Seneca POLYTECHNIC

2024-2025

CHEMICAL ENGINEERING TECHNOLOGY (CHY)

Important: This program is no longer accepting new applications. Explore Related Programs (https://www.senecapolytechnic.ca/programs/fulltime/CHY.html#related-programs).

About the Program

In this three-year advanced diploma program, you will be training for an exciting career as an engineering technologist with specializations in chemical/process engineering, chemical analysis and materials science. This program will provide you with hands-on experience and a solid background in basic biology, chemistry and mathematics. In subsequent semesters, you will gain further expertise in process engineering; instrumental analysis for chemicals and materials; process and unit design; environment, health and safety (EH&S); and special topics including energy, sustainability and biological engineering.

As a student in this program, you may be eligible to participate in a semester exchange opportunity with Business Academy Aarhus in Denmark (https://www.senecapolytechnic.ca/student-services-and-support/student-life/global-opportunities/semester-exchange/business-academy-aarhus.html).

Your academic progress will be monitored during the first two semesters. As the number of seats in the third semester is limited, if you do not maintain a semester GPA of at least 2.5 during the first year and subsequent semester, you will be transferred to an alternate program within the School of Biological Sciences and Applied Chemistry.

Common First Semester

The following programs have the first two semesters in common, allowing you to transfer between programs before the second year: Biotechnology - Advanced (https://www.senecapolytechnic.ca/programs/fulltime/BTA.html), Chemical Laboratory Technician (https://www.senecapolytechnic.ca/programs/fulltime/CLT.html) and Chemical Laboratory Technology - Pharmaceutical (https://www.senecapolytechnic.ca/programs/fulltime/CLP.html).

Credential Awarded

Ontario College Advanced Diploma

Duration

6 Semesters (3 Years)

Starts

January, September

Program and Course Delivery

This program is offered in Seneca's hybrid delivery format with some courses available in Seneca's flexible delivery format. Some coursework is online and some must be completed in person. Students will need to come on campus to complete in-person learning requirements. For courses offered in the flexible delivery format, professors use innovative learning spaces and technology to teach students in a classroom or lab and broadcast in real time to students attending remotely. In flexible courses, students have the choice of coming on campus or learning online.

Skills

Throughout this program you will develop the following skills:

- design, operate and maintain chemical engineering processes and equipment
- develop, perform and validate analytical methods using a variety of techniques and instrumentation
- select or synthesize and utilize chemicals and materials for research and design
- document and communicate technical findings clearly, ethically and effectively

Work Experience

Optional Work Term

Students meeting all academic requirements may have the opportunity to complete an optional work term(s) in a formal work environment. The work term(s) is similar in length to an academic semester and typically involves full-time work hours that may be paid or unpaid. In programs with limited work term opportunities, additional academic requirements and a passing grade on a communication assessment may be required for eligibility. Eligibility for participation does not guarantee a work position will be secured. Additional fees are required for those participating in the optional work term stream regardless of success in securing a work position.

Review eligibility requirements for work-integrated learning (https://www.senecapolytechnic.ca/employers/seneca-works/work-integrated-learning/eligibility.html)

Your Career

Graduates of the program can explore the following career options:

- plant operator (manufacturing, mining, fine chemicals, energy)
- environmental and water/wastewater technologist
- chemical/materials analyst
- quality assurance and control technician
- research and product development technologist

Affiliations/Associations

- Ontario Association of Certified Engineering Technicians and Technologists (OACETT)
- Chemical Institute of Canada (CIC) through the Canadian Society for Chemical Technology (CSCT)
- Canadian Association of Surface Finishers (CASF)
- National Engineering Month
- Aarhus Business Academy

Program of Study

Course Code	Course Name	Weekly Hours
Semester 1		
BIO173	Biology	5
CHM173	Chemistry	5
COM101	Communicating Across Contexts	3

or COM111	Communicating Across Contexts (Enriched)	
MTH173	Mathematics	5-6
or MTH171	Mathematics	
SSA001	Science Survival	1
Semester 2		
BIO273	Biology	5
CHM273	Chemistry	5
MTH273	Mathematics	5
TCM273	Technical Communications I	2
plus: General Education Course (1)		3
Semester 3		
CHO353	Chemistry - Organic	6
ICA353	Instrumentation for Chemical Analysis I	6
STA453	Statistics	3
TCA353	Techniques for Chemical Analysis I	6
TCM373	Technical Communications II	2
WTP100	Work Term Preparation *	1
Work-Integrated Learning Term 1		
CHY441	Chemical Engineering Technology, Work Term *	30
Semester 4		
ACE433	Applied Chemical Engineering I: Biology in Engineering	6
CHP433	Physical Chemistry	5
CNG433	Process Engineering	5
PHY453	Physics	3
plus: General Education Course (1)		3
Work-Integrated Learning Term 2		
CHY442	Chemical Engineering Technology, Work Term II *	30
Semester 5		
CHP533	Chemistry - Physical	0
CNG533	Fluid Mechanic and Heat Transfer	6
ICA533	Instrumentation for Chemical Analysis II	6
MTE533	Materials Engineering I: Characterization	6
plus: General Education Course (1)		3
Semester 6		
ACE633	Applied Chemical Engineering II: Energy	3
CNG633	Process Control and Industrial Safety	6
MTE633	Materials Engineering II: Design	6
SSA002	Science Survival II: Professional Practice	1
TCA633	Techniques for Chemical Analysis II	6

* Work-Integrated Learning option only

Note: The following course will not fulfil a General Education requirement: NAT280 The Body: Bits and Bites.

Program Learning Outcomes

This Seneca program has been validated by the Credential Validation Service as an Ontario College Credential as required by the Ministry of Colleges and Universities.

As a graduate, you will be prepared to reliably demonstrate the ability to:

- Perform all work in compliance with relevant statutes, regulations, standards, practices and guidelines.
- Implement, co-ordinate and evaluate quality control and quality assurance procedures to meet organizational standards and requirements.
- Troubleshoot industrial or chemical processes and laboratory equipment.
- Solve complex problems and perform tasks by applying principles of mathematics, physics, chemistry and chemical engineering.
- Perform, co-ordinate, implement and validate laboratory procedures to conduct quantitative and qualitative analyses and tests.
- Prepare and purify compounds using standard synthesis and purification procedures.
- Maintain and control industrial or chemical processes and assist with their design using chemical engineering principles.
- Analyze and interpret data using statistical methods.
- Select and use current technologies in chemical engineering tasks and projects.
- Prepare, modify, interpret and present technical documents for chemical engineering applications.
- Apply best practices for sustainability.
- Develop strategies for ongoing personal and professional development to enhance work performance in a multi-disciplinary workplace.

Admission Requirements

- Ontario Secondary School Diploma (OSSD), or equivalent, or a mature applicant (https://www.senecapolytechnic.ca/registrar/canadian-applicants/admission-requirements/mature-applicants.html)
- English: Grade 12 C or U, or equivalent course
- Mathematics: Grade 12 C or U, or Grade 11 Functions (MCR3U), or equivalent course
- Biology: Grade 11 C or U, or equivalent course
- Chemistry: Grade 11 U or Grade 12 C or U, or equivalent course

Canadian citizens and permanent residents may satisfy the English and/or mathematics requirements for this program through successful Seneca pre-admission testing. (https://www.senecapolytechnic.ca/registrar/canadian-applicants/admission-requirements/mature-applicants.html)

Recommended upgrading for applicants who do not meet academic subject requirements (https://www.senecapolytechnic.ca/registrar/canadian-applicants/admission-requirements/upgrading-options.html).

International Student Information

International admissions requirements vary by program and in addition to English requirements (https://www.senecapolytechnic.ca/international/apply/how-to-apply/admission-requirements/english-requirements.html), programs may require credits in mathematics, biology, and chemistry at a level equivalent to Ontario's curriculum, or a postsecondary degree or diploma, equivalent to an Ontario university or college. Program-specific pre-requisite courses and credentials are listed with the

admission requirements on each program page. To review the academic requirements please visit: Academic Requirements - Seneca, Toronto, Canada (senecapolytechnic.ca) (https://www.senecapolytechnic.ca/international/apply/how-to-apply/admission-requirements/academic-requirements.html).

Pathways

As a leader in academic pathways, we offer a range of options that will allow you to take your credential further in another Seneca program or a program at a partner institution.

To learn more about your eligibility, visit the Academic Pathways (https://www.senecapolytechnic.ca/pathways.html) web page.

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