

**BIOLOGICAL SYSTEMS ENGINEERING CURRICULUM**  
**BIOENVIRONMENTAL ENGINEERING OPTION**

A total of 128 credits required for graduation  
(2016-2017 Catalog)

**I. Communications (10 credits)**

3 cr.	ENGL 150 (FSSS)	Critical Thinking and Communication
3 cr.	ENGL 250 (FSSS)	Written, Oral, Visual, and Electronic Composition
3 cr.	Comm. Elect.	Select one of the courses below:
	<i>ENGL 309 (FS)</i>	<i>Report and Proposal Writing</i>
	<i>ENGL 314 (FS)</i>	<i>Technical Communication</i>
	<i>MKT 343 (FS)</i>	<i>Personal Sales</i>
	<i>SP CM 212 (FSSS)</i>	<i>Fundamentals of Public Speaking</i>
	<i>AG EDS 311 (FS)</i>	<i>Presentation and Sales Strategies for Ag Audiences</i>
1 cr.	LIB 160 (FSSS)	Information Literacy

**II. Mathematical Sciences (15 credits)**

4 cr.	MATH 165 (FSSS)	Calculus I
4 cr.	MATH 166 (FSSS)	Calculus II
4 cr.	MATH 267 (FSSS)	Elementary Differential Equations and Laplace Transforms
3 cr.	STAT 305 (FSSS)	Engineering Statistics

**III. Biological and Physical Science Common Core (22 credits)**

4 cr.	CHEM 167 (FS)	General Chemistry for Engineering Students
	or CHEM 177 and 178 (FS)	General Chemistry I and II
1 cr.	CHEM 167L (FS)	Laboratory in General Chemistry for Engineers
	or CHEM 177L (FS)	Laboratory in General Chemistry I
5 cr.	PHYS 221 (FSSS)	Introduction to Classical Physics I
5 cr.	PHYS 222 (FSSS)	Introduction to Classical Physics II
3 cr.	BIOL 212 (FS)	Principles of Biology II
3 cr.	MICRO 302 (FS)	Biology of Microorganisms
1 cr.	MICRO 302L (FS)	Microbiology Laboratory

**IV. Social Sciences and Humanities (12 credits)**

3 cr.	U. S. Diversity Course
3 cr.	International Perspective Course
6 cr.	Social Science and Humanities Electives (Select from departmental-approved list).

**V. Engineering Core (23 credits)**

R cr.	ENGR 101 (FS)	Engineering Orientation
1 cr.	A B E 110 (S)	Experiencing Biological Systems Engineering
3 cr.	A B E 160 (FS)	Engineering Problems with Computer Applications Laboratory
3 cr.	A B E 170 (FS)	Engineering Graphics and Introductory Design
3 cr.	E M 274 (FSSS)	Statics of Engineering
3 cr.	E M 324 (FSSS)	Mechanics of Materials
1 cr.	E M 327 (FSSS)	Mechanics of Materials Laboratory
3 cr.	M E 231 (FS)	Engineering Thermodynamics I
3 cr.	E M 378 (FSSS)	Mechanics of Fluids
3 cr.	C E 372 (FS)	Engineering Hydrology & Hydraulics

**VI. Biological Systems Engineering Core (26 credits)**

1 cr.	A B E 201 (FS)	Entrepreneurship Seminar
3 cr.	A B E 216 (F)	Fundamentals of Agricultural and Biological Engineering
2 cr.	A B E 218 (S)	Project Management and Design in Agriculture and Biosystems Engr.
3 cr.	A B E 316 (FS)	Computer Applications and Systems Modeling
4 cr.	A B E 363 (FS)	Agri-Industrial Applications of Electric Power and Electronics
3 cr.	A B E 380 (S)	Principles of Biological Systems Engineering
3 cr.	A B E 404 (F)	Instrumentation for Agricultural and Biological Engineering
2 cr.	A B E 415 (FS)	Biological Systems Engineering Design I
2 cr.	A B E 416 (FS)	Biological Systems Engineering Design II
3 cr.	A B E 480 (F)	Engineering Analysis of Biological Systems

**VII. Bioenvironmental Engineering Option (20 credits)**

3 cr.	CHEM 231 (FSSS)	Elementary Organic Chemistry
1 cr.	CHEM 231L (FSSS)	Laboratory in Elementary Organic Chemistry
2 cr.	CHEM 211 (FS)	Quantitative and Environmental Analysis
2 cr.	CHEM 211 L (FS)	Quantitative and Environmental Analysis Laboratory
3 cr.	C E 326 (FS)	Principles of Environmental Engineering
3 cr.	A B E 431 (F)	Design and Evaluation of Soil and Water Conservation Systems

**Bioenvironmental Elective I: Tools of Modern Practice**

*Select 3 credits from the following:*

1 cr.	A B E 273	CAD for Process Facilities and Land Use Planning
3 cr.	A B E 537 (odd F)	Total Maximum Daily Load (TMDL) Development and Implementation
3 cr.	C R P 451 (FSSS)	Introduction to Geographic Information Systems
1-6 cr.	ENSCI 370X (F)	GIS for Ecology and Environmental Science
4 cr.	ENSCI 461I(SS)	Introduction to GIS
3 cr.	GEOL 452 (F)	GIS for Geoscientists
3 cr.	NREM 345 (F)	Natural Resource Photogrammetry and Geographic Information Systems
3 cr.	NREM 446 (S)	Integrating GPA and GIS for Natural Resource Management
3 cr.	NREM 489X	Survey of Remote Sensing Technologies

**Bioenvironmental Elective II: Nonpoint Source Pollution and Water Quality**

*Select 3 credits from the following:*

3 cr.	A B E 432	Nonpoint Source Pollution and Control
3 cr.	A B E 436 (Even S)	Design and Evaluation of Soil and Water Monitoring Systems
3 cr.	NREM 466 (Alt. S)	Ecosystem Service Management
3 cr.	A ECL 418 (Alt. F)	Stream Ecology

*\*Please check the current catalog and Schedule of Classes for most recent offerings*