: 32 hours, consisting of 2 hours seminar, 8 graded graduate courses of which at least 5 need to be from TECS offerings and at least 4 courses must include engineering content. The remaining 6 credits are taken as two separate “independent study” courses in which a student must complete a project under direct supervision of a TECS faculty member. The delivery will allow asynchronous participation, and the faculty has developed experience with such methods in the 2020-21 academic year. The Moodle platform will be used for the courses.

   b. How does the proposed delivery mode align with system, institutional and unit missions and strategic plans?

   Offering the MSTE online will align with the Wilson College of Textile’s strategic plan to expand access to its graduate programs to people from diverse backgrounds, providing more flexibility in the program. Furthermore, this expansion of our program meets the needs of the workforce in a rapidly innovating textile industry in North Carolina and beyond. As such this also strengthens the strategic goals of the Wilson College of Textiles, and aligns with institutional and UNC System goals to increase access and economic impact.
The DE program is likely the best way of expanding the TECS graduate program. Furthermore, program stakeholders and 8-year program review pointed towards significant interest in industry and governmental organizations in this delivery mode.

2. **Student demand.** Provide documentation of student demand for the new delivery mode. Directly address the extent to which students will be drawn from a pool of students not previously served by the existing program.

The online (DE) extension of our program is a logical addition to our offerings. Currently we already have a Textile Chemistry DE degree and this would fill a similar, but larger, need. The suggestions and demands were expressed by the review committee in their report during the 8-year program review in fall 2019, as well as during conversations with our stakeholders from industry. As an example, a government lab (US Army Natick CCDC SC) has already sought our college to provide short courses and is now also actively asking for advanced and graduate courses. These potential students, both from industry and government labs, are not currently served by our on-campus program and will expand the population we will be able to serve with our unique graduate program.

3. **Unnecessary duplication.** List similar programs offered by other North Carolina institutions (public or private), including enrollments and delivery method. In cases where other UNC institutions provide similar online, site-based distance education, or off-campus programs, include evidence regarding how the proposed program meets unmet need. Discuss collaborative opportunities with these programs.

There are no similar programs in North Carolina (nor the US as a whole) currently.

4. **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 - add lines as needed):

<table>
<thead>
<tr>
<th>Delivery Mode</th>
<th>Online (DE)</th>
<th>Full-Time</th>
<th>Part-Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>On-Campus</td>
<td>32</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Estimate the total number of students that would be enrolled in the program during the fourth year of operation and in each delivery mode (campus, online, site - add lines as needed):

<table>
<thead>
<tr>
<th>Delivery Mode</th>
<th>Online (DE)</th>
<th>Full-Time</th>
<th>Part-Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>On-Campus</td>
<td>35</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
5. **Resources.**

a. Are new faculty, staff, library, facility/equipment, or other resources required to deliver the program? If so, explain the need and, using the template provided, estimate the costs and sources of funds to provide resources needed.

No new faculty, staff or facilities are needed in the starting phase. The department expects to be able to continuously support this delivery method with current means in the future as well.

b. Discuss how the new delivery mode will impact the workload of existing faculty.

There will be an initial small increase in workload, but over time the program will be established and further supported by the department’s TAs (with adequate course background), that should reduce the overall faculty workload. Faculty have developed experience with teaching online sections of their graded courses, and with relatively small initial numbers will be able to develop these programs for larger numbers, with their available TAs, in the future years. As we already have a DE option in our Textile Chemistry program, faculty has also built experience in supervising Independent Study projects in a DE format.

c. (site-based distance education and off-campus delivery only) If the institution has not previously delivered a degree program at this site, briefly describe the facilities, infrastructure, and arrangements and how they meet the needs of the program.

n/a

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

a) **Access** (all 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.

The Wilson College of Textiles already offers two other MS degrees online. The students in the MSTE will have the same access as all our other graduate students. The same services and support that are available to existing DE and on-campus students in the college will be available for students in the online MSTE. That includes a program advisor and connections to the textile networks through our graduate student organization (TAGS), our college’s student support services which organizes a career fair as well as the North Carolina Textile Foundation, which regularly organizes events with
the textile industry that we serve. Students are expected to be self-funded, but in many companies and government labs tuition support is available for part-time DE students.

b) **Curriculum delivery** (online and site-based distance education only). The distance education technology to be used is appropriate to the nature and objectives of the program. The content, methods and technology for each online course provide for adequate interaction between instructor and students and among students.

The faculty have developed online versions of their graduate courses and this content is available and will be used to teach the online sections for DE students. Prior to the 2020-21 academic year the TECS department significantly invested in a summer program in which the TECS faculty was supported by TAs to create online content for their courses to ensure quality of these courses beyond merely putting all content online.

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.

In addition to the summer effort as described above, during the 2020-21 academic year the faculty have continued development of their online courses and received training as well as strong tech support from the college’s technical support services. These experiences combined will directly translate into the DE offering of their courses.

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.

The identity of students who participate in distance education courses and programs at NC State is verified by the following: a secure login and passcode, proctored examinations, and new technology and practices that are effective in student identity verification. All NC State students, including distance education students, are uniquely identified with a student ID number, along with an associated Unity computing account with unique login name and secure password. The university uses the new practice of two-factor authentication and its associated technology to maintain account integrity. To gain access to content in password-protected learning environments, students must verify their identity by signing in with their Unity ID and password. These items also verify a student’s identity each time the student uses their NC State email account, accesses NC State University Libraries services, or other online resources. Proctored examinations are administered in a secure on-campus testing environment or through remote proctoring arrangements. NC State’s campus testing centers are National College Testing Association certified. Remote proctoring arrangements are approved by test center staff for students who live more than fifty miles from the NC State campus.
All students utilizing a campus testing center or approved remote proctoring arrangements are required to present an NC State or government-issued photo ID to the onsite proctor in order to verify their identity.

7. **Contact.** Provide the name, title, email address, and phone number of the person(s) responsible for planning this proposed program.

   Director of Graduate Programs TECS:
   Dr. Emiel Den Hartog, eadenhar@ncsu.edu, 919 515 6659

This request to establish a new distance education degree program (or program site) has been reviewed and approved by the appropriate institutional committees and authorities.

Chief Academic Officer: [Signature]

Chief Academic Officer (Joint Partner Campus): [Signature]
UNIVERSITY OF NORTH CAROLINA

REQUEST TO DELIVER

EXISTING DEGREE PROGRAM – NEW DELIVERY MODE OR SITE

Date: 3/8/2021

Constituent Institution: North Carolina State University

Is the program a joint degree program? Yes____ No____ X

Joint Partner campus

Title of Authorized Program: Graduate Certificate in Renewable Electric Energy Systems
Degree Abbreviation: GC-REES

CIP Code (6-digit): 14.4701 Level: B____ M____ I____ D____

CIP Code Title: Electrical and Computer Engineering

Proposed term to enroll students in alternate delivery method: term F____ year 21____

Provide a brief statement from the university SACSCOC liaison regarding whether the new delivery mode does or does not constitute a substantive change.

Identify the objective of this request (select one or more of the following)

☐ Add on campus delivery
☒ Add online delivery; Maximum percent offered online _____100%____
☐ Program will be listed in UNC Online
☐ One or more online courses in the program will be listed in UNC Online
☐ Add site-based delivery (list new sites below; add lines as needed)
☐ Instructor present (off-campus delivery)
☐ Instructor remote (site-based distance education)

Site #1

(address, city, county, state)

Site #2

(address, city, county, state)
Supply basic program information needed for UNC Academic Program Inventory (API), UNC Online
Minimum credit hours required
Expected number of full-time terms to completion

I. Justification for New Delivery Mode

1. Description and Purpose.
   a. Provide a 250-word or less description of the proposed program, including target audience, delivery method, hours required, program core and concentrations (if applicable), opportunities for which graduates will be prepared, and other special features. For online programs, describe whether the delivery is synchronous with an on-campus course, partially synchronous, asynchronous, other, and using what platform(s).

   There is no change from the current program. In COE, online programs are semi-synchronous in that students participate in classes after they are recorded but the online course is largely in step with the on-campus course.

   b. How does the proposed delivery mode align with system, institutional and unit missions and strategic plans?

      The target audience are practicing engineers in Industry. Adding an online delivery mode makes it easier for them to participate.

2. Student demand. Provide documentation of student demand for the new delivery mode. Directly address the extent to which students will be drawn from a pool of students not previously served by the existing program.

   We have one outstanding request. We anticipate that there will be two students by year one and five students by year four.

3. Unnecessary duplication. List similar programs offered by other North Carolina institutions (public or private), including enrollments and delivery method. In cases where other UNC institutions provide similar online, site-based distance education, or off-campus programs, include evidence regarding how the proposed program meets unmet need. Discuss collaborative opportunities with these programs.

   None identified
4. **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 - add lines as needed):

   Delivery Mode DE Full-Time Part-Time 2

   Delivery Mode On Campus Full-Time Part-Time 2

Estimate the total number of students that would be enrolled in the program during the fourth year of operation and in each delivery mode (campus, online, site - add lines as needed):

   Delivery Mode On Campus Full-Time Part-Time 5

   Delivery Mode DE Full-Time Part-Time 5

5. **Resources.**

   a. Are new faculty, staff, library, facility/equipment, or other resources required to deliver the program? If so, explain the need and, using the template provided, estimate the costs and sources of funds to provide resources needed.

   No.

   b. Discuss how the new delivery mode will impact the workload of existing faculty.

   The needed courses are already offered online as part of our regular EOL MS programs, so the added workload impact is almost zero – just a few more people in the relevant classes.

   c. (site-based distance education and off-campus delivery only) If the institution has not previously delivered a degree program at this site, briefly describe the facilities, infrastructure, and arrangements and how they meet the needs of the program.

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

   ECE has around 80 Engineering Online (EOL) students now taking graduate programs, mainly MS programs. The current EOL structure will be used for all delivery considerations

   a) **Access (all 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.

   EOL students have the same access to campus and departmental services as on campus students, though that access is virtual rather than physical. Instructors use Moodle for delivery of course materials to both types of students.
b) **Curriculum delivery** (online and site-based distance education only). The distance education technology to be used is appropriate to the nature and objectives of the program. The content, methods and technology for each online course provide for adequate interaction between instructor and students and among students. EOL students receive the same course materials as on campus students, except the lectures are not delivered in real time. EOL instructors hold online office hours for EOL 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. 

*Faculty teaching EOL courses receive training from EOL staff.*

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.

e) **EOL exam policies** are up to the instructors and the most common format are proctored remote exams.

7. **Contact.** Provide the name, title, email address, and phone number of the person(s) responsible for planning this proposed program.

Paul Franzon, Director of Graduate Programs, ECE, paulf@ncsu.edu 919-515-7351

This request to establish a new distance education degree program (or program site) has been reviewed and approved by the appropriate institutional committees and authorities.

Chief Academic Officer: ____________________________

Chief Academic Officer (Joint Partner Campus): ____________________________