

BIOLOGICAL SYSTEMS ENGINEERING CURRICULUM

ECOLOGICAL ENGINEERING OPTION

A total of 127 credits required for graduation
(2023-2024 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. Elective	Select one of the courses below:
	<i>ENGL 309 (FS)</i>	<i>Proposal and Report Writing</i>
	<i>ENGL 314 (FSSS)</i>	<i>Technical Communication</i>
	<i>MKT 450 (FS)</i>	<i>Advanced Professional Selling</i>
	<i>SP CM 212 (FSSS)</i>	<i>Fundamentals of Public Speaking</i>
	<i>SP CM 312 (FS)</i>	<i>Business and Professional Speaking</i>
	<i>AG EDS 311 (FS)</i>	<i>Presentation and Sales Strategies for Ag Audiences</i>
1 cr.	LIB 160 (FSSS)	Introduction to College Level Research

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, Chemical and Physical Science Common Core (25 credits)

3 cr.	BIOL 212 (FSSS)	Principles of Biology II
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
2 cr.	CHEM 211 (FS)	Quantitative & Environmental Analysis
2 cr.	CHEM 211L (FS)	Quantitative & Environmental Analysis Lab
3 cr.	CHEM 231 (FSSS)	Elementary Organic Chemistry
1 cr.	CHEM 231L (FSSS)	Elementary Organic Chemistry Lab
3 cr.	MICRO 302 (FSSS)	Biology of Microorganisms
1 cr.	MICRO 302L (FS)	Microbiology Laboratory
4 cr.	PHYS 231 (FSSS)	Introduction to Classical Physics I
1 cr.	PHYS 231L (FS)	Introduction to Classical Physics I Lab

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 Agricultural and Biosystems Engineering
3 cr.	A B E 160 (S)	Engineering Problems with Computer Applications Laboratory
3 cr.	A B E 170 (FS)	Engineering Graphics and Introductory Design
3 cr.	A B E 378 (FS)	Mechanics of Fluids
3 cr.	C E 274 (FSSS)	Statics of Engineering
3 cr.	E M 324 (FSSS)	Mechanics of Materials
3 cr.	I E 305 (FSSS)	Engineering Economic Analysis
1 cr.	Lab Elective	Select one of the courses below:
	<i>ABE 378L (FS) preferred</i>	<i>Mechanics of Fluids Laboratory</i>
	<i>E M 327 (FS)</i>	<i>Mechanics of Materials Laboratory</i>
3 cr.	M E 231 (FSSS)	Engineering Thermodynamics I

VI. Biological Systems Engineering Core (27 credits)

1 cr.	A B E 201 (FS)	Preparing for Workplace Seminar
3 cr.	A B E 216 (F)	Fundamentals of Agricultural and Biosystems Engineering
2 cr.	A B E 218 (S)	Project Management & Design in Agricultural and Biosystems Engr
1 cr.	A B E 273 (FS)	CAD for Process Facilities and Land Use Planning
3 cr.	A B E 316 (FS)	Applied Numerical Methods for Agricultural and Biosystems Engr
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 Biosystems Engineering
2 cr.	A B E 415 (FS)	Agricultural and Biosystems Engineering Design I
2 cr.	A B E 416 (FS)	Agricultural and Biosystems Engineering Design II
3 cr.	A B E 480 (F)	Engineering Analysis of Biological Systems

VII. Ecological Engineering Option (15 credits)

3 cr.	C E 372 (FS)	Engineering Hydrology and Hydraulics
3 cr.	A B E 431 (F)	Design and Evaluation of Soil & Water Conservation Systems
3 cr.	A B E 434 (S)	Ecosystem Restoration Engineering
6 cr.	Ecological Elective I & II	Select one of the courses below
	<i>A B E 334X</i>	<i>Principles of Ecological Engineering</i>
	<i>A B E 437 (alt F)</i>	<i>Watershed Modeling and Policy</i>
	<i>A ECL 418 (odd F)</i>	<i>Stream Ecology</i>
	<i>C E 326 (FS)</i>	<i>Principles of Environmental Engineering</i>
	<i>C R P 251(F)</i>	<i>Fundamentals of Geographic Information System</i>
	<i>ENSCI 270 (F)</i>	<i>Geospatial Technologies</i>
	<i>ENSCI 461I (4cr) (SS)</i>	<i>Introduction to GIS</i>
	<i>GEOL 452 (FS)</i>	<i>GIS for Geoscientists</i>
	<i>NREM 345 (S)</i>	<i>Natural Resource Photogrammetry and Geographic Info Syst.</i>
	<i>NREM 446 (F)</i>	<i>Integrating GPS & GIS for Natural Resources Management</i>
	<i>NREM 466 (odd S)</i>	<i>Ecosystem Services</i>
	<i>NREM 489 (F)</i>	<i>Survey of Remote Sensing Technologies</i>

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