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
  - Written English Requirement
  - PHYS 1050(3) Intro to Statics
  - Written English Requirement

Term 2
- Winter
  - MECH 3482(4) Kinematics & Dynamics
  - BIE 3320(4) Eng Prop Biological Materials
  - BIE 3290(4) Bio Eng Design Elective (4)**

Term 3
- Fall
  - BIE 2790(4) Fluid Mechanics
  - BIE 2900(4) Bio Eng Design 1
  - BIE 2110(4) Transport Phenomenon

Term 4
- Winter
  - ENG 1440(3) Intro to Statics
  - ENG 1430(3) Design in Engineering
  - ENG 1450(3) Intro to Elec & Comp Eng Techniques

Term 5
- Fall
  - MATH 1510(3) Applied Calculus 1
  - MATH 2132(3) Eng Math Analysis 2
  - MATH 2130(3) Applied Calculus 2

Term 6
- Winter
  - MECH 3400(4) Design of Struct Comp in Machines
  - BIE 3270(4) Instru & Measure for Biosystems
  - BIE 3270(4) Complementary Studies

Term 7
- Fall
  - MATH 1710(3) Applied Calculus 1
  - MATH 1210(3) Tech of Algebra
  - BIE 4950(4) Bio Eng Design 3*

Term 8
- Winter
  - MATH 1210(3) Tech of Algebra
  - BIE 4950(4) Bio Eng Design 3*
  - ENG 3000(3) Engineering Economics

NOTE 1: Choose 2 courses (specific courses are to be taken if completing a specialization)
- AGEI 2370 Principles of Ecology or BIOL 2300 Principles of Ecology
- ANSC 3530 The Animal and its Environment
- BIE 2600 Plant and Animal Physiology for Engineers
- BIE 1410 Anatomy of the Human Body
- BIE 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

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

prerequisite —— corequisite

Revised: June 17, 2022
DEPARTMENT OF BIOSYSTEMS ENGINEERING
For students starting second year Fall 2019

Students are expected to follow either the 4 year or the 5 year model program. This will ensure prerequisite and timetable requirements are met.

### PRELIMINARY ENGINEERING PROGRAM:

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

<table>
<thead>
<tr>
<th>2018</th>
<th>cr hr</th>
<th>Pre- (p) or Co- (c) Requisites</th>
<th>2019</th>
<th>Pre- (p) or Co- (c) Requisites</th>
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<tbody>
<tr>
<td>Complementary Studies Elective</td>
<td>3</td>
<td>ENG 1430 Engineering Design</td>
<td>3</td>
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<tr>
<td>CHEM 1300 Chemistry</td>
<td>3</td>
<td>ENG 1440 Engineering Statics</td>
<td>3</td>
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<tr>
<td>COMP 1012 Comp Prog Eng</td>
<td>3</td>
<td>ENG 1450 Intro Elec &amp; Comp Eng</td>
<td>3</td>
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<tr>
<td>ENG 1460 Thermal Sciences</td>
<td>3</td>
<td>Written English Requirement</td>
<td>3</td>
<td></td>
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<tr>
<td>MATH 1510 Applied Calculus 1</td>
<td>3</td>
<td>MATH 1210 C/L Algebra</td>
<td>3</td>
<td>MATH 1500/1510 (p or c), PHYS 1050 (p or c)</td>
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<tr>
<td>PHYS 1050 Physics</td>
<td>3</td>
<td>MATH 1710 Applied Calculus 2</td>
<td>3</td>
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### ADMISSION TO BIOSYSTEMS ENGINEERING PROGRAM:

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

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<thead>
<tr>
<th>FALL TERM (September)</th>
<th>Pre- (p) or Co- (c) Requisites</th>
<th>WINTER TERM (January)</th>
<th>Pre- (p) or Co- (c) Requisites</th>
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<tbody>
<tr>
<td>BIOE 2110 Transport Phenomenon</td>
<td>3</td>
<td>ENG 1460 (p)</td>
<td>BIOE 2480 Impact of Eng on Environ</td>
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<tr>
<td>BIOE 2590 Biology for Engineers</td>
<td>3</td>
<td>CHEM 1300 (p)</td>
<td>BIOE 2800 Solid Mechanics</td>
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<tr>
<td>BIOE 2900 Design 1</td>
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<td>ENG 1430 (p)</td>
<td>ENG 2022 Eng CAD Technology</td>
</tr>
<tr>
<td>BIOE 2790 Fluid Mechanics</td>
<td>4</td>
<td>ENG 1440 (p), MATH 1710/1700 (p)</td>
<td>MECH 2150 Numerical Methods</td>
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<tr>
<td>CHEM 1310 Chem 2 (CHEM 1110 &amp; 1126)</td>
<td>3</td>
<td>CHEM 1300 (p)</td>
<td>MATH 1210 Math Analysis 1</td>
</tr>
<tr>
<td>MATH 2132 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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<tr>
<th>THIRD YEAR 2020</th>
<th>Pre- (p) or Co- (c) Requisites</th>
<th>Pre- (p) or Co- (c) Requisites</th>
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<tbody>
<tr>
<td>BIOE 3400 Des of Struc Comp Mac</td>
<td>4</td>
<td>BIOE 2800</td>
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<tr>
<td>BIOE 3590 Mechanics of Biomater</td>
<td>4</td>
<td>BIOE 2800 (p)</td>
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<tr>
<td>BIOE 3900 Design 2</td>
<td>4</td>
<td>BIOE 2900 (p), BIOE 2022 (p)</td>
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<tr>
<td>MBIO 1220 Essentials of Microbiol</td>
<td>3</td>
<td>STAT 2220 Statistics for Engineers</td>
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<tr>
<td>BIOE Design Elective slot (see Note 2)</td>
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<td>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>
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<tr>
<th>FOURTH YEAR 2021</th>
<th>Pre- (p) or Co- (c) Requisites</th>
<th>Pre- (p) or Co- (c) Requisites</th>
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<tbody>
<tr>
<td>BIOE 4900** Design 3</td>
<td>4</td>
<td>BIOE 3900 (p)</td>
</tr>
<tr>
<td>BIOE 4240* Graduation Project</td>
<td>3</td>
<td>BIOE 3270 (p)</td>
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<tr>
<td>BIOE Design Elective slot (see Note 2)</td>
<td>4</td>
<td>BIOE 4240* Graduation Project</td>
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<tr>
<td>Elective slot (see Note 1 below)</td>
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<td>Elective slot (see Note 2)</td>
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<td>3/4</td>
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</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.  
(Science electives should be completed by end of Third Year.) Choose from specified lists if a Specialization is desired.

**Note 2:** Three BIOE design electives are required (out of the four slots shown). 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.