## General Education Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>24 Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year Composition 1</td>
<td>ENGL 101, or ENGL 107, or ENGL 109H</td>
</tr>
<tr>
<td>First Year Composition 2</td>
<td>ENGL 102, or ENGL 108</td>
</tr>
<tr>
<td>General Education, Tier 1</td>
<td>TRAD 1</td>
</tr>
<tr>
<td>General Education, Tier 1</td>
<td>TRAD 2</td>
</tr>
<tr>
<td>General Education, Tier 1</td>
<td>INDV 1</td>
</tr>
<tr>
<td>General Education, Tier 1</td>
<td>INDV 2</td>
</tr>
<tr>
<td>General Education, Tier 2</td>
<td>Humanities or Arts</td>
</tr>
<tr>
<td>General Education, Tier 2</td>
<td>Individuals &amp; Societies</td>
</tr>
</tbody>
</table>

### General Science & Math Core

<table>
<thead>
<tr>
<th>Course</th>
<th>37-39 Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculus I</td>
<td>MATH 122A/B, or MATH 125</td>
</tr>
<tr>
<td>Calculus II</td>
<td>MATH 129</td>
</tr>
<tr>
<td>Vector Calculus</td>
<td>MATH 223</td>
</tr>
<tr>
<td>Differential Equations</td>
<td>MATH 254</td>
</tr>
<tr>
<td>Probability and Statistics</td>
<td>SIE 305, or AREC 239</td>
</tr>
<tr>
<td>General Chemistry I</td>
<td>CHEM 151, or CHEM 161/163</td>
</tr>
<tr>
<td>General Chemistry II</td>
<td>CHEM 152, or CHEM 162/164</td>
</tr>
<tr>
<td>Physics I</td>
<td>PHYS 141, or PHYS 161H</td>
</tr>
<tr>
<td>Physics II</td>
<td>PHYS 241, or PHYS 261H</td>
</tr>
<tr>
<td>Biology I</td>
<td>MCB 181R/L, or PLS 240</td>
</tr>
<tr>
<td>Biology II</td>
<td>ECOL 182R/L, or MIC 205A/L, or PSIO 201</td>
</tr>
</tbody>
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### Engineering Science Core

<table>
<thead>
<tr>
<th>Course</th>
<th>21 Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intro to Engineering</td>
<td>ENGR 102A/B, or ENGR 102</td>
</tr>
<tr>
<td>Statics</td>
<td>CE 214</td>
</tr>
<tr>
<td>Fluid Mechanics</td>
<td>CE 218, or AME 331</td>
</tr>
<tr>
<td>Mechanics of Materials</td>
<td>AME 324A</td>
</tr>
<tr>
<td>Engineering Management</td>
<td>SIE 265</td>
</tr>
<tr>
<td>Senior Capstone Design I</td>
<td>ENGR 498A, or BE 498A</td>
</tr>
<tr>
<td>Senior Capstone Design II</td>
<td>ENGR 498B, or BE 498B</td>
</tr>
</tbody>
</table>

### Biosystems Engineering Core

<table>
<thead>
<tr>
<th>Course</th>
<th>20 Units</th>
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<tbody>
<tr>
<td>Intro to Biosystems Engineering</td>
<td>BE 201</td>
</tr>
<tr>
<td>Engineering Analytic Computer Skills</td>
<td>BE 205</td>
</tr>
<tr>
<td>Intro to Computer-aided Design</td>
<td>BE 221, or BE 220</td>
</tr>
<tr>
<td>Biosystems Thermal Engineering</td>
<td>BE 284</td>
</tr>
<tr>
<td>Intro to Biosystems Analytics</td>
<td>BE 310</td>
</tr>
<tr>
<td>Biosystems Analysis and Design</td>
<td>BE 423</td>
</tr>
<tr>
<td>Sensors &amp; Controls</td>
<td>BE 447</td>
</tr>
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</table>

### Engineering Electives

<table>
<thead>
<tr>
<th>Course</th>
<th>9 Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Electives</td>
<td>see list</td>
</tr>
<tr>
<td>Design Electives</td>
<td>see list</td>
</tr>
</tbody>
</table>

### Career Preparation

<table>
<thead>
<tr>
<th>Course</th>
<th>5 Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Writing</td>
<td>ALC 422, or ENVS 408, or ENGL 308</td>
</tr>
<tr>
<td>Seminar in Engineering Careers &amp; Professionalism</td>
<td>BE 496A</td>
</tr>
<tr>
<td>Internship</td>
<td>BE 493</td>
</tr>
</tbody>
</table>

### Total

| 128 |
| Total |
### Water Resources Emphasis Area

<table>
<thead>
<tr>
<th>Technical Electives (Choose 9 units)</th>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrology</td>
<td>CE/ATMO/HYDR 423</td>
<td>3</td>
</tr>
<tr>
<td>Wastewater Treatment Design System</td>
<td>CHEE/CE 476B</td>
<td>3</td>
</tr>
<tr>
<td>Soil Physics</td>
<td>ENVS 470</td>
<td>3</td>
</tr>
<tr>
<td>Remote Sensing Data and Methods</td>
<td>BE 485</td>
<td>3</td>
</tr>
<tr>
<td>Applications of Geographic Information Systems</td>
<td>RNR 403</td>
<td>3</td>
</tr>
<tr>
<td>Geographic Information Systems for Natural and Social Sciences</td>
<td>RNR 417</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(BE) Design Electives (Choose 9 units)</th>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watershed Engineering</td>
<td>BE 426</td>
<td>3</td>
</tr>
<tr>
<td>Computer Applications in Hydraulics</td>
<td>BE 427</td>
<td>3</td>
</tr>
<tr>
<td>Control of Erosion Processes</td>
<td>BE 428</td>
<td>3</td>
</tr>
<tr>
<td>Soil and Water Resources Engineering</td>
<td>BE 455</td>
<td>3</td>
</tr>
<tr>
<td>Irrigation Systems Design</td>
<td>BE 456</td>
<td>3</td>
</tr>
<tr>
<td>Soils, Wetlands and Wastewater Reuse</td>
<td>BE 458</td>
<td>3</td>
</tr>
<tr>
<td>Design of Onsite Wastewater Treatment and Dispersal</td>
<td>BE 459</td>
<td>3</td>
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### Controlled Environment Agriculture

<table>
<thead>
<tr>
<th>Technical Electives (Choose 12 units)</th>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquaculture</td>
<td>ACBS 456</td>
<td>3</td>
</tr>
<tr>
<td>Aquaponics Engineering</td>
<td>BE 444</td>
<td>3</td>
</tr>
<tr>
<td>Hydroponics</td>
<td>BE 217R/L</td>
<td>3/1</td>
</tr>
<tr>
<td>Plant Physiology</td>
<td>PLS 475A</td>
<td>3</td>
</tr>
<tr>
<td>Greenhouse Pest Management: Methods and Practice</td>
<td>ENTO 497C</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(BE) Design Electives (Choose 9 units)</th>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquaponics Design</td>
<td>BE 334</td>
<td>3</td>
</tr>
<tr>
<td>Applied Instrumentation for Controlled Environment Agriculture</td>
<td>BE 479</td>
<td>3</td>
</tr>
<tr>
<td>Controlled Environment Systems</td>
<td>BE 483</td>
<td>3</td>
</tr>
<tr>
<td>Irrigation Systems Design</td>
<td>BE/CE 456</td>
<td>3</td>
</tr>
<tr>
<td>Integrated Engineered Solutions in the Food-Water-Energy Nexus</td>
<td>BE 482</td>
<td>3</td>
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</table>

### Pre-Health / Pre-Medical

<table>
<thead>
<tr>
<th>Technical Electives (Choose 12 units)</th>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal Research Methods</td>
<td>ACBS/ANS/BIOC/MIC/ 443</td>
<td>3</td>
</tr>
<tr>
<td>Biochemistry</td>
<td>BIOC 384</td>
<td>3</td>
</tr>
<tr>
<td>Biomechanical Engineering</td>
<td>AME/BME 466</td>
<td>3</td>
</tr>
<tr>
<td>Biomedical Imaging</td>
<td>BME 416</td>
<td>3</td>
</tr>
<tr>
<td>Nanoscience and Nanotechnology for Biomedical Engineers</td>
<td>BME 485</td>
<td>3</td>
</tr>
<tr>
<td>Microbiology for Engineers</td>
<td>CHEE 477R</td>
<td>3</td>
</tr>
<tr>
<td>Organic Chemistry</td>
<td>CHEM 241 A</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(BE) Design Electives (Choose 9 units)</th>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering of Biological Processes</td>
<td>BE 481A</td>
<td>3</td>
</tr>
<tr>
<td>Cell and Tissue Engineering</td>
<td>BE 481B</td>
<td>3</td>
</tr>
<tr>
<td>Biomaterial-Tissue Interactions</td>
<td>BE 486</td>
<td>3</td>
</tr>
<tr>
<td>Fabrication Techniques for Micro- and Nanodevices</td>
<td>BE 489B</td>
<td>3</td>
</tr>
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</table>