**Biological Engineering Electives**

**Biosystems Engineering**

**Departmental Electives:** (Choose at least one of the following)
- ABE 4034 Remote Sensing in Engineering: Science, Sensor & Applications (3)
- ABE 4231 Irrigation and Drainage Engineering (4)
- ABE 4303C Structural and Environmental Design (3)
- ABE 4413C Post Harvest Operations Engineering (3)
- ABE 4905 Industrial Hygiene or Independent Study (1-4)
- Any graduate-level ABE course

**Engineering Electives:** (6 credits minimum up to 13 credits)
- ECH 4323 Process Control Theory (3)
- ECH 4323L Chemical Engineering Lab (1)
- ECH 4504 Chemical Kinetics & Reactor Design (4)
- ECH 4524 Heterogeneous Kinetics & Reactor Design (2)
- EGM 4313 Intermediate Engineering Analysis (4)
- EGM 4473 Experimental Optimum Engineering Design (3)
- EGM 4590 Biodynamics (3)
- EGM 4592 Bio-Solid Mechanics (3)
- EGM 4853 Bio-Fluid Mechanics (3)
- ENV Environmental Engineering Courses
- CWR Civil Engineering Courses

**Technical/Biological Science Electives**
- ALS 3133 Agricultural & Environmental Quality (3)
- AGR 3001 Environment, Food & Society (3)
- AGR 3303 Genetics (3)
- ANS 3006C Intro to Animal Science (4)
- AOM 4062 Food Engineering
- BOT 3503 Physiology & Molecular Biology of Plants (3)
- BCH 3025 Fundamentals of Biochemistry (4)
- EES 3000 Environmental Sciences & Humanity (3)
- EES 3000L Environmental Sciences & Humanity Lab (1)
- EE S4102 Wastewater Microbiology (2)
- EES 4102L Environmental Biology Lab (1)
- EES 4103 Applied Ecology (2)
- EES 4401 Public Health Engineering (3)
- FOR 3004 Forest Conservation & People (3)
- FOS 3042 Introductory Food Science (3)
- FOS 4204 Food Safety and Sanitation (2)
- FOS 4222 Food Microbiology (3)
- FOS 4222L Food Microbiology Lab (2)
- FOS 4311 Food Chemistry (3)
- FOS 4311L Food Chemistry Lab (1)
- FOS 4427C Principles of Food Processing (4)
- FOS 4522C Seafood Technology (3)
- FOS 4722C Quality Control in Foods (3)
- FOS 4731 Government Regulations in Food Industry (2)
<table>
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<th>Course Code</th>
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<tr>
<td>HUN 2201</td>
<td>Fundamentals of Human Nutrition</td>
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<td>HUN 3403</td>
<td>Nutrition through the Life Cycle</td>
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<td>MCB 3020</td>
<td>Basic Biology of Microorganisms</td>
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<td>Basic Biology of Microorganisms Lab</td>
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<td>Genetics of Microorganisms</td>
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<td>MCB 4403</td>
<td>Prokaryotic Cell Structure and Function</td>
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<td>Intro to Ecology</td>
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<td>PLS 3004C</td>
<td>Principles of Plant Science</td>
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<td>APK 2100C</td>
<td>Applied Human Anatomy with Lab</td>
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<td>APK 2105C</td>
<td>Applied Human Physiology with Lab</td>
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<td>WIS 3401</td>
<td>Wildlife Ecology &amp; Management</td>
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<td>WIS 4443C</td>
<td>Wetland Wildlife Ecology</td>
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**Land and Water Resources Engineering**

**Departmental Electives:** (Choose at least one of the following)
- ABE 4033 Biosensors (3)
- ABE 4034 Remote Sensing in Engineering: Science, Sensor & Applications (3)
- ABE 4303C Structural and Environmental Design (3)
- ABE 4413C Post Harvest Operations Engineering (3)
- ABE 4662 Quantification of Biological Processes (3)
- ABE 4812 Food and Bioprocess Engineering Unit Operations (4)
- ABE 4905 Industrial Hygiene or Independent Study (1-4)
- Any graduate-level ABE course

**Engineering Electives:** (Choose at least one of the following)
- CWR4111 Engineering Hydrology (3)
- CWR4114 Surface Hydrology (3)
- CWR4120 Groundwater (3)
- CWR4306 Urban Stormwater Systems Design (3)
- CWR4542 Water Resources Engineering (3)
- ENV4601 Environmental Resources Management (2)
- ENV4041C Environmental Analysis (3)
- ENV4405 Nutrient Control and Water Reuse (3)
- ENV4514C Water and Wastewater Treatment (3)

**Technical Electives** (Choose at least one of the following)
- AEB 3413 Economics of Environmental Policy (3)
- AEB 4434 Land and Water Economics (3)
- ALS 3133 Agricultural & Environmental Quality (3)
- AOM 4434 Precision Agriculture (3)
- EES4050 Environmental Planning and Design (3)
- EES4102 Wastewater Microbiology (2)
- EES4200 Environmental Chemistry of Carbon Compounds (2)
- EES4201 Water Chemistry (3)
- PLS 3004C Principles of Plant Science (3)
Agricultural Production Engineering

Departmental Electives: (Choose at least one of the following)
- ABE 4034  Remote Sensing in Engineering: Science, Sensor & Applications (3)
- ABE 4231c  Irrigation and Drainage Engineering (4)
- ABE 4812  Food Engineer Unit Op

Engineering Electives: (6 credits minimum up to 13 credits)
- CGN4101  Civil Engr Cost Analysis
- CEG 4012  Geotechnical Engineer
- CEG 4104  Retain Wall Embank
- CEG 4111  Foundations Engr Design
- CES 3102  Mechanics of Eng Structure
- CES 4141  Stress Analysis
- CES 4605  Analysis/Design Steel
- EML 4450  Energy Conversion
- EML 4600  Refrigeration & Air Fundamentals
- EML 4601  Heat Air Sys Design

Technical/Biological Science Electives
- ALS 3133  Agricultural & Environmental Quality (3)
- AEB 3103  Principles of FRE
- AEB 3111  Linear Program Agriculture
- AGR 4210  Physiology & Ec Crops
- AGR 4214c  Applied Field Crop Prod
- AGR 4231c  Forage Science & Range
- ANS 3006c  Intro To Animal Science (4)
- ANS 3251  Bio/Mang Dairy Cattle
- ANS 3384  Genet Improv Farm Animals
- AOM 4062  Food Engineering
- AOM 4434  Precision Agriculture
- EES 3008  Energy & Environment
- PLS 3004C  Principles of Plant Science (3)
- SUR 3331  Photogrammetry
- SUR 3322  Intro to Mapping
- SUR 3393  Geographic Info Systems

Packaging Engineering

Technical Science Electives
- PKG4941  Internship/Co-op
- AEB3133  Principles of Agribusiness Management
- AEB3300  Agricultural and Food Marketing
- AOM 4062  Food Engineering
- FOS3042  Introduction to Food Science