# Mechatronic Systems Engineering and Biomedical Engineering

**September 2021** (for students who entered Year 1 in September 2019)

## Year 2

### Term A
- **AM 2270A** Applied Mathematics for Engineering II
- **BME 3201A** Fundamentals of Biomedical Engineering Design
- **CS 1037A** Computer Science Fundamentals II
- **ECE 2205A** Electric Circuits I
- **MSE 2200Q** Engineering Shop Safety Training
- **MSE 2201A** Introduction to Electrical Instrumentation
- **MSE 2212A** Mechanics of Materials
- **MSE 2214A** Thermodynamics

### Term B
- **AM 2276B** Applied Mathematics for Electrical & Mechanical Eng. III
- **MSE 2202B** Introduction to Mechatronic Design
- **MSE 2213B** Engineering Dynamics
- **MSE 2233B** Circuits and Systems
- **MSE 2273B** Introduction to Fluid Mechanics and Heat Transfer
- **Writ 2130G** Building Better (Communication) Bridges

## Year 3

### Term A
- **NMM 3415A** Applied Mathematics for Electrical Engineering
- **Biol 1001A** Biology for Sciences I
- **ECE 2277A** Digital Logic Systems
- **ECE 3330A** Control Systems
- **MSE 3301A** Materials Selection and Manufacturing Processes
- **MSE 3310A** Electric Motors and Drives
- **MSE 3381A** Kinematics and Dynamics of Machines

### Term B
- **Biol 1002B** Biology for Sciences II
- **ECE 3331B** Signal Processing
- **ECE 3375B** Microprocessors and Microcomputers
- **MSE 3302B** Sensors and Actuators
- **MSE 3360B** Finite Element Methods for Mechatronic Systems
- **MSE 3380B** Machine Component Design for Mechatronic Systems

## Year 4

### Term A
- **Biochem 2280A** Biochemistry and Molecular Biology
- **BME 3301A** Neural Systems Engineering
- **ECE 4455A** Biomedical Systems Analysis
- **Physiol 2130** Human Physiology
- **SS 2141A** Applied Probability and Statistics for Engineers
- **One 0.5-credit Biomedical Science technical elective**

### Term B
- **BME 3303B** Cellular Systems Engineering
- **MME 4469B** Biomechanics of the Musculoskeletal System
- **Physiol 2130** Human Physiology
- **Two 0.5-credit Biomedical Science electives**
- **Two 0.5-credit Healthcare non-technical electives**

### Non-technical Electives

Students are required to complete 1.5 credits of non-technical electives as part of the program.

- **a)** The first 0.5 credit can come from the approved non-technical elective list ([https://www.eng.uwo.ca/undergraduate/upper-year/electives.html](https://www.eng.uwo.ca/undergraduate/upper-year/electives.html)).
- **b)** The remaining 1.0 credits must come from the following Healthcare Non-technical Elective list.

### Technical Elective List:

Some technical electives may not be offered in a given academic year. Consult the Department for accurate listing. Courses that do not appear on the list below require special permission from the Department.

<table>
<thead>
<tr>
<th>Biomedical Sciences Electives</th>
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<tbody>
<tr>
<td>Biochemistry 3385A/B</td>
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<tr>
<td>Biochemistry 3386A/B</td>
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<tr>
<td>Biology 2382A/B</td>
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<tr>
<td>Biology 2581A/B</td>
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<tr>
<td>Chemistry 2213A/B</td>
</tr>
<tr>
<td>Chemistry 2283F/G</td>
</tr>
<tr>
<td>Communication Sciences and Disorders 4417A/B</td>
</tr>
<tr>
<td>Health Science 2300A/B</td>
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<tr>
<td>Health Science 3300A/B</td>
</tr>
<tr>
<td>Medical Science 4931F/G</td>
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<tr>
<td>Physiology 3140A/B</td>
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</tbody>
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# Note

The official version of the academic calendar can be found at: [www.westerncalendar.uwo.ca](http://www.westerncalendar.uwo.ca)
### Year 5

#### Term A
- **BME 4400** Biomedical Engineering Research Thesis (1.5-credit course)
- **ECE 4445A** Introduction to Digital Image Processing
- **ELI 4110F** Engineering Ethics, Sustainable Development and the Law
- **MSE 4401A** Robotic Manipulators
- **MSE 4499** Mechatronic Design Project
- One 0.5-credit non-technical elective

#### Term B
- **BME 4400** Biomedical Engineering Research Thesis (1.5-credit course)
- **ELI 3200B** Engineering Innovation I: New Venture Creation
- **MSE 4499** Mechatronic Design Project
- Two 0.5-credit BME technical electives
- One 0.5-credit MSE technical elective

#### Biomedical Engineering (BME) Electives
- **CBE 4421A/B** Intro. to Biomaterials Engineering
- **ECE 4438A/B** Advanced Image Processing and Analysis
- **Medical Biophysics 3507F/G** Analysis of Oxygen Transport
- **Medical Biophysics 3645A/B** Intro. to Biomedical Optics
- **Medical Biophysics 4475A/B** Medical Imaging
- **Medical Biophysics 4535A/B** Hemodynamics

[www.eng.uwo.ca/undergraduate/upper-year/next.html](http://www.eng.uwo.ca/undergraduate/upper-year/next.html)