

## 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)

HUN 2201	Fundamentals of Human Nutrition (3)
HUN 3403	Nutrition through the Life Cycle (2)
MCB 3020	Basic Biology of Microorganisms (3)
MCB 3020L	Basic Biology of Microorganisms Lab (2)
MCB 4304	Genetics of Microorganisms (3)
MCB 4403	Prokaryotic Cell Structure and Function (3)
PCB 3034C	Intro to Ecology (4)
PCB 3063	Genetics (4)
PCB 3134	Eukaryotic Cell Structure and Function (3)
PLS 3004C	Principles of Plant Science (3)
APK 2100C	Applied Human Anatomy with Lab (4)
APK 2105C	Applied Human Physiology with Lab (4)
APK 3220C	Biomechanical Basis of Movement (3)
WIS 3401	Wildlife Ecology & Management (3)
WIS 4443C	Wetland Wildlife Ecology (4)

## **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