

BSAE Agricultural Engineering
Fall 2021

This document is an example of a BSAE program of study. Several factors can affect the course scheduling sequence. For a copy of the official curriculum, please go to the UGA Bulletin: <http://bulletin.uga.edu/>

Major Requirements

Students must earn a grade of "C" (2.0) or better in the courses listed in **bold**.

High Demand Entrance Requirements

To be considered as a candidate for BSAE, students must complete the courses listed in *italics* with a grade of "C" (2.0) or better. For more information on entrance requirements, please refer to the UGA Bulletin: <http://bulletin.uga.edu/> and our website.

YEAR ONE					
<u>Fall Semester</u>		<u>Hours</u>	<u>Spring Semester</u>		<u>Hours</u>
MATH 2250	<i>Calculus I</i>	4	MATH 2260	<i>Calculus II</i>	4
CHEM 1211&L	Freshman Chemistry I	4	PHYS 1251	<i>Physics for Engineers I</i>	3
ENGR 1920	Intro to Engineering	1	ENGR 1140	<i>Computational Engr. Methods</i>	2
ENGR 1120	<i>Engineering Graphics</i>	2	ENGL 1102	English Composition II	3
AENG 2100	Principles of Systems Engineering	3		Social Sciences Elective	3
ENGL 1101	<i>English Composition I</i>	3	FYOS	First-Year Odyssey Seminar	1
Total Credit Hours		17	Total Credit Hours		16
YEAR TWO					
<u>Fall Semester</u>		<u>Hours</u>	<u>Spring Semester</u>		<u>Hours</u>
MATH 2500	Multivariable Calculus	3	MATH 2700	Differential Equations	3
PHYS 1252	Physics for Engineers II	3	ENGR 2170	Electrical Circuits	3
ENGR 2120	<i>Statics</i>	3	AENG 2920	Design Methodology	2
	Life Science Elective¹	4	ENGR 3140	Thermodynamics I	3
	Major-Related Elective²	3	ENGR 2110	Engineering Decision Making	3
				Social Sciences Elective	3
Total Credit Hours		16	Total Credit Hours		17
YEAR THREE					
<u>Fall Semester</u>		<u>Hours</u>	<u>Spring Semester</u>		<u>Hours</u>
ENGR 3150	Heat Transfer	3	AENG 3100	Motion and Time Studies	3
ENGR 3160	Fluid Mechanics	3	CVLE 2710	Numerical Methods for Engineers	2
ENVE 3510	Modeling, Stat. Analysis, Uncertainty	3		Area of Emphasis Required Course	3
	Area of Emphasis Required Course	3		Area of Emphasis Required Course	3
COMM 1110 ³	Intro to Public Speaking	3		Area of Emphasis Required Course	3
				World Lang & Culture Elective	3
Total Credit Hours		15	Total Credit Hours		17
YEAR FOUR					
<u>Fall Semester</u>		<u>Hours</u>	<u>Spring Semester</u>		<u>Hours</u>
AENG 4910	Capstone Design I	2	AENG 4911	Capstone Design II	2
AENG 4140	Systems Modeling	3		Area of Emphasis Required Course	3
	Area of Emphasis Elective	3		Area of Emphasis Required Course	3
	Area of Emphasis Elective	3		Area of Emphasis Required Course	3
	Area of Emphasis Elective	1		World Lang & Culture Elective	3
	World Lang & Culture Elective	3		Social Sciences Elective	3
Total Credit Hours		15	Total Credit Hours		17

¹Life Science Elective: Select from BIOL 1107&L, CRSS 2010&L or P BIO 1210&L.

²Major-Related Elective: Select from ANTH 1102, FANR 2200 or GEOG 1125.

³COMM 1110 is required for BSAE; it will also satisfy the Humanities & the Arts requirement.

BSAE Areas of Emphasis

Students must declare an Area of Emphasis (28 credit hours). Design courses are listed in italics. **At least one design course (3 credit hours) must be selected from the list of electives for each of the Areas of Emphasis.**

Agricultural Systems Automation Engineering

Required Courses (21 credit hours)

ELEE 2040	Programming for Engineers
ELEE 3270	Electronics I
ELEE 4210/6210	Linear Systems
<i>ELEE 4220/6220</i>	<i>Feedback Control Systems</i>
ELEE 4230/6230	Sensors & Transducers
<i>ELEE 4235/6235</i>	<i>Industrial Control Systems</i>
ELEE 4280/6280	Introduction to Robotics Engineering

Elective Courses

AENG 3540
AENG 4120/6120
AENG 4130
BCHE 4710/6710
CSCI 3360
CSEE 4620/6620
ELEE 4260/6260
ELEE 4270
FANR 3800-3800L
FDST 3000
FDST 4012/6012-4012L/6012L
POUL/FDST 4860/6860-4860L/6860L

Physical Unit Operations
Introduction to Logistical Engineering
Precision Farming Controls & Sensors
Bioelectrochemical Engineering
Data Science I
Biomedical Imaging
Introduction to Nanoelectronics
Electronics II
Spatial Analysis of Natural Resources
Intro to Food Science and Technology
Food Processing II
Poultry Processing

BioLogistics

Required Courses

AENG 3540	<i>Physical Unit Operations</i>
AENG 4110	Postharvest Facilities Engineering
<i>AENG 4120/6120</i>	<i>Introduction to Logistical Engineering</i>
AENG 4160/6160	Introduction to Operations Research
ELEE 3270	Electronics I
ENGR 2140	Strength of Materials
ENVE 4550/6550	Life Cycle Analysis

Elective Courses

CVLE 3730
ELEE 4230/6230
ELEE 4235/6235
ENGR 4350/6350
ENGR 4490/6490
FDST 3000
ENGR 4490/6490
FDST 3000
FDST 4012/6012-4012L/6012L
HORT/CRSS 4430/6430
MGMT 4000
POUL/FDST 4860/6860-4860L/6860L
STAT 4260/6260

Civil Engineering Project Management
Sensors & Transducers
Industrial Control Systems
Introduction to Finite Element Analysis
Renewable Energy Engineering
Intro to Food Science and Technology
Renewable Energy Engineering
Intro to Food Science and Technology
Food Processing II
Plant Physiology
Operations Management
Poultry Processing
Statistical Quality Assurance

Electrical & Electronic Systems

Required Courses

ELEE 3270	Electronics I
ELEE 4210/6210	Linear Systems
<i>ELEE 4220/6220</i>	<i>Feedback Control Systems</i>
ELEE 4230/6230	Sensors & Transducers
<i>ELEE 4235/6235</i>	<i>Industrial Control Systems</i>
ELEE 4270	Electronics II
ELEE 4710	Fundamentals of Power Engineering

Elective Courses

AENG 3540
BCHE 3520
CSEE 4310
CSEE 4620/6620
CVLE/MCHE/LAND 4660/6660
ELEE 4260/6260
MCHE 4650/6650

Physical Unit Operations
Mass Transport & Rate Phenomena
Embedded Robotics
Biomedical Imaging
Sustainable Building Design
Introduction to Nanoelectronics
HVAC Systems for Buildings & Industry

Food Engineering

Required Courses

ELEE 3270	Electronics I
ELEE 4230/6230	Sensors & Transducers
ENGR 2140	Strength of Materials
<i>FDST 4012/6012-4012L/6012L</i>	<i>Food Processing II</i>
FDST 4013/6013-4013L/6013L	Food Processing III
MCHE 3300	Machine Design I
MCHE 4300	Mechanical Systems

Elective Courses

AENG 3540
AENG 4110
ELEE 4235/6235
ELEE 4710
FDST 3000
FDST/MIBO 4030/6030-4030L/6030L
FDST 4040/6040-4040L/6040L
FDST 4250/6250-4250L/6250L
FDST/EHSC/MIBO 4320/6320-4320L/6320L
MCHE 4650/6650
PATH/HORT/FDST 3050
POUL/FDST 4860/6860-4860L/6860L
STAT 4260/6260

Physical Unit Operations
Postharvest Facilities Engineering
Industrial Control Systems
Fundamentals of Power Engineering
Intro to Food Science and Technology
Food Microbiology
Food Chemistry
Principles of Food Product Development
Food Safety Control Systems
HVAC Systems for Buildings & Industry
Viticulture & Enology/Mediterranean Region
Poultry Processing
Statistical Quality Assurance

Mechanical Systems

Required Courses

ELEE 3270	Electronics I
ENGR 2130	Dynamics
ENGR 2140	Strength of Materials
ENGR 4350/6350	Intro to Finite Element Analysis
MCHE 3300	Machine Design I
MCHE 4300	Mechanical Systems
MCHE 4340	Machine Hydraulics

Elective Courses

AENG 3540	<i>Physical Unit Operations</i>
BCHE 3520	Mass Transport & Rate Phenomena
BIOE 4720/6720	<i>Biomedical Device Design</i>
CSEE 4310	Embedded Robotics
CVLE 3460L	Civil Engr. Hydraulics Lab (1 hour)
CVLE 3470L	Civil Engr. Structural Lab (1 hour)
CVLE 3610	<i>Structural Design</i>
CVLE/MCHE/LAND 4660/6660	<i>Sustainable Building Design</i>
ELEE 4210/6210	Linear Systems
ELEE 4220/6220	<i>Feedback Control Systems</i>
ELEE 4230/6230	Sensors & Transducers
ELEE 4235/6235	<i>Industrial Control Systems</i>
ENGR 4490/6490	<i>Renewable Energy Engineering</i>
ENVE 4470/6470	<i>Environmental Engr. Unit Operations</i>
MCHE 3150	Engineering Thermodynamics II
MCHE 4390	Mechanical Vibration
MCHE 4500/6500	Advanced Thermal Fluid Systems
MCHE 4530/6530	Combustion and Flames
MCHE 4650/6650	<i>HVAC Systems for Buildings & Industry</i>

Natural Resources Engineering

Required Courses

CVLE 3420	Intro to Soil Mechanics
CVLE 3440	Hydraulics of Closed Conduit Flow
ENGR 2140	Strength of Materials
ENVE 4435/6435	<i>Natural Resources Engr.</i>
ENVE 4470/6470	<i>Env. Engr. Unit Operations</i>
ENVE 4710	GIS for Urban Engineering, Planning, Development
WASR/CRSS/ECOL/ENGR/GEOG/ GEOL 4700L/6700L	Hydrology, Geology and Soils of Georgia

Elective Courses

AENG 4130	Precision Farming Controls & Sensors
AENG 4150/6150	Environmental Biophysics
AENG/CVLE 4170	<i>Wind and Water Erosion Prediction</i>
AENG/CVLE 4180	<i>Irrigation Systems Design</i>
BCHE (ENVE) 4490/6490	Env. Engr. Remediation Design
CRSS/FANR 3060&L	Soils & Hydrology
CRSS 4600/6600	Soil Physics
CVLE 2210	Principles of Surveying/Transportation
CVLE 3450L	Civil Engr. Soils Lab (1 hour)
CVLE 3460L	Civil Engr. Hydraulics Lab (1 hour)
CVLE 3610	<i>Structural Design</i>
CVLE/MCHE/LAND 4660/6660	<i>Sustainable Building Design</i>
ELEE 4230/6230	Sensors & Transducers
ELEE 4235/6235	<i>Industrial Control Systems</i>
ENGR/ATSC/GEOG4161&L/6161&L	Environmental Microclimatology
ENGR 4490/6490	<i>Renewable Energy Engineering</i>
ENVE 4410/6410	<i>Open Channel Hydraulics</i>
MCHE 4650/6650	<i>HVAC Systems for Buildings & Industry</i>
WASR 4500/6500	Quantitative Methods in Hydrology

Natural Resource Management

Required Courses

CVLE 3440	<i>Hydraulics of Closed Conduit Flow</i>
ENGR 2140	Strength of Materials
CVLE/MCHE/LAND 4660/6660	<i>Sustainable Building Design</i>
ENVE 4435/6435	<i>Natural Resources Engineering</i>
ENVE 4470/6470	<i>Environmental Engr. Unit Operations</i>
ENVE 4710	GIS for Urban Engineering, Planning, Develop.
MCHE 4650/6650	<i>HVAC Systems for Buildings & Industry</i>

Elective Courses

BCHE 3520	Mass Transport and Rate Phenomena
BCHE (ENVE) 4490/6490	Environmental Engineering Remediation Design
CRSS 3060&L	Soils & Hydrology
CRSS 4600	Soil Physics
CVLE 3420	<i>Intro to Soil Mechanics</i>
CVLE 3450L	Civil Engineering Lab – Soils
CVLE 3460L	Civil Engineering Lab - Hydraulics
CVLE 3470L	Civil Engineering Lab – Structural
CVLE 3610	Structural Design
ELEE 4230/6230	Sensors & Transducers
ENGR/ATSC/GEOG 4161&L/6141&L	Environmental Microclimatology
ENVE 4410/6410 or 6430	<i>Open Channel Hydraulics</i>
WASR/CRSS/ECOL/ENGR/GEOG/ GEOL 4700L/6700L	Hydrology, Geology and Soils of Georgia

Process Operations**Required Courses**

AENG 3540
 ELEE 3270
 ELEE 4210/6210
 ELEE 4220/6220
 ELEE 4230/6230
 ELEE 4235/6235
 ENGR 2140

Physical Unit Operations
 Electronics I
 Linear Systems
Feedback Control Systems
 Sensors & Transducers
Industrial Control Systems
Strength of Materials

Elective Courses

AENG 4110
 ENGR 4350/6350
 ENGR 4490/6490
 FORS 4530/6530
 MCHE 4650/6650

Postharvest Facilities Engineering
 Intro to Finite Element Analysis
Renewable Energy Engineering
 Wood Properties & Utilization
HVAC Systems for Buildings and Industry

Structural Systems**Required Courses**

CVLE 3420
 CVLE 3610
 CVLE 4610
 CVLE/MCHE/LAND 4660/6660
 CVLE/MCHE 4720
 ENGR 2140
 MCHE 4650/6650

Intro to Soil Mechanics
Structural Design
Design/Light Steel Structures
Sustainable Building Design
Design/Residential Structures
Strength of Materials
HVAC Systems for Buildings & Industry

Elective Courses

BCHE 3520
 CVLE 3440
 CVLE 3450L
 CVLE 3470L
 CVLE 3730
 CVLE 4330/6330
 CVLE 4470/6470

 CVLE 4530
 CVLE 4750
 ENGR 4350/6350
 ENVE 4435/6435
 ENVE 4470/6470
 ENVE 4710

 MCHE 3300

Mass Transport & Rate Phenomena
 Hydraulics of Closed Conduit Flow
 Civil Engr. Soils Lab (1 hour)
 Civil Engr. Structural Lab (1 hour)
Civil Engineering Project Management
Advanced Structural Analysis
Pavement Design

Design/Reinforced Concrete Structures
 Building Information Modeling (BIM)
 Introduction to Finite Element Analysis
Natural Resources Engineering
Environmental Engr. Unit Operations
 GIS for Urban Engineering, Planning,
 Development
 Machine Design I