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 Design of Environmental Modification Systems for Biological Products
(Alt S)
3 cr. A E 581 (S) Applied Crop Growth Modeling
3 cr. Agron 405/505 Environmental Biophysics (Biometeorology)
(Alt. 509)
2 cr. BBMB 451 (F) Physical Biochemistry
3 cr. Biol 301 (FS) Principles of Genetics
3 cr. C E 326 (FS) Principals 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 Survey of Biochemistry
   (FSSS)
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 Survey of Biochemistry
   (FSSS)
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