

**BIOLOGICAL SYSTEMS ENGINEERING CURRICULUM**  
**BIORENEWABLE RESOURCES OPTION**

A total of 128 credits required for graduation  
(2019-2020 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>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>Biorenewable Resources and Bioenvironmental 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 (1cr.) (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

5 cr. PHYS 221 (FSSS) Introduction to Classical Physics I

**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 (27 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.	E M 378 (FSSS)	Mechanics of Fluids
3 cr.	I E 305 (FSSS)	Engineering Economic Analysis
3 cr.	M E 231 (FSSS)	Engineering Thermodynamics I
4 cr.	M E 436 (FSSS)	Heat Transfer

**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
3 cr.	A B E 451 (S)	Food and Bioprocess Engineering
3 cr.	A B E 480 (F)	Engineering Analysis of Biological Systems

**VII. Biorenewable Resources Option (9 credits)**

3 cr.	A B E 325 (F)	Biorenewable Systems
3 cr.	A B E 469 (S)	Grain Processing and Handling
3 cr.	Biorenewable Elective	Select one of the courses below
	<i>FS HN 471 (F)</i>	<i>Food Processing I</i>
	<i>SCM 301</i>	<i>Supply Chain Management</i>

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