University Council

February 14, 2020

UNIVERSITY CURRICULUM COMMITTEE – 2019-2020
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Arts and Sciences – Jonathan Evans (Arts)
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Pharmacy – Michelle McElhannon
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Veterinary Medicine – Susan Sanchez
Graduate School – Amy Medlock
Ex-Officio – Provost S. Jack Hu
Undergraduate Student Representative – Melissa Hevener
Graduate Student Representative – Jordan Henley

Dear Colleagues:

The attached proposal from the College of Engineering for the following program changes will be an agenda item for the February 21, 2020, Full University Curriculum Committee meeting:

- Change the name of the major in Agricultural Engineering (B.S.A.E.) to Agricultural Systems Engineering (B.S.A.E.)
- Create a new Area of Emphasis in Agricultural Systems Automation Engineering under Agricultural Systems Engineering (B.S.A.E.)
- Create a new Area of Emphasis in BioLogistics under Agricultural Systems Engineering (B.S.A.E.)
- Create a new Area of Emphasis in Food Engineering under Agricultural Systems Engineering (B.S.A.E.)
- Create a new Area of Emphasis in Natural Resources Engineering under Agricultural Systems Engineering (B.S.A.E.)
Sincerely,

John Maerz, Chair
University Curriculum Committee

cc: Provost S. Jack Hu
    Dr. Rahul Shrivastav
PROPOSAL FOR ACADEMIC UNIT NAME CHANGE

Date: January 29, 2020

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

School/College/Unit: College of Engineering

Proposed Effective Date: Fall 2020

NAME CHANGE:

Current Name: Agricultural Engineering (B.S.A.E.)

Proposed Name: Agricultural Systems Engineering (B.S.A.E.)

JUSTIFICATION:

The existing Agricultural Engineering (B.S.A.E.) major, originally housed in the Department of Biological and Agricultural Engineering in the College of Agricultural and Environmental Sciences, now resides in the recently created College of Engineering. During the transition, Agricultural Engineering was used as a basis for launching the Civil, Mechanical, and Electrical and Environmental Engineering majors. This necessitates a need for revising the Agricultural Engineering major in order for it to remain viable. Given that agriculture is Georgia’s largest industry, it is important to involve thought leaders from around the U.S. and Georgia to develop a plan that would be viable in the 21st century. A committee comprised of members of the National Academy of Engineering and former ASABE presidents, as well as Georgia Industry representatives, contributed input for the revising effort. The revised curriculum builds on expertise from Civil, Mechanical, and Electrical and Environmental Engineering to enable cutting-edge development work across the agricultural spectrum. A few key faculty lines are being recruited to further strengthen systems engineering capability. Agricultural Engineering is now the major in the College of Engineering portfolio that emphasizes systems engineering while serving the agricultural industry, hence the name change to Agricultural Systems Engineering (B.S.A.E.).
PROPOSAL FOR AN AREA OF EMPHASIS

Date: January 27, 2020

School/College: College of Engineering

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

Program (Major and Degree): Agricultural Systems Engineering (B.S.A.E.)

Area of Emphasis Title: Agricultural Systems Automation Engineering

Which campus(es) will offer this program? Athens

Proposed Effective Date: Fall 2020

CIP: 14030101

Area of Emphasis Description:
Recent rapid development in technologies, such as drones, robots, and advanced imaging sensors, is poised to help modern agriculture to be more productive and environmentally sustainable. This area of emphasis is envisioned to equip graduates with knowledge and skills in automation engineering to work in the agricultural systems domain. Required courses will help students build a strong foundation in electronics, control theory, advanced sensors, microcontrollers, machine vision, and robotics, whereas elective courses, such as Remote Sensing and Data Science, are designed to fit each student with a particular interest.

Required Courses (22 hours):
CSCI 1301-1301L  Introduction to Computing and Programming  4 hrs.
ELEE 3270  Electronics I  3 hrs.
ELEE 4210/6210  Linear Systems  3 hrs.
ELEE 4220/6220  Feedback Control Systems  3 hrs.
ELEE 4230/6230  Sensors and Transducers  3 hrs.
ELEE 4235/6235  Industrial Control Systems  3 hrs.
ELEE 4280/6280  Introduction to Robotics Engineering  3 hrs.

Elective Courses (Choose two courses (minimum of 6 hours) hours from the following):
AENG 3100  Motion and Time Studies  3 hrs.
AENG 4130  Precision Farming Controls and Sensors  3 hrs.
AENG 4120/6120  Introduction to Logistical Engineering  3 hrs.
BCHE 4710/6710  Bioelectrochemical Engineering  3 hrs.
CSCI 3360  Data Science I  4 hrs.
CSEE 4620/6620  Biomedical Imaging  3 hrs.
ELEE 4260/6260  Introduction to Nanoelectronics  3 hrs.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEE 4270</td>
<td>Electronics II</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>FANR 3800, FANR 3800L</td>
<td>Spatial Analysis of Natural Resources, Spatial Analysis of Natural Resources Laboratory</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>FDST 3000</td>
<td>Introduction to Food Science and Technology</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>FDST 3700**</td>
<td>Survey of Food Processing</td>
<td>1 hr.</td>
</tr>
<tr>
<td>FDST 4012/6012-4012L/6012L</td>
<td>Food Processing II</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>POU(L)(FDST) 4860/6860-4860L/6860L</td>
<td>Poultry Processing</td>
<td>3 hrs.</td>
</tr>
</tbody>
</table>

**Pending CAPA approval

Information related to FDST 3700, Survey of Food Processing

Proposed course would act as a prerequisite for FDST 4012/6012-4012L/6012L and would have a prerequisite of ENGR 3150 and ENGR 3160. Currently, Food Science students are taught basic heat/mass transfer in FDST 4011/6011-4011L/6011L, and that course is the prerequisite for FDST 4012/6012-4012L/6012L. This material would be taught to engineering students in ENGR 3150 and ENGR 3160.
PROPOSAL FOR AN AREA OF EMPHASIS

Date: January 27, 2020

School/College: College of Engineering

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

Program (Major and Degree): Agricultural Systems Engineering (B.S.A.E.)

Area of Emphasis Title: BioLogistics

Which campus(es) will offer this program? Athens

Proposed Effective Date: Fall 2020

CIP: 14030101

Area of Emphasis Description:
The Area of Emphasis in BioLogistics provides a pathway for the study of moving food, feed, and fiber from the farm gate to the consumer. Operations management and quality management are a major focus, with emphasis on the handling of biological materials through a logistics chain.

Note: Successful completion of (BIOL 1107, BIOL 1107L) or (PBIO 1210, PBIO 1210L) is needed to meet prerequisite requirements.

Required Courses (21 hours):
AENG 3100    Motion and Time Studies    3 hrs.
AENG 3540    Physical Unit Operations    3 hrs.
AENG 4120/6120   Introduction to Logistical Engineering   3 hrs.
AENG 4160/6160   Introduction to Operations Research   3 hrs.
ELEE 3270    Electronics I    3 hrs.
ENGR 2140*   Strength of Materials*    3 hrs.
ENVE 4550/6550   Environmental Life Cycle Analysis   3 hrs.

*Requires a grade of “C” (2.0) or better.

Elective Courses (Choose 3 courses (minimum of 7 hours) from the following):
AENG 4110    Postharvest Facilities Engineering    3 hrs.
ELEE 4230/6230   Sensors and Transducers   3 hrs.
ELEE 4240    Introduction to Microcontrollers    3 hrs.
ELEE 4540/6540   Applied Machine Vision   3 hrs.
ENGR 4350/6350   Introduction to Finite Element Analysis   3 hrs.
ENGR 4490/6190    Renewable Energy Engineering    3 hrs.
FDST 3000    Introduction to Food Science and Technology    3 hrs.
FDST 3700**   Survey of Food Processing   1 hr.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDST 4012/6012-4012L/6012L</td>
<td>Food Processing II</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>HORT(CRSS) 4430/6430</td>
<td>Plant Physiology</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>MGMT 4000</td>
<td>Operations Management</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>POUL(FDST) 4860/6860-4860L/6860L</td>
<td>Poultry Processing</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>STAT 4260/6260</td>
<td>Statistical Quality Assurance</td>
<td>3 hrs.</td>
</tr>
</tbody>
</table>

**Pending CAPA approval**

Information related to FDST 3700, Survey of Food Processing

Proposed course would act as a prerequisite for FDST 4012/6012-4012L/6012L and would have a prerequisite of ENGR 3150 and ENGR 3160. Currently, Food Science students are taught basic heat/mass transfer in FDST 4011/6011-4011/6011L, and that course is the prerequisite for FDST 4012/6012-4012L/6012L. This material would be taught to engineering students in ENGR 3150 and ENGR 3160.
PROPOSAL FOR AN AREA OF EMPHASIS

Date: January 27, 2020

School/College: College of Engineering

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

Program (Major and Degree): Agricultural Systems Engineering (B.S.A.E.)

Area of Emphasis Title: Food Engineering

Which campus(es) will offer this program? Athens

Proposed Effective Date: Fall 2020

CIP: 14030101

Area of Emphasis Description:
The Area of Emphasis in Food Engineering was envisioned to create graduates who can design equipment and processes for the food industry. A basic understanding of the food matrix and food industry-specific knowledge is fundamental and reflected in the required courses, while the elective courses are designed to allow flexibility for the individual student and their advisor to tailor a program to fit their specific interests.

Note: Successful completion of (BIOL 1107, BIOL 1107L) is required for this area of emphasis.

Required Courses (21 hours):

- ELEE 3270   Electronics I   3 hrs.
- ELEE 4230/6230 Sensors and Transducers 3 hrs.
- ENGR 2140* Strength of Materials* 3 hrs.
- FDST 4012/6012-4012L/6012L Food Processing II 3 hrs.
- FDST 4013/6013-4013L/6013L Food Processing III 3 hrs.
- MCHE 3300 Machine Design I 3 hrs.
- MCHE 4300 Mechanical Systems 3 hrs.

*Requires a grade of “C” (2.0) or better.

Elective Courses (Choose 3 courses (minimum of 7 hours) from the following):

- AENG 3540 Physical Unit Operations 3 hrs.
- AENG 4110 Postharvest Facilities Engineering 3 hrs.
- ELEE 4240 Introduction to Microcontrollers 3 hrs.
- ELEE 4710 Fundamentals of Power Engineering 3 hrs.
- FDST 3000 Introduction to Food Science and Technology 3 hrs.
- FDST(MIBO) 4030/6030- Food Microbiology 4 hrs.
FDST 4250/6250-4250L/6250L  Principles of Food Product Development  2 hrs.
FDST(EHSC)(MIBO) 4320/6320-4320L/6320L  Food Safety Control Programs  3 hrs.
FDST 3700**  Survey of Food Processing  1 hr.
MCHE 4650/6650  HVAC Systems for Buildings and Industry  3 hrs.
PATH(HORT)(FDST) 3050  Viticulture and Enology in the Mediterranean Region  4 hrs.
POUL(FDST) 4860/6860-4860L/6860L  Poultry Processing  3 hrs.
STAT 4260/6260  Statistical Quality Assurance  3 hrs.

**Pending CAPA approval

Information related to FDST 3700, Survey of Food Processing

Proposed course would act as a prerequisite for FDST 4012/6012-4012L/6012L and would have a prerequisite of ENGR 3150 and ENGR 3160. Currently, Food Science students are taught basic heat/mass transfer in FDST 4011/6011-4011L/6011L, and that course is the prerequisite for FDST 4012/6012-4012L/6012L. This material would be taught to engineering students in ENGR 3150 and ENGR 3160.
PROPOSAL FOR AN AREA OF EMPHASIS

Date: January 27, 2020

School/College: College of Engineering

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

Program (Major and Degree): Agricultural Systems Engineering (B.S.A.E.)

Area of Emphasis Title: Natural Resources Engineering

Which campus(es) will offer this program? Athens

Proposed Effective Date: Fall 2020

CIP: 14030101

Area of Emphasis Description:
The Area of Emphasis in Natural Resources Engineering addresses problems at the rural-urban interface where environmentally associated issues of land development and cultivation meet the quality of life expected by suburban residents. Sustainable food, feed, and fiber production, along with environmental sustainability, are emphasized.

Required Courses (21 hours):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVLE 3420</td>
<td>Introduction to Soil Mechanics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>CVLE 3440</td>
<td>Hydraulics of Closed Conduit Flow</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>ENGR 2140*</td>
<td>Strength of Materials*</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>ENVE 4435/6435</td>
<td>Natural Resources Engineering</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>ENVE 4470/6670</td>
<td>Environmental Engineering Unit Operations</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>ENVE 4710</td>
<td>GIS for Urban Engineering, Planning, and Development</td>
<td>3 hrs.</td>
</tr>
</tbody>
</table>

WASR(CRSS)(ECOL) (ENGR)(GEOG)(GEOL) 4700L/6700L Hydrology, Geology and Soils of Georgia 3 hrs.

*Requires a grade of “C” (2.0) or better.

Elective Courses (Choose 3 courses (minimum of 7 hours) from the following):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AENG 4150/6150</td>
<td>Environmental Biophysics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>AENG(CVLE) 4170</td>
<td>Wind and Water Erosion Prediction</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>AENG(CVLE) 4180</td>
<td>Irrigation Systems Design</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>AENG 4130</td>
<td>Precision Farming Controls and Sensing</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>BCHE(ENVE) 4490/6490</td>
<td>Environmental Engineering Remediation Design</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
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<tr>
<td>CRSS(FANR) 3060, CRSS(FANR) 3060L</td>
<td>Soils and Hydrology, Soils and Hydrology Laboratory</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>CRSS 4600/6600</td>
<td>Soil Physics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>CVLE 2210</td>
<td>Principles of Surveying and Transportation</td>
<td>2 hrs.</td>
</tr>
<tr>
<td>CVLE 3450</td>
<td>Civil Engineering Laboratory - Soils</td>
<td>1 hr.</td>
</tr>
<tr>
<td>CVLE 3460</td>
<td>Civil Engineering Laboratory - Hydraulics</td>
<td>1 hr.</td>
</tr>
<tr>
<td>CVLE 3610</td>
<td>Structural Design</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>CVLE(MCHE) (LAND) 4660/6600</td>
<td>Sustainable Building Design</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>ELEE 4230/6230</td>
<td>Sensors and Transducers</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>ELEE 4240</td>
<td>Introduction to Microcontrollers</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>ENGR(ATSC)(GEOG) 4161/6161, ENGR(ATSC) (GEOG) 4161L/6161L</td>
<td>Environmental Microclimatology</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>ENGR 4490/6190</td>
<td>Renewable Energy Engineering</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>ENVE 4410/6410</td>
<td>Open Channel Hydraulics</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>MCHE 4650/6650</td>
<td>HVAC Systems for Buildings and Industry</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>WASR 4500/6500</td>
<td>Quantitative Methods in Hydrology</td>
<td>3 hrs.</td>
</tr>
</tbody>
</table>
Approvals on File

Proposal: Name Change and New Areas of Emphasis under Agricultural Systems Engineering (B.S.A.E.)

College: College of Engineering

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

Proposed Effective Term: Fall 2020

Department:

- School of Environmental, Civil, Agricultural, and Mechanical Engineering Chair, Dr. Sidney Thompson, 1/27/20

School/College:

- College of Engineering Associate Dean, Dr. Ramaraja Ramasamy, 1/21/20
- College of Engineering Dean, Dr. Don Leo, 1/27/20