# Chemical Engineering and AI (Option G)

## September 2023 (students who entered first year in September 2022 or later)

### Year 2:

#### Term A
- NMM 2270A: Applied Mathematics for Engineering II
- SE 2205A: Algorithms and Data Structures
- CBE 2206A: Industrial Organic Chemistry I
- CBE 2214A: Engineering Thermodynamics
- CBE 2220A: Chemical Process Calculations

#### Term B
- NMM 2276b: Applied Mathematics for Elec & Mech Eng III
- SE 2251b: Software Design for Systems Engineering
- CBE 2207B: Industrial Organic Chemistry II
- CBE 2224B: Chemical Engineering Thermodynamics
- CBE 2221B: Fluid Flow
- CBE 2220A: Chemical Process Calculations

### Year 3:

#### Term A
- DS 3000a: Intro to Machine Learning
- SE 3309a: Database Systems
- ECE 3350a: Cyber-Physical Systems Theory
- CBE 3307A: Energy and Environment
- CBE 3315A: Reaction Engineering
- CBE 3322A: Heat Transfer Operations

#### Term B
- AISE 3010b: Data Engineering and Machine Learning
- ECE 3351b: Digital Systems and Signal Processing
- SS 2143b: Applied Probability and Statistics
- Writing 2130f/g: Building Better (Communication) Bridges
- CBE 3324B: Mass Transfer Operations
- CBE 3323B: Staged Operations

### Year 4:

#### Term A
- AISE 3020a: AI: Ethics, bias and privacy
- AISE 4010a: Deep Learning for Time Series Data
- SE 4430a: Introduction to Computer Networking, Security & IoT
- CBE 3318A: Introduction to Chemical Process Simulation
- CBE 3395Y: Chemical Engineering Lab

#### Term B
- AISE 4020b: Artificial Intelligence Systems Engineering Design I
- CBE 3395Y: Chemical Engineering Lab
- CBE 3310B: Process Dynamics and Control
- CBE 3319B: Introduction to Plant Design and Safety
- CBE 3316B: Sustainable Chemical Engineering & Life Cycle Analysis
  - One 0.5-credit non-technical elective *

### Important:

Students are responsible for ensuring they have the correct courses required for their degree. If you are unsure which courses you still need or if you see courses listed on the progression sheet that are no longer offered or are not offered in the term you see listed here, please contact your Academic Counsellor.

*Non-technical Electives:

[http://www.eng.uwo.ca/undergraduate/upper_year/electives.html](http://www.eng.uwo.ca/undergraduate/upper_year/electives.html)

### AISE Technical Electives:

** AISE technical electives
- refer to a list of AI-based technical courses approved by the AISE program committee. The list consists of AI-based courses offered by the Faculty of Engineering and Faculty of Science at Western. The list will be updated every year.

### Technical Electives:

- CBE 4404a/b: Downstream Processing in Pharmaceutical Manufacturing
- CBE 4405a/b: Air Pollution
- CBE 4407a/b: Solid Waste Treatment
- CBE 4409a/b: Wastewater Treatment
- CBE 4411a/b: Engineering Coffee
- CBE 4413a/b: Selected Topic in Chemical Engineering
- CBE 4415: Chemical Engineering Project
- CBE 4416a/b: Carbon Footprint & Management
- 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 4422a/b: Nanobiotechnology
- CBE 4423a/b: Tissue Engineering
- CBE 4424a/b: Biosensor Principles and Applications
- CBE 4428a/b: Introduction to Nanoengineering
- CBE 4432a/b: Energy and Fuels Production Systems
- CBE 4463a/b: Water Pollution Design
- CBE 4485a/b: Energy & Society
- CBE 4493a/b: Polymer Engineering
- CEE 3362a/b: Drinking Water Quality and Treatment
- CBE 4484a/b: Green Fuels and Chemicals
- MME 4429a/b: Nuclear Engineering

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The official version of the academic calendar can be found at: [www.westerncalendar.uwo.ca](http://www.westerncalendar.uwo.ca)
<table>
<thead>
<tr>
<th>Year 5:</th>
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<tbody>
<tr>
<td><strong>Term A</strong></td>
</tr>
<tr>
<td>ECE 4450a Data Driven Control of Cyber-Physical Systems</td>
</tr>
<tr>
<td>ELI 4110f Engineering Ethics, Sustainable Development and the Law</td>
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<tr>
<td>AISE 4050 Artificial Intelligence Systems Engineering Design II</td>
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<tr>
<td>One 0.5 credit from AISE technical electives**</td>
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<tr>
<td>One 0.5-credit non-technical elective *</td>
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| **Term B:**                                |
| AISE 4050 Artificial Intelligence Systems Engineering Design III |
| One 0.5-credit non-technical elective *    |
| One CBE Technical Elective 0.5 credit     |
| One CBE Technical Elective 0.5 credit     |
| 0.5 credit from AISE technical elective**  |