

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

A total of 128 credits required for graduation  
(2013-2014 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 (FSSS)</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 (FSSS)	Principles of Biology II
3 cr.	MICRO 302 (FSSS)	Biology of Microorganisms
1 cr.	MICRO 302L (FSSS)	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 (FSSS)	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)**
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|-------|--------------|--|
| 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 (21 credits)**
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|-------|------------------|---|
| 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                                  |
| 1 cr. | CHEM 332L (FSSS) | Laboratory in 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        |
- Biorenewable Elective I & II. *Select 6 credits from the following:***
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|-------|------------------|---|
| 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                            |
| 3 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. | MGMT 370 (FSSS)  | Management of Organizations                     |

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