



UNIVERSITY OF
GEORGIA

University of Georgia
Athens, Georgia 30602
univcouncil@uga.edu
www.uga.edu

University Council

March 15, 2019

UNIVERSITY CURRICULUM COMMITTEE – 2018-2019

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Dear Colleagues:

The attached proposal from the College of Engineering to offer the existing major in Agricultural Engineering (M.S.) with a Non-Thesis option will be an agenda item for the March 22, 2019, Full University Curriculum Committee meeting.

Sincerely,

John Maerz, Chair

University Curriculum Committee

cc: Interim Provost Libby V. Morris
Dr. Rahul Shrivastav

Proposal to Add a Non-Thesis Option to the M.S. in Agricultural Engineering

Submitted to: Dr. Suzanne Barbour
Dean, Graduate School

Submitted and Prepared by: Sidney Thompson, Ph.D.
Chair, School of Environmental, Civil, Agricultural and Mechanical Engineering

Basic Information:

Proposed Change: Establishing a non-thesis option for the major in Agricultural Engineering (M.S.) for students pursuing a non-research, professionally-oriented career path.

Proposed Start Date: Fall 2019

Program Description:

The School of Environmental, Civil, Agricultural and Mechanical Engineering requests that a non-thesis path be added as an option for the major in Agricultural Engineering (M.S.). While the M.S. with thesis is a key credential for students in the engineering disciplines continuing on to doctoral study, the majority of master's students in engineering, both at UGA and nationally, either complete their M.S. and then begin their professional careers or complete their M.S. part-time while employed. Nationally, the vast majority of the over 200 engineering programs in the United States offer non-thesis programs to serve this student population and employer need.

The major in Agricultural Engineering (M.S.) is the only such degree offered in the state of Georgia. With the expanded options available to students for graduate study in engineering as the College of Engineering has grown, enrollment in Agricultural Engineering (M.S.) has diminished. We anticipate that a non-thesis option for UGA's Agricultural Engineering (M.S.) will expand opportunities for students who are either currently in or wish to directly enter a professional career.

The Agricultural Engineering (M.S.) is oriented toward executing engineering solutions for feed, fiber, and food production problems, and/or postharvest processing problems. Problems addressed by this degree are generally at or beyond the field scale; however, solution approaches frequently begin at the bench scale level. Students choose coursework to focus their master's work in either a specific disciplinary specialty or interdisciplinary area to meet the student's career objectives. Within the major, the two course areas of Sustainable Food Systems and Natural Resource Management are offered. The requested non-thesis M.S. program contains all the courses already required of thesis M.S. students and will include the same elective course sets now offered. Non-thesis students will be advised in assembling a coherent program of study by a faculty advisor or graduate director in the school. Students in the non-thesis program will replace the minimum research (6 credits) and thesis hours (3 credits) with 9 hours of elective credits at the 6000–8000 level for a total of 33 credits. Thus, the number of total credit hours for

both thesis and non-thesis tracks are identical. The non-thesis option can be obtained by taking only coursework, or it can include no more than 3 credit hours for a project and report (ENGR 7010, Project-Focused Masters Research) under the guidance of a faculty member. Such a non-thesis project and report is generally not research-oriented, but deals with other aspects of an engineering problem.

The following table outlines the program of study that is required for the current thesis option and the proposed non-thesis option for the M.S. in Agricultural Engineering. A minimum of 15 hours of coursework must be in ECAM Agricultural Engineering courses.

Current M.S With Thesis		Proposed M.S. Non-Thesis	
Courses	24	Courses	30
Core Coursework:		Core Coursework:	
Sustainable Food Systems and/or Natural Resource Management: 15 hours		Sustainable Food Systems and/or Natural Res. Management: 15 hours	
Graduate Seminar: 1 hour		Graduate Seminar: 1 hour	
Elective Coursework: 8 hours		Elective Coursework: 14 hours	
Research and Thesis: 9 hours		ENGR 7010 Project-Focused Masters Research or Additional Elective	3
ENGR 7000: Master's Research	6		
ENGR 7300: Master's Thesis	3		
Minimum Total Credit Hours	33	Minimum Total Credit Hours	33

Typical choices for engineering and supporting science courses in each area are shown below. Students work with their graduate advisor and their committee to provide guidance in formulating the final plan of study so that it complements the chosen research area.

Sustainable Food Systems

- AENG 6140, Systems modeling (3 hours)
- ELEE 6210, Linear Systems (3 hours)
- ELEE 6220, Feedback Control Systems (3 hours)
- ELEE 6230, Sensors and Transducers (3 hours)
- ENGR 6350, Introduction to Finite Element Analysis (3 hours)
- ENGR 6490, Renewable Energy Engineering (3 hours)
- ENGR 8103 Computational Engineering: Fundamentals, Elliptic, and Parabolic Differential Equations (3 hours)
- ENVE 6230, Energy in Nature, Civilization, and Engineering (3 hours)
- ENVE 6250, Energy Systems and the Environment (3 hours)
- ENVE 6530, Energy and Environmental Policy Analysis (3 hours)
- FDST 6011-6011L, Food Processing I
- FDST 6012-6012L, Food Processing II (3 hours)
- FDST 6013-6013L, Food Processing III (3 hours)

Approved Jan 16, 2019 College of Engineering Curriculum Committee

Natural Resource Management

- ENGR 8103 Computational Engineering: Fundamentals, Elliptic, and Parabolic Differential Equations (3 hours)
- ENVE 6410, Open Channel Hydraulics (3 hours)
- ENVE 6430, Advanced Open Channel Design (3 hours)
- ENVE 6440, Computer Modeling in Water Resources (3 hours)
- ENVE 6450, Engineering Hydrology and Hydraulics (3 hours)
- ENVE 6460, Groundwater Hydrology for Engineers (3 hours)

Faculty Vote

Consistent with our College's Faculty Governance, the School of Environmental, Civil, Agricultural and Mechanical Engineering's Curriculum Committee voted 17 yes, 2 no for the proposed non-thesis option for Agricultural Engineering (M.S.). The College Curriculum Committee then passed the proposal unanimously.

Justification for the Proposed Non-Thesis M.S. Option

The requested non-thesis option completes our Agricultural Engineering (M.S.) offerings and makes us competitive with our peers in recruitment of professionally-oriented students into our program. Among UGA's peer comparator group, nearly 90 percent offer master's students a non-thesis option. This reflects the fact that significant opportunities exist for students with the additional training possible with an M.S. degree that do not require completing research and a thesis.

The establishment of a non-thesis option for Agricultural Engineering (M.S.) and its concentrations will:

- Enable the School of Environmental, Civil, Agricultural and Mechanical Engineering to recruit students to a terminal professional master's who are interested in employment in the agricultural sector,
- Encourage our own Engineering (B.S.) students to stay for an additional year to complete a 5-year Double Dawgs B.S.-M.S. program, and
- Better serve local industry in the agricultural sector in their recruitment, retention, and training of professional talent through providing a master's opportunity locally for their engineering employees.

Admission Procedure for Domestic Applicants

As with the thesis M.S., students will apply using the established Graduate School Application process for admission. Those applications will be reviewed by the Graduate Admissions and Advisory Committee of the College which has faculty representatives from each of our three Schools and is chaired by the College's Graduate Coordinator. The admissions standards for Agricultural Engineering (M.S.) will be the same for students applying for either the thesis or non-thesis option.

Admission Procedure for International Applicants

Other than the graduate school international admissions and test score requirements, the basic admission procedure will be the same for international as well as domestic applicants.

Impact on Current Students

We do not anticipate any adverse impact on current M.S. students. The positive impact will be to give our existing students another option for a program they need for their desired careers. In addition, this program will contribute to our planned growth of our graduate enrollment enabling us to offer a more robust set of courses on a more regular basis for our students. As with the availability of any new program or program track, students currently enrolled in the M.S. or Ph.D. program will have the option of changing to a non-thesis M.S. in Agricultural Engineering (and completing those requirements) or continuing with the current degree objective. We do not anticipate that many of our current students will switch to a non-thesis option.

Financial Impacts

There is adequate capacity in existing courses. The growth in graduate student enrollment expected will result in more regular and expanded offering of courses which currently have FTE committed to them but often may not make minimum enrollment. No new faculty, facilities, or services will be required to implement a non-thesis option for the M.S. degree. Thus, no new funds are required.

Assessment

The Department currently has a strong assessment plan for our graduate program. We will make necessary adjustments for the non-thesis M.S. option so that this program can be properly assessed.

Approvals on File

Proposal: Offer the existing major in Agricultural Engineering (M.S.) with a Non-Thesis option

College: College of Engineering

Department/School: School of Environmental, Civil, Agricultural and Mechanical Engineering

Proposed Effective Term: Fall 2019

School/College:

- School of Environmental, Civil, Agricultural and Mechanical Engineering Chair, Dr. Sidney Thompson, 1/17/2019
- College of Engineering Dean, Dr. Donald Leo, 1/16/2019

Graduate School:

- Graduate School Dean, Dr. Suzanne Barbour, 3/20/2019