# Electrical Engineering and Biomedical Engineering

**September 2020** (for students entering Year 1 in September 2018)

## Year 2

### Term A
- **AM 2270A** Applied Mathematics for Engineering II
- **BME 3201A** Fundamentals of Biomedical Engineering Design
- **CS 1027A** Computer Science Fundamentals II
- **ECE 2205A** Electric Circuits I
- **ECE 2240A** Electrical Laboratory
- **ECE 2277A** Digital Logic Systems

### Term B
- **AM 2276B** Applied Mathematics for Electrical & Mechanical Eng. III
- **ECE 2231B** Introduction to Electronics
- **ECE 2233B** Circuits and Systems
- **ECE 2236B** Magnetic Circuits and Transmission Lines
- **ECE 2242B** Principles of Design in Electrical Engineering
- **Writ 2130G** Building Better (Communication) Bridges

One 0.5 credit non-technical elective *

## Year 3

### Term A
- **AM 3415A** Advanced Applied Mathematics for Electrical Engineering
- **Biol 1001A** Biology for Sciences I
- **ECE 3330A** Control Systems
- **ECE 3332A** Electric Machines
- **ECE 3337A** Electronic Circuits
- **SS 2141A** Applied Probability and Statistics for Engineers

### Term B
- **Biol 1002B** Biology for Sciences II
- **ECE 3331B** Introduction to Signal Processing
- **ECE 3336B** Electromagnetic Theory
- **ECE 3370B** Communication Electronics I
- **ECE 3375B** Microprocessors and Microcomputers
- **ECE 3399B** Principles and Practices of Design of Electronic 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
- 0.5 credit Biomedical Science elective
- 0.5 credit Healthcare non-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
- One 0.5-credit Healthcare non-technical elective
- One 0.5-credit Open elective (taken in either term)**

## Non-technical Electives

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

- *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)).

- The remaining 1.0 credits must come from the following Healthcare Non-technical Elective list.

### Healthcare Non-technical Electives

- Anthropology 2290F/G Cultures of Health and Healing
- Economics 2169F/G Economics of Health Care
- History 2195A/B Epidemics in North America
- Law 3101A/B Healthcare Law
- Philosophy 2071E Biomedical Ethics
- Philosophy 2072F/G Bioethics and Disability
- Philosophy 2715F/G Health Care Ethics
- Political Science 2276F/G The Politics of Health Care
- Religious Studies 2239F/G Christian Bioethics
- Sociology 2179A/B Promotion of Community Health
- Sociology 2180A/B Development of Health Inequalities
- Women’s Studies 2244 Women and Health
- Writing 3222F/G Advanced Healthcare Communication

## 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.

### Biomedical Sciences Electives

- Biochemistry 3385A/B Human Biochemistry
- Biochemistry 3386A/B Clinical Biochemistry
- Biology 2382A/B Cell Biology
- Biology 2581A/B Genetics
- Chemistry 2213A/B Organic Chemistry
- Chemistry 2283F/G Organic Chemistry II
- Communication Sciences and Disorders 4417A/B Hearing Science
- Health Science 2300A/B Systemic Approach to Functional Anatomy
- Health Science 3300A/B Anatomy of the Human Body
- Medical Science 4931F/G Selected Topics in Medical Science
- Physiology 3140A/B Cellular Physiology

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

Term A

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BME 4400</td>
<td>Biomedical Engineering Research Thesis (1.5-credit course)</td>
</tr>
<tr>
<td>ECE 4416</td>
<td>Electrical/Computer Engineering Project</td>
</tr>
<tr>
<td>ECE 4429A</td>
<td>Advanced Digital Signal Processing</td>
</tr>
<tr>
<td>ECE 4437A</td>
<td>Communications Theory</td>
</tr>
<tr>
<td>ECE 4445A</td>
<td>Introduction to Digital Image Processing</td>
</tr>
<tr>
<td>ES 4498F</td>
<td>Engineering Ethics, Sustainable Development and the Law</td>
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</tbody>
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Term B

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BME 4400</td>
<td>Biomedical Engineering Research Thesis (1.5-credit course)</td>
</tr>
<tr>
<td>ECE 4416</td>
<td>Electrical/Computer Engineering Project</td>
</tr>
<tr>
<td>ES 3330B</td>
<td>Engineering Innovation I: New Venture Creation</td>
</tr>
</tbody>
</table>

Two 0.5-credit BME technical electives
One 0.5-credit ECE technical elective

(https://www.eng.uwo.ca/undergraduate/upper-year/next.html)

Psychology 2220A/B  Intro. to Behavioural & Cognitive Neuroscience

Biomedical Engineering (BME) Electives

<table>
<thead>
<tr>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>CBE 4421A/B</td>
<td>Intro. to Biomaterials Engineering</td>
</tr>
<tr>
<td>ECE 4438A/B</td>
<td>Advanced Image Processing &amp; Analysis</td>
</tr>
<tr>
<td>Medical Biophysics 3507F/G</td>
<td>Analysis of Oxygen Transport</td>
</tr>
<tr>
<td>Medical Biophysics 3645A/B</td>
<td>Intro. to Biomedical Optics</td>
</tr>
<tr>
<td>Medical Biophysics 4475A/B</td>
<td>Medical Imaging</td>
</tr>
<tr>
<td>Physics 4662A/B</td>
<td>Magnetic Resonance Imaging</td>
</tr>
<tr>
<td>Physics 4672A/B</td>
<td>Radiological Physics</td>
</tr>
</tbody>
</table>

**Open Electives**

For the course credit designated as an "open elective", students may select any course from the lists of: Biomedical Science electives; BME technical electives; ECE technical electives; Healthcare non-technical electives; or Faculty of Engineering approved non-technical electives.