## Sample Courses
### General Chemical Engineering Option

### Year 2

<table>
<thead>
<tr>
<th>Term A</th>
<th>Term B</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM 2411 Applied Math for Engineering II</td>
<td>AM 2411 Applied Math for Engineering II</td>
</tr>
<tr>
<td>CBE 2206a Industrial Organic Chemistry I</td>
<td>CBE 2207b Industrial Organic Chemistry II</td>
</tr>
<tr>
<td>CBE 2224a Engineering Thermodynamics</td>
<td>CBE 2221b Fluid Flow</td>
</tr>
<tr>
<td>CBE 2220a Chemical Process Calculations</td>
<td>CBE 2224b Chemical Eng. Thermodynamics</td>
</tr>
<tr>
<td>CBE 2290a Fundamentals of Biochemical and</td>
<td>CBE 2291b Computational Methods for Engineering</td>
</tr>
<tr>
<td>Environmental Engineering</td>
<td>SS 2143b Applied Statistics and Data Analysis for Engineers</td>
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<tr>
<td>ES 2211F Engineering Communications</td>
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</tbody>
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### Year 3

<table>
<thead>
<tr>
<th>Term A</th>
<th>Term B</th>
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<tbody>
<tr>
<td>CBE 3315a Reaction Engineering</td>
<td>CBE 3310b Process Dynamics and Control</td>
</tr>
<tr>
<td>CBE 3318a Introduction to Chemical Process Simulation</td>
<td>CBE 3319b Introduction to Plant Design and Safety</td>
</tr>
<tr>
<td>CBE 3322a Heat Transfer Operations</td>
<td>CBE 3324b Mass Transfer Operations</td>
</tr>
<tr>
<td>CBE 3323a One 0.5 technical elective</td>
<td>CBE 3325b Particulate Operations</td>
</tr>
<tr>
<td>One 0.5 technical elective</td>
<td>One 0.5 technical elective</td>
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### Year 4

<table>
<thead>
<tr>
<th>Term A</th>
<th>Term B</th>
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<tbody>
<tr>
<td>Bus 2299E Business for Engineers</td>
<td>Bus 2299E Business for Engineers</td>
</tr>
<tr>
<td>CBE 4497 Chemical Process and Plant Design</td>
<td>CBE 4497 Chemical Process and Plant Design</td>
</tr>
<tr>
<td>CBE 4415* Chemical Engineering Project</td>
<td>CBE 4415* Chemical Engineering Project</td>
</tr>
<tr>
<td>One 0.5 technical elective</td>
<td>One 0.5 technical elective</td>
</tr>
<tr>
<td>One 0.5 non-technical elective taken from approved list</td>
<td>One 0.5 technical elective</td>
</tr>
</tbody>
</table>

### Technical Elective List

- CBE 4404a/b Downstream Processing in Pharmaceutical Manufacturing
- CBE 4413a/b Selected Topic in Chemical Engineering
- CBE 4417a/b Catalytic Processes
- CBE 4418a/b Industrial Multiphase Reactor Design
- CBE 4420a/b Computer Process Control
- CBE 4421a/b Introduction to Biomaterials Engineering
- CBE 4423a/b Tissue Engineering
- CBE 4424a/b Biosensor Principles and Applications
- CBE 4432a/b Oil Refining and Processing
- CBE 4433a/b Polymer Engineering
- CBE 4403a/b Biochemical Separation Process
- CBE 4407a/b Solid Waste Treatment
- CBE 4409a/b Wastewater Treatment
- CBE 4463a/b Water Pollution Design
- GPE 3383a/b Solar and Fuel Cells
- GPE 4484a/b Green Fuels and Chemicals

* A student may substitute two 0.5 technical electives from the list provided for CBE 4415

**NOTE:** Not all technical electives may be offered each year.
What is Chemical Engineering?
Chemical engineers design, develop and operate chemical and biochemical processes to make products such as plastics, polymers, medicines, food, fuels, fertilizers, detergents, cosmetics, and consumer goods at minimum cost in a safe and environmentally sustainable way. Chemical engineers also translate and scale-up processes developed by basic scientists into practical applications that benefit society and lead to economic development.

Western’s Chemical Engineering Program

Common First Year

General Chemical Engineering Option
This option emphasizes traditional chemical engineering processes and applications. A basic objective of the program is to combine and integrate the fundamental principles of chemical and biochemical engineering to design commercial processes and plants that make consumer products which are both economical and environmentally friendly. Among the distinguishing features of our program is the emphasis on prevention of pollution at the source before it happens by integrating innovative design principles of physical, chemical and biological processes.

Biochemical and Environmental Engineering Option
This option includes courses in the basic fundamentals of chemical engineering, and biochemical and environmental engineering courses that result in a synergistic interaction between chemical, biochemical and environmental engineering fundamentals. Students learn about renewable energy, bioenergy and biofuels, plus biotechnology and environmental pollution control. They also develop the necessary skills to design a process using a holistic approach by combining and applying all the required principles of chemical, biochemical and environmental engineering.

To view course listings for these options, please visit www.eng.uwo.ca/undergraduate/programs/chemical.html

Career Opportunities
Sample Careers
- Chemical Process Engineer
- Biochemical Engineer
- Polymer Engineer
- Refinery Engineer
- Petrochemical Engineer
- Chemical Engineer

Types of Employers
- Chemical Products Manufacturers
- Electric Power Companies
- Pharmaceutical Companies
- Plastic and Synthetic Resin Manufacturers
- Federal Government
- Pulp and Paper Companies
- Refined Petroleum Products Manufacturers

Individualize Your Chemical Engineering Degree

Dual Degrees
A dual degree allows you to gain a competitive edge towards a rewarding career. You will have the engineering skills and knowledge to become a successful problem solver, prepared to address and find solutions to current and future problems around the world in a traditional engineering career or a profession of your choice. We offer the following dual degrees with our Chemical Engineering program:

Chemical Engineering and Business
After two years in Engineering, you can apply to the Ivey Business School. If admitted to Ivey, you will take a combination of HBA courses and Chemical Engineering courses for the next three years. At the end of five years, you will graduate with both BESc and HBA degrees.

Biochemical Engineering and Medicine
You can apply for this option in second year. The course load in second and third year of Engineering studies is slightly heavier with this option to complete all required Engineering courses. You will apply to the Schulich School of Medicine & Dentistry for admission to the Medicine program in your third year. MCATs must be written before this time. If you are admitted to Medicine after three years in Engineering, you will complete the Medicine program for the next four years in addition to the Fourth Year Design project. At the end of seven years, you will graduate with both BESc and MD degrees.

Chemical Engineering and Law
After three years in Engineering, you can apply to Western Law after writing the LSAT examinations. For the next three years, you will take a combination of Law courses and Chemical Engineering courses. At the end of six years, you will graduate with both BESc and LLB degrees.

Dual Degrees with Other Faculties
We also offer more than 50 other dual degrees involving a major module in faculties such as: Science, Music, Social Science or Arts and Humanities.

Internship and Co-op Programs
Our optional Internship and Summer Engineering Co-op program provides you with opportunities to gain practical experience while earning a salary. The 12 to 16-month internship is available following your third year of study. Summer co-ops provide technical work experience during the summer months (May-August). You can complete a co-op every year or choose to complete just one during your time at Western.

Accelerated Master’s Program
This program is offered to third-year Western Engineering students. Applicants must have an average grade of 80 per cent or higher (based on their second and third year courses). The Accelerated Master’s program provides you with the opportunity to receive a research master’s degree within one year of receiving your bachelor’s degree.