TO: Members of the Graduate Council
FROM: Suzanne E. Barbour, Dean
DATE: January 29, 2018

Graduate Council Meeting
Wednesday, February 7, 2018 3:30 p.m.
315 New College
(The Bylaws prohibit representation by proxy.)

AGENDA

I.  Reading, correction and approval of minutes
(November 15, 2017)

II. Graduate Council Committee Reports

A. Administrative Committee
   Committee Report (Welch Suggs, Chair)
   No report

B. Program Committee
   Committee Report (Welch Suggs, Chair)
   
   Action Item: The Terry College of Business and the College of Pharmacy requests to create a new dual Doctor of Pharmacy and Master of Business Administration.
   Action Item: The Terry College of Business requests to offer a new Graduate Certificate in Entrepreneurship.
   Action Item: The College of Education requests to offer the Master of Arts in Teaching in Special Education in Griffin.
   Action Item: The College of Education requests to offer the Master of Education in Special Education in Griffin.
   Action Item: The College of Education requests to offer the Master of Education in Science Education online.
   Action Item: The College of Education requests to change the name of the Graduate Certificate in Multicultural and Diversity Studies to the Graduate Certificate in Diversity, Equity, and Inclusion.
   Action Item: The College of Agricultural and Environmental Sciences requests to offer a Graduate Certificate in Agricultural Data Science.
   Action Item: The College of Veterinary Medicine requests to change the name of the Graduate Certificate in Medical Illustration to the Graduate Certificate in Comparative Medical Illustration and Interactive Educational Media.

C. Curriculum Committee
   Committee Report (Mary Caplan, Chair)

D. Appeals Committee
   Committee Report (Nicholas Berente, Chair)
E. Strategic Planning Committee
   Committee Report (Tina Harris, Chair)

III. Old Business
   A. Transition to Graduate Program Faculty: GPF Guidelines Template

IV. New Business
   A. Repurposing the Curriculum Committee

V. Information Items

VI. Adjourn
The University of Georgia  
Dual Degree Proposal for Doctor of Pharmacy  
and Master of Business Administration

1. **Institution**: The University of Georgia  
2. **Date**:  
3. **Schools/Colleges**: College of Pharmacy and Terry College of Business  
4. **Degrees**: Doctor of Pharmacy and Master of Business Administration (MBA)  
5. **Starting Date**: Fall 2017  
6. **Signatures of Deans and Provost**:  

   Dean, Terry College of Business  
   Date  
   
   Dean, College of Pharmacy  
   Date  
   
   Dean, The Graduate School  
   Date  
   
   Provost, The University of Georgia  
   Date

7. **Program abstract**  
The Terry College of Business and the College of Pharmacy propose a dual degree program that will combine into one program of study the MBA degree with the Doctor of Pharmacy degree. This five-year course of study will include all the current requirements of the Doctor of Pharmacy degree and the core requirements, plus two electives, of the MBA degree. The program will be structured in such a way that highly motivated pharmacy students will be able to complete the requirements for both their Doctor of Pharmacy degree and the MBA degree in as little as one year beyond the time
it now takes them to complete just the Doctor of Pharmacy degree. The program will provide the University of Georgia’s graduating pharmacists with the expertise required to meet the technological, scientific, and research needs of this important sector of the healthcare industry, as well as the business skills necessary for professional advancement and career success.

The first PharmD/MBA dual degree program offered by The University System of Georgia, this program will advance Strategic Direction II, "Enhancing the Graduate and Professional Programs," of The University of Georgia 2020 Strategic Plan by furthering the goal of "increas[ing] interdisciplinary dual-degree graduate degrees awarded from 2010 levels." (Building on Excellence, 2020, p.10)

8. **Objectives of the program**

A major objective of the UGA College of Pharmacy is to effectively prepare Doctor of Pharmacy students to meet the challenges of competing in the global environment. We therefore strive to provide our students with both in-class and experiential learning opportunities that enable them to work effectively and collaboratively with professionals from other fields, such as medicine and managed care.

A major objective of the Terry College of Business is to enhance the professional education of pharmacy students with an understanding of the functional foundations of the business enterprise and with an introduction to the leadership, communication, and teamwork skills essential in today’s workplace. Its aim is to supplement the technical and practical aspects of the scientific field of pharmacy with the analytical tools and knowledge of the different business functions so that pharmacy students develop the competencies needed to succeed in a business environment. This combination is expected to improve both the short and long-term career opportunities of pharmacy graduates.

9. **Justification and need for the program**

a. **Benefits:**

   i. **Benefits to Students:** For the years 2014-2024, the U.S. Bureau of Labor Statistics projects below average employment growth for pharmacists. Therefore, for new graduates, the acquisition of business and soft skills and the experiential learning opportunities to practice them in a real world setting, as provided in this proposed dual degree program, will help to distinguish them in the job market.

   In today’s competitive healthcare environment, major drug store chains, supermarket chains, health systems, managed care firms and other providers need pharmacists who are not only proficient in the technical aspects of
medication oversight and patient care, but also good communicators and team players who understand the business challenges of the fast-changing healthcare field. Pharmacy students typically have expertise in patient care, while business students are highly skilled at optimizing organizational resources to achieve the tactical and strategic goals of a company or organization.

ii. Benefits to the College of Pharmacy: By offering a dual PharmD/MBA program, UGA and the College of Pharmacy would gain greater recognition locally and nationally for producing graduates who are in high demand in business and industrial settings. This program will enable the College of Pharmacy to train students with both pharmacy and business skillsets without the need to invest new resources to provide this valuable and needed training.

We anticipate that there will be more opportunities for pharmacy graduates to find jobs in leading companies if they have the PharmD/MBA degree and can demonstrate both their technical and business skills. This dual degree program will not only attract more students to pursue pharmacy degrees, but also enhance both colleges’ interdisciplinary teaching and research efforts and thereby increase recognition for the College of Pharmacy and the Terry College of Business at the local, national and international levels.

It is very important that the University and the College of Pharmacy continue to support students and train them effectively for today’s competitive work environment. The expected benefits of this dual degree program to the College of Pharmacy are as follows: (1) graduates who are more competitive in the job market; (2) added support for the development of new corporate relationships in Georgia and the U.S. for the college; and (3) augmentation of the college’s reputation and standing and improvement of its capability to recruit top students from Georgia and from around the country.

iii. Benefits to the Terry College of Business: The proposed dual degree program will benefit the Terry College by supporting its strategic goal of increasing enrollment in business graduate programs, specifically the Full-Time MBA program. In addition to increasing enrollment and revenues, the addition of the PharmD/MBA program will enable the Terry College of Business to offer a richer and more diverse set of course offerings in its Full-Time MBA program. Moreover, greater diversity in the student body through the inclusion of students with a pharmacy background promises to enrich the learning experience of MBA students and encourage interdisciplinary thinking among the Terry College faculty.
b. **Student Demand:** Faced with an increasingly competitive job market, many students are interested in educational opportunities that will differentiate them from their peers—opportunities that will give them an edge in securing employment in their field. A Qualtrics survey was sent to current first year pharmacy students in Fall 2016. Of the 92 students completing the survey, 29 students (31.52%) indicated they were definitely interested in the PharmD/MBA option as presented. An additional 41 students (44.57%) were possibly interested in pursuing the joint degree. This evidence supports the growing interest in pursuing the dual PharmD/MBA program in order to advance their careers in leadership roles in Georgia companies and beyond.

10. **Program Development.**

Discussions regarding this dual degree program began in the fall of 2015. During this time, the Associate Dean of the College of Pharmacy and the Director of the Full-Time MBA program of the Terry College of Business met to hold some initial, formative discussions. Since that time, the Associate Dean of the College of Pharmacy and the Full-time MBA Program Director have met periodically to delineate the curriculum of this dual degree program. The faculties of the Terry College of Business and the College of Pharmacy have discussed this program in detail and refined the curriculum to ensure that students will receive the best possible instructional experience and outcomes. It has been approved by the faculty of the College of Pharmacy and by the MBA Committee and Graduate Programs Committee of the Terry College of Business.

11. **Curriculum**

The program involves five years of study and a total of 184 credit hours. During years one and two, students will be enrolled in the College of Pharmacy. In year three, students will be enrolled in the Terry College of Business to complete their MBA program of study, and in years four and five, students will complete their Doctor of Pharmacy requirements.

<table>
<thead>
<tr>
<th>Table 1. PharmD Credit Hour Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit Hours</td>
</tr>
<tr>
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<table>
<thead>
<tr>
<th>Table 2. Full-Time MBA Degree Credit Hour Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Credit Hours</td>
</tr>
<tr>
<td>-----------------------</td>
</tr>
<tr>
<td>Credit Hours</td>
</tr>
</tbody>
</table>
Table 3. Dual Degree Program – PharmD Credit Hour Requirements

<table>
<thead>
<tr>
<th>Year</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
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<tr>
<td>Credit Hours</td>
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<td>36-38</td>
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Table 4. Dual Degree Program – Full-Time MBA Credit Hour Requirements

<table>
<thead>
<tr>
<th>Graduate Credit Hours</th>
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<tbody>
<tr>
<td>Credit Hours</td>
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</table>

a. Program of study for the proposed dual degree program: See Attachment 1.

b. Program of study for the Doctor of Pharmacy program: See Attachment 2.

c. Program of study for the Full-Time MBA program: See Attachment 3.

12. Program Administration

Students will be advised within the College of Pharmacy on their Doctor of Pharmacy degree-related coursework. Interested pharmacy students will apply to the dual degree program and admission to the Full-Time MBA program during their second year. Admitted students will be required to participate in summer MBA activities and in the two-week MBA orientation prior to the beginning of the fall semester of their third year. The Director of MBA Student Services will advise dual degree students in their third year. At the end of the program, students will rejoin the PharmD program and then complete graduation checks with the College of Pharmacy and the Full-Time MBA program.

13. Assessment

The College of Pharmacy and the Terry College of Business have established goals and criteria for assessing the quality of their individual degree programs. Suggested criteria to determine the effectiveness of the dual degree program and measuring the success of students earning the dual degree are as follows:

a. Longitudinal review of dual degree program graduates, their employment status, salaries, and employers as compared to PharmD only graduates.

b. Longitudinal enrollment numbers in the dual degree program, including statistics on the demographic makeup and academic qualifications of those students who enroll.
c. Participation in formal exit surveys to assess students' experiences and perceptions of the program.

d. Periodic survey of employers, assessing the quality of dual degree program graduate hires.

14. Fiscal and enrollment impact and estimated budget

No additional fiscal investment as a result of creating this dual degree program is anticipated in its early years; thus, no additional faculty or staff resources will be necessary for the administration at the outset. All academic courses identified in the program of study for the proposed dual degree program are currently being offered. We anticipate a gradual increase in student enrollment, which should be supported by students' tuition/fees.
# Program of Study: PharmD / MBA Dual Degree Program

## Year 1: Doctor of Pharmacy Program

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Semester</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tr>
<td><strong>Fall Semester</strong></td>
<td><strong>PHRM 3030</strong> Essentials of Pharmacy Practice I</td>
<td>3</td>
<td><strong>Spring Semester</strong></td>
<td><strong>PHRM 3040</strong> Essentials of Pharmacy Practice II</td>
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<tr>
<td></td>
<td><strong>PHRM 3300</strong> Pharmaceutical Calculations</td>
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<td><strong>PHRM 3070</strong> Medicinal Chemistry I</td>
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<td><strong>PHRM 3310</strong> Principles of Pharmacology I</td>
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<td><strong>PHRM 3320</strong> Principles of Pharmacology II</td>
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<td></td>
<td><strong>PHRM 3540</strong> Nutrition &amp; Lifestyle Intervention in Pharmacy Practice</td>
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<td></td>
<td><strong>PHRM 3550</strong> Human Pathophysiology</td>
<td>4</td>
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<td>1</td>
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<td><strong>PHRM 3600</strong> Immunology and Biotechnology</td>
<td>2</td>
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<td><strong>PHRM 3750</strong> Pharmacy and the United States HealthCare System</td>
<td>3</td>
</tr>
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<td></td>
<td><strong>PHRM 3900</strong> Pharmacy Intercommunications</td>
<td>2</td>
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<td><strong>PHRM 3820</strong> Self-Care, Nonprescription Drugs, and Herbal Products</td>
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<td></td>
<td><strong>PHRM 3940</strong> Survey of Drug Information</td>
<td>1</td>
<td></td>
<td><strong>PHRM 3950</strong> Introductory pharmacy Practice Experience I</td>
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<td><strong>Total Credit Hours</strong></td>
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## Year 2: Doctor of Pharmacy Program

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<th>Course Title</th>
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<tr>
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<td><strong>PHRM 4030</strong> Essentials of Pharmacy III</td>
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<td><strong>PHRM 4040</strong> Essentials of Pharmacy IV</td>
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<td><strong>PHRM 4060</strong> Medicinal Chemistry II</td>
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<td><strong>PHRM 4180</strong> Infectious Disease and Antitumor Agents</td>
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<td><strong>PHRM 4200</strong> Fundamentals of Pharmaceutics I: Physical Pharmacy and Dosage Form Design</td>
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<td><strong>PHRM 4430</strong> Principles of Pharmacology III</td>
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<td><strong>PHRM 4300</strong> Physical Assessment for Pharmacists</td>
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<td><strong>PHRM 4700</strong> Statistical Approaches to Drug Literature Evaluation</td>
<td>2</td>
<td></td>
<td><strong>PHRM 4880</strong> Pharmacotherapy II</td>
<td>3</td>
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<td><strong>PHRM 4870</strong> Pharmacotherapy I</td>
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<td><strong>Total Credit Hours</strong></td>
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<td><strong>Total Credit Hours</strong></td>
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### Year 2: Doctor of Pharmacy Program (SUMMER)

<table>
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<tr>
<th>Course</th>
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<tr>
<td>PHRM 4650</td>
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<td>Health System</td>
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### Year 3: MBA Program

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<td>ACCT 6000  Accounting</td>
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<td></td>
<td>FINA 7010  Finance</td>
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<td>ECON 7010  Economic Analysis for</td>
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<td></td>
<td>Business Leaders</td>
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<tr>
<td></td>
<td>MARK 7510  Marketing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>BUSN 7990  Communications for</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Career Effectiveness</td>
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<td></td>
<td>MSIT 7100  Applied Business Statistics</td>
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<td>Spring</td>
<td>MGMT 7400  Strategy</td>
<td>3</td>
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<tr>
<td></td>
<td>MGMT 7120  Operations</td>
<td>3</td>
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<td>MGMT 7050  Organizational Behavior</td>
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<td>MIST 7600  Data Analytics</td>
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<td></td>
<td>BUSN 7990  Communications for</td>
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<td></td>
<td>Career Effectiveness</td>
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<td></td>
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<td>Total Credit</td>
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*One elective must be a projects course, either Innovative Business Projects (ENTR 7320) or Lean Six Sigma (MGMT 7160)*

### Year 4: Doctor of Pharmacy Program

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<th>Semester</th>
<th>Course</th>
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<td>PHRM 5390  Pharmacogenomic Therapies</td>
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<td>PHRM 5650  Pharmacy Care management</td>
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<td>PHRM 5750  Drug Interactions and Adverse Drug Reactions</td>
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<td></td>
<td>PHRM 5880  Pharmacotherapy III</td>
<td>4</td>
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<td>PHRM 5920  Clinical Seminar</td>
<td>(1)</td>
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<td></td>
<td>Electives</td>
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<td></td>
<td>Electives</td>
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<tr>
<td>Spring</td>
<td>PHRM 5170  Applied Pharmacy Practice II</td>
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<tr>
<td></td>
<td>PHRM 5420  Pharmacy Health Services Outcomes</td>
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<tr>
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<td>PHRM 5560  Integrated Patient Care</td>
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<td>PHRM 5680  Pharmacy Law and Ethics</td>
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<td>PHRM 5890  Pharmacotherapy IV</td>
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<td>PHRM 5920  Clinical Seminar</td>
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<td>Electives</td>
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<td>Total Credit</td>
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|                   |                                            | 17 - 18      |


### Year 5: Doctor of Pharmacy Program (SUMMER)

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<tr>
<th>Subject</th>
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<tbody>
<tr>
<td>PHRM 5901 Advanced Pharmacy Practice Experience I</td>
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<tr>
<td>PHRM 5902 Advanced Pharmacy Practice Experience II</td>
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<td><strong>Total Credit Hours</strong></td>
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### Year 5: Doctor of Pharmacy Program

<table>
<thead>
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<th>Semester</th>
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<th>Semester</th>
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<tbody>
<tr>
<td>Fall Semester</td>
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<td>Spring Semester</td>
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<tr>
<td>*PHRM 5903 Advanced Pharmacy Practice Experience III</td>
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<td>PHRM 5907 Advanced Pharmacy Practice Experience VII</td>
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<td>*PHRM 5904 Advanced Pharmacy Practice Experience IV</td>
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<td>PHRM 5908 Advanced Pharmacy Practice Experience VIII</td>
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<td>*PHRM 5905 Advanced Pharmacy Practice Experience V</td>
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<td>PHRM 5909 Advanced Pharmacy Practice Experience IX</td>
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<tr>
<td>*PHRM 5906 Advanced Pharmacy Practice Experience VI</td>
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*Note: Students enroll in only 3 of 4 Fall Advanced Pharmacy Practice Experiences*

<table>
<thead>
<tr>
<th><strong>Total Credit Hours</strong></th>
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</thead>
<tbody>
<tr>
<td><strong>Spring Semester</strong></td>
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### Attachment 2
**Program of Study: PharmD Program**

#### Year 1

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Credit Hours</th>
<th>Spring Semester</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>PHRM 3030 Essentials of Pharmacy Practice I</td>
<td>3</td>
<td>PHRM 3040 Essentials of Pharmacy Practice II</td>
<td>3</td>
</tr>
<tr>
<td>PHRM 3300 Pharmaceutical Calculations</td>
<td>2</td>
<td>PHRM 3070 Medicinal Chemistry I</td>
<td>2</td>
</tr>
<tr>
<td>PHRM 3310 Principles of Pharmacology I</td>
<td>2</td>
<td>PHRM 3320 Principles of Pharmacology II</td>
<td>2</td>
</tr>
<tr>
<td>PHRM 3540 Nutrition &amp; Lifestyle Intervention in Pharmacy Practice</td>
<td>2</td>
<td>PHRM 3500 Opportunities in Pharmacy</td>
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</tr>
<tr>
<td>PHRM 3550 Human Pathophysiology</td>
<td>4</td>
<td>PHRM 3520 Interpreting Clinical Laboratory Tests</td>
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<td>PHRM 3600 Immunology and Biotechnology</td>
<td>2</td>
<td>PHRM 3750 Pharmacy and the United States HealthCare System</td>
<td>3</td>
</tr>
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<td>PHRM 3900 Pharmacy Intercommunications</td>
<td>2</td>
<td>PHRM 3820 Self-Care, Nonprescription Drugs, and Herbal Products</td>
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<tr>
<td>PHRM 3940 Survey of Drug Information</td>
<td>1</td>
<td>PHRM 3950 Introductory pharmacy Practice Experience I</td>
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<tr>
<td><strong>Total Credit Hours</strong></td>
<td><strong>18</strong></td>
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#### Year 2

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Credit Hours</th>
<th>Spring Semester</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHRM 4030 Essentials of Pharmacy III</td>
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<tr>
<td>PHRM 4060 Medicinal Chemistry II</td>
<td>2</td>
<td>PHRM 4180 Infectious Disease and Antitumor Agents</td>
<td>3</td>
</tr>
<tr>
<td>PHRM 4200 Fundamentals of Pharmaceutics I: Physical Pharmacy and Dosage Form Design</td>
<td>3</td>
<td>PHRM 4211 Pharmaceutics II: Biopharmaceutics and Pharmacokinetics</td>
<td>4</td>
</tr>
<tr>
<td>PHRM 4430 Principles of Pharmacology III</td>
<td>3</td>
<td>PHRM 4300 Physical Assessment for Pharmacists</td>
<td>2</td>
</tr>
<tr>
<td>PHRM 4700 Statistical Approaches to Drug Literature Evaluation</td>
<td>2</td>
<td>PHRM 4880 Pharmacotherapy II</td>
<td>3</td>
</tr>
<tr>
<td>Course</td>
<td>Credit Hours</td>
<td>Electives</td>
<td>Total Credit Hours</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>--------------</td>
<td>-----------</td>
<td>--------------------</td>
</tr>
<tr>
<td>PHRM 4870 Pharmacotherapy I</td>
<td>3</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Electives</td>
<td>2</td>
<td></td>
<td>18</td>
</tr>
<tr>
<td><strong>Total Credit Hours</strong></td>
<td><strong>18</strong></td>
<td><strong>2</strong></td>
<td><strong>17</strong></td>
</tr>
</tbody>
</table>

**Year 2 (SUMMER)**

<table>
<thead>
<tr>
<th>Summer</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHRM 4650 Health System IPPE</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Credit Hours</strong></td>
<td><strong>3</strong></td>
</tr>
</tbody>
</table>

**Year 3**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Credit Hours</th>
<th>Spring Semester</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fall Semester</strong></td>
<td></td>
<td><strong>Spring Semester</strong></td>
<td></td>
</tr>
<tr>
<td>PHRM 5160 Applied Pharmacy Practice I</td>
<td>2</td>
<td>PHRM 5170 Applied Pharmacy Practice II</td>
<td>2</td>
</tr>
<tr>
<td>PHRM 5390 Pharmacogenomic Therapies</td>
<td>2</td>
<td>PHRM 5420 Pharmacy Health Services Outcomes</td>
<td>2</td>
</tr>
<tr>
<td>PHRM 5650 Pharmacy Care management</td>
<td>2</td>
<td>PHRM 5560 Integrated Patient Care</td>
<td>2</td>
</tr>
<tr>
<td>PHRM 5750 Drug Interactions and Adverse Drug Reactions</td>
<td>2</td>
<td>PHRM 5680 Pharmacy Law and Ethics</td>
<td>2</td>
</tr>
<tr>
<td>PHRM 5880 Pharmacotherapy III</td>
<td>4</td>
<td>PHRM 5890 Pharmacotherapy IV</td>
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<tr>
<td>PHRM 5920 Clinical Seminar</td>
<td>(1)</td>
<td>PHRM 5920 Clinical Seminar</td>
<td>(1)</td>
</tr>
<tr>
<td>Electives</td>
<td>4</td>
<td>PHRM 5950 Advanced Drug Information and Drug Policy Management</td>
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</tr>
<tr>
<td>Electives</td>
<td></td>
<td>Electives</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Credit Hours</strong></td>
<td><strong>16 - 17</strong></td>
<td><strong>17 - 18</strong></td>
<td></td>
</tr>
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</table>

**Year 4 (SUMMER)**

<table>
<thead>
<tr>
<th>Summer</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHRM 5901 Advanced Pharmacy Practice Experience I</td>
<td>5</td>
</tr>
<tr>
<td>PHRM 5902 Advanced Pharmacy Practice Experience II</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total Credit Hours</strong></td>
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</tr>
<tr>
<td>Year 4</td>
<td>Fall Semester</td>
</tr>
<tr>
<td>----------------------------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>*PHRM 5903 Advanced Pharmacy Practice Experience III</td>
<td>5</td>
</tr>
<tr>
<td>*PHRM 5904 Advanced Pharmacy Practice Experience IV</td>
<td>5</td>
</tr>
<tr>
<td>*PHRM 5905 Advanced Pharmacy Practice Experience V</td>
<td>5</td>
</tr>
<tr>
<td>*PHRM 5906 Advanced Pharmacy Practice Experience VI</td>
<td>5</td>
</tr>
<tr>
<td>Total Credit Hours</td>
<td>15</td>
</tr>
</tbody>
</table>

*Note: Students enroll in only 3 of 4 Fall Advanced Pharmacy Practice Experiences
## Program of Study: Full-Time MBA Program

### YEAR ONE

**Fall**

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 6000 Accounting</td>
<td>3</td>
</tr>
<tr>
<td>FINA 7010 Finance</td>
<td>3</td>
</tr>
<tr>
<td>MSIT 7100 Statistics</td>
<td>3</td>
</tr>
<tr>
<td>MARK 7510 Marketing</td>
<td>3</td>
</tr>
<tr>
<td>ECON 7010 Economic Analysis for Business Leaders</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 7900 Communications for Career Effectiveness</td>
<td>3</td>
</tr>
</tbody>
</table>

**Spring – Module 1:**

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 7120 Operations</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 7400 Strategic Management</td>
<td>3</td>
</tr>
<tr>
<td>MIST 7600 Data Analytics</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 7160 Lean Six Sigma or Elective</td>
<td>3</td>
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</table>

**Spring – Module 2:**

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 7050 Organizational Behavior</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 7400 Strategic Management (continued)</td>
<td></td>
</tr>
<tr>
<td>MGMT 7160 Lean Six Sigma or Elective (continued)</td>
<td></td>
</tr>
<tr>
<td>MIST 7600 Data Analytics (continued)</td>
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### YEAR TWO

**Fall:**

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td>Elective or Innovative Business Projects*</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 7990 Launching and Managing Your Career</td>
<td>1</td>
</tr>
</tbody>
</table>
## Spring – Module One

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective or MGMT 7160 Lean Six Sigma*</td>
<td>3</td>
</tr>
<tr>
<td>Elective or ENTR 7320 Innovative Business Projects*</td>
<td>3</td>
</tr>
<tr>
<td>Elective or International Residency</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

## Spring – Module Two

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective or MGMT 7160 Lean Six Sigma* (continued)</td>
<td></td>
</tr>
<tr>
<td>Elective or ENTR 7320 Innovative Business Projects* (continued)</td>
<td></td>
</tr>
<tr>
<td>Elective or International Residency (continued)</td>
<td></td>
</tr>
<tr>
<td>Elective (continued)</td>
<td></td>
</tr>
<tr>
<td>LEGL 7010 Legal and Regulatory Environment of Business</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 7990 Volunteer Service</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: Elective denotes slots for elective courses within a chosen concentration. International Residency can be substituted for one elective.

*One elective must be a projects course, either Innovative Business Projects (ENTR 7320) or Lean Six Sigma (MGMT 7160).
INTERDISCIPLINARY CERTIFICATE PROGRAM PROPOSAL

For a Graduate Certificate in Entrepreneurship from the UGA Entrepreneurship Program

I. Basic Information

1. Institution: University of Georgia
2. School/College: Terry College of Business
3. Department/Division: Entrepreneurship Program
4. Certificate Title (as it will appear in the Bulletin): Entrepreneurship
5. Level (undergraduate or graduate): Graduate
6. Proposed starting date for the program: Upon Approval
7. Abstract of the program for the University Council's agenda:

Purpose: The Entrepreneurship Program, housed in the Terry College of Business, is proposing the following new graduate certificate program in Entrepreneurship. Currently, no graduate level program that provides students the opportunity to develop and nurture the skills necessary to become successful business owners or creators of ventures in social entrepreneurship exists at the University. In an effort to foster a greater entrepreneurial spirit on campus and in the Athens community, we propose an interdisciplinary graduate program for all Schools and Colleges across the University wishing to participate.

Eligibility: The graduate-level certificate in Entrepreneurship will be open to all currently enrolled graduate students across the University to advance business training of an interdisciplinary nature.

8. Submit letters of support from the various academic unit heads involved in developing the program initiative or whose support is vital to its success.

SIGNATURES:

_____________________________  Department Head

_____________________________  Dean of School/College

See Appendix

II. Response to the Criteria for All Programs

The proposed graduate certificate program will educate students to become entrepreneurs in the private, public, and non-profit sectors. This certificate is targeted to any graduate student who is passionate about creating or growing their own business.
The timing for further development of Entrepreneurship programs at the University of Georgia is ideal as the state continues to rank first in the US as the best state for business\(^1\). Georgia ranks ninth as the most entrepreneurial state\(^2\).

There is currently no graduate level program that provides students the opportunity to develop and nurture the skills necessary to become successful business owners or creators of ventures in social entrepreneurship. In an effort to foster a greater entrepreneurial spirit on campus and in the Athens community, we propose an interdisciplinary graduate program for all Schools and Colleges across the University wishing to participate. The program will allow students to take applied courses in diverse areas of graduate studies while offering the shared experience in entrepreneurship, market research, forms of funding, leadership, and business ethics. The program includes the creative search for ideas, the innovation process, and lean startup principles.

1. **The purpose and educational objectives of the program must be clearly stated, and must be consistent with the role, scope, and long-range development plan of the institution.**
   
   A. The purpose of the Graduate Certificate in Entrepreneurship is to:
      
      a. Provide students with the skillsets necessary to start a business; gain employment with a start-up company, venture capitalist, or investment bank; or become a social entrepreneur in public or non-profit institutions.
      
      b. Prepare the state’s future entrepreneurs to strengthen the economic outlook of the state of Georgia.
      
      c. Provide courses directed towards service-learning through increased collaboration with community partners, on and off campus events, national pitch competitions, speaker series with local, regional, and national entrepreneurs, and internship opportunities.
      
      d. Increase communication and share resources and expertise between programs and among faculty/students across the Graduate School.

   The educational objectives of the Certificate in Entrepreneurship are to:

   a. Develop ideas for and knowledge of startup businesses, scaling a business, and creating sustainable not-for-profit organizations.

   b. Identify the relationship of all business to the economic vitality and financial growth in the state of Georgia and beyond.

   c. Provide shared experiences in creativity and design, leadership, business ethics, entrepreneurship and innovation.

   d. Student competencies associated with attainment of the Graduate Certificate in Entrepreneurship include:

      - Ethics in Entrepreneurship
      - Entrepreneurial Finance
      - Business Models
      - Market Analysis
      - Managing the Entrepreneurial Venture
      - Business Plans
Students graduating with a Graduate Certificate in Entrepreneurship will be positioned to successfully start their own business venture, work in an entrepreneurial enterprise, or work in a financial institution serving entrepreneurs. Entrepreneurism is at all-time high in the United States[^3][^4].

**B. Interdisciplinary nature of proposed program:**

Entrepreneurship is inherently interdisciplinary. Entrepreneurs come from all walks of life and every discipline. Students enrolled in the program will have intensive studies in their home area but will learn structuring a new business, fundraising and financing a new business, and how to define the market from the foundational entrepreneurship classes.

Schools and colleges across the University will have the opportunity to enhance the basic skills taught in entrepreneurship by contributing program electives to build a strong, interdisciplinary foundation for students interested in adding business know-how, creativity, and innovation to their studies.

The Graduate Certificate in Entrepreneurship will recruit students from the various Graduate programs on campus. Participating schools include:

- College of Agriculture and Environmental Sciences
- College of Education
- College of Engineering
- College of Environment and Design
- College of Family and Consumer Sciences
- College of Public Health
- Franklin College of Arts and Sciences
- Grady College of Journalism and Mass Communication
- School of Public and International Affairs
- Terry College of Business
- School of Social Work
- College of Pharmacy
- School of Law
- Warnell School of Forestry and Natural Resources

We anticipate that within five years this program will be awarding certificates in Entrepreneurship to graduate students within many of the involved schools. The number of certifications will have exceeded the initial expectation of 20 students and the demand for the program will remain high.

2. *There must be a demonstrated and well-documented need for the program.*
A. Explain why this program is necessary.

A certificate in entrepreneurship will provide students from any area of the University with the ability to study entrepreneurship and apply this set of skills to their in-depth Graduate studies. Establishment of a graduate certificate in entrepreneurship would propel the University of Georgia forward as a leading national hub for entrepreneurship.

B. In addition, provide the following information:

1. Semester/Year of Program Initiation: Spring 2018
2. Semester/Year Full Implementation of Program: Spring 2018
3. Semester/Year First Certificates will be awarded: Fall 2018
4. Annual Number of Graduates expected: 20
5. Projected Future Trends for number of students enrolled in the program: initial 10-20 students expected enrollment; increasing each subsequent semester with a maximum enrollment of 45 students

3. There must be substantial evidence that student demand for the program will be sufficient to sustain reasonable enrollments in the program.

A. Provide documentation of the student interest in the program, and define what a reasonable level of enrollment is for a program of this type. Provide evidence that student demand will be sufficient to sustain reasonable enrollments.

Participation in the undergraduate certificate program has increased significantly since its inception:

<table>
<thead>
<tr>
<th>Term</th>
<th>Number of Applicants</th>
<th>Number of Accepted Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 2014</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Fall 2014</td>
<td>19</td>
<td>10</td>
</tr>
<tr>
<td>Spring 2015</td>
<td>23</td>
<td>7</td>
</tr>
<tr>
<td>Fall 2015</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Spring 2016</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Fall 2016</td>
<td>111</td>
<td>81</td>
</tr>
<tr>
<td>Spring 2017</td>
<td>179</td>
<td>146</td>
</tr>
<tr>
<td>Fall 2017</td>
<td>101</td>
<td>87</td>
</tr>
</tbody>
</table>

Since spring 2014, 42 students have graduated with the undergraduate certificate in entrepreneurship. An additional 41 students have applied to graduate with the certificate in May 2017.

Students have demonstrated interest in graduate level entrepreneurship courses:

<p>| Course | Course Description | Spring 2015 | Fall 2015 | Spring 2016 | Fall 2016 | Spring 2017 |</p>
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTR 7090</td>
<td>Critical Design Thinking</td>
<td>40</td>
</tr>
<tr>
<td>ENTR 7310</td>
<td>Innovation Management</td>
<td>88</td>
</tr>
<tr>
<td>ETNR 7500</td>
<td>Introduction to Entrepreneurship</td>
<td>15</td>
</tr>
<tr>
<td>ENTR 7515</td>
<td>Entrepreneurship</td>
<td>48</td>
</tr>
<tr>
<td>ENTR 7320</td>
<td>Innovative Business Projects</td>
<td>27</td>
</tr>
<tr>
<td>ENTR 7510</td>
<td>Business Plans</td>
<td>30</td>
</tr>
<tr>
<td>ENTR 7520</td>
<td>Implementing New Venture Plans</td>
<td>4</td>
</tr>
<tr>
<td>ENTR 7505</td>
<td>Entrepreneurial Finance</td>
<td>5</td>
</tr>
<tr>
<td>ENTR 7525</td>
<td>Managing the Entrepreneurial Venture</td>
<td>1</td>
</tr>
</tbody>
</table>

B. Minority student enrollment is expected to be equivalent to the proportion of minority students in the total student body.

4. The design and curriculum of the program must be consistent with appropriate disciplinary standards and accepted practice.

Provide the following information:

A. Present a detailed curriculum outline of the program listing specific course requirements (to include programs of study, course prefix, number, and title).

The graduate-level program will consist of 12 credit hours including two three-hour entrepreneurship courses, selected from the three core courses listed below, and two three-hour electives offered by entrepreneurship or other approved courses from participating schools and colleges.

1. Core courses:
   a) ENTR 7500 Introduction to Entrepreneurship (3 hours): Case studies of entrepreneurs and entrepreneurial ventures. Covers multiple areas, from structuring the new business to fundraising to defining the market. Students will learn from the experience of others in creating an entrepreneurial venture.
   b) ENTR 7505 Entrepreneurial Finance (3 hours): An exploration of the various options for financing an entrepreneurial venture. This course will cover various aspects of venture finance, including angel investing, venture capital, private equity, debt, and IPOs.
   c) ENTR 7525 Managing the Entrepreneurial Venture (3 hours): Managing the entrepreneurial venture combines elements across
business disciplines – marketing, sales, operations, organizational behavior, logistics, finance – with the creation of a business plan.

2. Examples of available ENTR electives:
   a) ENTR 7090 Critical Design Thinking (3 hours): Creativity/innovation are needed for leading industries and companies. Critical thinking is a way of deciding whether a claim is true or false. Design thinking uses a set of methods to develop ideas/solutions to challenges in any discipline or profession. This course will focus on developing students’ critical/design thinking processes.
   b) ENTR 7310 Innovation Management (3 hours): Multi-disciplinary approach to the exploration of the management of innovative projects in incumbent companies. The course will provide participants with frameworks and tools they can apply to enhance their abilities to manage the development and implementation of new ideas for business results. This topic will be approached from a global and process perspective.
   c) ENTR 7320 Innovative Business Projects (3 hours): Provides students with innovation frameworks and tools and practical experience in their use. Student teams will develop innovative solutions for real-world business projects and implementation proposals for the sponsoring company.
   d) ENTR 7510 Developing Successful Business Plans (3 hours): Key tasks involved in creating successful business plans and different ways in which each task may be accomplished. The primary course activity involves the preparation of a business plan for a "prospective" new venture.
   e) ENTR 7515 Entrepreneurship (1-3 hours): Entrepreneurship is the process of identifying, analyzing, and evaluating new economic opportunities and, when appropriate, of assembling the resources needed to seize these opportunities. The student will identify the characteristics of successful entrepreneurs and examine the ways they execute and implement this process.
   f) ENTR 7520 Implementing New Venture Plans (3 hours): This course provides student teams the opportunity to start-up proposed business ventures while still in school. Each team will identify the key tasks necessary to start their venture which will be assigned to a team member who is responsible for completing all of their assigned tasks during the course with the help of one or more mentors.
   g) ENTR 7990 Directed Study in Entrepreneurship Topics (3 hours): Directed study in entrepreneurship topics, giving particular attention to specialized problems in an area related to a student's academic interests.
h) ENTR 7800 Internship in Entrepreneurship (1-3 hours): Internship with a startup, entrepreneurial division of an existing company, venture capital firm, or other entrepreneurial-related financial firm.

B. Identify which aspects of the proposed curriculum already exist and which constitute new courses.

The core entrepreneurship courses and entrepreneurship electives already exist and are approved for the Certificate. The Elective course(s) chosen from existing offerings in other schools and colleges in consultation with the entrepreneurship director and the Terry College committees should be relevant to skills involved in starting or running a business or non-profit organization. These skills can be characterized as “soft” or “hard”. Examples of “soft skills” could include courses related to leadership, management development, psychology of organizations, personal development, managing a non-profit, and creative thinking among others. Examples of “hard skills” could include courses in product development, coding, agile methodology, manufacturing processes, forest management, and materials science among others.

Participating students should select Certificate electives intended to complement his or her understanding of how to create and run an entrepreneurial enterprise whether for profit or for social service. Electives chosen should show a direct or close indirect connection to assisting the student in moving further along in his/her entrepreneurial journey.

C. Identify model programs, accepted disciplinary standards, and accepted curricular practices against which the proposed program could be judged. Evaluate the extent to which the proposed curriculum is consistent with these external points of reference and provide a rationale for significant inconsistencies and differences that may exist.

At the University of Georgia, there are no existing graduate-level certificates like a certificate in entrepreneurship. The College of Education offers a Certificate in Creativity and Innovation through the Department of Educational Psychology which highlights creative thinking and problem solving, but does not offer the focus on business innovation the proposed certificate would offer.

Other institutions offering a graduate certificate in entrepreneurship:

Scheller College of Business, Georgia Institute of Technology: [https://www.scheller.gatech.edu/academics/certificates/eng-entre-cert.html](https://www.scheller.gatech.edu/academics/certificates/eng-entre-cert.html)
This certificate is open only to non-business graduate students.

Kogod School of Business, American University:
http://www.american.edu/kogod/graduate/CERT-GENTR.cfm
This certificate lacks the interdisciplinary approach outlined here.

Kenan-Flagler Business School, UNC at Chapel Hill:
https://onlinemba.unc.edu/academics/graduate-certificates/entrepreneurship-and-strategy/
This is an online certificate marketed towards working individuals.

D. If program accreditation is available, provide an analysis of the ability of the program to satisfy the curricular standards of such specialized accreditation.

The Terry College of Business is accredited by the Association to Advance Collegiate Schools of Business (AACSB). No formal accreditation standards exist for a graduate certificate in entrepreneurship.

5. Faculty resources must be adequate to support an effective program.

A. Define the size, experience, and specializations of the full-time faculty needed to support an effective program. Identify the extent to which such faculty resources currently exist at the institution, and what additions to the faculty will be needed to fully implement the program. Specify how many full-time faculty will provide direct instructional support to this program.

The current full-time faculty within the Entrepreneurship Program, four lecturers, will support this certificate.

In addition to the full-time faculty, a Faculty Advisory Board was established to oversee the entrepreneurship program (e.g., recommend new courses and suggest revisions to the program requirements over time). Advisory Board members serve 2-year renewable terms. The Advisory Board is comprised of the Director and representatives from each participating college, the Graduate School, and the Small Business Development Center.

B. In addition, for each faculty member directly involved in this program, list:
   1) Name, rank, degrees, academic specialty, educational background
   2) Special qualifications related to this program
   3) Relevant professional and scholarly activity for past five years
   4) Projected responsibility in this program and required adjustments in current assignments

- Robert Pinckney, Director and Lecturer, Entrepreneurship Program; MBA, Harvard University
  o Former number one company on Bulldog 100, Serial Entrepreneur
- David Sutherland, Lecturer, Entrepreneurship Program; PhD, University of Virginia
  o Extensive startup experience
- Elizabeth Brutz, Lecturer, Entrepreneurship Program; JD, University of Virginia
  o Entrepreneur with two successful startups
• Donald Chambers, Lecturer, Entrepreneurship Program; DM, Case Western University
  • Thirty years of startups and small business enterprise development

C. Where it is deemed necessary to add faculty in order to fully develop the program give the desired qualifications of the persons to be added.

No additional faculty is needed at this time.

6. Library, computer, and other instructional resources must be sufficient to adequately support the program.

A. Describe the available library resources for this program and the degree to which they are adequate to support an effective program. Identify the ways and the extent to which library resources need to be improved to adequately support this program.

B. Likewise, document the extent to which there is sufficient computer equipment, instructional equipment, laboratory equipment, research support resources, etc. available to adequately support this program. Specify improvements needed in these support areas.

Currently available library, computer, and instructional resources are adequate to support this proposed certificate.

7. Physical facilities necessary to fully implement the program must be available.

Describe the building, classroom, laboratory, and office space that will be available for this program and evaluate their adequacy to fully support an effective program. Plans for allocating, remodeling, or acquiring additional space to support the program’s full implementation of the program should also be identified.

Current library resources are sufficient to support this program.

Classroom facilities currently in use and planned expansion to fulfill needs of the undergraduate certificate are adequate to meet the needs of the graduate-level certificate.

8. The expense to the institution (including personnel, operating, equipment, facilities, library, etc.) required to fully implement the program must be identified.

A. Detailed funding to initiate the program and subsequent annual additions required to fully implement the program are needed below. Estimates should be based upon funding needed to develop an effective and successful program and not upon the minimal investment required to mount and sustain a potentially marginal program.

No additional funding is required to implement this program.
B. Indicate the extent of student support (fellowships, assistantships, scholarships, etc.) available for this program, and evaluate the adequacy of this support. Assistantships funded from institutional (as opposed to sponsored) funds should be included in this funding analysis as well.

The program will not be providing assistantships.

9. Commitments of financial support needed to initiate and fully develop the program must be secured.

A. Identify the sources of additional funds needed to support the program and the probability of their availability.

Funding for graduate-level entrepreneurship certificate courses will come from existing academic allocations and student technology fees. In addition, significant funding for the program is currently being provided by private donations.

B. It is particularly important to include in this response the long-range plans for additional or expanded facilities necessary to support an effective program. Evaluate the timing and likelihood of such capital funding.

Any funding for future expansion is support of the graduate certificate in entrepreneurship is anticipated to come primarily from private funding.

10. Provisions must be made for appropriate administration of the program within the institution and for the admission to and retention of students in the program in keeping with accepted practice.

Describe and evaluate the structure for the administration of the program. Explain the degree to which that structure is in keeping with good practice and accepted standards. Similarly, explain how and by what criteria students will be admitted to and retained in the program, and how these procedures are consistent with accepted standards for effective and successful programs.

The graduate-level certificate in entrepreneurship will be administered by the Associate Dean for Undergraduate Programs in the Terry College of Business. This structure is similar to other certificates on campus.

Students who wish to apply to the graduate certificate must be in good academic standing with a cumulative GPA of at least 3.0. Students will also complete an application with a statement of purpose.

1&2 http://www.georgia.org/small-business/

3 https://www.bls.gov/bdm/entrepreneurship/entrepreneurship.htm
1. Assessment
The Master of Arts in Teaching (MAT) with a major in Special Education leads to initial certification for students who hold undergraduate degrees in other fields and who do not hold a current teaching certification from Georgia or any other certifying body. Students interested in this degree are often seeking a second career, including individuals who retire from the military.

There is a critical shortage of special education teachers across the US, including the state of Georgia. In 2016, the University System of Georgia (USG) Board of Regents indicated that among all teachers produced by USG institutions, Special Education teachers comprised 10.3% and Early Childhood Special Education comprised 7% of all educators completing preparation programs in Georgia. The US Bureau of Labor Statistics indicates special education teacher need is expected to grow 6 percent from 2014 to 2024 and that this growth is driven by continued demand for special education services. Further, the Bureau estimates that many job opportunities will stem from the need to replace teachers who leave the occupation (e.g., retirement).

For the 2017-2018 school year, special education teacher job openings were available in nine public school systems in the counties surrounding the University of Georgia Griffin Campus (Spalding, Fayette, Henry, Coweta, Meriwether, Clayton, Butts, Lamar, and Upson counties). Each of these school systems hired at least one special education teacher without full certification in special education to meet immediate classroom needs. These teachers were hired with a provisional certificate or enrolled in the Georgia Teacher Alternative Certification Program (GTAPP), a non-degree program resulting in the same certification that teachers with a bachelor’s degree in special education have.

As demonstrated in the following table, there are four institutions and 10 campuses within a 50-mile radius of the UGA Griffin Campus offering degree programs or certification in special education at the undergraduate level. None of these institutions offer graduate
degrees in special education of any kind. Therefore, individuals in these areas of Georgia who have a bachelor’s degree in another field and wish to obtain special education certification must complete a second bachelor’s degree or enroll in an alternate certification program when a master’s degree would be a more desirable and appropriate route.

Table 2. Teacher preparation programs near UGA Griffin campus

<table>
<thead>
<tr>
<th>Institution</th>
<th>Miles from UGA Griffin</th>
<th>Special Education Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Undergraduate</td>
</tr>
<tr>
<td>Mercer University</td>
<td></td>
<td>Early Childhood Special Education P-5</td>
</tr>
<tr>
<td>• McDonough</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>• Newnan</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>• Macon</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>• Douglas</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Gordon State College</td>
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<td>Early Childhood Special Education P-5</td>
</tr>
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<td>• Barnesville</td>
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<td></td>
</tr>
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<td>• McDonough</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Clayton State University</td>
<td></td>
<td>Non-Degree Special Education Certification</td>
</tr>
<tr>
<td>• Morrow</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>• Peachtree City</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>• McDonough</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Middle Georgia State University</td>
<td>36</td>
<td>Early Childhood Special Education P-5</td>
</tr>
</tbody>
</table>

2. Admission Requirements
Students applying to the MAT Special Education (General Curriculum) program at the UGA Griffin Campus will be required to meet the same admission requirements established by the main UGA campus in Athens. These requirements include minimum GRE results of 146 verbal and 146 quantitative or a minimum score of 402 for the MAT, three letters of recommendation, an undergraduate degree from an accredited institution with a minimum cumulative undergraduate GPA of 3.0 for all courses taken, a statement of purpose, a curriculum vitae, and official transcripts. Applicants must also pass or exempt the GACE Program Admissions Test.

Program Content
The curriculum of the UGA Griffin Campus program will be equivalent to the approved program at the UGA Athens Campus. The criteria for electives or substitutions for specific requirements will be equivalent at both locations.

Prerequisites and Co-requisites (Required for teacher certification by the Georgia Professional Standards Commission)

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Credit Hours</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPED 2000</td>
<td>(3)</td>
<td>Survey of Special Education</td>
</tr>
<tr>
<td>LLED 4010/6010</td>
<td>(3)</td>
<td>Teaching of Reading</td>
</tr>
<tr>
<td>SPED 3050</td>
<td>(3)</td>
<td>Classroom and Behavior Management</td>
</tr>
</tbody>
</table>
SPED 4440/7440 (9) Practicum in Special Education

Program of Study Course work:

Core:
SPED 7120 (3) Dyslexia and other Learning Disabilities
SPED 7130 (3) Seminar in Behavioral, Conduct and Related Disorders
SPED 7010E (3) Clinical Assessment in Special Education
SPED 7220 (3) Strategy Instruction in the Content Areas
SPED 7150E (3) Designing Reading Interventions
SPED 7650 (3) Applied Project
SPED 7460 (3) Internship in Special Education

Electives:
MATH 7001 (3) Arithmetic and Problem Solving
MATH 7003 (3) Algebra and Problem Solving
EMAT 6420 (3) Mathematics Methods for PreK-Grade 8
ERSH 6200E (3) Methods of Research in Education
ERSH 7500E (3) Action Research

3. Student Advising
The advisor for the undergraduate special education program at the Griffin campus will serve as the advisor for the graduate program. The current advisor is a CSSE faculty member with full-time allocation to UGA Griffin Campus.

4. Resident Requirements
Residence requirements will be identical to those established for the MAT Special Education General Curriculum Program at the UGA Athens Campus, with residence at the UGA Griffin Campus location serving to meet that requirement.

5. Program Management
Dr. Cynthia Vail, Head of Department of Communication Science and Special Education, College of Education, University of Georgia will oversee the teaching assignments, program maintenance, and program quality. Dr. Tina Anderson, program coordinator for the UGA Griffin Campus Special Education Program, will be responsible providing the Griffin Campus portion of the yearly Student Learning Outcomes [SLO] assessment reports. The SLOs will be identical to those established for the MAT Special Education General Curriculum Program at the UGA Athens Campus and will be pooled for the UGA assessment. Additional contact persons include CSSE Faculty located on the Griffin Campus.

The application and matriculation of students will be identical to those established for the MAT Special Education General Curriculum Program at the UGA Athens Campus.

Timeline (pending approval):
Deadline for applications: November 1, 2017
Applicant review: December 1, 2017
Registration: January 3, 2018
Coursework begins: January 4, 2018
Annual review: May 1, 2019
The program of study is 36 credit hours with an additional 18 credit hours of prerequisites/co-requisites. Courses for the UGA Griffin Campus program will be offered through face-to-face and hybrid delivery at the Griffin campus and supplemented with online/distance education. All of the proposed courses are already approved UGA courses and will follow the format and delivery options defined in those existing courses. Some online/distance courses might be taught by faculty on the Athens campus. Courses will be scheduled over a six-semester schedule, including summer semester, to allow students attending full-time to complete the course of study in six consecutive semesters. Students entering the program having complete prerequisites may complete the program in four semesters.

There are two full-time CSSE faculty members with terminal degrees allocated to the UGA Griffin campus who attend faculty meetings on the Athens campus, serve on university committees, and participate in annual evaluations. In addition, students will take content coursework offered by the Department of Mathematics and Science Education (MSE) on the Griffin Campus. There are two full-time MSE faculty members with terminal degrees allocated to the UGA Griffin campus.

6. Library and Laboratory Resources
The Griffin Campus Library, located on the first floor of the Stuckey Building, will support students in the program. A full-time librarian is available to assist students through research consultations. Students will have access to resources and materials located at any of the UGA libraries, including off-campus online access, the Special Collections Libraries, and the Curriculum Materials Center located in Aderhold Hall on the Athens campus. Interlibrary loan is also available. When requested, materials and documents are available for retrieval and delivery by students at the Griffin Campus Library.

The CSSE has a resource room (122 Flynt Building) on the UGA Griffin Campus. Educational materials and resources as well as state-of-the-art technology are available for student use.

Study carrels, study rooms, and print/scan/copy services are available in the Student Learning Center at the UGA Griffin Campus. Technology assistance and technology loans are available for students through full-time academic EITS staff located at the Student Learning Center on the Griffin campus.

7. Budget
Courses for the Master’s Degree in Special Education at the UGA Griffin Campus will be taught by current CSSE faculty and Mathematics Education faculty on the Griffin Campus, supplemented with distance education by courses taught by CSSE and College of Education faculty on the Athens Campus. By using shared resources (cross-listed courses, math education, online delivery, and video conferencing), the proposed program will not require any additional faculty or staff members, nor be a burden on current faculty and staff.

Start-up costs will be covered by the current budget allocated to the CSSE for the current Griffin Campus Special Education Program.

8. Program Costs Assessed to Students
As a function of the certification that accompanies assessment and ethics processes, students
in the Master of Arts in Teaching program will need to pay for GACE Ethics Assessments, GACE Content Assessments, edTPA, and liability insurance.

9. Accreditation

Appropriate accreditation processes will be carried out by the University of Georgia College of Education. Currently, the programs in Special Education are formally approved by the Georgia Professional Standards Commission and are also nationally accredited by the National Council on Accreditation of Teacher Education (NCATE). The college will be applying for CAEP accreditation in the next few years. CAEP is now the current organization under which NCATE was reorganized. Programs in special education are based on standards from the Georgia Professional Standards Commission which are primarily generated from the Council on Exceptional Children.
College of Education  
Office of Academic Programs

TO: Dr. Suzanne Barbour, Dean of the Graduate School  
    Fiona Liken, Assistant Vice President

FROM: Dr. Stacey Neuharth-Pritchett, Associate Dean for Academic Programs

DATE: October 31, 2017

RE: Request to offer the MED in Special Education at Griffin

Please find attached a proposal from the Department of Communication Sciences and Special Education to offer the MED in Special Education at the Griffin Campus.

The College of Education’s Curriculum Committee approved this proposal on September 25, 2017
14 August 2017

Dear COE Curriculum Committee,

I am pleased to submit the attached proposal for a MEd in Special Education with an Emphasis in General Curriculum, to be offered at the Griffin campus. This program mirrors our Athens Campus MEd degree program. Bringing this degree to Griffin will take advantage of the faculty resources that we have assigned to the Griffin campus and will increase the number of teacher candidates for this high need teaching area. Our Departmental faculty voted on August 9, 2017 to approve (30 yes, 0 no) offering our MEd in Special Education with an Emphasis in General Curriculum Degree program on the Griffin campus. Thank-you for your assistance in this approval process.

Sincerely,

Cynthia O. Vail, PhD
Professor & Department Head
Proposal for an External Degree
The University of Georgia

Institution: University of Georgia

College/School/Division: College of Education

Department: Communication Sciences and Special Education

Degree: Master of Education (M.Ed.)

Major: Special Education with Emphasis in General Curriculum (P-12)

CIP Code: __________________________

Proposed Start Date: Spring Semester 2018

Assessment
A needs assessment demonstrating a sufficient pool of qualified applicants, for a Master of Education degree with a major in Special Education with emphasis in General Curriculum (M.Ed. Special Education-General Curriculum), conducted in January 2017 is outlined below.

There are 10 school systems in counties contiguous to the University of Georgia Griffin Campus (UGA Griffin Campus): Spalding, Pike, Fayette, Henry, Coweta, Meriwether, Clayton, Butts, Lamar, and Upson counties. Table 1 below indicates the number of teachers currently employed within those school systems. The prospective applicant pool is likely to include current teachers in these and other surrounding counties who hold an undergraduate degree in special education or general education who are either seeking to upgrade an existing teacher certification credential or shift/enhance certification areas.

Table 1. Teacher populations in contiguous counties to Griffin campus

<table>
<thead>
<tr>
<th>School System</th>
<th>Total Number of Teachers</th>
<th>Number of Special Education Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spalding</td>
<td>756</td>
<td>172</td>
</tr>
<tr>
<td>Pike</td>
<td>220</td>
<td>32</td>
</tr>
<tr>
<td>Fayette</td>
<td>1477</td>
<td>205</td>
</tr>
<tr>
<td>Henry</td>
<td>2892</td>
<td>486</td>
</tr>
<tr>
<td>Coweta</td>
<td>1564</td>
<td>228</td>
</tr>
<tr>
<td>Meriwether</td>
<td>250</td>
<td>38</td>
</tr>
<tr>
<td>Clayton</td>
<td>3052</td>
<td>461</td>
</tr>
<tr>
<td>Butts</td>
<td>230</td>
<td>32</td>
</tr>
<tr>
<td>Lamar</td>
<td>176</td>
<td>32</td>
</tr>
<tr>
<td>Upson</td>
<td>288</td>
<td>55</td>
</tr>
<tr>
<td>Total</td>
<td>10,905</td>
<td>1741</td>
</tr>
</tbody>
</table>

As demonstrated in Table 2, there are four University System of Georgia and private institutions, forming 10 campuses, within a 50-mile radius of the UGA Griffin Campus
offering degree programs or certification in special education at the undergraduate level. None of these institutions offer graduate degrees in special education. A qualified pool of applicants includes those teacher candidates who have obtained an undergraduate degree in special education or related degree at UGA Griffin Campus or one of these institutions. According to the Georgia Professional Standards Commission, this is also a pool of teacher candidates who wish to earn an advanced degree in their initial or related degree field and need to pursue the Master of Education degree to receive upgrade their current teaching certification. Finally, candidates who complete the degree requirements will also be eligible to receive a P-5 Math Endorsement in addition to the Master of Education degree. Given the high demand and unique opportunities offered through this degree program, the project number of new candidates is ten (10) per calendar year.

Table 2. Teacher preparation programs near UGA Griffin campus

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<td>Graduate</td>
</tr>
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<td></td>
<td></td>
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<tr>
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<td>17</td>
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<td>36</td>
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<td>50</td>
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<td>None</td>
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<td>Middle Georgia State University</td>
<td>36</td>
<td>Early Childhood Special Education P-5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>None</td>
</tr>
</tbody>
</table>

1. Admission Requirements
Students applying to the M.Ed. Special Education (General Curriculum Area of Emphasis) Program at the UGA Griffin Campus will be required to meet the same admission requirements established by the University of Georgia as those students applying for admission to the same program on the UGA Athens Campus. These requirements include minimum GRE results of 146 verbal and 146 quantitative or a minimum score of 402 for the MAT, three letters of recommendation, an undergraduate degree from an accredited institution with a minimum cumulative undergraduate GPA of 2.7 for all courses taken, a statement of purpose, a curriculum vitae, and official transcripts.

2. Program Content
The curriculum of the UGA Griffin Campus program will be equivalent to the approved program at the UGA Athens Campus. The criteria for electives or substitutions for specific requirements
will be equivalent at both locations.

Course work (36 credit hours):

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Credit Hours</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Education Core:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPED 7120</td>
<td>(3)</td>
<td>Dyslexia and other Learning Disabilities</td>
</tr>
<tr>
<td>SPED 7130</td>
<td>(3)</td>
<td>Seminar in Behavioral, Conduct and Related Disorders</td>
</tr>
<tr>
<td>SPED 7010E</td>
<td>(3)</td>
<td>Clinical Assessment in Special Education</td>
</tr>
<tr>
<td>SPED 7220</td>
<td>(3)</td>
<td>Strategy Instruction in the Content Areas</td>
</tr>
<tr>
<td>SPED 7150E</td>
<td>(3)</td>
<td>Designing Reading Interventions</td>
</tr>
<tr>
<td>SPED 7460</td>
<td>(3)</td>
<td>Internship in Special Education</td>
</tr>
<tr>
<td>Math Content:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 7001</td>
<td>(3)</td>
<td>Arithmetic and Problem Solving</td>
</tr>
<tr>
<td>MATH 7003</td>
<td>(3)</td>
<td>Algebra and Problem Solving</td>
</tr>
<tr>
<td>EMAT 6420</td>
<td>(3)</td>
<td>Mathematics Methods for PreK-Grade 8</td>
</tr>
<tr>
<td>Research and Applied Project:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERSH 6200E</td>
<td>(3)</td>
<td>Methods of Research in Education</td>
</tr>
<tr>
<td>ERSH 7500E</td>
<td>(3)</td>
<td>Action Research</td>
</tr>
<tr>
<td>SPED 7650</td>
<td>(3)</td>
<td>Applied Project</td>
</tr>
</tbody>
</table>

3. Student Advising
The advisor for the undergraduate special education program at the Griffin campus will serve as the advisor for the graduate program. The current advisor is a CSSE faculty member with full-time allocation to UGA Griffin Campus.

4. Resident Requirements
Residence requirements will be identical to those established for the M.Ed. Special Education (General Curriculum) Program at the UGA Athens Campus, with residence at the UGA Griffin Campus location serving to meet that requirement.

5. Program Management
Dr. Cynthia Vail, Head of Department of Communication Science and Special Education, College of Education, University of Georgia will oversee the teaching assignments, program maintenance, and program quality. Dr. Tina Anderson, program coordinator for the UGA Griffin Campus Special Education Program, will be responsible providing the Griffin Campus portion of the yearly Student Learning Outcomes [SLOs] assessment reports. The SLOs will be identical to those established for the M.Ed. Special Education (General Curriculum) Program at the UGA Athens Campus and will be pooled for the UGA assessment. Additional contact persons include CSSE Faculty located on the Griffin Campus.

The application and matriculation of students will be identical to those established for the M.Ed. Special Education (General Curriculum) Program at the UGA Athens Campus.

Timeline (pending approval):

Deadline for applications: November 15, 2017
Applicant review: December 1, 2017
The program of study is 36 credit hours. Courses for the UGA Griffin Campus program will be offered through face-to-face and hybrid delivery at the Griffin campus and supplemented with online/distance education. All of the proposed courses are already approved UGA courses and will follow the format and delivery options defined in those existing courses. Courses will be scheduled over a four-semester schedule, including summer semester, to allow students attending full-time to complete the course of student in four consecutive semesters. There are two full-time CSSE faculty members with terminal degrees allocated to the UGA Griffin campus who attend faculty meetings on the Athens campus, serve on university committees, and participate in annual evaluations. In addition, students will take content coursework offered by the Department of Mathematics and Science Education (MSE) on the Griffin Campus. There are two full-time MSE faculty members with terminal degrees allocated to the UGA Griffin campus. Some online courses might be taught by faculty on the Athens campus.

6. Library and Laboratory Resources
The Griffin Campus Library, located on the first floor of the Stuckey Building, will support students in the program. A full-time librarian is available to assist students through research consultations. Students will have access to resources and materials located at any of the UGA libraries, including off-campus online access, the Special Collections Libraries, and the Curriculum Materials Center Library located in the Aderhold Hall on the Athens campus. Interlibrary loan is also available. When requested, materials and documents are available for retrieval and delivery by students at the Griffin Campus Library.

The CSSE has a resource room (122 Flynt Building) on the UGA Griffin Campus. Educational materials and resources as well as state-of-the-art technology are available for student use.

Study carrels, study rooms, and print/scan/copy services are available in the Student Learning Center at the UGA Griffin Campus. Technology assistance and technology loans are available for students through full-time academic EITS staff located at the Student Learning Center on the Griffin campus.

7. Budget
Courses for the Master’s Degree in Special Education at the UGA Griffin Campus will be taught by current CSSE faculty and Mathematics Education faculty on the Griffin Campus, supplemented with distance education by courses taught by CSSE and College of Education faculty on the Athens Campus. By using shared resources (cross-listed courses, math education, online delivery, and video conferencing), the proposed program will not require any additional faculty or staff members, nor be a burden on current faculty and staff.

Start-up costs will be covered by the current budget allocated to the CSSE for the current Griffin Campus Special Education Program.

8. Program Costs Assessed to Students
No additional program costs are anticipated for the students in the Master’s Degree in
Special Education program at the UGA Griffin Campus above those paid by the same majors enrolled at the Athens Campus.

9. Accreditation

Appropriate accreditation processes will be carried out by the University of Georgia College of Education. Currently, the programs in Special Education are formally approved by the Georgia Professional Standards Commission and are also nationally accredited by the National Council on Accreditation of Teacher Education (NCATE). The college will be applying for CAEP accreditation in the next few years. CAEP is now the current organization under which NCATE was reorganized. Programs in special education are based on standards from the Georgia Professional Standards Commission which are primarily generated from the Council on Exceptional Children.
College of Education
Office of Academic Programs

TO: Dr. Suzanne Barbour, Dean of the Graduate School
Fiona Liken, Assistant Vice President

FROM: Dr. Stacey Neuharth-Pritchett, Associate Dean for Academic Programs

DATE: September 1, 2017

RE: Science Education Online MED proposal

Please find attached a proposal to offer their existing MED in Science Education as an online program. The College of Education’s Curriculum Committee approved this proposal on April 24, 2017.
Science Education Online M.Ed. Proposal

Proposal for an External Degree

The University of Georgia

Date: July 12, 2017

College/School/Division: Education

Department: Mathematics and Science Education

Degree: Master of Education

Major: Science Education

CIP Code:

Proposed Start Date: Summer 2018

1. Needs Assessment

Elements of the mission of the Science Education program at the University of Georgia (as expressed in the Mission Statement of the Department of Mathematics and Science Education) include:

Teacher education is a central responsibility and priority of the department. This is a very broad responsibility that includes the identification and development of potential at every level. These levels include undergraduate, graduate, and post-graduate study; they include pre-service and in-service programs; they include preparing K-12 and college teachers; they include faculty development in teacher education.

The department is committed to working with schools and other educational institutions to improve science education through courses, in-service degree programs, staff development, advising, curriculum development, research and evaluation. Working in collaboration with school personnel for the improvement of science education is an important vehicle for accomplishing outreach commitments.

The department pursues program development and curriculum development grounded in the same level of scholarship as other aspects of their mission. Research and evaluation related to program development are part of the mission.

The department continuously monitors and improves programs for the undergraduate and graduate degree programs in mathematics education and science education. These programs reflect the needs of the fields of mathematics education and science education and the best judgment and scholarship available for program elements and program improvement.
It is at the master’s degree level that all of the above aspects of the program’s mission can best be combined and integrated, particularly in service to the state of Georgia and its science teachers. As recently as 10 years ago, the M.Ed. program (which at the time also included, as an alternative pathway, what is now the separate M.A.T. program), was our largest, and a major source of ongoing connections with alumni of our undergraduate programs and with local science teachers. It has become increasingly clear in recent years that our narrower M.Ed. program, which is specifically designed for, and limited to, already-certified teachers, is no longer viable if all teacher-students must commute to Athens for class meetings, even if (as has always been the case) all classes are scheduled either one evening per week or in Summer Semester.

As a practical matter, in the past our M.Ed. program has only been able to serve those science teachers in northeast Georgia and the eastern part of the metropolitan Atlanta area, and until recent years that population was sufficient to maintain a “critical mass” of M.Ed. students and sufficient enrollment in master’s-level courses so that those courses could consistently be offered. However, competition from both entirely-online programs in Science Education at universities in other states and more general programs in Secondary Education (which, crucially, are also accepted by the Georgia Professional Standards Commission for the purpose of certification upgrades) at Georgia universities located closer to Atlanta has led to rapidly dwindling enrollment in our M.Ed. (and also Ed.S.) programs in Athens. Over the past three years matriculation in our M.Ed. program has averaged fewer than two students per year, with sufficient enrollment (according to the College of Education’s guidelines, which are more stringent than the university’s) in graduate-only 6000- and 7000-level Science Education courses maintained only because of the enrollment of M.A.T. degree students (who take these courses in addition to the undergraduate/graduate courses required for initial certification), an even smaller number of Ed.S. and M.A. students, and occasional doctoral students (often from other departments).

The proportion of inquiries to the Graduate Coordinator about graduate programs for teachers that specify interest in a largely or entirely online option has steadily increased, and the experiment of offering all of our graduate-only master’s courses in hybrid or entirely asynchronous online versions over the past two and a half years (beginning on a pilot basis in Summer 2014 and with a complete commitment beginning in Fall 2015) has noticeably increased enrollment in those courses. In calendar years 2015 and 2016, all scheduled 6000- and 7000- level courses had sufficient enrollment to be offered (although barely), while half had to be cancelled in 2014, and systematic records of e-mail and telephone inquiries reveal that well over 90% of potential M.Ed. students will not seriously consider our program if cannot be completed entirely online.

We therefore propose to completely replace the current M.Ed. program at the Athens campus with an entirely online program. We have already taken the step of getting approval for E versions of the graduate-only courses whose enrollment is expected to be drawn primarily from M.Ed. and M.A.T. degree students, namely ESCI 6200, 6990, 7040, and 7080. The intent is not to offer the on-campus versions of these courses in Athens in the future. The non-E course numbers remain because the possibility exists of using them at the Gwinnett campus, as was true for a number of years in the 1990s and 2000s.
2. Admission Requirements

Requirements for admission to the fully online M.Ed. program will be the same as for our current campus-based degree. Prospective candidates must, at a minimum, hold a Baccalaureate degree from an accredited college or university and Clear Renewable Certification at the T-4 level. Although nearly all students enrolled in the program currently and in the recent past hold certification in a Secondary (Grades 6-12) Science field (Biology, Chemistry, Physics, Earth/Space Science, and/or "Broad Field" Secondary Science), some have been science specialists who hold Middle Grades certification and we are open in principle to admitting those with Early Childhood certification who have an unusually strong commitment to studying science teaching.

Admissions decisions for this program are made in nearly all cases by the Graduate Coordinator and criteria and standards for judging applicants’ suitability include: (a) cumulative grade point average for all previous undergraduate and graduate courses, with a preferred standard of a minimum of 3.0 on a 4-point scale, both overall and specifically in science courses; (b) recent Graduate Record Examination scores (verbal and quantitative) as defined by the University of Georgia Graduate School, with a preferred minimum standard of 146 on each part (representing 29th percentile for Verbal and 25th percentile for Quantitative); (c) the aforementioned initial certification requirements; and (d) a brief statement of purpose consistent with the intended focus of the program, as stated above. Admissions decisions are made on a “rolling” basis (as soon as possible after application materials are complete) and are not explicitly competitive — meeting the minimum requirements stated above normally results in admission. Additionally, for this program, students must certify that they have access to a computer with a high-speed Internet connection. Students are classified as in-state or out-of-state based on University System of Georgia Board of Regents policy.

3. Program Content

The course requirements and standards for this program are the same as for the current degree originally designed for face-to-face delivery. The degree requires the same standards of academic excellence and rigor. Expectations for the coursework will be the same in terms of requirements for reading professional materials, papers, and participation in discussions. Like the existing program, the online program is not designed around an inflexible cohort schedule. As with the current program, most students are expected to take one or two courses per academic year semester and two to three courses per Summer Semester, resulting in a modal time-to-degree of approximately 6 semesters (2 calendar years). All of the proposed required courses are offered in e-versions that have already been fully approved. There are no laboratory or supervised field experience requirements for the program, although students who are willing and able to attend science [content] courses in Athens (or at the UGA Marine Education Center at Skidaway Island or the UGA campus in Costa Rica), typically in Summer Semester at both locations, are encouraged to include lab and/or field experiences in science content fields as part of their coursework.

The course requirements and Comprehensive Exam guidelines for the online M.Ed. program in Science Education are specified on the Requirements/Advising Sheet and Professional Portfolio Instructions accompanying this document.
4. Student Advising

Students will be assigned an advisor from among the faculty who will advise the student as part of his/her normal advisement load. Students may be advised online, by phone, or in person, as they wish. As with the current M.Ed. program, the degree requirements, advising worksheet (annotated in great detail), and instructions for the compilation and assessment of the Professional Portfolio will be available online on the department web site.

5. Residency Requirement

There is no residency requirement beyond the minimum required by the UGA Graduate School for M.Ed. degrees, which is two semesters of enrollment, not necessarily consecutive.

6. Program Management

Maintenance of the quality and viability of the program will be the responsibility of the ESCI faculty, with the Graduate Coordinator for Science Education Programs taking the lead with the support of the program and departmental administration. With the exception of out-of-department courses (for which their own policies apply), all courses will be taught by tenured or tenure-track faculty of the Mathematics and Science Education Department or by appropriately highly qualified part-time faculty, vetted by the Science Education program faculty and approved formally by the department. Thus far the online versions of the ESCI courses proposed to be included in the program have all been taught by tenured faculty.

Once established, it is hoped that the online M.Ed. program (separate from the M.A.T., even though the two programs have some courses in common) will attract and support, at minimum, approximately 15 new students per year, with the hope that numbers may eventually return to, or even exceed, the levels customary before competition from other online programs existed.

Timetable for the first iteration of the degree program:

Spring-Summer 2017: Determine the optimum course rotation schedule (which semesters, which portions of Summer Semesters in particular) for the online MEd program. Survey the recently typical online availability of out-of-department coursework expected most often to be included in students’ programs. Ensure technical competence and availability of existing faculty consistently to teach courses in the program and to support it in principle. (This work has been completed.)

Summer 2017: Offer online versions of the last of the ESCI courses to be taught for the first time in a fully asynchronous online format, ESCI 7080 and 6200. (This has been completed.)

Summer and Fall Semesters 2017: Admit the last new MEd students to the existing program.
Spring Semester 2018: Advertise, recruit, and admit students explicitly to the online program.

May 2018: Hold online orientation for first students in the online program.

Summer 2018: Most of the first students expected to take two ESCI courses (7040 or 7080, and one version of 6200), and possibly an additional one or two courses (from any of the course requirement areas). New students may well be admitted to begin the program in Fall Semester.

Fall 2018 and Spring 2019: Students expected to take at least one course per semester, including ESCI 6990 in Fall.

Summer 2019: Most of the first students expected to take the two ESCI courses not given the previous summer (7040 or 7080, and the other version of 6200) and possibly an additional one or two courses (from any of the course requirement areas).

Fall 2019 and Spring 2020: Students expected to take at least one course per semester, including ESCI 6990 in Fall if not taken previously.

Summer 2020: A majority of first students in the program are expected to graduate, including fulfilling the capstone Portfolio Requirement.

Assessing the Program

Summer 2019; Formative assessment of first year of the program via online interviews, course evaluation, and/or surveys of students. Focus will be to determine strengths and weaknesses in the ongoing program. Program inquiries and enrollment so far will be examined to determine whether there is likely to be sufficient ongoing demand for the program.

Summer 2020: Summative evaluation of the program in the light of the experiences of its first graduates, addressing issues identified in individual courses in the past to determine if issues have been remediated. Ongoing assessment will occur annually by survey in subsequent years.

Application & Matriculation

Students will apply for this degree program in the same way they would apply for on-campus programs. The only difference will be their intention to be part of the online cohort and indication that they have the technological capacity to participate in the program. Applications will be reviewed for initial matriculation in Fall, Spring, or Summer, although the number choosing to start in Spring is expected to be much smaller than in Summer or Fall. In the long run it is expected that Summer will be the most popular semester in which to start, because students willing to study particularly intensively may be able to complete the program in 4 semesters (Summer-Fall-Spring-Summer).

The capstone Professional Portfolio will serve as the Comprehensive Exam required by the Graduate School, as is true of the current program.
Duplication

There is an online master’s degree program in Science Education at Georgia State University, however we still receive many inquiries from science teachers throughout the state and region who would prefer a UGA degree. There are Science Education master’s programs in other states that are largely but not completely online (e.g., Montana State University) and completely online master’s programs not specific to Science Education but that do qualify science teachers for certification upgrades (e.g., Central Michigan University). Both of these programs currently enroll many Georgia science teachers, either in many individual courses or for entire programs. However there is no wholly online master’s program in Science Education at a flagship state university or a major private university.

Currently in the College of Education there are one undergraduate, nine graduate, and four certificate programs that may be completed entirely online. This program would not duplicate or compete for potential students with any of those.

7. Library and Laboratory Resources

There are no laboratory requirements for the program. In terms of library access, students will have access to Galileo and GIL. Students also have access to a multitude of interactive internet-based resources which have been incorporated into the web sites for our master’s-level Science Education courses.

8. Budget

Because this online version of a program mirrors the existing program in the department with face-to-face classes, no funds are requested for the development of, and transition to, this online version. The program will include courses – ESCI 6990, 7040, 7080, and 6200 (2 versions with different foci) – of which online versions have already been developed and taught by program faculty over the course of the last 2 years (beginning in Summer 2015). The faculty believe that we can make this program modification without any additional funds. The courses in the current program are subsumed in regular faculty teaching loads (academic year) and customarily funded Summer courses. Many of the courses required in the proposed program are also currently taken by most of our full-time, campus-based M.A.T. students, and at least in the short run this is likely to continue. If enrollment increases as much as hoped, separate sets of courses or separate sections of some current courses for M.Ed. vs. M.A.T. students may be established. The proposed program will employ current library resources and does not anticipate additional fees in the form of library, laboratory, or other specialized facility resource requirements. We do not anticipate any start-up costs for the proposed program, special costs for the completion of the first cycle of students, or any additional costs associated with future cycles of students. Therefore, we submit this proposal with a $0 budget.

9. Program Costs Assessed to Students

Costs for students taking the online M.Ed. would be consistent with the established e-rate fee structure. The current cost per credit hour is $629 for e-rate programs in the UGA College of Education.
10. Accreditation

The online master's degree, like all Science Education degrees, will be subject to accreditation by the Georgia Professional Standards Commission and the National Council for Accreditation of Teacher Education or its successors.
Signatures

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Attach actual course requirements

Faculty experience with online

Combo of MAT students

Mention other UGA programs that are high quality
TO: Dr. Suzanne Barbour, Dean of the Graduate School  
    Fiona Liken, Assistant Vice President  
FROM: Dr. Stacey Neuharth-Pritchett, Associate Dean for Academic Programs  
DATE: October 6, 2017  
RE: Name Change for the Graduate Certificate in Multicultural and Diversity Studies in Educational Contexts  

Please find attached a proposal from the Department of Lifelong Education, Administration, and Policy and the College of Education requesting the following changes to the Graduate Certificate in Multicultural and Diversity Studies in Educational Contexts.  

- Proposal to rename the certificate to Diversity, Equity, and Inclusion  
- Proposal to transfer the certificate to the College of Education, Dean's Office  

The College of Education's Curriculum Committee approved this proposal on September 25, 2017
NAME CHANGE JUSTIFICATION FORM

School/College Name: College of Education
Proposed Name: Certificate in Diversity, Equity, and Inclusion

Department Name Changes:
Current Department Name: Proposed Department Name:
_________________________________________________________
_________________________________________________________
_________________________________________________________

Major Name Changes:
Current Major Name: Degree Proposed Major Name: Degree
Interdisciplinary Certificate of Certificate Certificate in Diversity, Equity, and Inclusion Certificate
Multicultural and Diversity Studies in Educational Contexts

Minor Name Change:
Current Minor Name: Degree Proposed Minor Name: Degree
_________________________________________________________
_________________________________________________________

Prefix Changes:
A prefix change package should be submitted after the name change has been approved.

Current Prefix Proposed Prefix
Department Department
_________________________________________________________
_________________________________________________________
_________________________________________________________

JUSTIFICATION:

Attach a page justifying changes.

SIGNATURES:

School/College:
_________________________________________________________

Department:
_________________________________________________________
May 4, 2017

Dear Curriculum Committee,

Please accept this request for a name change for a graduate certificate in the College of Education. Dr. Kathleen deMarrais (LEAP Department Head) contacted me to ask that the Interdisciplinary Graduate Certificate of Multicultural and Diversity Studies held in her department be transferred to the Dean’s Office under the Office of Diversity, Equity, and Inclusion. Dean Craig Kennedy approved this request. Dr. deMarrais and Dr. Glaser (CHDS Department Head) worked with me to rename the certificate program (also approved by Dean Craig Kennedy) and revise the curriculum.

Current Name: Interdisciplinary Certificate of Multicultural and Diversity Studies in Educational Contexts

Proposed Name Change: Diversity, Equity, and Inclusion Graduate Certificate Program

I am also attaching the following forms to support this request.

- Name Change Justification Form
- Proposal for an External Certificate

Please let me know if there are any questions about this request. Thank you!

Warmest regards,

Professor and Associate Dean of Diversity, Equity, and Inclusion
College of Education
The University of Georgia
Department of Counseling and Human Development Services
402 Aderhold Hall Athens, GA 30602-7124
404.849.8186, asingh@uga.edu
Diversity, Equity, and Inclusion Graduate Certificate

Program

Office of Diversity, Equity, and Inclusion

College of Education, Dean’s Office
Overview

The University of Georgia approved the Interdisciplinary Graduate Certificate in Multicultural and Diversity Studies in Educational Contexts on September 14, 2011. The name was formally changed to the Diversity, Equity, and Inclusion Graduate Certificate in May 2017. The purpose of the DEI Grad Certificate is to bridge knowledge across disciplines related to DEI and to stimulate students and faculty to synthesize and apply this knowledge in their fields as DEI leaders. As designed, the DEI graduate certificate cuts across many disciplines (e.g., counseling, education psychology, sports management, communication sciences) and each of the nine departments in the College of Education. This certificate is only available to students who are currently enrolled in the Graduate School, whether in a degree program or on a non-degree-seeking track. A notation of completion of this certificate will be placed on the student’s formal University of Georgia transcript.

The DEI graduate certificate program requires a total of 15 credit hours of coursework, with one core course exploring DEI foundations in social justice and electives that support the student’s primary diversity, equity, and inclusion interests. Students must take one of two 3-hour core required courses (ECHD 8190 - Introduction to Social Justice Frameworks: Foundations in Diversity, Equity, and Inclusion or ECHD 9930 – Equity, Diversity, and Inclusion) for this certificate program, and there are 4 elective courses (3 hours each). Elective courses can be taken in fields such as lifelong education, administration, and policy; science education; food science and technology; language and literacy education; qualitative research; and non-profit organizations. Courses used toward the DEI can also be used on a Graduate School Final Program of Study for the student’s degree. Please note that all Graduate School policies regarding which courses can be used on programs of study apply to the DEI programs of study, including the following:

1. Courses listed must be no older than 6 years
2. No grade below “C” is acceptable for any course listed. Courses used toward the earning of this certificate must be taken at The University of Georgia.

Programs of Study

At the outset of the student’s matriculation into the DEI program, in consultation with their advisor, the student will complete the DEI Proposed Program of Study and submit it to the DEI Graduate Certificate Coordinator (Associate Dean of Diversity, Equity, and Inclusion – Dr. Anneliese Singh, asinh@uga.edu). The submission of the DEI Proposed Program of Study will serve as the application into the program. All DEI Proposed Programs of Study are due by the end of the fourth week of classes each semester.

As the student is working toward their final course(s) in the certificate, it is their responsibility to submit the DEI Final Program of Study to the DEI Coordinator. Both the DEI Proposed Program of Study and the DEI Final Program of Study must be on file with the College of Education Dean’s Office in the Office of Diversity, Equity, and Inclusion. Once both programs of study are on file and checked for accuracy, notification of certificate completion will then be sent to the Graduate School, who in turn will then notify the Registrar’s office to update the student’s program of study and place the notation on their University of Georgia transcript.

IMPORTANT NOTE: During the semester in which the student will complete the DEI program, they must apply for graduation from the DEI program in Athena.
Form Submission Procedure
Please fill out the DEI programs of study using the latest version of Adobe Acrobat or Adobe Acrobat Reader. Once filled out, print the forms, sign them, and then submit the hard copies via US/campus mail to the following address:

Attn: Dr. Anneliese Singh, DEI Graduate Certificate Coordinator
Associate Dean of Diversity, Equity, and Inclusion
Office of Diversity, Equity, and Inclusion
G9 Aderhold Hall
110 Carlton St.
Athens, GA 30602

Alternatively, the student may submit the forms electronically by scanning their signed DEI programs of study and attaching them to an email sent to asingh@uga.edu. If the student decides to submit the forms electronically, they should use “DEI” and their name in the Subject Line.

DEI Course Updates
The 15-hour DEI certificate program comprises one required core course (3 credit hours) and four electives (12 credit hours). The elective courses are of the student’s choosing, and should be courses that teach the student about issues of race/ethnicity, social class, sexual orientation, gender identity and gender expression, immigration, poverty, and/or other important contemporary sociocultural issues. The below list of electives, while not exhaustive, outlines potential electives within the College of Education. However, students may select DEI courses that are not listed below within the College of Education, and course electives may also be taken outside of the college. The list of potential elective courses will be updated once a year in August and the changes will be posted on DEI’s website thereafter.
Diversity, Equity, and Inclusion Graduate Certificate - Proposed Program of Study

Student Name: ________________________________

UGA ID #: ___________________________ UGA Email Address: ________________________________

Graduate Degree Objective: __________________________

Home Department: __________________________

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<tr>
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<tr>
<td></td>
<td>ECHD 8190</td>
<td>Introduction to Social Justice Frameworks in P-16 Settings</td>
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<tr>
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<td>ECHD 9930</td>
<td>Equity, Diversity, and Inclusion</td>
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DEI Core Class – 1 course (3 credit hours) required

DEI Elective Classes: Select 4 course electives (12 credit hours) that explore issues of diversity, equity, and inclusion. A list, but not exhaustive, of potential electives is provided below within the College of Education. However, students may select DEI courses that are not listed below within the College of Education, and course electives may also be taken outside of the college.

ECHD 7060  Cross-Cultural Counseling
ECHD 8290  Social Justice and Liberation Frameworks in School and Community Settings
ECHD 9060  Advanced Multicultural Counseling
EDAP 8310  Current Educational Policies in the United States
EDAP 9015  Curriculum and Educational Policy
EDEC 8201  Social, Economic, and Political Perspectives in the Education of Young Children: Birth to 8 years
EDEC 8400  Feminist Perspectives in Elementary Education
EDMS 9090  Socio-Cultural Issues in Early Adolescence
EDUC 7200  Multicultural Education for the 21st Century
EDUC 7500  Advocating for Social Justice in Educational Settings
EDUC 7710  Issues in Latino Education
EDUC 8460  The Ecological Context of Urban Education
EPSY 7210  Multicultural Gifted and Talented Education
EPSY 7270  Retention of Ethnic Minorities in Gifted/Advanced Programs
EPSY 8200  Learning Difficulties of Gifted Children and Youth
EPSY 8250  Early Education Intervention for Young Children Placed At-Risk
ETAP 7210  Social Class, Poverty, and Class-Sensitive Pedagogy
ETAP 7600  Hip Hop Pedagogy: Possibilities, Challenges, and Social Justice
KINS 7060  Human Diversity in Sport Pedagogy
KINS 7250  Gender and Sport
LLED 7545E Diverse Children's Literature in a Digital Age
LLED 7503  Sociocultural Contexts of Linguistic Minority Education
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<td>LLED 7903</td>
<td>Culture and Literacy Classrooms</td>
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<tr>
<td>LLED 8065</td>
<td>Queer Theories and Education</td>
</tr>
<tr>
<td>LLED 8590</td>
<td>Arts-based inquiry in diverse learning communities</td>
</tr>
<tr>
<td>LLED 8710</td>
<td>Poetry for Interdisciplinary Understanding</td>
</tr>
<tr>
<td>LLOD 8050</td>
<td>Multicultural Issues in Adult Education</td>
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<tr>
<td>LLOD 8140</td>
<td>Equity and Inclusion in Organizations</td>
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<tr>
<td>LLOD 8180</td>
<td>Feminist Pedagogies</td>
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<tr>
<td>SPED 7120E</td>
<td>Learning Disabilities</td>
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<tr>
<td>SPED 7120</td>
<td>Dyslexia and Other Learning Disabilities</td>
</tr>
<tr>
<td>SPED 7250</td>
<td>Written Language Disorders</td>
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Student Signature: __________________________ Date: ________________

Major Professor Signature: __________________________ Date: ________________

Please submit this form to the following address:

Attn: Dr. Anneliese Singh, DEI Graduate Certificate Coordinator
Associate Dean of Diversity, Equity, and Inclusion
Office of Diversity, Equity, and Inclusion
G9 Aderhold Hall
110 Carlton St.
Athens, GA 30602
Diversity, Equity, and Inclusion Graduate Certificate
Final Program of Study

Student Name: ____________________________ UGA ID #: ____________________________

UGA Email Address: ______________________ Graduate Degree Objective: ______________

Home department: ________________________________________________________________

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**DEI Elective Classes – 4 courses (12 credit hours) required**

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<td>DEI Course Elective 4</td>
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<td>DEI Course Elective 5</td>
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Student Signature: ____________________________ Date: ____________________________

Major Professor Signature: ____________________________ Date: ____________________________

**IMPORTANT NOTE:** During the semester in which the student will complete the DEI program, the student must apply for graduation from the DEI program in Athena.

Please submit this form to the following address:

*Attn: Dr. Anneliese Singh, DEI Graduate Certificate Coordinator*  
*Associate Dean of Diversity, Equity, and Inclusion*  
*Office of Diversity, Equity, and Inclusion*  
*G9 Aderhold Hall*  
*110 Carlton St.*  
*Athens, GA 30602*
October 4, 2017

Dr. Suzanne Barbour  
Dean, Graduate School  
University of Georgia  
210 S. Jackson St.  
Athens, GA 30602

Dear Dr. Barbour,

We are pleased to submit a proposal for an interdisciplinary graduate certificate in Agricultural Data Science for consideration by UGA Graduate Council. The modern agri-food system generates large amounts of structured and unstructured data in areas such as precision agriculture, crop and weather-based modeling, imaging and sensing, -omics technologies, and food consumer analytics, yet current graduates often lack the integrative skills to manage, mine, and interpret the resulting data streams. The purpose of the proposed program is to produce graduates capable of bridging the gap between the generation, analysis, and interpretation of big data in the agricultural sector. Students with these skills will be critical for improving communication between data generators (agricultural and biological scientists) on the one hand, and data specialists (computer scientists and statisticians) on the other. Such interdisciplinary collaboration will enable the transformational innovations needed to develop solutions to meet future food and agriculture needs.

As detailed in the proposal, we anticipate operating costs totaling $1,500 in year 1 and $3,000 each in years 2 and 3, primarily for software licenses and computer time, and to bring in external speakers for the capstone seminar series. These costs will be shared between the CAES Office of Academic Affairs and the Department of Plant Pathology.

We are excited about the prospects for this certificate, and hope that you will share our enthusiasm. Please contact us if you have further questions.

Sincerely,

Josef M. Broder  
Associate Dean for Academic Affairs – CAES

Harald Scherm  
Professor of Plant Pathology & Department Head

cy: Sam Pardue

attachment
OUTLINE FOR AN INTERDISCIPLINARY CERTIFICATE PROGRAM

I. Basic Information

1. Institution University of Georgia

2. School/College College of Agricultural and Environmental Sciences (CAES)

3. Department/Division Plant Pathology

4. Certificate Title (as it will appear in the Bulletin) Agricultural Data Science

5. Level (undergraduate or graduate) Graduate

6. Proposed starting date for program Fall Semester 2018

7. Abstract of the program for the University Council's agenda:
   Provide a one or two page summary of the proposed program that includes an overview and highlights of the response to the criteria in Section II.

The demand for employees with "big data" expertise has risen sharply across all sectors of the U.S. economy. According to a recent Forbes Tech report, demand for many data science positions is expected to increase by between 80 and 90% over the next year. As a result, formal degree or certificate programs in data science have skyrocketed, primarily in areas related to business, consumer, and health care analytics. In contrast, there are currently no specialized training programs in Agricultural Data Science, providing an opportunity for UGA to position itself at the leading edge of this emerging field. Indeed, agriculture is viewed by many as the next frontier in big data generation and analysis, especially when considering data-intensive applications such as precision agriculture, climate and weather-based modeling, crop and livestock imaging and sensing, plant and animal phenomics, and food consumer analytics, among others.

Although many agricultural scientists receive statistical training in the analysis of field and laboratory experiments, they typically lack the integrative skills to manage, mine, and interpret big or less structured data streams. Drawing on UGA’s strength in the agricultural sciences and its campus-wide Informatics Initiative, we propose to develop a Graduate Certificate in Agricultural Data Science targeted toward enrolled graduate students in the agri-food sciences and aimed at producing graduates capable of bridging the gap between the generation, analysis, and interpretation of structured and unstructured agricultural data. The Certificate is envisioned to encompass 18 credit hours in the following areas:

- **Area 1: Agricultural Data Science Core** (6 credits): Two required courses covering the foundations in descriptive and predictive analytics in the agri-food sciences and providing context for and integration among more specialized data science elective courses.

- **Area 2: Analytical Foundations** (at least 5 credits): More specialized elective courses in the foundations of data science: programming, data management, statistics, econometrics, and/or data mining.

- **Area 3: Analytical Applications** (at least 6 credits): Elective courses from a range of applications including precision agriculture, geographic information science, imaging and sensing, experimental statistics, bioinformatics, and consumer analytics, among others.

- **Area 4: Seminar in Agricultural Data Science** (1 credit): Capstone seminar course featuring UGA and external speakers highlighting diverse applications in agricultural analytics.
8. Submit letters of support from the various academic unit heads involved in developing the program initiative or whose support is vital to its success.

Letters of support from relevant units are attached to this proposal.

SIGNATURES:

[Signatures]

Department Head

Dean of School/College

II. Response to the Criteria for All Programs

The criteria that proposed new programs are expected to meet in order to be approved and implemented within the University of Georgia are listed below. Please provide sufficient explanation as to how the proposed program satisfies each criterion.

1. The purpose and educational objectives of the program must be clearly stated, and must be consistent with the role, scope, and long-range development plan of the institution.

   A. State the purpose and educational objectives of the program and explain how the program complements the role, scope, and long-range development plan of the institution.

The modern agri-food system generates large amounts of structured and unstructured data in areas such as precision agriculture, crop and weather-based modeling, imaging and sensing, -omics technologies, and food consumer analytics, yet current graduates often lack the integrative skills to manage, mine, and interpret the resulting data streams. The purpose of the Agricultural Data Science (ADS) certificate program is to produce graduates capable of bridging the gap between the generation, analysis, and interpretation of big data in the agricultural sector. Students with these skills will be critical for improving communication between data generators (agricultural and biological scientists) on the one hand, and data specialists (computer scientists and statisticians) on the other. Such interdisciplinary collaboration will enable the transformational innovations needed to develop solutions to meet future food and agriculture needs. As more and more companies in the agri-food sector are transforming themselves into data-driven enterprises, graduates from the ADS program will be in high demand.

The ADS certificate builds upon the momentum generated by the Georgia Informatics Institutes (GII) and Informatics Across the Curriculum Program at UGA. We will utilize INFO 8000 (Foundations of Informatics for Research and Practice), a currently approved graduate-level INFO course, as one of the core courses for the certificate. One additional core course, AESC 6xxx (Applied Agricultural Data Science), will be developed de novo following the "Specialty Core" model envisioned by GII. As such, there will be considerable potential for synergism between the ADS certificate and the GII.

The ADS certificate also addresses key long-range goals of the university, the CAES, and the Graduate School as spelled out in their respective 2020 strategic plans:

- UGA Strategic Plan – Strategic Direction II, Strategic Priority: "Provide and promote additional opportunities for interdisciplinary, dual, and joint degree experiences for graduate and professional students."

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- **CAES Strategic Plan – Goal 1:** CAES educational programs will be at the forefront of all land-grant institutions: “Encourage the creation of interdepartmental curriculum to ensure emerging societal needs are addressed.”

- **Graduate School Strategic Plan –Goal 2:** Enhance the culture of innovation and interdisciplinarity in graduate education
  - Strategy A: “Encourage and support efforts to offer innovative and interdisciplinary research and learning opportunities for graduate students.”
  - Strategy B: “Increase the number of interdisciplinary certificates, interdisciplinary degrees, and dual-degrees awarded.”

B. Describe the interdisciplinary nature of the proposed program. Which school(s) or college(s) and department(s) will be involved in the development of the program? Describe the expected stage of development for this program within five years.

The ADS certificate is only open to enrolled graduate students at the University of Georgia. It will be housed in the CAES, administered by a Certificate Coordinator in the Department of Plant Pathology, and supported by a Steering Committee with faculty representatives from relevant disciplines. The curriculum will be highly interdisciplinary. Both core courses (INFO 8000 and AESC 6xxx) will integrate analytical approaches and case studies from a range of disciplines. Similarly, the capstone seminar (AESC 8xxx) will draw from intramural and invited speakers across disciplines and industries. Elective courses will be drawn from four different colleges (CAES, Franklin College of Arts and Sciences, Warnell School of Forestry and Natural Resources, and Family and Consumer Sciences) and two Institutes (GII and Institute of Bioinformatics). At the same time, the curriculum has been designed such that prerequisites for core and elective courses will not be prohibitive for students coming from a range of different disciplines and graduate majors.

Since most of the courses that make up the curriculum of the ADS certificate are already in place, it is expected that the program will be fully developed and operational within the first 5 years.

2. *There must be a demonstrated and well-documented need for the program.*

A. Explain why this program is necessary.

Agriculture faces a “great balancing act”\(^1\) among three critical needs: doubling food production to feed a world population of 9 billion people by 2050, while simultaneously reducing environmental impacts (agriculture currently is responsible for 24% of greenhouse gas emissions and 70% of freshwater withdrawals globally) and supporting rural economic development (agriculture directly or indirectly employs 28% of the world’s population). Reconciling these conflicting needs necessitates a transition to a smarter, more efficient agri-food system that is driven by new technologies, robust decision support models, and advanced analytics to increase overall food production, optimize use of natural resources, minimize waste, and improve food access. According to a recent analysis by Rabobank, a multinational

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agricultural banking group, the convergence of big data, computational algorithms, and associated technologies could add $10 billion in value each year worldwide for crop farms alone\(^2\).

The demand for employees with big data expertise has risen sharply across all sectors of the U.S. economy. According to a recent Forbes Tech report, demand for many data science positions is expected to increase by between 80 and 90% over the next year\(^3\). As a result, formal degree or certificate programs in data science have skyrocketed, primarily in areas related to business, consumer, and health care analytics\(^4\). In contrast, there are currently no specialized training programs in agricultural data science, providing an opportunity for UGA to position itself at the leading edge of this emerging field. Indeed, agriculture is viewed by many as the “next frontier” in big data generation and analysis, especially when considering data-intensive applications such as precision agriculture, climate and weather-based modeling, crop and livestock imaging and sensing, plant and animal phenomics, and food consumer analytics, among others. Multinational companies such as IBM, Monsanto, and DuPont Pioneer have recognized this opportunity and are investing heavily into agricultural big data and associated analytics platforms\(^5\). Also of note, venture capital investment into agricultural technologies in the U.S. has nearly doubled each year since 2012 to reach an estimated total of $4.1 billion in 2015\(^6\); the top-four areas of investments are all in data-intensive subsectors such as food e-commerce, precision irrigation, drones and robotics, and decision support technology.

Although many agricultural scientists receive statistical training in the analysis of field and laboratory experiments, they typically lack the integrative skills to manage, mine, and interpret the more complex data generated through emerging precision agriculture, imaging and sensing, produce tracking, and food consumer analytics technologies. Training of a cadre of agri-food graduate students who are more “data-smart” and quantitative in their approach will help improve communication and collaboration between data generators (agricultural and biological scientists) on the one hand, and data specialists (computer scientists and statisticians) on the other. This type of interdisciplinary cross-talk will enable the transformational innovations needed to develop solutions to meet future food and agriculture needs.

As more and more companies in the agri-food sector are transforming themselves into data-driven enterprises, graduates from the IGC program will be in high demand. This is echoed in an industry support letter submitted on behalf of the ADS certificate (attached at the end of this document).

Finally, it is noteworthy in this context that USDA’s National Institute of Food and Agriculture (NIFA), the largest funder of fundamental and applied agricultural research in the U.S., has recently launched a new initiative, Food and Agriculture Cyberinformatics and Tools (FACT), to address the increasing need for data-driven solutions to address complex agricultural problems. Building on this initiative, the FY2017 NIFA Request for Applications for its Foundational Program for the first time included funding for workshops to

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\(^8\) AgFunder. 2015. AgTech Investing Report. Mid Year Report 2015. AgFunder, New York, NY.
identify “priorities and bottlenecks in generating, managing and integrating data in the food and agricultural system.” It is anticipated that this funding stream will be expanded in the near future to include research and education in agricultural data science. UGA graduate students trained in the ADS certificate will be better prepared to be competitive for these funds once they have entered the academic workforce as postdocs or independent investigators.

B. In addition, provide the following information:
   1. Semester/Year of Program Initiation: Fall 2018
   2. Semester/Year Full Implementation of Program: Fall 2019
   3. Semester/Year First Certificates will be awarded: Fall 2020
   4. Annual Number of Graduates expected (once the program is established): 12
   5. Projected Future Trends for number of students enrolled in the program: 25-40 at any one time

3. There must be substantial evidence that student demand for the program will be sufficient to sustain reasonable enrollments in the program.

   A. Provide documentation of the student interest in the program, and define what a reasonable level of enrollment is for a program of this type. Provide evidence that student demand will be sufficient to sustain reasonable enrollments.

An online survey was conducted among current CAES graduate students in July of 2017 to gauge interest in the ADS certificate. Among n = 113 respondents (49 Masters, 64 PhD), 86.8% indicated that they would be interested in this program: 49.6% were “definitely interested” and 37.2% “depending on the details.” Examples of student feedback received are as follows:

- “This would be an AMAZING addition to any graduate student’s program of study. It adds an invaluable set of skills to their “tool box” and it addresses a large gap in our knowledge and training that many graduate students have mentioned they feel they lack. A great idea.”
- “I see a general need for this certificate. At the MS level, I think that students with these skills would be very marketable in the animal agriculture industry.”
- “I think this program is a great idea, and would enroll now if it were available today.”
- “I would definitely be interested in this. My background is in applied statistics and to have the opportunity to apply that to agricultural data would be quite useful.”
- “I am trying to get this skills right now, but with a graduate certificate and an organized program of study I feel like I would be able to learn much more.”
- “It is a very timely course. When might it be available?”

B. In addition, provide the following information:

To what extent will minority student enrollments be greater than, less than, or equivalent to the proportion of minority students in the total student body?

Minority enrollment in agricultural college majors has been lagging behind that of many other disciplines because of the stigma that is often associated with “traditional” agriculture among minority populations\(^9\). For example, the percentage of non-white graduate and professional students in Fall

Semester 2016 was 25.6% across UGA but only 15.9% in the CAES. The ADS certificate highlights a non-traditional, “hi-tech” approach to agricultural science that should be particularly attractive to minority students. Hence, we expect a somewhat greater proportion of minority students represented in the certificate program than across the CAES at large.

4. The design and curriculum of the program must be consistent with appropriate disciplinary standards and accepted practice.

Provide the following information:

A. Present a detailed curriculum outline of the program listing specific course requirements (to include programs of study, course prefix, number, and title).

Certificate Areas:

- **Area 1: Agricultural Data Science Core** (6 credits): Two required courses covering the foundations in descriptive and predictive analytics in the agri-food sciences and providing context for and integration among more specialized data science elective courses.
- **Area 2: Analytical Foundations** (at least 5 credits): More specialized elective courses in the foundations of data science: programming, data management, statistics, econometrics, and/or data mining.
- **Area 3: Analytical Applications** (at least 6 credits): Elective courses from a range of applications including precision agriculture, geographic information science, imaging and sensing, agricultural statistics, bioinformatics, and consumer analytics, among others.
- **Area 4: Seminar in Agricultural Data Science** (1 credit; new course): Capstone seminar course featuring UGA and external (industry and academia) speakers highlighting diverse applications in agricultural analytics.

**AREA 1: AGRICULTURAL DATA SCIENCE CORE**

Both courses are required:

**INFO 8000 — Foundations of Informatics for Research and Practice** (3 credits)

*This interdisciplinary course provides instruction and exposure to the theory, tools, and techniques that connect data to information, knowledge, and decisions. Students will gain the knowledge and skills necessary to deeply engage in the increasingly interdisciplinary, data-driven, security-focused industrial and research enterprises as they complete practical analytical tasks and projects.*

**AESC 6xxx - Applied Agricultural Data Science** (3 credits; new course)

*This course will cover a variety of modern approaches for analyzing and interpreting data types commonly encountered in the agri-food sciences (including but not limited to variable selection and transformation, decision trees, neural networks, regression models, combination of models, and text mining).*

**AREA 2: ANALYTICAL FOUNDATIONS** (Programming, Statistics, Data Mining, Data Management)

Take at least 5 credits:

**AAEC 6610 — Quantitative Techniques in Agricultural Economics** (3 hours)

*Basic quantitative techniques in agricultural economic theory, emphasizing basic models used in*
the study of prices, marketing, and production.

**AAEC 6630 or 6630E - Quantitative Tools for Agribusiness Management (3 credits)**
Quantitative methods for agribusiness management focused on seven topics, including statistical tests, regression, forecasting, linear programming, non-linear optimization, multi-criteria decision making, and simulation models. These tools are introduced in lecture and then put to practical use in the computer lab using SAS and Excel.

**BINF 6006 - Programming and Data Structures for Informatics (4 credits)**
An intensive introduction to fundamental concepts in programming and data structures and their application to everyday use in informatics analyses. Hands-on exercises will emphasize problem-solving and writing code to collect, analyze, and present results.

**CSCI 6360 - Data Science II (4 credits)**
An introduction to advanced analytics techniques in data science, including random forests, semi-supervised learning, spectral analytics, randomized algorithms, and just-in-time compilers. Distributed and out-of-core processing.

**CSCI 6370 – Database Management (4 Credits)**
The theory and practice of database management. Topics to be covered include efficient file access techniques, the relational data model as well as other data models, query languages, database design using entity-relationship diagrams and normalization theory, query optimization, and transaction processing.

**STAT 6360 - Statistical Software Programming (3 credits)**
Programming techniques in modern statistical software, including SAS and R for students with some experience with computer programming. Topics include data input/output; data formats and types; data management; flow control, conditional execution, and program design; statistical graphics and exploratory data analysis; basic procedures, and functions for statistical modeling and inference.

**AREA 3: ANALYTICAL APPLICATIONS**
Take at least 6 credits:

**AAEC 6620 - Applied Econometrics (3 credits)**
Standard and advanced econometric techniques are applied to topics in agriculture and resource economics. Techniques include models for cross-section data, such as pooled regressions, limited dependent variable models, random and fixed effects models for panel data, and forecasting and volatility models for time series data. Students will conduct statistical analyses and model evaluation.

**AAEC 8610 - Advanced Econometric Applications (3 hours)**
Development and use of econometric techniques. Emphasis on the application of maximum likelihood estimation using MATLAB. The analysis of categorical and survival data, multiple equation regression models, simultaneous systems, and multivariate time series. The treatment of models with discrete and limited dependent variables in a panel data context.

**ADSC 8000 – Statistical Genetics and Bioinformatics with Application to Animal Agriculture (3**
Currently used methods and techniques in the field of molecular genetics and bioinformatics with applications in livestock and poultry species. Major emphasis on Genome wide association studies (GWAS), and genomic selection (GS). Lab sessions include the simulation and analysis of genomic data within the context of GWAS and GS. Students will have the opportunity to develop their own code or to use software provided by the instructor.

**ADSC 8120-8120L – Advanced Statistical Methods in Animal Breeding (3 credits)**
Latest statistical and computing procedures used in animal breeding and genetics with special emphasis on Bayesian statistics, Markov chain Monte Carlo techniques and methods useful for analysis of molecular marker information.

**BINF(MIBI)(BCMB) 8211 - Advanced Methods for Biological Data Analyses (3 credits)**
Advanced strategies and methodologies for large-scale data analyses in support of genomics, transcriptomics, proteomics, and studies of biological pathways and networks. Topics include gene finding, genomic rearrangements, microarray data analyses, protein function inference, protein-protein interaction prediction, and pathway and network prediction. Major data mining tools will be covered for each topic.

**BINF 8441 - Statistics for Bioinformatics (3 credits)**
Introductory statistics for students in the life sciences, including probability, discrete and continuous random variables, distributions, expectations, maximum likelihood, Bayesian inference, hypothesis testing, and linear regression. These topics will be mixed with applications of the statistical concepts to biological data. Statistical inference and real data analysis are implemented in R.

**CRSS 6050 - Improving Nutrient and Energy Efficiency with Geographic Information Systems (4 credits)**
Students will apply GIS, GPS, and remote sensing principles in agricultural applications; emphasizing hands-on experience working with producers, vendors, and researchers collecting data, developing spatial databases, analyzing data, and communicating findings. Students will explore agriculture as a landscape complex and evaluate regulatory requirements, conservation opportunities, applied technologies, and market factors.

**CRSS 6060-6060L - Advanced Topics in Precision Agriculture (3 credits; Tifton Campus)**
Concepts and analytical techniques used in precision agriculture to make management decisions such as geostatistics to analyze georeferenced data, development of management zones, integration of sensors with real-time control systems, and big data analytics. Lab exercises will provide experiential learning of topics covered during lectures.

**CRSS(PBGG) 8010 - Research Methods and Design for Crop Science (3 credits)**
Foundational methods to design and conduct effective field trials for plant research.

**CSCI 6380 – Data Mining (4 credits)**
A broad introduction to data mining methods and an exploration of research problems in data mining and its applications in complex real-world domains. Approaches include association and classification rule learning, tree learning, neural network and Bayesian methods, support vector machines, clustering, and ensemble learning.
CSCI 6330 - Artificial Intelligence and the Web (4 credits)
The application of artificial intelligence methodologies and algorithms to problems involving the world wide web. Introduction to problem-solving, knowledge representation, learning, and reasoning techniques and exploration of how they are applied to enable information provisioning, social networking, and service provisioning on the web.

CSCI 6850 - Biomedical Image Analysis (4 credits)
Introduction to the standard approaches to biomedical image analysis, including basic concepts of biomedical imaging, basic algorithms, principles of software systems, and their applications. Biomedical image analysis software tools will be used in hands-on projects.

FANR 6750-6750D - Experimental Methods in Forestry and Natural Resources Research (4 credits)
Statistical procedures and computer software to collect, analyze, and interpret forest resources research data.

FANR 8400 - Advanced Spatial Analysis for Natural Resources (3 credits)
Advanced theory and applications of spatial information technology and spatial analysis techniques in natural resources. Focus will be on addressing realistic problems within the field of natural resources, including in student's own research area.

FHCE 7050 - Consumer Analytics and Research Methods II (3 credits)
Advanced research methods with an emphasis on applied consumer research techniques, interpretation, and dissemination. Through the use of modern analytic tools and diverse quantitative methods, students learn to integrate design, measurement, sampling, data management, and analytic techniques found in applied consumer analytic settings such as business, government, and non-profit organizations.

FORS 6760-6760L – Quantitative Models for Forest Resources Managers (3 credits)
Model forms used to simulate tree and forest stand development as well as models used to simulate the growth of various wildlife and fish species. Parameter estimation methods and model evaluation included.

FORS 7690-7690L – Applied Geographic Information Systems (GIS) for Forest Resource Management (3 credits)
Geographic Information Systems (GIS) methods and techniques to solve management problems faced by forestry professionals. Focus on the collection, organization, and analysis of spatial and tabular information with an emphasis on big data (FIA, RPA, census, Landsat) and their use in the decision-making process.

GEOG(CRSS) 6375 - GIS Applications in Agriculture (4 credits)
An exploration of the uses of Geographic Information Science (GIS) technology in agricultural applications. Basics of Global Positioning Systems (GPS) for location reference, GIS for field investigation, and remote sensing for crop and soil evaluation will be explored. Construction of GIS databases for precision farming and watershed management applications will be required.

PATH 8310-8310L – Epidemiology of Plant Diseases (3 credits)
Factors altering the course of disease epidemics in plant populations. Techniques for qualitative
and quantitative measures of such factors will be emphasized.

PBIO(BIOL)(BINF) 6550 - Bioinformatics Applications (3 credits)
State-of-the-art computational analyses of genome, DNA, RNA, and protein sequences will be presented, including programs for analyzing these data and the underlying analysis methods. Topics include sequence and structure databases; sequence assembly; sequence alignment; evolutionary analyses; gene function prediction; genome annotation; and applications for medical, agricultural and environmental genomics.

PBIO(BINF)(FANR) 6700 - Computational Plant Science (3 credits)
Introduces computational techniques to students who are new to programming or do not regularly program using examples from plant science. In doing so, the course introduces basic simulation techniques and imaging techniques that can be specialized and further developed in higher level graduate courses.

STAT 6230 - Applied Regression Analysis (3 credits)
Applied methods in regression analysis. Topics include univariate linear regression, techniques of multiple regression and model building, ANOVA as regression analysis, analysis of covariance, model selection and diagnostic checking techniques, nonlinear regression, and logistic regression.

STAT 8200 - Design of Experiments for Research Workers (3 credits)
Methods for constructing and analyzing designed experiments are considered. Concepts of experimental unit, randomization, blocking, replication, and orthogonal contrasts are introduced. Designs include completely randomized design, randomized complete block design, Latin squares design, split-plot design, repeated measures design, and factorial and fractional factorial designs.

STAT 8250 – Multivariate Methods
An introduction to the methodology of multivariate statistics for quantitatively-oriented students from various disciplines who have training in regression and analysis of variance. Topics include the multivariate normal distribution, one and two population inference on population mean vectors, MANOVA, principal component analysis, factor analysis, discrimination, classification, and canonical correlation.

AREA 4: SEMINAR IN AGRICULTURAL DATA SCIENCE
This course is required:

AESC 8xxx – Seminar in Agricultural Data Science (1 credit; new course)
Capstone seminar course featuring UGA and external speakers (industry and academia) highlighting diverse applications in agricultural analytics.

B. Identify which aspects of the proposed curriculum already exist and which constitute new courses.

Only two new courses (both required) will be needed for the proposed curriculum, AESC 6xxx (Applied Agricultural Data Science; 3 credits) and AESC 8xxx (Seminar in Agricultural Data Science; 1 credit).
Brief descriptions of the two classes are included in the course listing above. Development of these two courses will commence as soon as the certificate program is approved.

AESC 6xxx and 8xxx, along with the existing INFO 8000 (*Foundations of Informatics for Research and Practice*), will play an important integrative role within the program, whereas the elective courses (all of which are already in existence) provide the flexibility to satisfy the needs and interests of diverse majors within the agri-food and allied sciences.

C. Identify model programs, accepted disciplinary standards, and accepted curricular practices against which the proposed program could be judged. Evaluate the extent to which the proposed curriculum is consistent with these external points of reference and provide a rationale for significant inconsistencies and differences that may exist.

To the best of the writers’ knowledge, the ADS certificate will be the first of its kind; as such, there are no accepted disciplinary standards or curricular practices against which the proposed program can be judged directly. However, there exist numerous graduate certificate programs in general Data Science, Business Analytics, and Health Care Analytics that can serve as external points of reference. Most of these programs follow a similar structure as proposed here, involving a unifying and integrative core, required foundational courses in programming and data management, and a range of electives to provide flexibility for students in various majors.

D. If program accreditation is available, provide an analysis of the ability of the program to satisfy the curricular standards of such specialized accreditation.

N/A

5. Faculty resources must be adequate to support an effective program.

A. Define the size, experience, and specializations of the full-time faculty needed to support an effective program. Identify the extent to which such faculty resources currently exist at the institution, and what additions to the faculty will be needed to fully implement the program. Specify how many full-time faculty will provide direct instructional support to this program.

The ADS certificate involves numerous electives (and hence instructors) from four different colleges (CAES, Franklin College of Arts and Sciences, Warnell School of Forestry and Natural Resources, and Family and Consumer Sciences) and two Institutes (Gil and Institute of Bioinformatics). Given the large number of electives, it is unlikely that any single one of these courses would be oversubscribed and would require additional instructor resources. The courses with the largest enrollment will be the core courses, INFO 8000 (*Foundations of Informatics for Research and Practice*) and AESC 6xxx (*Applied Agricultural Data Science*), as well as the capstone seminar, AESC 8xxx (*Seminar in Agricultural Data Science*). INFO 8000 is designed as a large survey course and is expected to be capable of accommodating the additional 12 students/year coming via the certificate. AESC 6xxx is a new course and will be developed and taught by Dr. Harald Scherm (Department of Plant Pathology and initial Coordinator of the ADS certificate program), potentially in collaboration with a new hire in

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computational epidemiology anticipated in his department in FY19. Responsibilities for AESC 8xxx, the seminar course, will rotate among a core group of CAES faculty with an interest in quantitative approaches and data science. As such, no new faculty resources are required.

B. In addition, for each faculty member directly involved in this program, list:

1) Name, rank, degrees, academic specialty, educational background
2) Special qualifications related to this program
3) Relevant professional and scholarly activity for past five years
4) Projected responsibility in this program and required adjustments in current assignments

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<tr>
<th></th>
<th>Name</th>
<th>Academic Background</th>
<th>Responsibilities</th>
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<tbody>
<tr>
<td>1</td>
<td>Harald Scherm</td>
<td>Prof. of Plant Pathology &amp; Department Head</td>
<td>Berna Karali, Associate Prof. of Ag &amp; Applied Economics</td>
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<tr>
<td></td>
<td>PhD (Plant Pathology)</td>
<td>UC Davis, 1994</td>
<td>PhD (Economics with Statistics minor) NCSU, 2007</td>
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<tr>
<td></td>
<td>Prof. of Crop &amp; Soil Sciences</td>
<td>University of Florida, 1989</td>
<td>Statistics and Adjunct Prof. of Statistics</td>
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<tr>
<td></td>
<td>PhD (Agricultural Engineering)</td>
<td>University of</td>
<td>PhD (Quantitative Genetics &amp; Animal Breeding), Polytech Univ. Madrid, 1997</td>
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<tr>
<td>2</td>
<td>Ecological and quantitative epidemiology</td>
<td>Agricultural engineering, precision agriculture</td>
<td>Statistical genetics, Bayesian inference, longitudinal data modeling</td>
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<tr>
<td>3</td>
<td>Research on temporal and spatial aspects of botanical epidemics; data synthesis techniques such as meta-analysis and text analytics: CAES Asst. Dean for Research, 2010-2017</td>
<td>Research on spatial and temporal patterns of soil water distribution in fields; development of data management techniques for precision agriculture; development of dynamic variable rate irrigation tools. Teaches CRSS 3030 – Introduction to Precision Agriculture and CRSS 8060 – Advanced Topics in Precision Agriculture.</td>
<td>Bayesian inferences and Markov Chain Monte Carlo methods; longitudinal data modeling; microarray data analysis and bioinformatics. Currently leads USDA National Needs Fellowship project on “integrated training of graduate students in quantitative and computational methods for animal breeding and genomics.” Research on financial and agricultural commodity price analysis employing multivariate and temporal econometric techniques</td>
</tr>
<tr>
<td>4*</td>
<td>Certificate Coordinator</td>
<td>Seminar Coordination/ Steering Committee</td>
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*No changes in current assignments of these faculty members will be needed. Seminar coordination will rotate among the seminar coordinators each year.

C. Where it is deemed necessary to add faculty in order to fully develop the program give the desired qualifications of the persons to be added.

Since the ADS certificate curriculum relies largely on existing courses, no additional faculty will be needed to fully develop the program.

6. Library, computer, and other instructional resources must be sufficient to adequately support the program.
A. Describe the available library resources for this program and the degree to which they are adequate to support an effective program. Identify the ways and the extent to which library resources need to be improved to adequately support this program.

Current UGA Library resources in this area are extensive, including 240,000 items (print and electronic books and journals) related to agriculture and food science, and over 200,000 in computer science, informatics, and statistics. Hence, no improvements are needed to adequately support the ADS program.

B. Likewise, document the extent to which there is sufficient computer equipment, instructional equipment, laboratory equipment, research support resources, etc. available to adequately support this program. Specify improvements needed in these support areas.

Adequate computer labs and software are available to support the program. In the CAES alone, this includes 7 instructional computer labs in Athens with 112 machines that are managed either centrally by the Office of Information Technology (OIT) or through CAES departments. Many of these labs are equipped with data science-relevant software such as R, SAS, Matlab, and ArcGIS. Access to high-performance computing and networking infrastructure is available through the Georgia Advanced Computing Resource Center (GACRC) located at UGA’s Boyd Data Center, a comprehensive collection of scientific, engineering and business applications, as well as associated consulting and training services.

7. Physical facilities necessary to fully implement the program must be available.

Describe the building, classroom, laboratory, and office space that will be available for this program and evaluate their adequacy to fully support an effective program. Plans for allocating, remodeling, or acquiring additional space to support the program's full implementation of the program should also be identified.

Currently available classroom and computer lab facilities are fully adequate to support this program effectively. No additional space will be needed.

8. The expense to the institution (including personnel, operating, equipment, facilities, library, etc.) required to fully implement the program must be identified.

A. Detailed funding to initiate the program and subsequent annual additions required to fully implement the program are needed below. Estimates should be based upon funding needed to develop an effective and successful program and not upon the minimal investment required to mount and sustain a potentially marginal program.

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</table>
We anticipate operating costs totaling $1,500 in year 1 and $3,000 each in years 2 and 3, which will be shared between the CAES Office of Academic Affairs and the Department of Plant Pathology. Each year, $1,500 will be used to purchase software licenses and cover GACRC computing time. In years 2 and 3, $1,500/year will be used to bring in extramural speakers for the AESC 8xxx capstone seminar.

B. Indicate the extent of student support (fellowships, assistantships, scholarships, etc.) available for this program, and evaluate the adequacy of this support. Assistantships funded from institutional (as opposed to sponsored) funds should be included in this funding analysis as well.

Students in the certificate will be funded through their regular graduate assistantships provided by their major departments or programs; thus, there will be no separate financial support line specifically for participation in the certificate. In the future, we anticipate applying for fellowship funding from the USDA-NIFA Food and Agricultural Sciences National Needs Graduate and Postgraduate Fellowship (NNF) grants program to recruit new MS or PhD students having an interest in pursuing the ADS certificate into existing CAES graduate majors.

9. Commitments of financial support needed to initiate and fully develop the program must be secured.

A. Identify the sources of additional funds needed to support the program and the probability of their availability.

As indicated in section 8A, the CAES will provide operational funds for software licenses/computer time and to help bring to UGA extramural speakers for the AESC 8xxx capstone seminar. No additional funds will be needed to support the program.

B. It is particularly important to include in this response the long-range plans for additional or expanded facilities necessary to support an effective program. Evaluate the timing and likelihood of such capital funding.

In the future, we anticipate applying for fellowship funding from the USDA-NIFA Food and Agricultural Sciences National Needs Graduate and Postgraduate Fellowship (NNF) grants program to recruit new MS or PhD students having an interest in pursuing the ADS certificate into existing CAES graduate majors.

10. Provisions must be made for appropriate administration of the program within the institution and for the admission to and retention of students in the program in keeping with accepted practice.

Describe and evaluate the structure for the administration of the program. Explain the degree to which that structure is in keeping with good practice and accepted standards. Similarly, explain how and by what criteria students will be admitted to and retained in the program, and how these procedures are consistent with accepted standards for effective and successful programs.

The ADS certificate will be administered by the Certificate Coordinator, Dr. Harald Scherm, who currently serves as the head of the Department of Plant Pathology and is a quantitative and ecological epidemiologist by training. He will be supported by administrative staff in his
department, and advised by a **Steering Committee** consisting of faculty representatives from the main Colleges and Institutes that offer relevant courses and/or feed students into the program. Two additional members of the Steering Committee will be the GIS Director (or his/her designee) and a representative from the agri-technology industry.

Students will be admitted to the certificate by submitting an application to the Coordinator. The Coordinator in conjunction with administrative staff will be responsible for admitting students to the program, advising on programs of study, coordinating course offerings, maintaining student records, promoting activities, securing additional funding, and consulting with the Steering Committee regarding curriculum issues.

The semester before completing the certificate, students will be required to fill out a certificate completion form. The ADS certificate will be awarded to the student upon the completion of her/his graduate degree. An exit survey will be conducted to determine to what degree learning outcomes have been met.
July 24, 2017

Dr. Harald Scherm
Professor and Head, Dept. of Plant Pathology
UGA, Athens, GA

Ref: “Agricultural Data Science Curriculum” Proposal

Dear Dr. Scherm,

It was a pleasure visiting with you in early June. I am in receipt of your proposal with a vision to create Interdisciplinary Graduate Certificate in Agricultural Data Science. One key aspect of my role is managing internal and external knowledge partnerships. I discussed the content and intent of your vision with a few of my colleagues deeply involved in our Fuse and Crop Care initiatives.

AGCO is one of the world’s leading farm machinery OEMs, with 2016 sales of 7.4B USD. AGCO will continue to invest in top quality crop care product line for North America. And, FUSE is our major push to enable efficiency improvements for the entire farming operation of a customer. Improving utilization of the machines and making them more flexible & precise are the main goals. Machine connectivity, Data analytics and Agronomy tools are key pieces of this strategy.

Over the past few years, we have noticed a key gap in that there are very few people with a good cross-functional background in Agronomy, Precision Tech and Data Analytics. There are few institutions that are even thinking about this in a holistic manner. We see two key benefits from your proposal for our industry; firstly, it would help create a talent pipeline that is much needed to support our future products & smart services, and secondly, continuing education opportunities for our existing talent.

In summary, AGCO sees a lot of value in your proposal and fully support it. Thank you very much for sharing it with us and please do not hesitate to contact us if I can be of further assistance.

With best wishes,

Dr. Ravi Godbole
DATE: July 31, 2017

TO: CAES Graduate Affairs & Curriculum Committee

FROM: Samuel L. Pardue, Dean and Director

SUBJECT: Graduate Certificate in Agricultural Data Science

I would like to express my support for the proposed Graduate Certificate in Agricultural Data Science. This certificate has the potential to develop important applications for agriculture and to better prepare our graduates in dealing with the emerging science of "big data". The apparent absence of similar programs with an agricultural focus, uniquely positions UGA with the opportunity to assume national leadership in this area.

The College of Agricultural and Environmental Sciences has strong programs in areas of precision agriculture, plant breeding, agronomics, Ag economics, food safety and genomics. These and other programs generate large datasets and are good fits for interfacing with the proposed certificate. The certificate is a timely initiative and can strengthen existing collaborations with faculty across multiple colleges/schools. The certificate may also encourage the creation of a critical mass of UGA faculty with relevant expertise in this rapidly expanding area.

Interest in the application of "big data" to production Ag is growing. Both federal (the proposed USDA AgCloud) and private corporate support for developing analytical tools for food and fiber production is growing. The certificate would provide focus and a structure to bring these entities together.

Our college will support our faculty and students involved in this certificate and encourage them to participate in any associated workshops, seminars, and/or grant writing activities. The certificate has the potential to strengthen our existing graduate programs and will likely result in new collaborative efforts.

SLP/alc
August 9, 2017

Dr. Harald Scherm  
Professor & Department Head  
Department of Plant Pathology  
University of Georgia  
Athens, GA 30602

Dear Dr. Scherm,

Thank you for meeting with me and my colleague, Dr. Ping Ma, to discuss the proposal for an interdisciplinary graduate certificate in Agricultural Data Science to be housed in the College of Agricultural and Environmental Sciences (CAES). As we discussed, this is a very timely proposal that addresses a real need and opportunity for developing more quantitative skills and knowledge across the curriculum. The proposal is also congruent with the Department of Statistics' increased emphasis in this area, which includes development of a B.S. degree in Data Science, in collaboration with the Department of Computer Science at UGA. We are in the process of developing coursework for such a degree, which would allow for electives in a variety interdisciplinary areas on campus, including the courses offered by CAES. Thus, there will be more synergy even from the undergraduate level. Many of your students already are well prepared to take our upper level statistics courses, and I am sure this certificate will only broaden their expertise and make them marketable in the era of data science.

I reviewed your proposed curriculum and support inclusion of our STAT courses under Areas 2 and 3 of the certificate. These courses are highly relevant as well as accessible to graduate students who are not Statistics majors. As we discussed, we would also be happy to share our expertise during development and teaching of the AESC 6xxx Applied Agricultural Data Science core course.

The Department of Statistics looks forward to collaborating with you and your team as this certificate is moving forward.

Sincerely,

[Signature]

Professor and Interim Head
August 27, 2017

Re: Interdisciplinary CAES Graduate Certificate in Agricultural Data Science

Dr. Harald Scherm
Professor and Head
Department of Plant Pathology
University of Georgia

Dear Dr. Scherm,

I’m writing on behalf of the Institute of Bioinformatics (IOB), a member institute in the Georgia Institutes for Informatics for Research and Education (GII), in support of the CAES Graduate Certificate in Agricultural Data Science. Agricultural science led the genomics revolution at UGA (and much of the world) and thus the unit is home to a plethora of data ranging from genomes (both host plants and their pathogens) as well as sensor and climate data that are ripe for both integration and mining. Thus, this certificate is timely and meets an urgent need.

The creation of this certificate is in complete agreement with the planned growth of informatics on the UGA campus. Several IOB courses are available and included in the proposed curriculum:

- BINF6006 – Programming and Data Structures
- BINF 8211 Advanced methods for Biological Data analyses
- BINF 8441 Statistics for Bioinformatics
- BINF6550 Bioinformatics Applications
- BINF 6700 Computational Plant Science

To the extent that we can accommodate additional students we are happy to do so and believe that this cross utilization enhances the interdisciplinary experience of all involved. Should the enrollment become too high (we welcome this problem!) we will work with CAES and the other units utilizing the courses to construct a solution, ideally in light of achieving GII goals for campus.

The IOB looks forward to working CAES in support of this endeavor.

Sincerely,

Jessica C Kissinger, PhD
Distinguished Research Professor
Department of Genetics
Director, Institute of Bioinformatics
August 2\textsuperscript{nd}, 2017

Dr. Pamela Whitten  
Senior Vice President for Academic Affairs and Provost  
University of Georgia  
Athens, GA

Dear Dr. Whitten,

The Georgia Informatics Institutes for Research and Education (GII) is pleased to support the proposal submitted by Dr. Harald Scherm and the Department of Plant Biology to offer a graduate certificate in Agricultural Data Science. This certificate is well positioned to capitalize on the rapid rise in data science jobs in Agriculture, and is a perfect example of the type of program the GII hopes to foster and grow over the next several years.

To this point, we appreciate the inclusion of the Georgia Informatics Institute’s course, INFO 8000 as part of its Area 1: Agricultural Data Science Core. This course is offered both Fall and Spring semesters and has the capacity for increased enrollment due to its inclusion in the certificate. We also appreciate the invitation for our director or appointed member to serve on the certificate’s steering committee. This will ensure that INFO 8000 continues to meet the needs of the certificate, and that the certificate stays up to date with respect to future informatics offerings on campus.

In summary, this new certificate aligns perfectly with the mission of the GII, and will help further raise the bar for graduate-level informatics education on campus.

Sincerely,

Kyle Johnsen, PhD  
Director, Georgia Informatics Institutes  
Associate Professor, College of Engineering  
University of Georgia  
Athens, GA
November 28, 2017

Office of Curriculum Systems
319 New College
The University of Georgia
Athens, GA 30602
CAMPUS

Re: Name change of Comparative Medical Illustration Certificate

To whom it may concern:

The Graduate Affairs Committee of the College of Veterinary Medicine has voted in favor of my forwarding this proposal to change the name of the Comparative Medical Illustration Certificate to Comparative Illustration and Interactive Educational Media Certificate.

We propose to change the name of this program to Comparative Medical Illustration and Interactive Educational Media to allow graduates of university-level interactive game design & development/computer science programs in regionally accredited institutions to enter this program. This would allow direct collaboration among those students and those with artistic skills in medical illustration to create more engaging and interactive educational materials. The Office of Graduate Affairs in the College of Veterinary Medicine will provide administration of the program. The funds, required courses and space required to start the program are in place.

Sincerely,

Harry W. Dickerson, B.V.Sc., Ph.D.
Associate Dean for Research and Graduate Affairs
NAME CHANGE JUSTIFICATION FORM

School/College Name: College of Veterinary Medicine
Department Name: Educational Resources

Major Name Changes:

Current Major Name: Comparative Medical Illustration Certificate
Proposed Major Name: Comparative Medical Illustration and Interactive Educational Media Certificate

JUSTIFICATION:

See attached Justification Page

SIGNATURES:

School/College: [Signature]
Department: [Signature]
Comparative Medical Illustration and Interactive Educational Media Certificate

Justification of Proposed Name Change
The Certificate in Comparative Medical Illustration, which currently is offered through Educational Resources in the College of Veterinary Medicine, trains students in the development of state-of-the-art educational materials including electronic books. Presently, this program is open to graduates of one of the four accredited medical illustration training programs in North America.

With the growing use of interactivity to more fully engage today’s students, we propose to allow graduates of university-level interactive game design & development/computer science programs in regionally accredited institutions to enter this program. This would allow direct collaboration among those students and those with artistic skills in medical illustration to create more engaging and interactive educational materials.

All students will be mentored by the Director of Educational Resources, three medical illustrators and the department’s software developer. All students will collaborate with University of Georgia faculty members and staff with expertise in photography, videography, 2D and 3D computer animation, graphic design, and computer programming to produce state-of-the-art educational materials for use in education.

A key feature of the revised certificate program will be to have students with expertise in medical illustration or interactive media work closely together on specific projects to incorporate 3D models and animations into new interactive approaches (e.g., virtual reality, augmented reality, and mixed reality). When exceptionally talented students in either area are interested in extending their program an additional year to enhance their capabilities in these new areas and funding is identified, this approach will be taken.
APPENDIX

Existing departmental courses to be used in the proposed certificate program are listed below, with the maximal number of credit hours for each course; depending upon the department, these courses are graded using either the S/U and A-F format. A subset of these courses will be taken to meet the requirement for the certificate.

<table>
<thead>
<tr>
<th>Department</th>
<th>Course Number and Name</th>
<th>Credit Hours</th>
<th>Max Hours Allowed</th>
<th>Grade Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veterinary Physiology &amp; Pharmacology</td>
<td>VPHY 6930 Research Methods</td>
<td>1-3</td>
<td>3</td>
<td>S/U</td>
</tr>
<tr>
<td></td>
<td>VPHY 7100 Instructional Challenges in Physiology &amp; Pharmacology</td>
<td>1-12</td>
<td>12</td>
<td>S/U</td>
</tr>
<tr>
<td></td>
<td>VPHY 8330 Laboratory Apprenticeship in Physiology &amp; Pharmacology</td>
<td>3</td>
<td>15</td>
<td>A-F</td>
</tr>
<tr>
<td>Veterinary Pathology</td>
<td>VPAT 8050 Problems in Veterinary Pathology</td>
<td>2-5</td>
<td>15</td>
<td>S/U</td>
</tr>
<tr>
<td>Veterinary Biosciences &amp; Diagnostic Imaging</td>
<td>VARB 8010 Problems in Veterinary Anatomy</td>
<td>1-5</td>
<td>10</td>
<td>A-F</td>
</tr>
<tr>
<td>Infectious Diseases</td>
<td>IDIS 8040 Problems in Parasitology</td>
<td>1-4</td>
<td>15</td>
<td>A-F</td>
</tr>
<tr>
<td></td>
<td>IDIS 8900 Problems in Infectious Diseases</td>
<td>1-10</td>
<td>10</td>
<td>A-F</td>
</tr>
<tr>
<td>Large Animal Medicine &amp; Surgery</td>
<td>LAMS 8010 Problems in Large Animal Pathophysiology</td>
<td>1-5</td>
<td>10</td>
<td>S/U</td>
</tr>
<tr>
<td></td>
<td>LAMS 9020 Instructional Challenges in Large Animal Medicine &amp; Surgery</td>
<td>1-12</td>
<td>12</td>
<td>S/U</td>
</tr>
<tr>
<td>Small Animal Medicine &amp; Surgery</td>
<td>SAMS 8030 Neurosurgery</td>
<td>1</td>
<td>15</td>
<td>S/U</td>
</tr>
<tr>
<td></td>
<td>SAMS(PATH) 8040 Neurological Pathology</td>
<td>1</td>
<td>10</td>
<td>S/U</td>
</tr>
</tbody>
</table>

Following are two sample programs of study:

**Program 1**

*Summer Thru Term*
- VPHY 6930 (3 hours)
- LAMS 8010 (5 hours)

*Fall Semester*
- LAMS 9020 (6 hours)
- VPHY 7100 (6 hours)

*Spring Semester*
- IDIS 8040 (4 hours)
- VPAT 8050 (5 hours)
- VARB 8010 (3 hours)

**Program 2**

*Summer Thru Term*
- LAMS 9020 (6 hours)
- VPAT 8050 (3 hours)

*Fall Semester*
- SAMS 8040 (1 hour)
- LAMS 8010 (5 hours)
- VPHY 7100 (6 hours)

*Spring Semester*
- IDIS 8900 (9 hours)
- VPHY 6930 (3 hours)
Happy New Year, Colleagues!

I hope your semester break was relaxing and enjoyable. I wanted to update you on results of the votes that you cast at the end of the fall semester. You voted on two action items:

1. Revision of the Graduate Faculty guidelines to allow both full and part-time faculty to serve as Graduate Faculty (approved; 68% yes; 27% no; 5% abstain)
2. Disbanding of the university-level Graduate Faculty in favor of "Graduate Program Faculty" appointed at the program level (approved; 71% yes; 22% no; 7% abstain)

The change to allow part time faculty to serve as Graduate Faculty is effective immediately (spring semester 2018). The shift from university-level Graduate Faculty to "Graduate Program Faculty" is more complex and will be phased in over time. The Graduate School will work with your deans to develop a strategy for a smooth transition. During that process, we may call on you for advice. I look forward to working with you on this issue.

Best,
Suzanne

--
Suzanne Barbour, Dean
Graduate School
210 S. Jackson Street, Terrell Hall
Athens, GA 30602