**BIOLOGICAL ENGINEERING, MINOR**

Requirements for a minor may be completed at any campus location offering the specified courses for the minor. Students may not change from a campus that offers their major to a campus that does not offer their major for the purpose of completing a minor.

**Program Requirements**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirements for the Minor</td>
<td>18-20</td>
</tr>
</tbody>
</table>

**Requirements for the Minor**

The minor requires a minimum of 18 credits, at least 6 of which must be at the 400 level.

A grade of C or better is required for all courses in the minor, as specified by Senate Policy 59-10 ([https://senate.psu.edu/policies-and-rules-for-undergraduate-students/59-00-minors-and-certificates/#59-10](https://senate.psu.edu/policies-and-rules-for-undergraduate-students/59-00-minors-and-certificates/#59-10)). In addition, at least six credits of the minor must be unique from the prescribed courses required by a student's major(s).

**Additional Courses**

Additional Courses: Require a grade of C or better

Select 3-4 credits from the following related science electives: 3-4

- AGRO 28 Principles of Crop Management
- ANSC 201 Animal Science
- ASM/ERM 309 Measurement & Monitoring of Hydrologic Systems
- BIOL 110 Biology: Basic Concepts and Biodiversity
- BIOL 127 Introduction to Plant Biology
- BMB 211 Elementary Biochemistry
- BMB/MICRB 251 Molecular and Cell Biology I
- CHEM 202 Fundamentals of Organic Chemistry I
- CHEM 210 Organic Chemistry I
- FDSC 200 Introductory Food Science
- HORT 101 Horticultural Science
- MICRB 201 Introductory Microbiology
- SOILS 101 Introductory Soil Science

Select 6-7 credits from the following 300-level BE courses: 6-7

- BE 301 Mathematical Modeling of Biological and Physical Systems
- BE 302 Heat and Mass Transfer in Biological Systems
- BE 303 Structural Systems in Agriculture
- BE 304 Engineering Properties of Food and Biological Materials
- BE 305 Agricultural Measurements and Control Systems
- BE 306 Machines for Agricultural and Biological Processing
- BE 307 Principles of Soil and Water Engineering
- BE 308 Engineering Elements of Biochemistry and Microbiology

Select 6 credits from the following 400-level BE courses: 6

- BE 461 Design of Fluid Power Systems
- BE 462 Design of Wood Structures
- BE 464 Bioenergy Systems Engineering
- BE 465 Food and Biological Process Engineering
- BE 467 Design of Stormwater and Erosion Control Facilities
- BE 468 Microbiological Engineering
- BE 477 Land-Based Waste Disposal
- BE 487

**Supporting Courses and Related Areas**

Supporting Courses and Related Areas: Require a grade of C or better

Select 3 credits of 400-level coursework or independent study in a related science or engineering field in consultation with the minor adviser 3