BIOSYSTEMS ENGINEERING: EXAMPLE OF AN 8-TERM PROGRAM

*Pre- and co-requisites for Biosystems Engineering Science and Design Electives are dependent on course selection

Term 1
Fall
- PHYS 1050(3) - Physics I - Mechanics
- PHYS 1055(3) - Written English Requirement
- MATH 1510(3) - Applied Calculus 1
- COMP 1012(3) - Computer Program for Sci & Eng
- PHIL 1290 - Critical Thinking
- CHEM 1300(3) - Chemistry 1

Term 2
Winter
- PHYS 1050(3) - Kinematics & Dynamics
- MECH 3482(4) - Eng Prop Biological Materials
- MATH 1510(3) - Eng Math Analysis 1
- MECH 3400(4) - Design of Struct Comp in Machines
- STAT 2220(3) - Statistics

Term 3
Fall
- ENG 1440(3) - Intro to Statics
- BIE 2800(4) - Solid Mechanics I
- BIOE 2790(4) - Fluid Mechanics
- BIE 2900(4) - Bio Eng Design1
- BIE 2990(4) - Applied Calculus 2
- ENG 2022(3) - Eng CAD Technology
- BIE 2130(3) - Numerical Methods
- MECH 2150(4) - Impact of Eng on the Enviro

Term 4
Winter
- ENG 1440(3) - Intro to Statics
- BIE 2800(4) - Solid Mechanics I
- BIE 2790(4) - Fluid Mechanics
- BIE 2900(4) - Bio Eng Design1
- BIE 2990(4) - Applied Calculus 2
- ENG 2022(3) - Eng CAD Technology
- BIE 2130(3) - Numerical Methods
- MECH 2150(4) - Impact of Eng on the Enviro

Term 5
Fall
- MATH 2130(3) - Eng Math Analysis 1
- BIE 3590(4) - Mechanics of Bio Materials
- BIE 3400(4) - Design of Struct Comp in Machines
- BIE 3270(4) - Instru & Measure for Biosystems
- BIE 4900(4) - Graduation Project

Term 6
Winter
- BIE 3320(4) - BioE Design Elective**
- BIE 3400(4) - Design of Struct Comp in Machines
- BIE 3270(4) - Instru & Measure for Biosystems
- BIE 4900(4) - Graduation Project

Term 7
Fall
- BIE 4950(4) - Bio Eng Design 4*
- BIE 4240(3) - Science Elective

Term 8
Winter
- BIE 4990(4) - Bio Eng Design 4*
- BIE 5000(3) - Science Elective

Term 9
Fall
- BIE 4950(4) - Bio Eng Design 4*
- BIE 5000(3) - Science Elective

Term 10
Winter
- BIE 4990(4) - Bio Eng Design 4*
- BIE 5000(3) - Science Elective

NOTE 1: Choose 2 courses
(specific courses are to be taken if completing a specialization)
- AGEC 2370 Principles of Ecology or BIOL 2300 Principles of Ecology
- ANSC 3530 The Animal and its Environment
- BIEO 2600 Plant and Animal Physiology for Engineers
- BIOL 1410 Anatomy of the Human Body
- BIOL 1412 Physiology of the Human Body
- PLNT 2510 Fundamentals of Horticulture
- SOIL 4060 Physical Properties of Soil

NOTE 2: Course is to be selected from a specified list if completing a specialization
*See Design Elective Information Sheet for listing of all Design Electives offered

*BioE 4900 & 4950 must be taken in the same academic year

prerequisite ----> corequisite

Revised: June 17, 2022
## PRELIMINARY ENGINEERING PROGRAM:

The following 12 courses must be completed by all engineering students.

<table>
<thead>
<tr>
<th>2016</th>
<th>cr hr</th>
<th>Pre- (p) or Co- (c) Requisites</th>
<th>cr hr</th>
<th>Pre- (p) or Co- (c) Requisites</th>
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<tbody>
<tr>
<td>Complementary Studies Elective</td>
<td>3</td>
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<td>ENG 1430</td>
<td>Engineering Design</td>
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<tr>
<td>CHEM 1300</td>
<td>Chemistry</td>
<td>3</td>
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<td>Engineering Statics</td>
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<td>COMP 1012</td>
<td>Comp Prog Eng</td>
<td>3</td>
<td>ENG 1450</td>
<td>Intro Elec &amp; Comp Eng</td>
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<tr>
<td>ENG 1480</td>
<td>Thermal Sciences</td>
<td>3</td>
<td></td>
<td>Written English Requirement</td>
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<tr>
<td>MATH 1510</td>
<td>Applied Calculus 1</td>
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<td>MATH 1210</td>
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<tr>
<td>PHYS 1050</td>
<td>Physics</td>
<td>3</td>
<td>MATH 1500/1510 (p or c)</td>
<td>PHYS 1050 (p or c)</td>
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## ADMISSION TO BIOSYSTEMS ENGINEERING PROGRAM:

Any Preliminary Engineering courses not yet completed should be taken in Second Year if necessary.

### FALL TERM (September)

<table>
<thead>
<tr>
<th>2017</th>
<th>cr hr</th>
<th>Pre- (p) or Co- (c) Requisites</th>
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<tbody>
<tr>
<td>BIOE 2110</td>
<td>Transport Phenomenon</td>
<td>3</td>
<td>ENG 1460 (p)</td>
<td>BIOE 2480</td>
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<tr>
<td>BIOE 2590</td>
<td>Biology for Engineers</td>
<td>3</td>
<td>CHEM 1300 (p)</td>
<td>BIOE 2800</td>
</tr>
<tr>
<td>BIOE 2900</td>
<td>Design 1</td>
<td>4</td>
<td>ENG 1430 (p)</td>
<td>ENG 2022</td>
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<tr>
<td>BIOE 2790</td>
<td>Fluid Mechanics</td>
<td>4</td>
<td>ENG 1440 (p), MATH 1710/1700 (p)</td>
<td>MECH 2150</td>
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<tr>
<td>CHEM 1310</td>
<td>Chem 2 (CHEM 1110 &amp; 1120)</td>
<td>3</td>
<td>CHEM 1300 (p)</td>
<td>MATH 2130</td>
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<td>MATH 2132</td>
<td>Math Analysis 2</td>
<td>3</td>
<td>MATH 1210 (p), MATH 1710/1700 (p)</td>
<td>Elective slot (see note 1 below)</td>
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### WINTER TERM (January)

<table>
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</thead>
<tbody>
<tr>
<td>BIOE 3400</td>
<td>Des of Struc Comp Mac</td>
<td>4</td>
<td>BIOE 2800 or MECH 2222 (p)</td>
<td>BIOE 3270</td>
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<tr>
<td>BIOE 3590</td>
<td>Mechanics of Biomater</td>
<td>4</td>
<td>BIOE 2800 (p)</td>
<td>MATH 2132 (p), ENG 1450 (p)</td>
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<tr>
<td>BIOE 3900</td>
<td>Design 2</td>
<td>4</td>
<td>BIOE 2900 (p), BIOE 2022</td>
<td>BIOE 3320</td>
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<tr>
<td>MBIO 1220</td>
<td>Essentials of Microbiol</td>
<td>3</td>
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<td>MECH 3482</td>
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<td>BIOE Design Elective slot (see Note 2)</td>
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<td>BIOE Design Elective slot (see Note 2)</td>
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<td>Elective slot (see Note 1 below)</td>
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### THIRD YEAR

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<th>Pre- (p) or Co- (c) Requisites</th>
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<tbody>
<tr>
<td>BIOE 4000**</td>
<td>Design 3</td>
<td>4</td>
<td>BIOE 3900 (p)</td>
<td>BIOE 4900**</td>
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<tr>
<td>BIOE 4240*</td>
<td>Graduation Project</td>
<td>3</td>
<td>BIOE 3270 (p)</td>
<td>BIOE 4240*</td>
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<td>BIOE Design Elective slot (see Note 2)</td>
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<td>Elective slot (see Note 1 below)</td>
<td>3/4</td>
<td>Elective slot (see Note 1 below)</td>
<td>3/4</td>
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</tr>
</tbody>
</table>

*Students may register for BIOE 4240 Graduation Project in either term.

**BIOE 4900 & 4950 must be taken in the same academic year.

Note 1: Must choose two science electives, two complementary studies electives, and two free electives.

Note 2: Choose from specified lists if a Specialization is desired.

### Biomedical Specialization:

Students in the Biomedical Specialization should take BIOL 1410 (Fall) and BIOL 1412 (Winter) in the elective slots of third year.

### Bioresource Specialization:

Students in the Bioresource Specialization should take BIOE 2600 (alternatively ANSC 3530 in the Winter of second year or PLNT 2510 in the Fall of third year) and SOIL 4060 in the Winter of third year.

### Environmental Specialization:

Students in the Environmental Specialization should take BIOE 2600 (alternatively BIOL 2300 in the Winter of second year or AGEC 2370 in the Fall of third year) and SOIL 4060 in the Winter of third year.

1. PLNT 2510 is only offered in the fall every two years.