BIOLOGICAL SYSTEMS ENGINEERING CURRICULUM
BIORENEWABLE RESOURCES ENGINEERING OPTION
A total of 128 credits required for graduation
(2014-2015 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:
	ENGL 309 (FS)	*Report and Proposal Writing*
	ENGL 314 (FSSS)	*Technical Communication*
	MKT 343 (FS)	*Personal Sales*
	SP CM 212 (FSSS)	*Fundamentals of Public Speaking*
	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 (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.	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.	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)

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 Engineering
3 cr.	A B E 316 (F)	Applied Numerical Methods for Agricultural and Biosystems Engineering
4 cr.	A B E 363 (F)	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 Biosystemss 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. Biorenewable Resources Engineering Option (21 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
1 cr.	CHEM 332L (FSSS)	Laboratory in Organic Chemistry II
Pick 3 cr.	A B E 388* (F)	Sustainable Engineering and International Development
1 3 cr	A B E 325* (F)	Biorenewable Systems
3 cr.	Modeling/Sim. Elect.	Select one of the courses below:
	A B E 403 (S, odd yrs)	*Modeling and Controls for Agricultural Systems*
	I E 312(F)	*optimization*
	M E 421	*System Dynamics and Control*

Biorenewable Elective I & II. *Select 6 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
1 cr	A B E 273	CAD for Process Facilities and Land Use Planning
3 cr.	A B E 325* (F)	Biorenewable Systems
3 cr.	A B E 388* (F)	Sustainable Engineering and International Development
3 cr.	A B E 469 (S)	Grain Processing and Handling
3 cr.	A E 506	Applied Computational Intelligence
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

*A B E 325 or A B E 388, one can count towards the option and the other can count towards the elective. You cannot double count one course for two areas.

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