## Electrical Engineering and Biomedical Engineering
### September 2023 (for students entering Year 1 in September 2022 or later)

### Year 2

#### Term A
- NMM 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
- NMM 2276B  
  Applied Mathematics for Electrical & Mechanical Eng. III  
- ECE 2231B  
  Introduction to Electronics  
- ECE 2236B  
  Magnetic Circuits and Transmission Lines  
- ECE 2242B  
  Principles of Design in Electrical Engineering

#### Year 3

#### Term A
- NMM 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.

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

**Students must pay attention when selecting the first 0.5 credit to ensure appropriate prerequisite courses are completed for the non-technical electives below.**

### Healthcare Non-technical Electives
- Anthropology 2290F/G  
  Cultures of Health and Healing  
- Anthropology 2240A/B  
  Evolution, Ecology & Human Health  
- Economics 2169F/G  
  Economics of Health Care  
- History 2195A/B  
  Epidemics in North America  
- Law 3101A/B  
  Healthcare Law  
- Philosophy 2071E  
  Biomedical Ethics  
- Philosophy 2272F/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

### 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 2223F/G  
  Organic Chemistry of Biological Molecules  
- 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 Code</th>
<th>Course 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>ELI 4410F</td>
<td>Engineering Ethics, Sustainable Development and the Law</td>
</tr>
</tbody>
</table>

#### Term B

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course 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>ELI 3200B</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)

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<table>
<thead>
<tr>
<th>Psychology 2220A/B</th>
<th>Intro. to Behavioural &amp; Cognitive Neuroscience</th>
</tr>
</thead>
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**Biomedical Engineering (BME) Electives**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBE 4421A/B</td>
<td>Intro. to Biomaterials Engineering</td>
</tr>
<tr>
<td>CBE 4422A/B</td>
<td>Nanobiotechnology</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.