# Chemical: Biochemical and Environmental Engineering (Option B)

## September 2019 (students who entered *first year* in September 2017 or later)

### Year 2:

#### Term A
- AM 2270a Applied Math for Engineering II
- CBE 2206a Introductory Industrial Organic Chemistry
- CBE 2214a Engineering Thermodynamics
- CBE 2220a Chemical Process Calculations
- CBE 2290a Fundamentals of Biochemical and Environmental Engineering

- Writing 2130f Building Better (Communication) Bridges: Rhetoric & Professional Communication for Engineers

#### Term B
- AM 2277b Applied Math Chemical and Civil Engineering III
- CBE 2207b Applied Industrial Organic Chemistry
- CBE 2221b Fluid Flow
- CBE 2224b Chemical Eng. Thermodynamics
- CBE 2291b Computational Methods for Engineering

- SS 2143b Applied Statistics and Data Analysis for Engineers

### Year 3:

#### Term A
- CBE 3330a Bioreaction & Bioprocess Engineering
- CBE 3315a Reaction Engineering
- CBE 3318a Introduction to Chemical Process Simulation
- CBE 3322a Heat Transfer Operations
- CBE 3325a Particulate Operations
- CBE 3396y Biochemical Engineering Lab

#### Term B
- CBE 3310b Process Dynamics and Control
- CBE 3319b Introduction to Plant Design and Safety
- CBE 3324b Mass Transfer Operations
- CBE 3323b Staged Operations
- CBE 3396y Biochemical Engineering Lab
- ECE2208b Electrical Measurement and Instrumentation
- CBE 4403b Biochemical Separation Process

### Year 4:

#### Term A
- CBE 4498 Biochemical Process and Plant Design
  - Two 0.5 Technical elective
  - 1.0 Non-technical elective taken from approved list

#### Term B
- CBE 4498 Biochemical Process and Plant Design
- ES 4498G Engineering Ethics, Sustainable Development and the Law
  - Two 0.5 Technical elective
  - 0.5 Non-technical elective taken from approved list

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**NOTES:**

- **Non-technical Electives:**
  - Please choose a maximum of 1.0 credits (one 1.0 credit course or two 0.5 credit courses) from the 1000 level and a minimum of one 0.5 credit from the 2000 (or higher) level.
  
  http://www.eng.uwo.ca/undergraduate/first_year/electives.html
  
  http://www.eng.uwo.ca/undergraduate/upper_year/electives.html

- **Technical Elective List:**
  - Some technical electives may not be offered in a given academic year. Consult the Department for accurate listing.

<table>
<thead>
<tr>
<th>General Chemical Engineering Courses</th>
<th>Biochemical and Environmental Engineering Courses</th>
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<tbody>
<tr>
<td>CBE 4404a/b Downstream Processing in Pharmaceutical Manufacturing</td>
<td>CBE 4407a/b Solid Waste Treatment</td>
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<tr>
<td>CBE 4413a/b Selected Topics in Chemical Engineering</td>
<td>CBE 4409a/b Wastewater Treatment</td>
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<tr>
<td>CBE 4417a/b Catalytic Processes</td>
<td>CBE 4425 Biochemical &amp; Environmental Eng. Project</td>
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<td>CBE 4418a/b Industrial Multiphase Reactor Design</td>
<td>CBE 4421a/b Introduction to Biomaterials Engineering</td>
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<td>CBE 4420a/b Computer Process Control</td>
<td>CBE 4422a/b Nanobiotechnology</td>
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<td>CBE 4432a/b Energy and Fuels Production Systems</td>
<td>CBE 4423a/b Tissue Engineering</td>
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<tr>
<td>CBE 4485a/b Energy and Society</td>
<td>CBE 4424a/b Biosensor Principles and Applications</td>
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<tr>
<td>CBE 4493a/b Polymer Engineering</td>
<td>CBE 4426a/b Water Pollution Design</td>
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<tr>
<td>CEE 4440a/b Air Pollution</td>
<td>CEE 3362a/b Drinking Water Quality and Treatment</td>
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<tr>
<td>GPE 4484a/b Green Fuels and Chemicals</td>
<td>MME 4429a/b Nuclear Engineering</td>
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**Accelerated Masters students can take a graduate course with special permission from the Department Chair.**