BIOSYSTEMS ENGINEERING: EXAMPLE OF A 10-TERM PROGRAM

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

Term 1
Fall
- Written English Requirement
  PHYS 1050(3)
- Intro to Statics
  ENG 1440(3)
- Intro to Mechanics
  PHYS 1410(3)
- Intro to Calculus
  MATH 1510(3)
- Intro to Comp Eng
  COMP 1012(3)
- Essentials of Microbiology
  BIOE 2200(3)
  or
  BIOE 2100(3)

Term 2
Winter
- Fluid Mechanics
  BIOE 2790(4)
- Design of Struct Comp in Machines
  BIE 2800(3)
- Design in Engineering
  ENG 2900(4)
- Bio Eng Design Elective
  BIOE 2900(4)

Term 3
Fall
- Impact of Eng on the Enviro
  BIOE 2480(3)
- Eng Math Analysis 1
  MATH 2130(3)
- Eng Prop Biological Materials
  BIE 3200(4)
- Eng Prop Biological Materials
  BIE 3320(4)
- Bio Eng Design 2
  BIOE 3900(4)

Term 4
Winter
- Kinematics & Dynamics
  MECH 3482(4)
- Numerical Methods
  MECH 2150(4)
- Instru & Measure for Biosystems
  BIE 3270(4)
- Bio Eng Design 3*
  BIOE 4900(4)
- Bio Eng Design 4*
  BIOE 4950(4)

Term 5
Fall
- Mechanics of Bio Materials
  BIE 3590(4)
- Intro to Elec & Comp Eng
  ENG 1450(3)
- Science Elective
  (See Note 1 below)
- Science Elective
  (See Note 1 below)
- Science Elective
  (See Note 1 below)

Term 6
Winter
- Written English Requirement
  PHYS 1050(3)
- Intro to Statics
  ENG 1440(3)
- Intro to Mechanics
  PHYS 1410(3)
- Intro to Calculus
  MATH 1510(3)
- Intro to Comp Eng
  COMP 1012(3)
- Essentials of Microbiology
  BIOE 2200(3)
  or
  BIOE 2100(3)

Term 7
Fall
- Kinematics & Dynamics
  MECH 3482(4)
- Numerical Methods
  MECH 2150(4)
- Instru & Measure for Biosystems
  BIE 3270(4)
- Bio Eng Design 3*
  BIOE 4900(4)
- Bio Eng Design 4*
  BIOE 4950(4)

Term 8
Winter
- Free Elective
  (See Note 2)
- Free Elective
  (See Note 2)
- Free Elective
  (See Note 2)
- Bio Eng Design Elective
  (4)**
  (offered in both terms)

Term 9
Fall
- Free Elective
  (See Note 2)
- Free Elective
  (See Note 2)
- Bio Eng Design Elective
  (4)**

Term 10
Winter
- Free Elective
  (See Note 2)
- Free Elective
  (See Note 2)
- Bio Eng Design Elective
  (4)**

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

**See Design Elective Information Sheet for listing of all Design Electives offered

NOTE 1: Choose 2 courses (Specific courses are to be taken if completing a specialization)
  AGEC 2370 or BIE 2300
  ANSC 3530
  BIE 4200
  BIE 1415
  BIE 1412
  PLNT 2510
  SOIL 4060

NOTE 2: Course is to be selected from a specified list if completing a specialization

Revised: June 17, 2022
DEPARTMENT OF BIOSYSTEMS ENGINEERING

5 YEAR MODEL PROGRAM

For students starting second year Fall 2020

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>2019</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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</thead>
<tbody>
<tr>
<td>Complementary Studies Elective</td>
<td>3</td>
<td>ENG 1430 Engineering Design</td>
<td>3</td>
<td>ENG 1440 Engineering Statics</td>
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<tr>
<td>CHEM 1300</td>
<td>Chem 1 (CHEM 1100 &amp; 1122)</td>
<td>3</td>
<td>ENG 1450 Intro Elec &amp; Comp Eng</td>
<td>3</td>
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<tr>
<td>COMP 1012</td>
<td>Comp Prog Eng</td>
<td>3</td>
<td>MATH 1210 C/L Algebra</td>
<td>3</td>
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<tr>
<td>ENG 1460</td>
<td>Thermal Sciences</td>
<td>3</td>
<td>MATH 1510/1510 (p or c)</td>
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<td>MATH 1510</td>
<td>Applied Calculus 1</td>
<td>3</td>
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<td>PHYS 1050</td>
<td>Physics</td>
<td>3</td>
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ADMISION TO BIOSYSTEMS ENGINEERING PROGRAM: Any Preliminary Engineering courses not yet completed should be taken in Second Year if possible.

SECOND YEAR 2020

<table>
<thead>
<tr>
<th>FALL TERM (September)</th>
<th>WINTER TERM (January)</th>
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<tbody>
<tr>
<td>Pre- (p) or Co- (c) Requisites</td>
<td>Pre- (p) or Co- (c) Requisites</td>
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<tr>
<td>BIOE 2590</td>
<td>Biology for Engineers</td>
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<tr>
<td>BIOE 2900</td>
<td>Design 1</td>
</tr>
<tr>
<td>CHEM 1310</td>
<td>Chem 2 (CHEM 1110 &amp; 1126)</td>
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<tr>
<td>Mbio 1220</td>
<td>Essentials of Microbiology</td>
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THIRD YEAR 2021

<table>
<thead>
<tr>
<th>Pre- (p) or Co- (c) Requisites</th>
<th>Pre- (p) or Co- (c) Requisites</th>
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</thead>
<tbody>
<tr>
<td>BIOE 2110</td>
<td>Transport Phenomenon</td>
</tr>
<tr>
<td>BIOE 2790</td>
<td>Fluid Mechanics</td>
</tr>
<tr>
<td>MATH 2130</td>
<td>Math Analysis 1</td>
</tr>
<tr>
<td>Elective slot (see Note 1 below)</td>
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FOURTH YEAR 2022

<table>
<thead>
<tr>
<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</td>
<td>Des of Struc Comp Mac</td>
</tr>
<tr>
<td>BIOE 3590</td>
<td>Mechanics of Biomater</td>
</tr>
<tr>
<td>BIOE 3900</td>
<td>Design 2</td>
</tr>
<tr>
<td>Elective slot (see Note 1 below)</td>
<td>3/4</td>
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<tr>
<td>BIOE Design Elective slot (see Note 2)</td>
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FIFTH YEAR 2023

<table>
<thead>
<tr>
<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**</td>
<td>Design 3</td>
</tr>
<tr>
<td>BIOE 4240*</td>
<td>Graduation Project</td>
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<tr>
<td>BIOE Design Elective slot (see Note 2)</td>
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*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 PLNT 2510 in the Fall or ANSC 3530 in the Winter of third year) and SOIL 4060 in the Winter of third year.

Environmental Specialization:

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

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