

COMPUTER SYSTEMS TECHNICIAN - NETWORKING

Program Outline

Major:	CSTN
Length:	2 Years
Delivery:	4 Semesters, plus 2 work terms
Credential:	Ontario College Diploma, Co-op
Effective:	2013-2014
Location:	Barrie
Start:	Fall (Barrie), Winter (Barrie)

Description

This program is designed to meet the academic needs of all students, whether a recent secondary school graduate, a college or university graduate, or a mature student.

As students progress through the two years, the courses they take will help them gain insight and experience in the fields in which they may choose to apply their computer skills after graduation.

A structured approach to problem solving, effective oral and written communications, and attention to standards and documentation are stressed throughout.

Industry trends and requirements are continually monitored to ensure curriculum remains current and relevant.

Career Opportunities

Graduates will be prepared to work independently or as a member of a team to support the development, implementation, and maintenance of computer systems and networks. Graduates with networking interests/skills generally find employment as data communications and network technical support specialists or network administrators;

while graduates with hardware interests/skills generally find employment as computer operations specialists in many types of businesses and government.

Program Learning Outcomes

The graduate has reliably demonstrated the ability to:

- communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience;
- interact with others in groups and teams, use critical thinking skills to evaluate and solve problems, communicate confidently in a variety of situations, and demonstrate technological fluency;
- analyze and resolve basic information technology problems through the application of systematic approaches.
- support the analysis, planning, design, development, and implementation of computer systems and networks.
- install, configure, troubleshoot, maintain, and upgrade components of computer systems and networks.
- complete all work in compliance with relevant policies, practices, processes and procedures.
- participate as an effective individual and member of a team.
- interpret, produce, and present work-related documents and information effectively and accurately.
- identify and implement strategies to improve job performance and promote personal and professional growth.
- utilize effective communication and interpersonal skills.
- employ generic skills for personal and professional growth.
- examine organizational behaviour and group dynamics within a technology team.
- discuss ethical issues within a multicultural and global business environment.
- participate in society as an informed citizen and pursue an enriched professional and personal life through life-long learning.
- describe technologies and techniques that can be used to reduce the impact of information technology on the environment.
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- Curriculum objectives are achieved through a combination of lectures, labs, practical assignments, and co-op placements. Program Learning Outcomes are geared towards developing the skills necessary to design, develop, implement and audit computerized information systems, and toward developing initiative and self motivation.

Practical Experience:

Co-operative Education is a mandatory component of all Co-op programs at Georgian College; it has been designed as a process by which students integrate their academic education with work experience related to their program of study. This integration affects

much more than simply earning a salary, including the adjustment to the work environment and the development of professionalism. It also reinforces skills and theory learned during academic semesters, develops professional contacts, job knowledge and career path, improves human relations and communication skills and promotes personal maturity and financial independence.

Students are requested to register, attend and participate in their scheduled co-operative education classes. These classes are scheduled for all first year students and are expected to be completed in order to proceed successfully to their first co-op work experience. To ensure students are eligible to proceed onto any co-op work experience students should refer to Promotional Status and Eligibility for Co-op as outlined in the College Calendar. Co-op policies and procedures can be located on our website:
www.georgianc.on.ca/careers/for-students/

Georgian College follows the Co-operative Education guidelines set out by the Canadian Association for Co-operative Education (CAFCE) and Education at Work Ontario (EWO) by supporting the learning outcomes designed for the program specific graduate profile and curriculum as set out by the Ministry of Training, Colleges and Universities.

The Program Progression:

Fall Intake - Barrie

Sem 1	Sem 2	Work Term 1	Sem 3	Work Term 2	Sem 4
Fall 2013	Winter 2014	Summer 2014	Fall 2014	Winter 2015	Summer 2015

Winter Intake - Barrie

Sem 1	Sem 2	Work Term 1	Sem 3	Sem 4	Work Term 2
Winter 2014	Summer 2014	Fall 2014	Winter 2015	Summer 2015	Fall 2015

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
<http://www.georgianc.on.ca/academics/articulations/>

Admission Requirements:

You must meet ONE of the following requirements to be eligible for admission to these programs:

Secondary school applicants:

- OSS Curriculum: OSSD or equivalent with Grade 12 English (C) or (U) (ENG 4C, ENG 4U); plus any Grade 12 College Mathematics (MAP 4C or MCT 4C), or any Grade 12 U University Mathematics

Non-Secondary school applicants (19 years or older):

- Any credit Communication course and most credit mathematics courses taken at Georgian College
- College preparatory programs including those taken at Georgian College: Business Foundations*
- Equivalent courses in English and mathematics taken through secondary school or Independent Learning Centres (at the general, advanced, college or university level)
- Academic and Career Entrance Certificate (ACE) program with communications and business, apprentice or technical mathematics*
- Mature student testing in English and mathematics that meets the minimum standards for admission (available through most testing services)*
- Ontario High School Equivalency Certificate (GED)
- English, Literature or Communication credit courses and most mathematics credit courses from accredited colleges/universities

Home school applicants:

- Applicants can write the mature student testing in English and mathematics that meets the minimum standards for admission (available through testing services)*

* available from Georgian College. For a complete listing please contact the Office of the Registrar.

Non-secondary school applicants who are 19 years of age or over by the first day of classes, and who lack the academic entrance qualifications, may be considered for entrance to an appropriate post-secondary diploma or certificate program as mature applicants. Mature applicants must meet all program specific prerequisites including all selection criteria; equivalencies are stated above. Applicants who are unsure whether they meet admission requirements should contact the Office of the Registrar. In addition, those applying as mature students and having no documentation of Grade 12 education must supply, if required, proof of age, such as a copy of an official birth certificate or driver's licence. Refer to Section 2.5 and 2.6 of the Academic Calendar for further details.

Credit transfer and course exemptions:

Applicants who have taken courses from a recognized and accredited post-secondary institution and/or have relevant life/learning experience may be eligible for credit

transfer/course exemptions. Courses/experience must match at least 80% of the learning outcomes of a Georgian College course with a minimum grade of 60% or C achieved in previous coursework; some program exceptions apply (see program outline). For further information please visit the Credit Transfer Centre website: georgiancollege.ca/admissions/credit-transfer/

Graduation Requirements:

- 18 Mandatory Courses
- 2 Communications Courses
- 1 Optional Course
- 3 General Education Courses
- 2 Co-op Work Terms

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.

Mandatory Courses

- COMP1035 Networking Essentials
- COMP1046 Windows System Administration
- COMP1070 Computer Hardware and Virtualization
- COMP1071 Linux Network Administration
- COMP2017 Windows Server Administration
- COMP2018 Linux System Administration
- COMP2020 Windows Network Administration
- COMP2057 Wide Area Networks
- COMP2071 Enterprise Technical Support
- COMP2072 Network Design
- COMP2074 Routing Protocols
- COMP2076 Switch Configuration
- COMP2078 Emerging Technology and Innovation
- COMP2101 Administrative Scripting
- COMP2102 Windows Service Administration
- COMP2103 Introduction to Information Security
- MATH1003 Math for the Computer Industry
- MGMT2008 Project Management for Information Technology

Communications Courses

To be selected at time of registration from the College list, as determined by testing.

Optional Course

COMP1009 The Mainframe Environment

COMP2003 Relational Database

COMP2104 Data Centre Technologies

General Education Courses

To be selected from College list

Co-op Work Terms

COOP1007 Computer Systems Technician Work Term 1

COOP2004 Computer Systems Technician Work Term 2

Course Descriptions:

COMP1009 The Mainframe Environment 42.0 Hours

This course introduces students to the key concepts and principles that are applicable to a variety of mainframe operating systems. Mainframe operating systems will be discussed in relationship to specific hardware architectures and applications. In the lab, user interfaces, tools and utilities, application development, and the runtime environment will be explored. The emphasis of this course is to develop an understanding of the complex relationships required in a mainframe operating system to support user processes. The impact of the use of mainframe systems in reducing power consumption in data centers will also be discussed.

COMP1035 Networking Essentials 42.0 Hours

Network systems interconnect computer related resources, services and users. This course provides the student with a fundamental knowledge of networking concepts and technologies. There is a strong emphasis on terminology, protocols, error detection/correction and network security. This course assists in developing the necessary skills to plan and implement small networks across a range of applications.

COMP1046 Windows System Administration 42.0 Hours

The Windows operating system is the most widely deployed desktop operating system. This course focuses on the principles of workstation administration by teaching students how to deploy, configure, and troubleshoot a Windows System. By the end of this course students will be expected to demonstrate the ability to manage a Windows computer system.

COMP1070 Computer Hardware and Virtualization 42.0 Hours

Virtualization allows systems engineers to leverage information technology (IT) resources by running multiple instances of different operating systems on a single hardware device. This course teaches students how to install, configure, and troubleshoot both workstations and server hardware as well as prepare, deploy, and maintain virtual machines. Upon completion of this course students will be able to install, configure, and manage both the hardware and software components of a virtual infrastructure.

COMP1071 Linux Network Administration 42.0 Hours

Linux network servers are commonly found all over the Internet. This course teaches the student how to install, configure, and manage network services using the Linux operating system. Students will gain experience in configuring services such as Domain Name Service (DNS), email, database, and web.

COMP2003 Relational Database 42.0 Hours

In this course, the student is introduced to the process of creating and managing a relational database using Structured Query Language (SQL) statements. The emphasis of this course is data manipulation and extraction.

COMP2017 Windows Server Administration 42.0 Hours

Windows servers provide applications and services that manage a network. This course examines the implementation of these services in a networked environment, and teaches students how to install, configure, and manage common services such as such as Dynamic Host Configuration Protocol (DHCP), Domain Name Service (DNS), and file and print services.

COMP2018 Linux System Administration 42.0 Hours

The Linux operating system is commonly found powering Internet and network servers. This course explores different ways that Linux can be deployed within an organization. With a strong emphasis on command line administration, students will learn how to manage user accounts, file systems, and processes while gaining hands-on experience installing, configuring, and administering a Linux system.

COMP2020 Windows Network Administration 42.0 Hours

Windows servers provide applications and services that manage a network. This course examines the implementation of these services in a networked environment, and teaches students how to install, configure, and manage common services such as such as Dynamic Host Configuration Protocol (DHCP), Domain Name Service (DNS), and file and print services.

COMP2057 Wide Area Networks 42.0 Hours

Wide Area Networks (WAN) facilitate the transmission of data across large geographic areas. Students will learn how to select appropriate technologies, services, and devices to meet the changing business requirements of an evolving enterprise. This course examines several technologies and their configuration techniques.

P- COMP2056 Network Planning or P- COMP1038 Networking Essentials 1 or P- CSC2294 Windows Server or P- CSC2291 Data Communications-Networking or P- COMP1035 Networking Essentials or P- COMP3009 Computer Networks

COMP2071 Enterprise Technical Support 42.0 Hours

Information Technology professionals are expected to support users as well as troubleshoot and resolve common system issues. This course examines the roles of first and second level IT technical support. Students will explore common network management tools while learning how to problem solve, resolve technical issues, and support users.

COMP2072 Network Design 42.0 Hours

This course prepares the student to analyze network infrastructure requirements and to design and implement the infrastructure for business solutions. Implementation responsibilities include installing, configuring, and troubleshooting network systems.

COMP2074 Routing Protocols 42.0 Hours

This course introduces the student to the concept of dynamic routing protocols, describes the classes of dynamic routing protocols, and gives examples of protocols in each class. A student will learn to choose a dynamic routing protocol based upon many considerations; these include the size of the network, the bandwidth of available links, the processing power of the routers, the brands and models of the routers, and the protocols that are used in the network.

COMP2076 Switch Configuration 42.0 Hours

Switched networks are used to interconnect network devices. Students will learn the functions and operation of wired and wireless switches. This course reviews and reinforces the underlying concepts and standards of an Ethernet switched network. Students will develop skills configuring Virtual Local Area Networks (VLANs) as well as gain exposure to common switching protocols.

COMP2078 Emerging Technology and Innovation 42.0 Hours

Technology is rapidly changing and evolving. An IT professional must be able to identify the potential benefits of new technology and determine the feasibility of implementation into a given system. Students will learn to research and apply new and/or innovative technologies which are being integrated into the Information Technology environment. This course will provide students with the opportunity to investigate trends and examine the potential impact of the technology.

COMP2101 Administrative Scripting 42.0 Hours

Scripts are used to automate common network administration tasks. This course introduces students to both Windows and Linux administrative scripting languages. Students will write scripts that perform administrative tasks such as manage the user environment, automate routines, and configure system settings.

COMP2102 Windows Service Administration 42.0 Hours

Businesses rely on interconnected productivity and content services. This course examines the application of common Microsoft business technologies to enhance collaboration and communications exchange. Students will gain experience installing, configuring and managing services such as electronic mail, database and web through a series of applied assignments.

COMP2103 Introduction to Information Security 42.0 Hours

Information Technology systems need to ensure the confidentiality, integrity, and availability of information. This course introduces students the principles of network and operating system security through hands-on exploration. Students learn how to harden an operating system as well as secure the network by implementing technologies such as firewalls, Virtual Private Networks (VPN), and Intrusion Detection Systems (IDS).

COMP2104 Data Centre Technologies 42.0 Hours

Data centres are the nerve centre of enterprise networks. This course examines common design elements such as power consumption and cooling requirements. Students will be exposed to common technology solutions used within a data centre. Students will also learn how to design and implement fault-tolerant and load balancing systems.

COOP1007 Computer Systems Technician Work Term 1 560.0 Hours

Co-operative Education is a mandatory component of all Co-op programs at Georgian College. Students are required to attend and participate in their scheduled semester co-op classes CPHR 0001 (12 sessions) in order to proceed successfully to their first co-op work experience.

COOP2004 Computer Systems Technician Work Term 2 560.0 Hours

After completion of co-op work experience 1, students are required to attend a scheduled debriefing session. This session will be scheduled in the first month for all returning co-op students and is intended to prepare students for work term 2. This session will also allow the student to validate and submit supporting documentation for work term 1 credit. This must be achieved before proceeding to co-op work experience 2 and graduating with a two year Computer Systems Technician Diploma.

P- COOP1007 Computer Systems Technician Work Term 1

MATH1003 Math for the Computer Industry 42.0 Hours

This course provides students with the practical knowledge and skills in the use of mathematics in relation to computers. Alternate number bases, set theory, logic, and Boolean algebra are the foundation of this course. In addition, students use basic statistical concepts to understand challenges in information technology.

MGMT2008 Project Management for Information Technology 42.0 Hours

This course introduces the fundamental principles necessary for successful management of Information Technology (IT) projects. Project planning, management and control techniques will be discussed and the application of computers in project management will be studied.

Course Description Legend

P = Prerequisite; C = Concurrent prerequisite; CO= Corequisite

Information contained in College documents respecting programs 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. The college reserves the right to add or delete programs, options, courses, timetables or campus locations subject to sufficient enrolment, and the availability of courses.