

**AGRICULTURAL ENGINEERING CURRICULUM
FOOD AND BIOSYSTEMS ENGINEERING OPTION**

A total of 127.5 credits required for graduation
(2007-2009 Catalog)

I. Communications (9.5 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
or	3 cr.	Engl 314 (FSSS) Technical Communication
or	3 cr.	Sp Cm 212 (FSSS) Fundamentals of Public Speaking
or	3 cr.	Ag Eds 311 (FS) Presentation and Sales Strategies for Ag Audiences
0.5 cr.	Lib 160 (FSSS)	Library Instruction

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. Physical Sciences (19 credits)

4 cr.	Chem 167 (FS)	General Chemistry for Engineers
1 cr.	Chem 167L (FS)	Laboratory in General Chemistry for Engineers
3 cr.	Chem 231 (FS)	Elementary Organic Chemistry
1 cr.	Chem 231L (FS)	Lab in Elementary Organic Chemistry
5 cr.	Phys 221 (FSSS)	Introduction to Classical Physics I
5 cr.	Phys 222 (FSSS)	Introduction to Classical Physics II

IV. Biological Sciences (17 credits)

3 cr.	Biol 212 (FS)	Principles of Biology II
3 cr.	Micro 302 (FS)	Biology of Microorganisms
1 cr.	Micro 302L (FS)	Microbiology lab
10 cr.		Biological Science Electives from Department-approved list Students with an emphasis in Food & Process Systems must take FSHN 311, 4 cr., (F) and FSHN 420, 3 cr. (F). (SEE DETAILS ON LAST PAGE)

V. Social Sciences and Humanities (12 credits)

3 cr.	U. S. Diversity Course (Select from University-approved list).	
3 cr.	International Perspectives Course (Select from University-approved list).	
6 cr.	Social Science and Humanities Electives (Select from departmental-approved list).	

VI. Engineering (6 credits)

R cr.	Engr 101 (FS)	Engineering Orientation
3 cr.	AE 170 (FS)	Engineering Graphics and Introductory Design
3 cr.	Engr 160 (S)	Engineering Problems with Computer Applications Laboratory

VII. Agricultural Engineering (27 credits)

1 cr.	A E 110 (S)	Experiencing Agricultural & Biosystems Engineering
1 cr.	A E 201 (FS)	Entrepreneurship and Internship Seminar
3 cr.	A E 316 (S)	Computer Applications and Systems Modeling
3 cr.	A E 216 (S)	Fundamentals of Agricultural and Biological Engineering
4 cr.	A E 363 (F)	Agri-Industrial Applications of Electric Power and Electronics

3 cr.	A E 404 (F)	Instrumentation for Agricultural and Biological Engineering
*2 cr.	A E 415 (FS)	Agricultural Engineering Design I
*2 cr.	A E 416 (FS)	Agricultural Engineering Design II
3 cr.	A E 469 (S)	Grain Processing and Handling
3 cr.	A E 480 (S)	Engineering Analysis of Biological Systems

VIII. Other Engineering (9 credits)

3 cr.	M E 330 (FS)	Thermodynamics
3 cr.	Ch E 356 (FS)	Transport Phenomena I
3 cr.	Ch E 357 (FS)	Transport Phenomena II

IX. Engineering Mechanics (7 credits)

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

X. 2 cr. Free Elective

XI. Technical Electives ** (to be selected with adviser)** (6 credits)**

Select courses from one emphasis area

A. Emphasis in Food and Process Engineering

	3 cr.	FSHN 471 (F)	Food Processing
	4 cr.	Econ 451 (F)	Agricultural Law
	3 cr.	An S 360 (F)	Fresh Meats
	3 cr.	An S 470 (S)	Processed Meats
	1 cr.	A E 271 (FS)	Engineering Applications of Parametric Solid Modeling
or	1 cr.	A E 272 (FS)	Parametric Solid Models, Drawings, and Assemblies Using Pro/ENG
	3 cr.	A E 473 (S)	Manure Treatment and Bioconversion
	1-3 cr.	A E 490 (FSSS)	Independent Study
	3 cr.	Ch E 382 (FS)	Chemical Reaction Engineering
	3 cr.	Ch E 415 (S)	Biochemical Engineering
	3 cr.	Con E 380 (FS)	Engineering Law
	2 cr.	FSHN 472 (F)	Food Processing Laboratory
	3 cr.	I E 305 (FS)	Engineering Economic Analysis
	3 cr.	I E 312 (F)	Optimization
	3 cr.	I E 439 (S)	Industrial Automation
	2 cr.	TSM 272 (F)	Introduction to Occupational Safety
	3 cr.	Mgmt 370 (FSSS)	Management of Organizations
	*3 cr.	Engr 466 (FS)	Multidisciplinary Engineering Design (may be repeated and can replace AE 415 and AE 416)

B. Emphasis in Biological Engineering

	1 cr.	A E 271 (FS)	Engineering Applications of Parametric Solid Modeling
or	1 cr.	A E 272 (FS)	Parametric Solid Models, Drawings, and Assemblies Using Pro/ENG
	3 cr.	A E 325 (F)	Biorenewable Systems Technology and Management
	1-4 cr.	A E 490B (FSSS)	Independent Study – Biological Engineering
	3 cr.	A E 530 (S)	Agricultural Water Quality Engineering
	3 cr.	A E 472/572 (Alt S)	Design of Environmental Modification Systems for Biological Products
	3 cr.	A E 581 (S)	Applied Crop Growth Modeling
	3 cr.	Agron 405/505 (Alt. S09)	Environmental Biophysics (Biometeorology)
	2 cr.	BBMB 451 (F)	Physical Biochemistry
	3 cr.	Biol 301 (FS)	Principles of Genetics

3 cr.	C E 326 (FS)	Principles of Environmental Engineering
3 cr.	C E 421 (F)	Environmental Biotechnology
4 cr.	Ch E 358 (FS)	Separations
3 cr.	Ch E 382 (FS)	Chemical Reaction Engineering
3 cr.	Ch E 415 (S)	Biochemical Engineering
3 cr.	E M 345 (FSSS)	Dynamics
4 cr.	Math 265 (FSSS)	Calculus III
*3 cr.	Engr 466 (FS)	Multidisciplinary Engineering Design (may be repeated and can replace AE 415 and AE 416)

** Any 300-/400- level AE/BSE course will be accepted.

**Department Approved list for Food & Bio Engr Option
(students to select 9 credits from 2007-09 catalog)**

A. Food and Processing Emphasis

4 cr.	*FSHN 311 (F)	Food Chemistry
3 cr.	*FSHN 420 (F)	Food Microbiology
3 cr.	Gen 308 (FSSS)	Biotechnology in Agriculture, Food, and Human Health
3 cr.	BBMB 301 (FSSS)	Survey of Biochemistry
1 cr.	Biol 211L (FS)	Principles of Biology Laboratory
1 cr.	Biol 212L (FS)	Principles of Biology Laboratory II
1 cr.	Micro 302L (FS)	Microbiology Laboratory
3 cr.	Micro 407 (S)	Microbiological Safety of Foods of Animal Origin

* strongly recommended

B. Biological Engineering Emphasis

3 cr.	BBMB 301 (FSSS)	Survey of Biochemistry
2 cr.	BBMB 451 (F)	Physical Biochemistry
3 cr.	Gen 308 (FSSS)	Biotechnology in Agriculture, Food, and Human Health
3 cr.	Gen 320 (FS)	Genetics, Agriculture, and Biotechnology
1 cr.	Biol 211L (FS)	Principles of Biology Laboratory
1 cr.	Biol 212L (FS)	Principles of Biology Laboratory II
3 cr.	Biol 313 (FS)	Principles of Genetics
1 cr.	Biol 313L (FS)	Genetics Laboratory
4 cr.	Biol 330	Principles of Plant Physiology