COMPUTER PROGRAMMING

Program: CMPG
Credential: Ontario College Diploma, Co-op
Delivery: Full-time + Part-time
Work Integrated Learning: 1 Co-op Work Term
Length: 4 Semesters, plus 1 work term
Duration: 2 Years
Effective: Fall 2023, Winter 2024, Summer 2024
Location: Barrie

Description

In this program, students focus on computer programming, web development, and designing data-driven systems. Students learn how to write code in a variety of programming languages such as Arduino, ASP.NET, C#, Java, JavaScript, HTML/CSS, PHP and Swift. Students gain experience developing software for diverse platforms including embedded systems, desktop, mobile and mainframe systems. With a strong emphasis on business and entrepreneurial values, students gain experience in problem solving, troubleshooting and system building through a series of applied assignments, projects and co-op work terms.

Career Opportunities

Graduates from this program are well suited to fulfill a wide-range of entry-level roles related to software development. Graduates could find themselves working independently or as a member of a team to analyze, design, enhance, and maintain software applications, on a variety of platforms including desktop, mobile, web, and mainframe systems. Computer programmer graduates may be employed in related fields, including systems analysis, business analysis, database design and management, computer operations, web development, and mobile application development.

Program Learning Outcomes

The graduate has reliably demonstrated the ability to:

1. identify, analyze, develop, implement, verify and document the requirements for a computing environment;

2. contribute to the diagnostics, troubleshooting, documenting and monitoring of technical problems using appropriate methodologies and tools;

3. implement and maintain secure computing environments;

4. implement robust computing system solutions through validation testing that aligns with industry best practices;

5. communicate and collaborate with team members and stakeholders to ensure effective working relationships;

6. select and apply strategies for personal and professional development to enhance work performance;

7. apply project management principles and tools when working on projects within a computing environment;

8. adhere to ethical, legal, and regulatory requirements and/or principles in the development and management of computing solutions and systems;

9. support the analysis and definition of software system specifications based on functional and non-functional requirements;

10. 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;

11. 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;

12. model, design, implement, and maintain basic data storage solutions;

13. contribute to the integration of network communications into software solutions by adhering to protocol standards;

14. describe technologies and techniques that can be used to reduce the impact of information technology on the environment;

15. apply basic entrepreneurial strategies to identify and respond to new opportunities.

Practical Experience

All co-operative education programs at Georgian contain mandatory work term experiences aligned with program learning outcomes. Co-op work terms are designed to integrate academic learning with work experience, supporting the development of industry specific competencies and employability skills.

Georgian College holds membership with, and endeavours to follow, the co-operative education guidelines set out by the Co-operative Education and Work Integrated Learning Canada (CEWIL) and Experiential and Work-Integrated Ontario (EWO) as supported by the Ministry of Colleges and Universities.

Co-op is facilitated as a supported, competitive job search process. Students are required to complete a Co-op and Career Preparation course scheduled prior to their first co-op work term. Students engage in an active co-op job search that includes applying to positions posted by Co-op Consultants, and personal networking. Co-op work terms are scheduled according to a formal sequence that alternates academic and co-op semesters as shown in the program progression below.

Programs may have additional requirements such as a valid driver's license, strong communication skills, industry specific certifications, and ability to travel. Under exceptional circumstances, a student may be unable to complete the program progression as shown below. Please refer to Georgian College Academic Regulations for details.

International co-op work terms are supported and encouraged, when aligned with program requirements.

Further information on co-op services can be found at www.GeorgianCollege.ca/co-op (https://www.georgiancollege.ca/co-op/)

Program Progression

The following reflects the planned progression for full-time offerings of the program.

Fall Intake - Barrie

- **Sem 1:** Fall 2023
- **Sem 2:** Winter 2024
- **Sem 3:** Summer 2024
- **Work Term 1:** Fall 2024
- **Sem 4:** Winter 2025

Winter Intake - Barrie

- **Sem 1:** Winter 2024
- **Sem 2:** Summer 2024
- **Sem 3:** Fall 2024
- **Work Term 1:** Winter 2025
- **Sem 4:** Summer 2025

Summer Intake - Barrie

- **Sem 1:** Summer 2024
- **Sem 2:** Fall 2024
- **Sem 3:** Winter 2025
- **Work Term 1:** Summer 2025
- **Sem 4:** Fall 2025

Articulation

A number of articulation agreements have been negotiated with universities and other institutions across Canada, North America and internationally. These agreements are assessed, revised and updated on a regular basis. Please contact the program co-ordinator for specific details if you are interested in pursuing such an option. Additional information can be found on our website at https://www.georgiancollege.ca/admissions/credit-transfer/ (http://www.georgiancollege.ca/admissions/credit-transfer/)

Admission Requirements

OSSD or equivalent with

- Grade 12 English (C or U)
- any Grade 12 Mathematics (C or U)

Mature students, non-secondary school applicants (19 years or older), and home school applicants may also be considered for admission. Eligibility may be met by applicants who have taken equivalent courses, upgrading, completed their GED, and equivalency testing. For complete details refer to: www.georgiancollege.ca/admissions/academic-regulations/ (https://www.georgiancollege.ca/admissions/academic-regulations/)

Applicants who have taken courses from a recognized and accredited post-secondary institution and/or have relevant life/learning experience may also be considered for admission; refer to the Credit for Prior Learning website for details: www.georgiancollege.ca/admissions/credit-transfer/ (https://www.georgiancollege.ca/admissions/credit-transfer/)

Additional Information

To be successful in this program, students are required to have a personal notebook computer (either PC or Mac architecture) prior to the start of the program that meets or exceeds the following hardware specifications:

- Intel i5 processor or AMD equivalent
- 8GB of memory (16 GB recommended)
- 250GB hard drive (SSD recommended)

Additional operating systems, tools, and software used in the program are provided to the student upon commencement of the program.

Note: Machines that run Windows on an ARM processor are not supported at this time. Many development programs are not complied to work with that operating system/chipset combination.

Graduation Requirements

18 Program Courses
2 Communications Courses
1 Program Option Course
3 General Education Courses
1 Co-op Work Term

Graduation Eligibility

To graduate from this program, the passing weighted average for promotion through each semester, from year to year, and to graduate is 60%. Additionally, a student must attain a minimum of 50% or a letter grade of P (Pass) or S (Satisfactory) in each course in each semester unless otherwise stated on the course outline.

Program Tracking

The following reflects the planned course sequence for full-time offerings of the Fall intake of the program. Where more than one intake is offered contact the program co-ordinator for the program tracking.

Semester 1		**Hours**
Program Courses		
COMP 1002	HTML, CSS, and JS Fundamentals	42
COMP 1030	Programming Fundamentals	42
COMP 1035	Networking Essentials	42
COMP 1045	Internet of Things using Arduino	42
MATH 1003	Math for the Computer Industry	42
Communications Course		
Select 1 course from the communications list during registration.		42
	Hours	**252**
Semester 2		
Program Courses		
COMP 1006	Introduction to Web Programming using PHP	42
COMP 1008	Introduction to Object Oriented Programming using Java	42
COMP 1054	Interface Design Using CSS	42
COMP 2003	Relational Database	42
COMP 1112	Document Automation Using Python	42
Communications Course		
Select 1 course from the communications list during registration.		42
	Hours	**252**
Semester 3		
Program Courses		
COMP 1011	Advanced Object Oriented Programming using Java	42

COMP 1073	Client-Side JavaScript	42
COMP 2084	Server-Side Scripting using ASP.NET	42
COMP 2139	Cloud Computing Services	42
ENTR 1002	Introduction to Entrepreneurship	42
General Education Course		
Select 1 course from the general education list during registration.		42
	Hours	**252**
Semester 4		
Program Courses		
COMP 2068	JavaScript Frameworks	42
COMP 3025	Mobile and Pervasive Computing	42
COMP 2140	Systems Analysis and Project Management	42
General Education Courses		
Select 2 courses from the general education list during registration.		84
Program Option Course		
Select 1 course from the available list during registration.		42
	Hours	**252**
	Total Hours	**1008**

Co-op Work Terms		**Hours**
COOP 1059	Computer Programming Work Term 1	490
	Hours	**490**
	Total Hours	**490**

Code	**Title**
Program options may include:	
COMP 1009	The Mainframe Environment
COMP 1046	Windows System Administration
COMP 1070	Computer Virtualization
COMP 2006	Introduction to C++
COMP 2018	Linux System Administration
COMP 2021	Data Structures and Algorithms
COMP 2070	Programming for the Mainframe
COMP 2125	Mobile Development using Swift
COMP 2131	Cloud Computing
COMP 2099	Introduction to Data Analytics
COMP 3002	Advanced Databases
COMP 3023	Game and Simulation Programming
COMP 3026	Application Security Programming
COMP 3033	Web Frameworks and APIs
COMP 3037	Introduction to Artificial Intelligence

Graduation Window

Students unable to adhere to the program duration of two years (as stated above) may take a maximum of four years to complete their credential. After this time, students must be re-admitted into the program, and follow the curriculum in place at the time of re-admission.

Disclaimer: *The information in this document is correct at the time of publication. Academic content of programs and courses is revised on an ongoing basis to ensure relevance to changing educational objectives and employment market needs.*

Program outlines may be subject to change in response to emerging situations, in order to facilitate student achievement of the learning outcomes required for graduation. Components such as courses, progression, coop work terms, placements, internships and other requirements may be delivered differently than published.