

BIOLOGICAL SYSTEMS ENGINEERING CURRICULUM
BIORENEWABLE RESOURCES OPTION

A total of 128 credits required for graduation
(2021-2022 Catalog)

- I. Communications (10 credits)**
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|-------|-------------------------|---|
| 3 cr. | ENGL 150 (FSSS) | Critical Thinking and Communication |
| 3 cr. | ENGL 250 (FSSS) | Written, Oral, Visual, and Electronic Composition |
| 3 cr. | Comm. Elective | 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 450 (FS)</i> | <i>Advanced Professional Selling</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)**
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|-------|-----------------|--|
| 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, Chemical and Physical Science Common Core (25 credits)**
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| 3 cr. | BIOL 212 (FSSS) | Principles of Biology II |
| 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 |
| 8 cr. | Recommendations for Chemistry Sequence I and II with labs | |
- Biorenewable Resources and Bioenvironmental Engineering Option**
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|----------------------------|----------------------------|--|
| Chem Seq I w/Lab (4 cr.) | | |
| | <i>CHEM 231 (2 cr.) +</i> | <i>Elementary Organic Chemistry +</i> |
| | <i>231L (2 cr.) (FSSS)</i> | <i>Elementary Organic Chemistry Lab</i> |
| Chem Seq II w/ Lab (4 cr.) | | |
| | <i>CHEM 211 (2 cr.) +</i> | <i>Quantitative & Environmental Analysis +</i> |
| | <i>211L (2 cr.) (FS)</i> | <i>Quantitative & Environmental Analysis Lab</i> |
- Food Engineering Option**
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|-----------------------------|----------------------------|---|
| Chem. Seq I w/Lab (4 cr.) | | |
| | <i>CHEM 231 (3 cr.) +</i> | <i>Elementary Organic Chemistry +</i> |
| | <i>231L (1 cr.) (FSSS)</i> | <i>Elementary Organic Chemistry Lab</i> |
| Chem Seq. II w/ Lab (4 cr.) | | |
| | <i>FS HN 311 (3 cr.)+</i> | <i>Food Chemistry +</i> |
| | <i>311L (1cr.) (F)</i> | <i>Food Chemistry Lab (preferred for Food Engineering option)</i> |
- Open Option**
- | | | |
|----------------------------|----------------------------|---|
| Chem Seq I w/Lab (4 cr.) | | |
| | <i>CHEM 331 (3 cr.)+</i> | <i>Organic Chemistry I +</i> |
| | <i>331L (1 cr.) (FSSS)</i> | <i>Organic Chemistry I Lab</i> |
| Chem Seq II w/ Lab (4 cr.) | | |
| | <i>CHEM 332 (3 cr.) +</i> | <i>Organic Chemistry II +</i> |
| | <i>332L (1 cr.) (FSSS)</i> | <i>Organic Chemistry II Lab</i> |
| 3 cr. | MICRO 302 (FS) | Biology of Microorganisms |
| 1 cr. | MICRO 302L (FS) | Microbiology Laboratory |
| 4 cr. | PHYS 231 (FSSS) | Introduction to Classical Physics I |
| 1 cr. | PHYS 231L (FSSS) | Introduction to Classical Physics I 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 (27 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. A B E 378 (FS) Mechanics of Fluids
3 cr. C E 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. I E 305 (FSSS) Engineering Economic Analysis
3 cr. M E 231 (FSSS) Engineering Thermodynamics I
4 cr. M E 436 (FSSS) Heat Transfer
- VI. Biological Systems Engineering Core (30 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 Engr
1 cr. A B E 273 (FS) CAD for Process Facilities and Land Use Planning
3 cr. A B E 316 (FS) Applied Numerical Methods for Agricultural and Biosystems Engr
4 cr. A B E 363 (FS) 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 Biosystems Engineering Design I
2 cr. A B E 416 (FS) Agricultural and Biosystems Engineering Design II
3 cr. A B E 451 (S) Food and Bioprocess Engineering
3 cr. A B E 480 (F) Engineering Analysis of Biological Systems
- VII. Biorenewable Resources Option (9 credits)**
3 cr. A B E 325 (F) Biorenewable Systems
3 cr. A B E 469 (S) Grain Processing and Handling
3 cr. Biorenewable Elective Select one of the courses below
FS HN 471 (F) Food Processing I
SCM 301 Supply Chain Management

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