

COMPUTER PROGRAMMING (CPP)

About the Program

This two-year diploma program prepares you with the skills and knowledge to begin your career as a programmer. As a leader in developing relevant programs, we have the largest offering of computer studies programs in the province. Through a variety of practical and theoretical courses, you will gain skills in mobile development, web development and distributed programming techniques and database administration. You will also learn about security and a variety of operating systems including Windows, UNIX, Linux and IBM Business Computing. Graduates of this program will enter their industry with programming and communications skills suitable for employment.

Part-time option is available > (<http://www.senecapolytechnic.ca/ce/technology/application-development/computer-cpo.html>)

Open Sources and Seneca

Seneca has connections with top tier open-source companies such as Mozilla, creators of the Firefox web browser, and Red Hat, maker of the most successful commercial Linux operating system. In a variety of courses, you will have the opportunity to work with top tier developers on such projects.

Credential Awarded

Ontario College Diploma

Duration

4 Semesters (2 Years)

Starts

January, May, 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:

- Computer programming
- Operating systems
- Database and web technology
- Data communication
- Security
- Advanced programming languages
- System methodologies
- Internet client and server-side development

- Database system design and maintenance
- Solve problems associated with software installation

Your Career

Graduates of the program can explore the following career options:

- Software developer
- Information systems specialist
- Personal Computer specialist
- International Business Machines programmer
- UNIX/Linux programmer
- Computer application programmer
- Interactive developer
- Junior software engineer
- Program analyst

Program of Study

Course Code	Course Name	Weekly Hours
Semester 1		
APS145	Applied Problem Solving	3
COM101	Communicating Across Contexts	3
or COM111	Communicating Across Contexts (Enriched)	
CPR101	Computer Principles for Programmers	3
IPC144	Introduction to Programming Using C	4
OPS102	Operating Systems for Programmers	4
Semester 2		
DBS211	Introduction to Database Systems	4
OOP244	Introduction to Object Oriented Programming	4
SFT221	Software Testing	3
WEB222	Web Programming Principles	4
plus: General Education Course (1)		
Semester 3		
DBS311	Advanced Database Services	4
OOP345	Object-Oriented Software Development Using C++	4
SYD366	Software Analysis and Design - I	4
WEB322	Web Programming Tools and Frameworks	4
plus: General Education Course (1)		
Semester 4		
DSA456	Data Structures and Algorithms	4
EAC594	Business Communication for the Digital Workplace	3
PMC444	IT Project Management Fundamentals Tools and Techniques	4
plus: General Education Course (1)		
plus: Professional Option Course (1)		

Professional Options

Course Code	Course Name	Weekly Hours
APD545	Application Development	4
BCI433	IBM Business Computing	4
CCP555	Cloud Computing for Programmers	4
DBA625	Database Administration	3
DBS501	Stored Procedures Using Oracles PL/SQL	4
DBW624	Introduction to Datawarehousing	3
DEN502	Digital Entrepreneurship for Programmers	4
ELA521	Ethics, Law and Application Development	4
GAM531	Game Engine Foundations	4
GAM532	Game Engine Techniques	4
GAM536	Game Content Creation	4
GAM537	Game Development Fundamentals	4
GPU621	Parallel Algorithms and Programming Techniques	4
MAP523	Mobile App Development - iOS	4
MAP524	Mobile App Development - Android	4
MAP526	Mobile App Development - Cross Platform	4
MST300	Introduction to Microsoft Cloud Technologies	4
OSD600	Open Source Development	4
OSD700	Open Source Development Project	4
RPG544	Business Application Using RPG	3
SPO600	Software Portability and Optimization	4
SYD466	Software Analysis and Design - II	4
TEC702	Technician as an Entrepreneur	4
UNX510	UNIX BASH Shell Scripting	4
UNX511	UNIX Systems Programming	4
WEB422	Web Programming for Apps and Services	4
WEB524	Web Programming Using ASP.NET	4
WEB530	Cross-platform App Development	3

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:

- identify, analyze, develop, implement, verify and document the requirements for a computing environment.
- contribute to the diagnostics, troubleshooting, documenting and monitoring of technical problems using appropriate methodologies and tools.
- implement and maintain secure computing environments.
- implement robust computing system solutions through validation testing that aligns with industry best practices.
- communicate and collaborate with team members and stakeholders to ensure effective working relationships.
- select and apply strategies for personal and professional development to enhance work performance.
- apply project management principles and tools when working on projects within a computing environment.
- adhere to ethical, legal, and regulatory requirements and/or principles in the development and management of computing solutions and systems.
- support the analysis and definition of software system specifications based on functional and non-functional requirements.
- contribute to the development, documentation, implementation, maintenance and testing of software systems by using industry standard software development methodologies based on defined specifications and existing technologies/frameworks.
- apply one or more programming paradigms such as object-oriented, structured or functional programming, and design principles, as well as documented requirements, to the software development process.
- model, design, implement, and maintain basic data storage solutions.
- contribute to the integration of network communications into software solutions by adhering to protocol standards.

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 U or M, 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)) (<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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