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
- Physics 1 Mechanics
- Written English Requirement
- Applied Calculus 1
- Computer Program for Sci & Eng
- Complementary Studies
  - PHL 1290 (3)
  - Critical Thinking recommended
- Chemistry 1
  - CHEM 1300(3)
  - CHEM 1100(3)
  - & 1122(1.5)

Term 2
Winter
- Intro to Statics
- Applied Calculus 2
- Intro to Elec & Comp Eng Techniques
- Tech of Algebra
- Design in Engineering
- Eng CAD Technology
- Intro to Thermal Sciences
- Indigenous Knowledge Course

Term 3
Fall
- Solid Mechanics I
- Bio Eng Design 1
- Essentials of Microbiology
  - MBIO 1220(3)
  - or MBIO 1010 (3)

Term 4
Winter
- Fluid Mechanics
- Bio Eng Design 2
- Eng Math Analysis 2
- Eng Math Analysis 1
- Numerical Methods

Term 5
Fall
- Mechanics of Bio Materials
- Bio Eng Design 3*
- Bio Eng Design 4*

Term 6
Winter
- Kinematics & Dynamics
- Design of Struct Comp in Machines
- Instru & Measure for Biosystems

Term 7
Fall
- Eng Prop Biological Materials
- Indigenous Knowledge Course (3)

Term 8
Winter
- Free Elective (See Note 2)

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

Term 10
Winter
- Free Elective (See Note 2)
- Engineering Economics

Note 1: Choose 2 courses (specific courses are to be taken if completing a specialization)
- AEGC 2370 or BIOL 2300
- ANSC 3530
- BIOE 2600
- BIOL 1410
- BIOL 1412
- PLNT 2510
- SOIL 4060

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

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

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

Advanced student admissions September 2021
DEPARTMENT OF BIOSYSTEMS ENGINEERING
5 YEAR MODEL PROGRAM

For students starting second year Fall 2021
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>2020</th>
<th>cr hr</th>
<th>Pre- (p) or Co- (c) Requisites</th>
<th>2020</th>
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<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>
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<td>ENG 1430 Engineering Design</td>
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<tr>
<td>CHEM 1300</td>
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<td>ENG 1440 Engineering Statics</td>
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<td>ENG 1440 Engineering Statics</td>
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<tr>
<td>COMP 1012</td>
<td>3</td>
<td>ENG 1450 Intro Elec &amp; Comp Eng</td>
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<td>ENG 1450 Intro Elec &amp; Comp Eng</td>
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<td>ENG 1460</td>
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<td>Written English Requirement</td>
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<td>MATH 1510</td>
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<td>MATH 1210 C/L Algebra</td>
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<td>PHYS 1050</td>
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<td>MATH 1500/1510 (p or c)</td>
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<td>MATH 1500/1510 (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

SECOND YEAR 2021

<table>
<thead>
<tr>
<th>FALL TERM (September)</th>
<th>WINTER TERM (January)</th>
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<tbody>
<tr>
<td>BIOE 2590 Biology for Engineers</td>
<td>CHEM 1300 or CHEM 1100 &amp; 1122(p)</td>
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<tr>
<td>BIOE 2900 Design 1</td>
<td>ENG 1430 (p)</td>
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<tr>
<td>CHEM 1310</td>
<td>ENG 1440 (p), MATH 1710 (p)</td>
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<tr>
<td>MBIOL 1220 Essentials of Microbiology</td>
<td>STAT 2220 Statistics for Engineers</td>
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<tr>
<th>SECOND YEAR 2022</th>
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<tbody>
<tr>
<td>BIOE 3590 Mechanics of Biomaterials</td>
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<tr>
<td>BIOE 3900 Design 2</td>
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<td>Elective slot (see Note 1 below)</td>
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<tr>
<th>THIRD YEAR 2022</th>
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<tbody>
<tr>
<td>BIOE 2110 Transport Phenomena</td>
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<tr>
<td>BIOE 2790 Fluid Mechanics</td>
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<td>MATH 2130 Math Analysis 1</td>
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<td>Elective slot (see Note 1 below)</td>
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<th>FOURTH YEAR 2023</th>
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<tr>
<td>BIOE 3400 Des of Struc Comp Mac</td>
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<tr>
<td>BIOE 3590 Mechanics of Biomaterials</td>
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<tr>
<td>BIOE 3900 Design 2</td>
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<th>FIFTH YEAR 2024</th>
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<tbody>
<tr>
<td>BIOE 4900** Design 3</td>
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<tr>
<td>BIOE 4240* Graduation Project</td>
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<tr>
<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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Note 1: Must choose two science electives, one complementary studies elective, 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 PLNT 2510¹ 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 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.