

# BASC CHEMICAL ENGINEERING, ENGINEERING MANAGEMENT AND ENTREPRENEURSHIP OPTION

Chemical engineering is at the intersection of many disciplines, linking knowledge of basic and applied sciences, economics, and health and safety. Chemical engineering graduates use a series of operations to sustainably process raw natural materials into finished products. They work in any number of industries, and during their careers, they may face a variety of challenges, including optimizing processes, monitoring pollution, converting renewable energy, processing foods and drugs, and manufacturing new materials.

This program is offered in English and in French.

Courses in the first two years of the program are offered in English and French. In the third and fourth years, almost all courses are given in English only.

## Program Requirements

Requirements for this program have been modified. Please consult the 2023-2024 calendars (<https://catalogue.uottawa.ca/en/archives/>) for the previous requirements.

Co-operative education is available with this program.

### Compulsory First-Year Courses:

|          |   |         |
|----------|---|---------|
| ADM 1100 | Introduction to Business  | 3 Units |
| ADM 1340 | Financial Accounting  | 3 Units |
| CHG 1125 | Chemical Engineering Fundamentals                                     | 3 Units |
| CHG 1371 | Numerical Methods and Engineering Computation in Chemical Engineering | 3 Units |
| CHM 1311 | Principles of Chemistry   | 3 Units |
| CHM 1321 | Organic Chemistry I   | 3 Units |
| ENG 1112 | Technical Report Writing  | 3 Units |
| GNG 1105 | Engineering Mechanics   | 3 Units |
| ITI 1120 | Introduction to Computing I   | 3 Units |
| MAT 1320 | Calculus I  | 3 Units |
| MAT 1322 | Calculus II   | 3 Units |
| MAT 1341 | Introduction to Linear Algebra  | 3 Units |
| PHY 1122 | Fundamentals of Physics II  | 3 Units |

### Compulsory Second-Year Courses:

|          |  |         |
|----------|--|---------|
| ADM 2320 | Marketing  | 3 Units |
| CHG 2312 | Fluid Flow   | 3 Units |
| CHG 2314 | Heat Transfer Operations   | 3 Units |
| CHG 2317 | Introduction to Chemical Process Analysis and Design                   | 3 Units |
| CHG 2324 | Fundamentals and Applications of Chemical Engineering Thermodynamics   | 3 Units |
| CHM 2120 | Organic Chemistry II   | 3 Units |
| CHM 2330 | Physical Chemistry: Introduction to the Molecular Properties of Matter | 3 Units |
| GNG 1103 | Introduction to Engineering Design                                     | 3 Units |

|          |   |         |
|----------|---|---------|
| MAT 2322 | Calculus III for Engineers                            | 3 Units |
| MAT 2384 | Ordinary Differential Equations and Numerical Methods | 3 Units |

3 course units from: 3 Units

|          |   |  |
|----------|---|--|
| ECO 1192 | Engineering Economics   |  |
| GNG 2101 | Introduction to Product Development for Engineers and Computer Scientists |  |

3 course units from: 3 Units

|          |  |  |
|----------|--|--|
| HIS 2129 | Technology, Society and Environment Since 1850 |  |
| PHI 2394 | Scientific Thought and Social Values           |  |

### Compulsory Third-Year Courses:

|          |   |         |
|----------|---|---------|
| ADM 3313 | New Venture Creation  | 3 Units |
| CHG 3111 | Unit Operations   | 3 Units |
| CHG 3112 | Process Synthesis, Design and Economics                         | 3 Units |
| CHG 3122 | Chemical Engineering Practice                                   | 3 Units |
| CHG 3127 | Chemical Reaction Engineering                                   | 3 Units |
| CHG 3305 | Advanced Materials in Chemical Engineering                      | 3 Units |
| CHG 3316 | Transport Phenomena   | 3 Units |
| CHG 3326 | Principles of Phase Equilibria and Chemical Reaction Equilibria | 3 Units |
| CHG 3335 | Process Control   | 3 Units |
| CHG 3337 | Data Collection and Interpretation                              | 3 Units |

### Compulsory Fourth-Year Courses:

|   |   |         |
|---|---|---------|
| CHG 4116  | Chemical Engineering Laboratory               | 3 Units |
| CHG 4250  | Plant Design Project                          | 9 Units |
| CHG 4307  | Process Risk Management and Sustainability    | 3 Units |
| CHG 4343  | Computer-Aided Design in Chemical Engineering | 3 Units |
| GNG 4170  | Engineering Law                               | 3 Units |
| CHG 4381  | Biochemical Engineering                       | 3 Units |
| 3 technical course units from the list of technical electives |   | 3 Units |

**Total: 132 Units**

## List of Optional Courses

Students in the regular program (no option) or the Engineering Management and Entrepreneurship option can register for technical electives from any of the three lists below.

### List of Technical Electives in Chemical Engineering <sup>1</sup>

|          |   |         |
|----------|---|---------|
| CHG 4331 | Introduction to Polymer Reaction Engineering                      | 3 Units |
| CHG 4359 | Selected Topics I   | 3 Units |
| CHG 4360 | Selected Topics II  | 3 Units |
| CHG 4361 | Selected Topics III   | 3 Units |
| CHG 4362 | Selected Topics IV  | 3 Units |
| CHG 4364 | Oil and Gas Processing  | 3 Units |
| CHG 4380 | Particulate and Multiphase Systems                                | 3 Units |
| CHG 4901 | Thesis and seminars I   | 3 Units |
| CHG 4902 | Thesis and seminars II  | 3 Units |
| GNG 4120 | Technology Entrepreneurship for Engineers and Computer Scientists | 3 Units |
| GNG 4128 | Introduction to Nuclear Engineering                               | 3 Units |

**List of Technical Electives for the Environment Option <sup>1</sup>**

|          |  |         |
|----------|--|---------|
| BIO 2129 | Ecology  | 3 Units |
| CHG 4301 | Air Pollution Control Processes                                    | 3 Units |
| CHG 4302 | Environmental Biotechnology  | 3 Units |
| CHG 4359 | Selected Topics I <sup>2</sup>                                     | 3 Units |
| CHG 4360 | Selected Topics II <sup>2</sup>                                    | 3 Units |
| CHG 4361 | Selected Topics III <sup>2</sup>                                   | 3 Units |
| CHG 4362 | Selected Topics IV <sup>2</sup>                                    | 3 Units |
| CHG 4385 | Adsorption Separations for Environmental Applications              | 3 Units |
| CHG 4901 | Thesis and seminars I  | 3 Units |
| CHG 4902 | Thesis and seminars II   | 3 Units |
| CVG 3132 | Physical/Chemical Unit Operation of Water and Wastewater Treatment | 3 Units |
| CVG 4130 | Advanced Environmental Engineering                                 | 3 Units |
| CVG 4133 | Solid Waste Management   | 3 Units |

**Note(s)**

**1**

These courses are not necessarily offered every year.

**2**

This course must be in the field of Environmental Engineering.  
Permission granted by the department.