BIOLOGICAL SYSTEMS ENGINEERING CURRICULUM
ECOLOGICAL ENGINEERING OPTION
A total of 127 credits required for graduation
(2023-2024 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. Elective Select one of the courses below:
   ENGL 309 (FS) Proposal and Report Writing
   ENGL 314 (FSSS) Technical Communication
   MKT 450 (FS) Advanced Professional Selling
   SP CM 212 (FSSS) Fundamentals of Public Speaking
   SP CM 312 (FS) Business and Professional Speaking
   AG EDS 311 (FS) Presentation and Sales Strategies for Ag Audiences
1 cr. LIB 160 (FSSS) Introduction to College Level Research

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, Chemical and Physical Science Common Core (25 credits)
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
2 cr. CHEM 211 (FS) Quantitative & Environmental Analysis
2 cr. CHEM 211L (FS) Quantitative & Environmental Analysis Lab
3 cr. CHEM 231 (FSSS) Elementary Organic Chemistry
1 cr. CHEM 231L (FSSS) Elementary Organic Chemistry Lab
3 cr. MICRO 302 (FSSS) Biology of Microorganisms
1 cr. MICRO 302L (FS) Microbiology Laboratory
4 cr. PHYS 231 (FSSS) Introduction to Classical Physics I
1 cr. PHYS 231L (FS) 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 (23 credits)
R cr. ENGR 101 (FS) Engineering Orientation
1 cr. A B E 110 (S) Experiencing Agricultural and Biosystems Engineering
3 cr. A B E 160 (S) 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
3 cr. I E 305 (FSSS) Engineering Economic Analysis
1 cr. Lab Elective Select one of the courses below:
   A B E 378L (FS) preferred Mechanics of Fluids Laboratory
   E M 327 (FS) Mechanics of Materials Laboratory
3 cr. M E 231 (FSSS) Engineering Thermodynamics I

Updated 2/24/2023
VI. Biological Systems Engineering Core (27 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 480 (F) Engineering Analysis of Biological Systems

VII. Ecological Engineering Option (15 credits)
3 cr. C E 372 (FS) Engineering Hydrology and Hydraulics
3 cr. A B E 431 (F) Design and Evaluation of Soil & Water Conservation Systems
3 cr. A B E 434 (S) Ecosystem Restoration Engineering
6 cr. Ecological Elective I & II Select one of the courses below
   A B E 334X Principles of Ecological Engineering
   A B E 437 (alt F) Watershed Modeling and Policy
   A ECL 418 (odd F) Stream Ecology
   C E 326 (FS) Principles of Environmental Engineering
   C R P 251 (F) Fundamentals of Geographic Information System
   ENSCI 270 (F) Geospatial Technologies
   ENSCI 461I (4cr) (SS) Introduction to GIS
   GEOL 452 (FS) GIS for Geoscientists
   NREM 345 (S) Natural Resource Photogrammetry and Geographic Info Syst.
   NREM 446 (F) Integrating GPS & GIS for Natural Resources Management
   NREM 466 (odd S) Ecosystem Services
   NREM 489 (F) Survey of Remote Sensing Technologies

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