

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

A total of 128 credits required for graduation  
(2012-2013 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.	ENGL 309 (FS)	Report and Proposal Writing
<b>or</b>	3 cr. ENGL 314 (FS)	Technical Communication
<b>or</b>	3 cr. MKT 343 (FS)	Personal Sales
<b>or</b>	3 cr. SP CM 212 (FSSS)	Fundamentals of Public Speaking
<b>or</b>	3 cr. AG EDS 311 (FS)	Presentation and Sales Strategies for Ag Audiences
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.	BSE 110 (S)	Experiencing Biological Systems Engineering
3 cr.	ENGR 160 (FS)	Engineering Problems with Computer Applications Laboratory
3 cr.	BSE 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.	CH E 356 (FS)	Transport Phenomena I
3 cr.	CH E 357 (FS)	Transport Phenomena II

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

1 cr.	BSE 201 (FS)	Preparing for Workplace Seminar
3 cr.	BSE 216 (F)	Fundamentals of Agricultural and Biosystems Engineering
2 cr.	BSE 218 (S)	Project Management & Design in Agricultural and Biosystems Engineering
3 cr.	BSE 316 (F)	Applied Numerical Methods for Agricultural and Biosystems Engineering
4 cr.	A E 363 (F)	Agri-Industrial Applications of Electric Power and Electronics
3 cr.	BSE 380 (S)	Principles of Biological Systems Engineering
3 cr.	A E 404 (F)	Instrumentation for Agricultural and Biosystems Engineering
2 cr.	BSE 415 (FS)	Agricultural and Biosystems Engineering Design I
2 cr.	BSE 416 (FS)	Agricultural and Biosystems Engineering Design II
3 cr.	BSE 480 (F)	Engineering Analysis of Biological Systems

**VII. Biorenewable Resources Engineering Option (20 credits)**

3 cr.	CHEM 331 (FSSS)	Organic Chemistry I
1 cr.	CHEM 331L (FSSS)	Laboratory in Organic Chemistry I
3 cr.	CHEM 332 (FSSS)	Organic Chemistry II
3 cr.	A E 388 (F)	Sustainable Engineering and International Development
3 cr.	BSE 403 (Alt. S)	Modeling and Controls for Agricultural Systems

**Select 7 additional credits from the following:**

4 cr.	Biol 312 (FSS)	Ecology
3 cr.	Biol 313 (FSSS)	Principles of Genetics
3 cr.	TSM 310 (S)	Total Quality Improvement
3 cr.	TSM 270 (F)	Principles of Injury Prevention
2 cr.	TSM 371 (S)	Occupational Safety Management
2 cr.	TSM 372 (Alt. F)	Legal Aspects of Occupational Safety and Health
3 cr.	ECON 207 (FS)	Applied Economic Optimization
3 cr.	BSE 325 (F)	Biorenewable Systems
4 cr.	BSE 469 (S)	Grain Processing and Handling
3 cr.	FS HN 471 (F)	Food Processing I
3 cr.	BRT 501(S)	Fundamentals of Biorenewable Resources
3 cr.	BRT 545x (S)	Biofuels
3 cr.	MGMT 370 (FSSS)	Management of Organizations
1 cr.	CHEM 332L	Laboratory in Organic Chemistry II