

**BIOLOGICAL SYSTEMS ENGINEERING CURRICULUM  
BIOENVIRONMENTAL ENGINEERING OPTION**

A total of 127 credits required for graduation  
(2021-2021 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>Report and Proposal 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)	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, 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
8 cr.	Recommendations for Chemistry Sequence I and II with labs	
	<b>Bioenvironmental and Biorenewable Resources Engineering Option</b>	
	Chem Seq I w/Lab (4 cr.)	
	<i>CHEM 231 (2 cr.) +</i>	<i>Elementary Organic Chemistry +</i>
	<i>231L (2 cr.) (FSSS)</i>	<i>Elementary Organic Chemistry Lab</i>
	Chem Seq II w/ Lab (4 cr.)	
	<i>CHEM 211 (2 cr.) +</i>	<i>Quantitative &amp; Environmental Analysis +</i>
	<i>211L (2 cr.) (FS)</i>	<i>Quantitative &amp; Environmental Analysis Lab</i>
	<b>Food Engineering Option</b>	
	Chem. Seq I w/Lab (4 cr.)	
	<i>CHEM 231 (3 cr.) +</i>	<i>Elementary Organic Chemistry +</i>
	<i>231L (1 cr.) (FSSS)</i>	<i>Elementary Organic Chemistry Lab</i>
	Chem Seq. II w/ Lab (4 cr.)	
	<i>FS HN 311 (3 cr.)+</i>	<i>Food Chemistry +</i>
	<i>311L (1 cr.) (F)</i>	<i>Food Chemistry Lab (preferred for Food Engineering option)</i>
	<b>Open Option</b>	
	Chem Seq I w/Lab (4 cr.)	
	<i>CHEM 331 (3 cr.)+</i>	<i>Organic Chemistry I +</i>
	<i>331L (1 cr.) (FSSS)</i>	<i>Organic Chemistry I Lab</i>
	Chem Seq II w/ Lab (4 cr.)	
	<i>CHEM 332 (3 cr.) +</i>	<i>Organic Chemistry II +</i>
	<i>332L (1 cr.) (FSSS)</i>	<i>Organic Chemistry II Lab</i>
3 cr.	MICRO 302 (FS)	Biology of Microorganisms
1 cr.	MICRO 302L (FS)	Microbiology Laboratory
4 cr.	PHYS 231 (FSSS)	Introduction to Classical Physics I
1 cr.	PHYS 231L (FSSS)	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 (26 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. A B E 378 (FS) Mechanics of Fluids
- 3 cr. C E 274 (FSSS) Statics of Engineering
- 3 cr. C E 372 (FS) Engineering Hydrology and Hydraulics
- 3 cr. E M 324 (FSSS) Mechanics of Materials
- 1 cr. E M 327 (FSSS) Mechanics of Materials Laboratory
- 3 cr. I E 305 (FSSS) Engineering Economic Analysis
- 3 cr. M E 231 (FSSS) Engineering Thermodynamics I

**VI. Biological Systems Engineering Core (30 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
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|-------|---------------|---------------------------------------|
| 3 cr. | A B E 451 (S) | Food and Bioprocess Engineering       |
| or    | A B E 432 (S) | Nonpoint Source Pollution and Control |
- 3 cr. A B E 480 (F) Engineering Analysis of Biological Systems

**VII. Bioenvironmental Engineering Option (9 credits)**

- 3 cr. C E 326 (FS) Principles of Environmental Engineering
- 3 cr. A B E 431 (F) Design and Evaluation of Soil & Water Conservation Systems
- 3 cr. Bioenvironmental Elective  
  - A B E 432 (S) Nonpoint Source Pollution and Control (only when applying A B E 451 to Core)*
  - A B E 437 (alt F) Watershed Modeling and Policy*
  - A ECL 418 (alt F) Stream Ecology*
  - C R P 251(F) Fundamentals of Geographic Information System*
  - ENSCI 270 (F) Geospatial Technologies*
  - ENSCI 461I (4cr) (SS) Introduction to GIS*
  - GEOL 452 (F) GIS for Geoscientists*
  - NREM 345 (S) Natural Resource Photogrammetry and Geographic Info Syst.*
  - NREM 446 (F) Integrating GPS & GIS for Natural Resources Management*
  - NREM 466 (odd S) Ecosystem Service Management*
  - NREM 489 (S) Survey of Remote Sensing Technologies*

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