

BIOLOGICAL SYSTEMS ENGINEERING CURRICULUM

Biorenewable Resources Engineering Option

A total of 127.5 credits required for graduation

(2011-2012 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 (FS) Technical Communication |
| or | 3 cr. | CE 205 (FS) Economic Analysis and 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. Biological and Physical Science Common Core (22 credits)

| | | |
|-------|-----------------|---|
| 4 cr. | Chem 167 (FS) | General Chemistry for Engineering Students |
| 1 cr. | Chem 167L (FS) | Laboratory in General Chemistry for Engineers |
| 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 lab |

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) | Thermodynamics |
| 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) | Entrepreneurship Seminar |
| 3 cr. | BSE 216 (F) | Fundamentals of Agricultural and Biological Engineering |
| 2 cr. | BSE 218 (S) | Project Management and Design in Agricultural and Biosystems Engineering |
| 3 cr. | BSE 316 (F) | Computer Applications and Systems Modeling |
| 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 Biological Engineering |
| 2 cr. | BSE 415 (FS) | Biological Systems Engineering Design I |
| 2 cr. | BSE 416 (FS) | Biological Systems Engineering Design II |
| 3 cr. | BSE 480 (F) | Engineering Analysis of Biological Systems |

VII. Biorenewable Resources Engineering Option (20 credits)

| | | |
|-------|------------------|---|
| 3 cr. | Chem 331 (FS) | Organic Chemistry |
| 1 cr. | Chem 331L (FS) | Laboratory in Organic Chemistry (biobased focus) |
| 3 cr. | Chem 332 (FS) | Organic Chemistry |
| 3 cr. | A E 388 (F) | Sustainable Engineering and International Development |
| 3 cr. | BSE 403 (Alt. S) | Process Modeling and Control for Biosystems Engineering |

Select 7 additional credits from the following:

| | | |
|-------|------------------|--|
| 3 cr. | Biol 312 (FSS) | Ecology |
| 3 cr. | Biol 313 (FS) | Principles of Genetics |
| 3 cr. | TSM 310 (S) | Total Quality Improvement |
| 2 cr. | TSM 272 (F) | Introduction to Occupational Safety |
| 2 cr. | TSM 372 (F) | Legal Aspects of Occupational Safety and Health |
| 3 cr. | Econ 207 (S) | 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 |
| 3 cr. | BRT 501(S) | Fundamentals of Biorenewable Resources |
| 3 cr. | BRT 545x (S) | Biofuels |
| 3 cr. | A E 406 (Alt. F) | Applied Computational Intelligence for Agricultural & Biological Systems |
| 3 cr. | Mgmt 370 (FSSS) | Management of Organizations |