## 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 2270a</td>
<td>Applied Mathematics for Engineering II</td>
</tr>
<tr>
<td>CBE 2206a</td>
<td>Industrial Organic Chemistry I</td>
</tr>
<tr>
<td>CBE 2224a</td>
<td>Engineering Thermodynamics</td>
</tr>
<tr>
<td>CBE 2220a</td>
<td>Chemical Process Calculations</td>
</tr>
<tr>
<td>CBE 2290a</td>
<td>Fundamentals of Biochemical and Environmental Engineering</td>
</tr>
<tr>
<td>ES 2211F</td>
<td>Engineering Communications</td>
</tr>
</tbody>
</table>

### Year 3

<table>
<thead>
<tr>
<th>Term A</th>
<th>Term B</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBE 3315a</td>
<td>Reaction Engineering</td>
</tr>
<tr>
<td>CBE 3318a</td>
<td>Introduction to Chemical Process Simulation</td>
</tr>
<tr>
<td>CBE 3322a</td>
<td>Heat Transfer Operations</td>
</tr>
<tr>
<td>CBE 3323a</td>
<td>Staged Operations</td>
</tr>
<tr>
<td>CBE 3395Y</td>
<td>Chemical Engineering Lab</td>
</tr>
<tr>
<td>One 0.5 technical elective</td>
<td>One 0.5 technical elective</td>
</tr>
</tbody>
</table>

### Year 4

<table>
<thead>
<tr>
<th>Term A</th>
<th>Term B</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBE 4407</td>
<td>Chemical Process and Plant Design</td>
</tr>
<tr>
<td>CBE 4415*</td>
<td>Chemical Engineering Project</td>
</tr>
<tr>
<td>One 0.5 technical elective</td>
<td>One 0.5 technical elective</td>
</tr>
<tr>
<td>Two 0.5 non-technical elective taken from approved list</td>
<td>One 0.5 technical elective</td>
</tr>
<tr>
<td>One 0.5 non-technical elective</td>
<td>One 0.5 non-technical elective</td>
</tr>
</tbody>
</table>

### Technical Elective List

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBE 4404a/b</td>
<td>Downstream Processing in Pharmaceutical Manufacturing</td>
</tr>
<tr>
<td>CBE 4413a/b</td>
<td>Selected Topic in Chemical Engineering</td>
</tr>
<tr>
<td>CBE 4417a/b</td>
<td>Catalytic Processes</td>
</tr>
<tr>
<td>CBE 4418a/b</td>
<td>Industrial Multiphase Reactor Design</td>
</tr>
<tr>
<td>CBE 4420a/b</td>
<td>Computer Process Control</td>
</tr>
<tr>
<td>CBE 4421a/b</td>
<td>Introduction to Biomaterials Engineering</td>
</tr>
<tr>
<td>CBE 4423a/b</td>
<td>Tissue Engineering</td>
</tr>
<tr>
<td>CBE 4424a/b</td>
<td>Biosensor Principles and Applications</td>
</tr>
<tr>
<td>CBE 4432a/b</td>
<td>Oil Refining and Processing</td>
</tr>
<tr>
<td>CBE 4485a/b</td>
<td>Energy and Society</td>
</tr>
<tr>
<td>CBE 4493a/b</td>
<td>Polymer Engineering</td>
</tr>
<tr>
<td>CBE 4403a/b</td>
<td>Biochemical Separation Process</td>
</tr>
<tr>
<td>CBE 4407a/b</td>
<td>Solid Waste Treatment</td>
</tr>
<tr>
<td>CBE 4409a/b</td>
<td>Wastewater Treatment</td>
</tr>
<tr>
<td>CBE 4463a/b</td>
<td>Water Pollution Design</td>
</tr>
<tr>
<td>GPE 4484a/b</td>
<td>Green Fuels and Chemicals</td>
</tr>
</tbody>
</table>

* 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 study the principles of chemistry, biology, physics, mathematics and economics to design, develop and operate processes for the production of food, fuel, energy, clothing, medicines, cosmetics, plastics, polymers, fertilizer, chemicals, consumer goods and materials. Today’s chemical engineers are spearheading innovations in pharmaceuticals, biotechnology, high-performance advanced materials and devices, alternative energy, consumer products, composites, manufacturing, and environmental solutions. Chemical Engineers works to engineer the chemistry of people’s lives.

Western’s Chemical Engineering Program

Common First Year


The objective of the Chemical Engineering program is to teach students fundamental principles to design commercial processes to transform raw materials, living cells and microorganisms from the environment into useful consumer products at minimum cost in a safe way, and return spent products and by-products to the environment in an ecologically sustainable manner. In Year 3, students opt for one of the two options:

General Chemical Engineering Option

This option explores traditional chemical engineering processes and applications. Through technical electives, students will have the opportunity to explore emerging topics in the field of catalysis, energy, water, materials, pharmaceuticals, polymers, oil processing, instrumentation and control.

Biochemical and Environmental Engineering Option

This option provides students with a strong foundation in the fundamentals of biochemical and environmental processes. Students learn how to integrate engineering principles with knowledge of applied biology to design advanced biochemical systems for industrial environmental and biomedical applications. Through technical electives, students will have the opportunity to explore emerging topics in fields of biotechnology, biomedical engineering, bioenergy, biomaterials, bio-separation and environmental engineering.

In their fourth year, students have the option of investigating a focus area of their interest in greater depth by working in a research lab under the supervision of a faculty mentor, gaining practical skills while completing an original research project.

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

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.

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 & 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.

Sample Careers

• Chemical Engineer
• Biochemical Engineer
• Polymer Engineer
• Refinery Engineer
• Petrochemical Engineer

Types of Employers

• Chemical Products Manufacturers
• Power Companies
• Pharmaceutical Companies
• Plastic and Synthetic Resin Manufacturers
• Federal Government
• Pulp and Paper Companies
• Petroleum Products Manufacturers