

**New Program Proposal  
 Master of Science in Agriculture,  
 with concentrations in Agricultural Systems Management and Agricultural Education  
 Clemson University**

**Summary**

Clemson University requests approval to offer a program leading to the Master of Science in Agriculture, with concentrations in Agricultural Systems Management and Agricultural Education, to be implemented in Spring 2020 through traditional delivery. The following chart outlines the stages of approval for the proposal. The Advisory Committee on Academic Programs (ACAP) voted to recommend approval of the proposal. The full program proposal attached.

<b>Stages of Consideration</b>	<b>Date</b>	<b>Comments</b>
Program Proposal Received	2/1/19	Not Applicable
Staff comments to the institution	2/28/19	Staff requested revisions to the proposal to address the following inquires: <ul style="list-style-type: none"> <li>▪ Rationale for approval delays;</li> <li>▪ A notification of termination for the current non-thesis Master’s in Agricultural Education and clarification on the proposed MA;</li> <li>▪ Incorporation of feedback from interested students and prospective employers;</li> <li>▪ Inclusion of more data sources for employment opportunities;</li> <li>▪ Explanation for separate admissions requirements;</li> <li>▪ Inclusion of similar programs;</li> <li>▪ Clarity on faculty time allocation to the proposed program;</li> <li>▪ Use of physical resources and facilities;</li> <li>▪ Narrative on how the proposed termination for the current non-thesis Master’s in Agriculture Education will be impacted by the proposed replacement of the non-thesis option in the agricultural education concentration;</li> <li>▪ Further elaboration on use of funds (facilities, equipment, annual growth);</li> <li>▪ Discipline-specific program objectives and plans to track employment; and</li> <li>▪ Potential stackable credentials that students may earn.</li> </ul>
Program Proposal Received	3/8/19	The revised proposal was submitted for ACAP consideration.
ACAP Consideration	3/28/19	Representatives from Clemson University (CU) introduced the proposal along with the new program proposal for the PhD in Agriculture, citing the huge role of agriculture in the state. CU representatives explained that the current MA in Agricultural Education program is not approved to convey any initial licensure or certification, nor will the proposed program, and that students in

		<p>the current MA in Agricultural Education would transfer to the Agricultural Education concentration in the proposed program.</p> <p>Representatives also cited the interest of working professionals such as extension agents who would want to attain a MS in Agricultural Systems Management, and that feedback from employers indicated a desire for students with greater depth of knowledge which the concentrations will deliver.</p> <p>Members of the Advisory Committee on Academic Programs (ACAP) discussed the proposal, citing staff questions about electives and coursework and the lengthy internal approval process. Clemson representatives stated that most courses are already taught so there will be no significant faculty or other resources required as faculty are already in place. Regarding the approval process, CU explained that, as noted in the Background section of the proposal, after initial informal approval there were a variety of changes to the agricultural program (organizational changes, leadership turnover), but the current curriculum committee has reviewed the proposed program and determined it is still relevant and has integrity. Moreover, the Clemson Office of the Provost is supportive of the programs.</p> <p>After remaining discussion, ACAP voted unanimously to recommend approval of the program proposal. Staff transmitted remaining questions for additional clarity.</p>
Staff comments to the institution	4/5/19	<p>Staff requested the proposal be revised to include:</p> <ul style="list-style-type: none"> <li>▪ The explanations provided at ACAP regarding intuitional approval;</li> <li>▪ Primary source student and prospective employer needs for the two proposed concentration; and</li> <li>▪ The physical resources and facilities already existent that will be used to support the program.</li> </ul>
Revised Program Proposal Received	8/1/19 10/3/19	The revised proposal satisfactorily addressed the requests.

**Recommendation**

The staff recommends the Committee on Academic Affairs and Licensing favorably commend to the Commission the program leading to the Master of Science in Agriculture, with concentrations in Agricultural Systems Management and Agricultural Education to be implemented in Spring 2020.

**Clemson University Student and Program Data**

<b>Graduate In-/Out-of-State Enrollment Fall 2018</b>	2,195 (41.56%) / 3,087(54.44%)
<b>Number of Approved Programs in 10 Yrs. (FY 2009- 2018)</b>	37
<b>Number of Terminated Programs in 10 Yrs. (FY 2009- 2018)</b>	18

**Industry Related Occupational Wages and Projections in South Carolina, 2016 – 2026\***

<b>Occupational Field<sup>1</sup></b>	<b>2016 Median Income<sup>2</sup></b>	<b>2016 Estimated Employment<sup>3</sup></b>	<b>2026 Projected Employment</b>	<b>Total 2016-2026 Employment Change</b>	<b>2016-2026 Annual Avg. Percent Change</b>	<b>Total Percent Change</b>
Farming, Fishing, and Forestry	\$31,710	23,738	20,899	-2,839	-1.27%	-11.96%

<sup>1</sup> "Occupational Field" represents the closest related occupation category that includes the occupations aligned with the program proposal.

<sup>2</sup> SC Department of Employment & Workforce (DEW), Labor Market Information. (2019). Occupational Employment and Wage Rates (OES) for All Major Groups in South Carolina in 2016 [Data file]. Retrieved from <https://jobs.scworks.org/vosnet/lmi/default.aspx?pu=1>

<sup>3</sup> SC Department of Employment & Workforce (DEW), Labor Market Information. (2019). Occupational Projections (Long-term) for Multiple Occupations in South Carolina in 2016-2026 [Data file]. Retrieved from <https://jobs.scworks.org/vosnet/lmi/default.aspx?pu=1>

\* Data downloaded September 16, 2019; Most recent data available.

## NEW PROGRAM PROPOSAL FORM

Name of Institution: **Clemson University**

Name of Program (include degree designation and all concentrations, options, or tracks):  
**M.S. Agriculture (concentrations: Agricultural Systems Management; Agricultural Education)**

Program Designation:

- |   |  |
|---|--|
| <input type="checkbox"/> Associate's Degree   | <input checked="" type="checkbox"/> Master's Degree                                  |
| <input type="checkbox"/> Bachelor's Degree: 4 Year  | <input type="checkbox"/> Specialist  |
| <input type="checkbox"/> Bachelor's Degree: 5 Year  | <input type="checkbox"/> Doctoral Degree: Research/Scholarship (e.g., Ph.D. and DMA) |
| <input type="checkbox"/> Doctoral Degree: Professional Practice (e.g., Ed.D., D.N.P., J.D., Pharm.D., and M.D.) |  |

Consider the program for supplemental Palmetto Fellows and LIFE Scholarship awards?

- Yes  
 No

Proposed Date of Implementation: **January 2020**

CIP Code: **01.9999**

Delivery Site(s): **Clemson Main Campus**

Delivery Mode:

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Traditional/face-to-face<br>*select if less than 25% online | <input type="checkbox"/> Distance Education                             |
|   | <input type="checkbox"/> 100% online                                    |
|   | <input type="checkbox"/> Blended/hybrid (50% or more online)            |
|   | <input type="checkbox"/> Blended/hybrid (25-49% online)                 |
|   | <input type="checkbox"/> Other distance education (explain if selected) |

Program Contact Information (name, title, telephone number, and email address):

**Dale Layfield, Associate Professor of Agricultural Education; 864.656.5676; [dlayfie@clemson.edu](mailto:dlayfie@clemson.edu)**  
**Jeremy King, Assoc Provost Instl Effectiveness; 864.934.3554; [jking2@clemson.edu](mailto:jking2@clemson.edu)**

Institutional Approvals and Dates of Approval (include department through Provost/Chief Academic Officer, President, and Board of Trustees approval):

- **Provost: February 4, 2015**
- **President: February 5, 2015**
- **Board of Trustees: February 6, 2015**
- **Departmental Faculty Final Approval: September 28, 2016**
- **University Graduate Curriculum Committee: December 2, 2016**

## Background Information

State the nature and purpose of the proposed program, including target audience, centrality to institutional mission, and relation to the strategic plan.

The rationale for the delay of the program from 2015-2019 is primarily in that the Agricultural Sciences department has been through a series of evolutionary changes in the past four years. Programs in this department were part of a "school" that broke into two departments and later the faculty in the current agricultural sciences broke into another department. Agricultural Sciences was formed into a separate department in 2017. The proposal for this program passed through a variety of different faculty in the process. The originator that secured the approval by the board of trustees, moved into an administrative role in the college. Following the approval of the program at the university curriculum committee, the agribusiness program, part of the original proposal, separated from the proposed program. This occurred when the agribusiness program received their graduate (Master's/PhD) program back from the business college. This forced the current proposal to undergo major edits and the proposal passed hands again to a new lead faculty member. During updates in 2018, the lead faculty on the program was informed that the forms were changed and the previous application had to transition into the current form.

The Master of Science in Agriculture (M.S.) is designed as an applied research degree program that will fulfill the needs of the agricultural and natural resource sectors of the South Carolina Economy. The M.S. program will offer both a thesis and non-thesis option. Graduates will contribute significantly to improving the technical and economic competitiveness of agribusiness, advancing economic development and growth, and the educational needs of the state.

The program will offer two degree concentrations in (1) Agricultural Systems Management and (2) Agricultural Education. The first option allows a student to focus on the design and maintenance of equipment and processes critical to the long-term sustainability of these industries. The second option provides students the opportunity to combine their previous knowledge of agriculture and natural resource management with educational principles to better serve client needs ranging from educating youth to educating the farm community. The M.S. program will provide advanced training and education to students interested in expanding their knowledge and expertise in the promotion and growth of South Carolina's agricultural economy and/or the protection and efficient management of the state's valuable environmental and natural resources.

This degree will add significant depth to an individual's understanding of agricultural and natural resource policy issues to enhance the state's global competitiveness. The current non-thesis Master's in Agricultural Education program will be replaced by the non-thesis option in the agricultural education concentration.

The current Master's of Agricultural Education (MAGED) has more than 20 students enrolled. If the new graduate program is approved, the current students will transition into the non-thesis Master's and the faculty of Ag Ed will request for termination of the MAGED program. Although the MAGED was a professional master's program that targeted agriculture teachers and cooperative extension agents, it was never a teacher-certification program.

The proposed program has a strong relation to the department's strategic plan. The establishment of the M.S. and Ph.D. graduate degree was one of the primary core strategies in the strategic priority of excellence in teaching and education of students in the 2017 plan. Another core strategy for this priority is to strengthen linkages with agribusiness and natural resource industries, educational institutions, governmental and non-governmental organizations through the use of class-based student research projects conducted for stakeholders, student internships, and graduate student research.

The only stackable credentials that we know of will be in the agriculture teachers when they take additional graduate coursework and they earn add-on credentials for the teaching certificate.

### **Assessment of Need**

Provide an assessment of the need for the program for the institution, the state, the region, and beyond, if applicable.

Agricultural Education Concentration: A 2018 Needs Assessment of secondary agricultural educators in South Carolina found that the majority are in their first ten years of their career. Secondary agricultural educators seeking a Master's often desire to strengthen their professional standing in their profession. Teachers seeking advancement in their positions will benefit from research methods coursework (AGED 8890) as well as program development (AGED 6400). Senior faculty in secondary agricultural education programs serve as leaders in the program's accreditation review and coursework earned at the master's level will assist those teachers in providing needed assessment and benchmark development. Employers of the secondary agriculture teachers earning a Master's of Agricultural Science include Career and Technology Educator (CTE) Directors with skills for their teachers to develop community needs assessment and an advisory committee that will guide in the program development/revision process. Others seeking the agricultural education concentration would include cooperative extension agents. The National Research Agenda report (2016) for the American Association for Agricultural Education highlights the need for change agent development in the Research Priority 2, titled *New Technologies, Practices, and Products Adoption Decisions*. One of the roles of a cooperative extension agent is to link Change Agents and Opinion Leaders to the farmers. Part of the program in the agricultural education concentration will engage students in coursework and applied activities to strengthen this concept (AGED 8010).

Agricultural Systems Management Concentration: Agricultural Systems Management undergraduate degrees across the country (or similar named programs such as the Agricultural Mechanization and Business Program at Clemson University) are very diverse programs that cover a wide range of subject matter. Subject matter consists of courses such as electrical system design, building structures, land surveying, irrigation design, hydraulic system design, computer controls, material handling and processing, soil and water conservation, ventilation design, waste management, business/marketing/finance, etc. Due to this broad depth of knowledge that typical Bachelor's degrees provide, both students and employers would like to have the opportunity for more specialized education. By having a Master level degree option, students would be able to specialize in a particular area of interest. With the course requirements as set forth with this proposed concentration in Agricultural Systems Management, students would be able to tailor their individual coursework around a particular field of interest. By having this more focused advanced degree, marketability to employers would increase and these students would be able to field more advanced positions within firms, not just entry level. For employers, these individuals with their focused degree and broad undergraduate knowledge base make excellent team/project managers. They have an understanding of each member of the team, yet have the ability to focus all talents on the overall objective of the project at hand.

#### **Transfer and Articulation**

Identify any special articulation agreements for the proposed program. Provide the articulation agreement or Memorandum of Agreement/Understanding.

**None**

### Employment Opportunities

Occupation	State		National		Data Type and Source
	Expected Number of Jobs	Employment Projection	Expected Number of Jobs	Employment Projection	
Agricultural Sciences Teachers, Postsecondary	* A growth of new SC agriculture teacher positions in: 2016-17 - 13 2017-18 - 9 2018-19 - 14	Not available	12,600	7.9% (by 2026)	<a href="http://www.projectionscentral.com/Projections/LongTerm">http://www.projectionscentral.com/Projections/LongTerm</a> *=Correspondence with Mr. Billy Keels, State Director of Agricultural Education for South Carolina
Forestry and Conservation Science Teachers, Postsecondary	These numbers would be clumped in figures immediately above	Not available	2,300	4.5% (by 2026)	<a href="http://www.projectionscentral.com/Projections/LongTerm">http://www.projectionscentral.com/Projections/LongTerm</a>
Education Administrators, Elementary and Secondary School	4,190	9.5% (by 2016)	19,800	7.9% (by 2026)	<a href="http://www.projectionscentral.com/Projections/LongTerm">http://www.projectionscentral.com/Projections/LongTerm</a>
Soil & Plant Scientists	Not available	Not available	19,900	9.0% (by 2026)	<a href="http://www.projectionscentral.com/Projections/LongTerm">http://www.projectionscentral.com/Projections/LongTerm</a>
Conservation Scientists	270	8.7% (by 2026)	22,300	6.3% (by 2026)	<a href="http://www.projectionscentral.com/Projections/LongTerm">http://www.projectionscentral.com/Projections/LongTerm</a>
Farm & Home Management Advisors (Cooperative Extension)	*22 extension agents were hired in SC in 2016	Not available	11,200	7.7% (by 2026)	<a href="http://www.projectionscentral.com/Projections/LongTerm">http://www.projectionscentral.com/Projections/LongTerm</a> *=Correspondence with Michael Simmons, Administrative Officer, Office of Human Resources at Clemson University

#### Supporting Evidence of Anticipated Employment Opportunities

Provide supporting evidence of anticipated employment opportunities for graduates.

#### M.S. — Concentration in Agricultural Education

Graduates earning a Master’s in Agriculture with a concentration in Agricultural Education are often hired into many facets of agricultural service and education in South Carolina. Those seeking a career in the cooperative extension service are informed that a master’s degree is preferred and many of those decide to seek a Master’s in Agricultural Education. A lot of our coursework at the graduate level aligns with many of the responsibilities cooperative extension agents have so the Master’s in Ag Ed has traditionally been favored by many. These courses include Leadership of Volunteers (AGED 6150); Systems for Technology Transfer (AGED 8010), Principles of Adult/Extension Education (AGED 6030) and Program Development in Adult/Extension Education (AGED 6400). An overwhelming majority of those employed with the cooperative extension completed their graduate work with

Clemson's agricultural education program. Agricultural Educators in secondary and post-secondary schools across South Carolina are also strongly encouraged to complete a master's degree.

Secondary agriculture teachers seeking to advance their careers toward a Ph.D. in agricultural education often earn a Master's in Agricultural Education with a thesis (if available). The Ph.D. in Agricultural Education prefers a Master's and often those earning the Ph.D., did so in this degree. The Master's in Agricultural Education also impacts professional development for the secondary agriculture teachers as it increases their pay, keeping them in the profession.

#### M.S. — Concentration in Agricultural Systems Management

Graduates earning a Master's in Agriculture with a concentration in Agricultural Systems Management would also have a variety of career options throughout the agricultural production/services sectors. Positions often include managers in production or processing and equipment operations. Some of the businesses include farm and industrial equipment companies, food processing plants, cotton gins, construction companies, grain and seed companies, livestock feeding operations, irrigation companies and manufacturers.

Over the past several years, even though we have been able to place nearly all of our undergraduate students into the job market, one issue many employers have mentioned is while they love the breadth of knowledge our students have, it would be great if they had more in-depth knowledge into a particular area that the employer focused on. For example, many students have been employed by Archer Daniels Midlands (ADM) over the years. While they have made great employees, the company has always asked if there were ways to get more material handling and processing related content. The broad undergraduate degrees (across the country) truly do not offer enough hours to make up these specific employer needs. By having this advanced degree, students in Agricultural Systems Management would essentially be provided the opportunity to specialize in a particular area of interest and thus meet these needs/concerns/requirements of potential employers.

#### **Description of the Program**

<b>Projected Enrollment</b>			
<b>Year</b>	<b>Fall Headcount</b>	<b>Spring Headcount</b>	<b>Summer Headcount</b>
2019 – 20	3	3	
2020 – 21	6	6	6
2021 – 22	9	9	9
2022 – 23	12	12	12
2023 – 24	15	15	15

The numbers above are based on the calculation that each faculty member (9 total) would begin the Master's program with approximately .3 grad students each.

Besides the general institutional admission requirements, are there any separate or additional admission requirements for the proposed program? If yes, explain.

Yes

No

## Curriculum

### New Courses

List and provide course descriptions for new courses.

<b>Course Name</b>	<b>Description</b>
AGED 8910 — Master's Thesis Research	This course is designed to assist students that are conducting master's thesis research and/or developing their thesis report. The research topic will be directly related to the student's thesis, which will be agreed upon by the major professor and the student prior to the beginning of the semester.
AGM 8000 — Research Methods	Study of the research methods and data collection processes applicable to agricultural systems management. Emphasis on defining research problems, collecting, analyzing, recording and interpreting data. Students will be required to develop and present research project proposal upon completion of the course.
AGM 8910 — Master's Thesis Research	This course is designed to assist students that are conducting master's thesis research and/or developing their thesis report. The research topic will be directly related to the student's thesis, which will be agreed upon by the major professor and the student prior to the beginning of the semester.

Total Credit Hours Required: 30

Curriculum by Year					
Course Name	Credit Hours	Course Name	Credit Hours	Course Name	Credit Hours
<b>Year 1</b>					
<b>Agricultural Education Concentration — Master's Thesis Option</b>					
<b>Fall</b>		<b>Spring</b>		<b>Summer</b>	
AGED 8210 - Theories and Practices of Adult Education	3	AGED 8890 – Research in Education	3	AGED 8910 — Clinical Research in Agricultural Education	3
Elective course determined by grad committee	6	STAT 8010 – Statistical Methods I	3	Elective course determined by grad committee	3
		Elective course determined by grad committee	3		
Total Semester Hours	<b>9</b>	Total Semester Hours	<b>9</b>	Total Semester Hours	<b>6</b>
<b>Year 2</b>					
<b>Fall</b>		<b>Spring</b>		<b>Summer</b>	
AGED 8010— Systems for Technology Transfer	3				
AGED 8910 — Clinical Research in Agricultural Education	3				
Total Semester Hours	<b>6</b>	Total Semester Hours		Total Semester Hours	

Total Credit Hours Required: 30

Curriculum by Year					
Course Name	Credit Hours	Course Name	Credit Hours	Course Name	Credit Hours
<b>Year 1</b>					
<b>Agricultural Education Concentration — Master's Non-Thesis Option</b>					
<b>Fall</b>		<b>Spring</b>		<b>Summer</b>	
AGED 8210 - Theories and Practices of Adult Education	3	AGED 8890 – Research in Education	3	AGED 8040/8041 - Special Problems/ Special Problems Laboratory (used to develop creative component)	3
Elective course determined by grad committee	6	STAT 8010 – Statistical Methods I (optional)	3	Elective course determined by grad committee	3
		Elective course determined by grad committee	3		
Total Semester Hours	<b>9</b>	Total Semester Hours	<b>9</b>	Total Semester Hours	<b>6</b>
<b>Year 2</b>					
<b>Fall</b>		<b>Spring</b>		<b>Summer</b>	
AGED 8010— Systems for Technology Transfer	3				
AGED 8040/8041 - Special Problems/ Special Problems Laboratory (used to develop creative component)	3				
Elective course determined by grad committee	3				
Total Semester Hours	<b>9</b>	Total Semester Hours		Total Semester Hours	

Total Credit Hours Required: 30

Curriculum by Year					
Course Name	Credit Hours	Course Name	Credit Hours	Course Name	Credit Hours
<b>Year 1</b>					
<b>Agricultural Systems Management Concentration — Master's Thesis option</b>					
<b>Fall</b>		<b>Spring</b>		<b>Summer</b>	
AGM 8000 - Research Methodologies & Philosophy	3	Elective course determined by grad committee	6	AGM 8910 — Master's Research	3
Elective course determined by grad committee	6	STAT 8010 – Statistical Methods I	3	Elective course determined by grad committee	3
Total Semester Hours	<b>9</b>	Total Semester Hours	<b>9</b>	Total Semester Hours	<b>6</b>
<b>Year 2</b>					
<b>Fall</b>		<b>Spring</b>		<b>Summer</b>	
Elective course determined by grad committee	3				
AGM 8910 — Master's Research	3				
Total Semester Hours	6	Total Semester Hours		Total Semester Hours	

Total Credit Hours Required: 30

Curriculum by Year					
Course Name	Credit Hours	Course Name	Credit Hours	Course Name	Credit Hours
<b>Year 1</b>					
<b>Agricultural Systems Management Concentration — Master's Non-Thesis option</b>					
<b>Fall</b>		<b>Spring</b>		<b>Summer</b>	
AGM 8000 - Research Methodologies & Philosophy	3	Elective course determined by grad committee	6	Elective course determined by grad committee	6
Elective course determined by grad committee	6	STAT 8010 – Statistical Methods I	3		
Total Semester Hours	<b>9</b>	Total Semester Hours	<b>9</b>	Total Semester Hours	<b>6</b>
<b>Year 2</b>					
<b>Fall</b>		<b>Spring</b>		<b>Summer</b>	
Elective course determined by grad committee	6				
Total Semester Hours	6	Total Semester Hours		Total Semester Hours	

**Similar Programs in South Carolina offered by Public and Independent Institutions**

Identify the similar programs offered and describe the similarities and differences for each program.

Program Name and Designation	Total Credit Hours	Institution	Similarities	Differences
Master of Agricultural Education (MAGED)	30	Clemson University	The coursework for the Master's of Agricultural Education will mirror that of the new Master's of Agriculture, Agricultural Education Concentration, with the exception of the AGED 8910, Clinical Research in Agricultural Education that the students seeking the Thesis will have to take.	The Proposed Master's of Science in Agriculture with the Agricultural Education Concentration will allow the option for a student to complete a Thesis.

**Faculty**

<b>Rank and Full- or Part-time</b>	<b>Courses Taught for the Program</b>	<b>Academic Degrees and Coursework Relevant to Courses Taught, Including Institution and Major</b>	<b>Other Qualifications and Relevant Professional Experience (e.g., licensures, certifications, years in industry, etc.)</b>
Professor #1 (Full-time)	F15, AGM 4050/4051 Env Cont in Anim Str, 3 (UT) S18, AGM 4720/4721 Capstone, 3 (UT) F18/S18, AGM 4730 Heat Transfer Apps in Ag, Var (UT)	BS, Agricultural Engineering, University of Georgia 1982. MS, Agricultural Engineering, University of Kentucky 1987. PhD, Agricultural Engineering, University of Kentucky 1991.	
Professor #2 (Full-time)	F18/S18, AGM 2210 Land Measurements, 3 (UT) S18, AGM 4020/4021 Landscape Drainage and Irrig, 3 (UT) F18/S18, AGM 4730 Special Topics, Var (UT) S18, AGM 6020/6021 Land Drain and Irrig, 3 (G) S18, PES 9910 Doctoral Dissertation Research, Var (G)	BS, Agricultural Engineering, Clemson University 1997. MS, Biosystems Engineering, Clemson University 1998. PhD, Civil Engineering, University of South Carolina 2005.	
Professor #3 (Full-time)	S18, AGED 1000 Orientation & Field Experience, 1 (UT) F18, AGED 2010/2011 Intro to Agric Educ, 3 (UT) F18, AGED 2040 App Ag Calculations, 3 (UT) F18, AGED 4000 Supervised Field Experience II, 1 (UT) S18, AGED 4060 Directed Teaching, 12 (UT) S18, AGED 4250/4251 Teaching Ag Mechs, 2 (UT) S18, AGED 6250/6251 Teaching Ag Mechs, 2 (G)	BS, Agricultural Education, Virginia Tech 1981. MS, Vocational and Technical Education, Virginia Tech 1997. PhD, Vocational and Technical Education, Virginia Tech 2004.	
Associate Professor #1 (Full-time)	F15, AGM 3010 Soil Water Conserv, 3 (UT) S16, FNR 4700 Succession in Restored Wetland, Var (UT)	BA, History, Wake Forest University 1987. MS, Marine Resource Management, Oregon State University 1995. PhD, Forest Resources, Clemson University 2009.	
Associate Professor #2 (Full-time)	F15, BE 8710 Coastal Eco Design & Restoration, Var (G) F15, PES 8900 Coastal Ecological Design, Var (G)	BS, Zoology, University of Tennessee 1993. MS, Environmental Health, University of Georgia 1996. PhD, Biology and Agricultural Engineering, University of Georgia 2001	

Rank and Full- or Part-time	Courses Taught for the Program	Academic Degrees and Coursework Relevant to Courses Taught, Including Institution and Major	Other Qualifications and Relevant Professional Experience (e.g., licensures, certifications, years in industry, etc.)
Associate Professor #3 (Full-time)	S18, AGED 4060 Directed Teaching, 12 (UT) S18, AGED 4070 Int in Ext/Ldr Edu, Var (UT) S18, AGED 4150 Leadership of Vol, 3 (UT) F18, AGED 8120 Dev of Superv Agric Exp, 3 (G) S18, AGED 6150 Leadership of Vol, 3 (G) F18/Su18, AGED 8040/8041 Special Problems, 3 (G) F18/S18, AGED 8100 Clin Ag Ed Research, Var (G) F18, AGED 2000	BS, Agricultural Education, University of Florida 1989. MAg, Agricultural Education, University of Florida 1994. PhD, Agricultural Education, Pennsylvania State University 1998.	
Assistant Professor #1 (Full-time)	F18, AGM 4060/4061 Mech & Hydraulic Sys, 3 (UT) S18, AGM 4520/4521 Mobile Power, 3 (UT) F18/S18, AGM 4730 Special Topics, Var (UT) S18, AGM 6520/6521 Mobile Power, 3 (G) F18, AGM 8710 Adv Precision Ag Sci & Tech, Var (G) F18/S18, PES 8910 Master's Thesis Research, Var (G)	BS, Agricultural Machinery Engineering, Ankara University (Turkey) 1992. MSc, Agricultural and Biological Engineering, The Pennsylvania State University 1997. PhD, Agricultural and Biological Engineering, The Pennsylvania State University 2000.	
Assistant Professor #2 (Full-time)	F18, AGED 4030 Prin Adult/Ext Ed, 3 (UT) F18, AGED 3020 Junior Seminar, 1 (UT) F18, AGED 3030/3031 Ag Ed Mech Tech, 3 (UT) S18, AGED 4060 Directed Teaching, 12 (UT) F18, AGED 4280 Special Studies, Var (UT) F18, AGED 7500 Special Institute Courses, Var (G) F18, AGED 8040/8041 Special Problems, 3 (G) S18, AGED 8100 Clin Ag Ed Research, Var (G) F18, AGED 8150/8151 Agric Power Mech, 3 (G) S18, AGED 8890 Intro to Res in Ed, 3 (G)	BS, Agricultural Education, Virginia Tech University 2004. MS, Agricultural and Life Sciences, Virginia Tech University 2011. PhD, Agricultural Education, Iowa State University 2014.	

Rank and Full- or Part-time	Courses Taught for the Program	Academic Degrees and Coursework Relevant to Courses Taught, Including Institution and Major	Other Qualifications and Relevant Professional Experience (e.g., licensures, certifications, years in industry, etc.)
Assistant Professor #3 (Full-time)	F18, AGED 1020 Freshman Seminar, 1 (UT) S18, AGED 2030/2031 Teaching Agriscience, 3 (UT) F18, AGED 4010/4011 Instr Methods Ag Ed, 3 (UT) S18, AGED 4060 Directed Teaching, 12 (UT) F18, AGED 6010/6011 Instr Methods Ag Ed, 3 (G) S18, AGED 8040/8041 Special Problems, 3 (G)	BS, Plant and Soil Science, University of Delaware 1992. MAgEd, Agriscience Education, University of Delaware 2009. PhD, Agricultural Education, University of Florida 2015.	

Total FTE needed to support the proposed program: .45

Faculty: **4.5% of time, overall**

Staff: **0.075 of time**

Administration:

**Faculty, Staff, and Administrative Personnel**

Each of the 9 faculty in the program will re-allocate .05 of their time to the newly proposed graduate program.

**Resources**

**Library and Learning Resources**

Explain how current library/learning collections, databases, resources, and services specific to the discipline, including those provided by PASCAL, can support the proposed program. Identify additional library resources needed.

The Clemson University Libraries hold more than 1.8 million items including books, periodicals, electronic resources, digital media collections, government publications and patents, musical recordings, maps and microforms. Resources include 3,593 print journal subscriptions, approximately 48,000 e-journals, more than 22,800 e-books, and more than 400 online databases. The Library holdings and electronic access are adequate to support the program. All major journals in our files are available online or through open access. The Library already maintains access to databases such as the National Agricultural Statistics Service (NASS), Agricola, and AGRIS. The Library also maintains in-person and online research resources specific to the Agriculture field. Likewise, extensive additional resources for the proposed program are available through Interlibrary Loan and Pascal, which are available to students and faculty without cost. No additional library resources are anticipated.

### **Student Support Services**

Explain how current academic support services will support the proposed program. Identify new services needed and provide any estimated costs associated with these services.

In addition to library and learning resources, a number of academic and student support services are available to all graduate students—including online students—at Clemson University:

- **Clemson Computing and Information Technology (CCIT)** provides a leading-edge integrated information environment integral to learning and research. Graduate students may (but are not limited to) take advantage of services such as Clemson email account, emergency text messages, mobile guidebooks, video conferencing, web development, and data storage. Help services are available via phone, email, or online chat.
- **Student Accessibility Services** – Graduate Students may register with Student Accessibility Services to use services such as academic access letters, assistive technology, communication services, test proctoring center and electronic textbooks.
- **Center for Career and Professional Development** – Clemson University is dedicated to engaging students in career development that will empower them to successfully pursue their educational and professional goals. Services provided by the career center include career workshops, resume writing, career development, job search assistance, and networking.
- **Legal Assistance** - All Clemson students are eligible to receive one legal aid voucher per semester. Each voucher entitles the student to one-half hour consultation with a lawyer off campus.
- **Counseling and Psychological Services (CAPS)** - Counseling and Psychological Services (CAPS), the mental health department of Student Health Services, offers a wide array of services along a continuum of intensity for various psychological issues.
- **Graduate Student Life** – Operating under the Division of Student Affairs, this is a central body that collaborates with the Graduate School and Graduate Student Government to enhance the overall graduate student life experience.
- **Clemson University Writing Center** – The goal of the writing center is to help all members of the Clemson community become more confident and effective writers.
- **The Harvey and Lucinda Gantt Multicultural Center** - The Harvey and Lucinda Gantt Multicultural Center is committed to creating diverse learning environments that enhance the intercultural competence of our students. The center supports and advocates for the needs of all students, challenges students to think critically about themselves and their communities, provides engaging experiential learning opportunities and empowers students to be positive change agents.
- **Clemson Online** - Clemson Online staff are here to ensure that all online students have access to the resources and support that comprise a first-class Clemson education. Clemson University is devoted to ensuring an innovative and substantive educational experience for all students.

Personalized student support and file management will be provided by the student services coordinator in the Department of Agricultural Sciences. Each student will be provided with a temporary advisor in the department upon acceptance until a permanent advisor is selected by the end of the first semester. No additional estimated costs for student support will be incurred by the addition of the new graduate program students.

### **Physical Resources/Facilities**

Identify the physical facilities needed to support the program and the institution's plan for meeting the requirements.

The Agricultural Sciences Department is a multifaceted department with several programs and focus areas. The labs and lab equipment cover a range of research areas from water and natural resources to instrumentation and machinery design to teaching labs for agricultural education. In addition to these individual lab areas, we also oversee a research fabrication lab that is used by all of the program areas.

With respect to the water and natural resources portion of the department, we have a suite of labs that focus on topics such as soil/erosion/sediment, water quality, and animal waste management. These labs provide students with the analytical equipment required for measuring and monitoring such properties associated with these topics. In addition to wet and dry labs, this suite also includes computational lab space for water quality/quantity modeling. Labs devoted to instrumentation and machinery consist of several labs whereby are currently working with precision agriculture and development of unmanned ground and air vehicles used with remote sensing. These labs are also being used for development of crop harvesting and processing equipment and techniques in order to increase production. The agricultural education teaching labs are used by this program to educate students on various teaching techniques and strategies to promote learning in the classroom. The main research fabrication lab is used by all research programs to design and construct various pieces of equipment required for the various research needs. This lab contains both metal and wood fabrication equipment ranging from new metal and wood lathes to milling and cutting equipment.

These diverse labs encompass the research areas in which this new degree program focuses and will provide students with the resources they need to be successful in their degree goals. These labs have been updated over the past four to five years with the assistance of the college and resources provided by individual faculty from their respected research programs. Over the coming years, with the implementation of this degree program, additional resources and equipment will be added as we grow these programs in order to meet the needs of the state. In addition to these campus resources, these programs will also have access to the various Clemson Research and Experiment Stations across the state. These research centers provide students with experience in the field working with their research projects.

### **Equipment**

Identify new instructional equipment needed for the proposed program.

**NONE**

### **Impact on Existing Programs**

Will the proposed program impact existing degree programs or services at the institution (e.g., course offerings or enrollment)? If yes, explain.

Yes

No

The termination of the non-thesis MAGED program will not have any negative impact as the students that are currently enrolled will transition into the new non-thesis section of the Ag Ed Concentration.

Financial Support

Sources of Financing for the Program by Year												
Category	1 <sup>st</sup>		2 <sup>nd</sup>		3 <sup>rd</sup>		4 <sup>th</sup>		5 <sup>th</sup>		Grand Total	
	New	Total	New	Total	New	Total	New	Total	New	Total	New	Total
Tuition Funding	\$34,452	\$34,452	\$88,714	\$88,714	\$134,017	\$134,017	\$181,959	\$181,959	\$232,656	\$232,656	\$671,798	\$671,798
Program-Specific Fees												
Special State Appropriation												
Reallocation of Existing Funds	-	\$133,700	-	\$138,069	-	\$142,592	-	\$147,274	-	\$152,121	\$441,987	\$713,756
Federal, Grant, or Other Funding												
<b>Total</b>	<b>\$34,452</b>	<b>\$168,152</b>	<b>\$88,714</b>	<b>\$226,783</b>	<b>\$134,017</b>	<b>\$276,609</b>	<b>\$181,959</b>	<b>\$329,233</b>	<b>\$232,656</b>	<b>\$384,777</b>	<b>\$1,113,785</b>	<b>\$1,385,554</b>
Estimated Costs Associated with Implementing the Program by Year												
Category	1 <sup>st</sup>		2 <sup>nd</sup>		3 <sup>rd</sup>		4 <sup>th</sup>		5 <sup>th</sup>		Grand Total	
	New	Total	New	Total	New	Total	New	Total	New	Total	New	Total
Program Administration and Faculty/ Staff Salaries	-	\$133,700	-	\$138,069	-	\$142,592	-	\$147,274	-	\$152,121		\$713,756
Facilities, Equipment, Supplies, and Materials	\$9,000	\$9,000	\$9,000	\$9,000	\$9,000	\$9,000	\$9,000	\$9,000	\$9,000	\$9,000	\$45,000	\$45,000
Library Resources												
Other (Admin Overhead)	\$15,317	\$15,317	\$28,423	\$28,423	\$39,409	\$39,409	\$51,029	\$51,029	\$63,312	\$63,312	\$197,490	\$197,490
<b>Total</b>	<b>\$24,317</b>	<b>\$158,017</b>	<b>\$37,423</b>	<b>\$175,492</b>	<b>\$48,409</b>	<b>\$191,001</b>	<b>\$60,029</b>	<b>\$207,303</b>	<b>\$72,312</b>	<b>\$224,433</b>	<b>\$242,490</b>	<b>\$956,246</b>
<b>Net Total</b> (Sources of Financing Minus Estimated Costs)	\$10,135	\$10,135	\$51,291	\$51,291	\$85,608	\$85,608	\$121,930	\$269,204	\$160,344	\$160,344	\$429,308	\$429,308

CAAL

11/06/2019

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**Note:** New costs - costs incurred solely as a result of implementing this program. Total costs - new costs; program's share of costs of existing resources used to support the program; and any other costs redirected to the program.

## Budget Justification

### Revenue Highlights:

- **Tuition Funding:** Academic Tuition and Fees of \$638 per credit hour for in-state is proposed. As enrollment grows from 3 initial students to 15 students in year five, the program will eventually generate approximately \$232K in additional tuition revenue. Program degree length ranges from four terms for full-time students to six terms for part-time students. The financial plan assumes that tuition and fees grow at 3% annually.
  - No graduate assistantships or fellowships will be offered for students in this degree program.
- **Reallocation of Existing Funds:** The reallocated resources are estimated at \$10K plus fringe of 33.7% per course for 10 courses to account for the faculty currently teaching courses where existing capacity will be utilized. Compensation growth rate is estimated to be 2.75% each year.

### Expense Highlights:

- **Program Administration, Faculty and Staff Salaries:**
  - No new personnel costs are required to administer this program. All courses are existing, with the exception of 3 newly created courses (AGED 8910, AGM 8000, & AGM 8910). Newly created courses are independent study and require no additional faculty workload, students will be assigned to an existing faculty member for directed research.
  - All courses listed in the program have additional capacity, for which the program will leverage to teach the newly proposed MS programs. The teaching cost is shown as a reallocated expense since the faculty are already in place (i.e., the instructional faculty neither represent new incremental revenues nor costs)
- **Facilities, Equipment, Supplies, and Materials:**
  - A marketing budget of \$4K will be used to communicate the new program across the state of South Carolina.
  - A lab improvement budget for \$5K is for lab improvements for courses being used across the curriculum.
- **Other Costs:**
  - Administrative overhead represents departmental support costs pro-rated across academic programs.

### Evaluation and Assessment

<b>Program Objectives</b>	<b>Student Learning Outcomes Aligned to Program Objectives</b>	<b>Methods of Assessment</b>
Deliver academic and technical knowledge and experiences needed for success in a technological agricultural industry and world.	Master's students will be able to demonstrate advanced knowledge/expertise in agricultural education or agricultural systems management.	Student seminar presentations and/or student-led workshops will be assessed to determine levels of student knowledge in agricultural education or agricultural systems management.
Enhance the use and understanding of quantitative and qualitative data collection skills.	Master's students will demonstrate quantitative/qualitative skills in the use of data collection and analysis techniques to conduct research in agricultural education or agricultural systems management.	Performance in STAT 8010 — Statistical Methods I will be one criterion in the assessment of data collection analysis skills.
Increase students' capacities to communication in both written and oral forms.	Master's students will develop written and oral communications of quality, as consistent with the focus of the agricultural education and agricultural systems management professions.	Draft copies and the final document for the thesis will be used in the assessment of these outcomes.
Recognize their role in society and the social and cultural consequences of practice in their profession.	Master's students will demonstrate and participate in intellectual/organizational aspects of their respective professions.	Artifacts developed in the graduate comprehensive exam will be used as artifacts for this outcome.
Develop scientific literacy by independently assessing, interpreting, and summarizing literature and other sources of knowledge on a research topic.	Master's students will conduct independent research resulting in an original contribution to knowledge in agricultural education and agricultural systems management professions.	Chapter three of the master's student's thesis, "Research Methodology" will provide the assessment artifact for this outcome.

Program objectives specific to the agricultural education concentration are to:

1. Assess educational needs of learners and plan educational programs based on assessment findings;
2. Demonstrate an understanding of the principles of curriculum development;
3. Become proficient in commonly recognized educational theories and their implications;
4. Demonstrate instructional design methodology and the principles of teaching and learning. †

Program objectives specific to the agricultural systems management concentration are:

1. To integrate theory, technical information and methods in analyzing and solving agricultural, resource and rural-related problems, and
2. Promote and support professional development opportunities not only in skill-specific and agricultural STEM-related areas, but also in a broader sense, including international activities, leadership, team-building, ethics & integrity, and diversity.

Explain how the proposed program, including all program objectives, will be evaluated, along with plans to track employment. Describe how assessment data will be used.

To maintain employment tracking of Master's students, each advisor will contribute to a database that will be maintained by the department's student service's coordinator. Annual correspondence with those in the database

will provide a continued update of those transitioning in their careers. The database will be maintained in Clemson's cloud storage system, Box.com, so all faculty will have full access to the information.

Assessment data will be analyzed on an annual basis to determine if the two concentrations are meeting the needs of our students and if changes in curriculum or other programmatic changes will be needed.

### **Accreditation and Licensure/Certification**

Will the institution seek program-specific accreditation (e.g., CAEP, ABET, NASM, etc.)? If yes, describe the institution's plans to seek accreditation, including the expected timeline.

Yes

No

Will the proposed program lead to licensure or certification? If yes, identify the licensure or certification.

Yes

No

Explain how the program will prepare students for this licensure or certification. **N/A**

If the program is an Educator Preparation Program, does the proposed certification area require national recognition from a Specialized Professional Association (SPA)? If yes, describe the institution's plans to seek national recognition, including the expected timeline.

Yes

No