Seneca POLYTECHNIC

2024-2025

BACHELOR OF COMPUTER SCIENCE (BCMS)

About the Program

The Bachelor of Computer Science degree program will prepare you to become a resilient, flexible and agile professional who thrives in an increasingly evolving technology environment.

This innovative three-year degree program offers a unique focus on inclusion (including equity, diversity and accessibility), and blends comprehensive technical studies with experiential career-focused learning opportunities. You will explore various areas of computer science, including user interface design, cybersecurity, cloud computing, machine learning, infrastructures, application development and more.

In addition to technical skills and theoretical knowledge in computer science, this program will provide you with core transferable, cross-functional skills, such as creative problem solving and business and technical writing through case analysis and industry projects. You will have the opportunity to gain further industry experience through the program's mandatory work term, which is designed to connect theoretical understanding with practical experience across various computer science disciplines. This degree program's unique focus on inclusion and accessibility will also help you leverage diverse perspectives to develop innovative solutions and work within different team settings.

Credential Awarded

Bachelor Degree

Duration

6 Semesters (3 Years)

Starts

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:

- inclusive problem solving and critical thinking
- effective communication and ability to collaborate in diverse workplaces
- database design and development
- algorithms and programming languages
- software development lifecycle
- human-centred design and accessibility
- self-management and collaboration
- cybersecurity and cloud computing
- research and ethics

Work Experience

Mandatory Degree Co-op

A work experience that includes at least one term in a formal work environment. In most cases the work term(s) is a paid position that is completed between two academic semesters and requires a minimum of 420 hours of work. Students must be in good standing and meet all identified requirements prior to participating in the work experience. The successful completion of the co-op work term(s) is required for graduation. Eligibility for participation does not guarantee that a work position will be secured. Additional fees are required for those participating in the mandatory co-op stream regardless of success in securing a work position.

Your Career

When you graduate from this program, these are the types of career options you can explore:

- Cloud programmer
- Computer programmer
- Data analyst
- Database developer
- DevOps engineer
- Full stack developer
- IT analyst
- Software developer
- System analyst
- UX developer

Program of Study

Course Code	Course Name	Weekly Hours
Semester 1		
DBS101	Introduction to Database Management Systems	4
DEI101	Introduction to Diversity, Equity, Inclusion and Accessibility	2
MTH130	Math Foundations	1
OPS106	Introduction to Unix	4
PBS101	Introduction to Problem Solving	2
PRG101	Introduction to Computer Programming	4

Semester 2		
ENG106	Writing Strategies	3
MTH230	Discrete Mathematics and Logic	3
NTF201	Networking Fundamentals	4
PRG210	Object Oriented Programming	4
SYS210	System Analysis	4
Semester 3		
DEI301	Diversity, Equity and Inclusion in Computer Science	3
DSA301	Data Structure and Algorithms	4
MTH330	Calculus	3
SYS310	System Design and Architecture	4
WEB310	Web Development I	4
Semester 4		
BTC440	Business and Technical Writing	3
CAO401	Computer Architecture and Organization	4
SEC401	Introduction to Security	4
UDI401	User Interface Design	3
WEB401	Web Development II	4
plus: Liberal Studies Course (1)		3
Semester 5		
DEI501	Building an Accessibility Toolkit	4
REA501	Research Methodologies	3
SEC501	Software Security	4
STA501	Applied Statistics	4
WTP200	Work Term Preparation	1
plus: Liberal Studies Course (1)		3
Work-Integrated Learning Term		
BCS771	Computer Science - Inclusive Design, Co-op	35
Semester 6		
CLO601	Cloud Computing for Programmers	4
CPT601	Capstone Project	4
ETH601	Law and Ethics	3
plus: Liberal Studies Course (1)		3
plus: Professional Options (1)		4
Professional Options		
Semester 6		
DPI912	Python for Programmers: Sockets and Security	4
DPI914	Social Engineering	4
DPS909	Topics in Open Source Development	4

Seneca has been granted a consent by the Minister of Colleges and Universities to offer this degree for a seven-year term starting July 2, 2024. In conformity with the Minister's criteria and requirements, Seneca will submit an application for the renewal of the consent for this program 12 months prior to the expiration of the consent. Seneca shall ensure that all students admitted to the above-named program during the period of consent will have the opportunity to complete the program within a reasonable time frame.

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:

- Apply professional ethics, accountability, and equity to computer science principles to promote diversity and cultivate inclusion within global and social contexts.
- Design and implement secure solutions to support the virtual infrastructure and application development needs for the project.
- Analyze problems to create and implement solutions within the limitations of computer science.
- Design and develop robust software systems that meet functional and non-functional requirements for multiple industries and technical ecosystems.
- Design and build human-centred applications that enhance user experience and support clients in achieving business goals.
- Create and validate business solutions using mathematical foundations, algorithmic principles, and critical thinking skills.
- Demonstrate interpersonal, teambuilding and leadership skills, while participating in a variety of work environments.
- Develop critical thinking and research practices to facilitate lifelong learning for personal and professional development.
- Apply knowledge of database design and management to support software development processes.
- Communicate complex information using a variety of formats to audiences with different levels of technical knowledge.

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, with a minimum of 65%
- Mathematics: Grade 12 C or U, or Grade 11 U or M, or equivalent course, with a minimum of 65%
- 4 additional Grade 11 or 12 subjects at the C, M or U level

Learn about Seneca's free English upgrading course (https://www.senecapolytechnic.ca/registrar/canadian-applicants/admission-requirements/upgrading-options/english-12u-equivalency.html) and math upgrading course (https://www.senecapolytechnic.ca/registrar/canadian-applicants/admission-requirements/upgrading-options/math-12u-equivalency.html) for applicants who don't meet the high school requirements, as well as recommended upgrading for applicants who don't meet their 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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