BASC CHEMICAL ENGINEERING

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

Co-operative education is available with this program.

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

Compulsory First-Year Courses:		
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:		
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:		
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
9 technical course units from the list of technical electives		9 Units
6 complementary elective course units at the undergraduate level [3]		6 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 [1]		
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 [1]		
BIO 2129	Ecology	3 Units
CHG 4301	Air Pollution Control Processes	3 Units
CHG 4302	Environmental Biotechnology	3 Units
CHG 4359	Selected Topics I [2]	3 Units
CHG 4360	Selected Topics II [2]	3 Units
CHG 4361	Selected Topics III [2]	3 Units

CHG 4362	Selected Topics IV [2]	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.

3

Complementary elective courses at the undergraduate level includes GNG 2101, GNG 4170, and GNG 4120, but excludes all courses offered by the Faculty of Science and the Faculty of Engineering as well as all courses that have a science, mathematics or engineering content. For a complete list of courses please refer to the list of complementary elective courses (https://www2.uottawa.ca/faculty-engineering/undergraduate-studies/courses-and-course-sequences/complementary-electives/) on the Faculty of Engineering website.