

Area of Interest: Computers and Technology

Computer Systems Technician (Co-op Option)

Ontario College Diploma

2 Years

Ottawa Campus

Academic Year: 2018/2019

Program Code: 0150X01FWO

Our Program

Meet the broad range of responsibilities of today`s IT careers.

Graduates of the Computer Systems Technician program can discover a career in information technology in either the public or private sector. This is a two-year Ontario College Diploma program. Resources used in this program run Windows and GNU/Linux/UNIX-based operating system platforms and support a wide variety of pre-installed software applications.

Students have access to Cisco and Aruba hardware labs and network-based operating systems, providing the best education available.

As a student in this program, you will focus on the technical aspects of common components in the industry. You also learn troubleshooting techniques for computer hardware, operating systems, networking technologies and system administration.

You will also learn how to provide customer support and solve problems through troubleshooting. Industry professionals teach technical report writing skills.

After Level 03, you have the opportunity to take part in back-to-back co-op work terms to gain real-world experience.

With good academic standing in this program, you can apply to the three-year Computer Systems Technology -Security program to receive an Advanced Diploma. You can also work towards certifications from Cisco Academy CCENT/CCMA; the Computer Technology Industry Association A+; Network+ and more. These certifications give you additional credentials as you start your career.

Upon graduation, you may find employment opportunities with government and in private and public sectors. You may also find junior and entry-level positions in:

- network/system installation maintenance or administration
- hardware and software sales
- customer service support
- technical support

This program participates in Algonquin`s etext initiative. All required texts and digital resources are provided to students and can be accessed for life from up to four devices simultaneously.

There are three program start dates each year at the beginning of the Fall, the Winter and Spring terms. Program progression varies depending on the term in which students begin the program.

This program offers two co-operative education (Co-op) Work Term(s)option. Qualified students with a minimum GPA of 2.7 have the opportunity to apply for paid co-op employment to gain valuable work experience and networks within industry. *See Additional Information for more details.

Bring Your Own Device (BYOD): Students are expected to have and use a laptop or mobile computing device when registered in this on-campus program. A Windows-based laptop with Intel i7 processor, 16G of RAM and minimum 1TB hard drive is required. Hardware and software specifications required by your program are outlined at <http://algonquincollege.com/byod>. Mobile

devices/laptops and supplies can be purchased directly from Algonquin`s New Technology Store at educational rates.

SUCCESS FACTORS

This program is well-suited for students who:

- Enjoy the challenge of a constantly evolving field.
- Can work independently or in a team environment.
- Have good problem-solving and analytical skills.
- Are interested in learning how to implement and troubleshoot computer technology, operating systems and networking technology solutions.

Employment

Graduates may find employment in a wide variety of areas, in the government, private and public sectors, at the junior/entry-level in positions, such as network/system installation, maintenance and/or administration, and at the junior to intermediate level in positions, such as hardware/software sales and support, customer service support representative and technical support specialist.

Learning Outcomes

The graduate has reliably demonstrated the ability to:

- Analyze and resolve information technology problems through the application of systematic approaches and diagnostic tools.
- Support the implementation and administration of computer systems.
- Support the implementation and administration of networking solutions.
- Install, configure, troubleshoot, maintain, and upgrade components of computer systems.
- Install, configure, troubleshoot, maintain, and upgrade components of networks.
- Use a variety of scripting tools and languages to automate routine tasks.
- Follow, monitor, and document data storage procedures designed to ensure the integrity of information.
- Apply knowledge of security issues to the implementation of information technology solutions.
- Provide efficient and effective technical support to clients in a manner that promotes safe computing practices and reduces the risk of the issue recurring.
- Conform to workplace expectations found in information technology (IT) environments.
- Contribute to the successful completion of the project applying the project management principles in use.
- Identify and apply discipline-specific practices that contribute to the local and global community through social responsibility, economic commitment and environmental stewardship.

Program of Study

Level: 01	Courses	Hours
CST8182	Networking Fundamentals	75.0
CST8202	Windows Operating Systems I	60.0
CST8207	Gnu/Linux Operating Systems I	75.0
CST8300	Achieving Success in Changing Environments	45.0

ENL1813T	Communications I	45.0
MAT8002	Numeracy and Logic	45.0
Level: 02	Courses	Hours
CST8177	Gnu/Linux Operating Systems II	75.0
CST8206	Foundation of It Service Management	45.0
CST8208	Pc System Technology	60.0
CST8239	Windows Operating Systems II	60.0
CST8270	Routing and Switching	90.0
Choose one from equivalencies: Courses		Hours
GED0150	General Education Elective	45.0
Level: 03	Courses	Hours
CST8190	Pc Troubleshooting	75.0
CST8213	Network Services Administration	75.0
CST8242	Windows Operating Systems III	75.0
CST8271	Enterprise Internetworks	75.0
CST8304	Wireless Network Administration	75.0
Co-op: 01	Courses	Hours
WKT8001	Work Term I	
Co-op: 02	Courses	Hours
WKT8002	Work Term II	
Level: 04	Courses	Hours
CST8245	Advanced Scripting	60.0
CST8247	It Security Fundamentals	60.0
CST8248	Emerging Technologies	60.0
CST8249	Network Security	75.0
ENL8720	Technical Communication for Technicians	45.0

Fees for the 2018/2019 Academic Year

Program fees listed are for the **2018/2019** Academic Year.

Total Level 01 program fees are \$2,824.81 as detailed below:

Program Fees:

Tuition: \$1,512.54

Program Ancillary: \$ 173.00

eText: \$ 60.00

Compulsory Ancillary Fees:

Student Activity: \$ 217.37

Sports: \$ 72.63

Technology: \$ 159.62

Transcript: \$ 20.00

Health Services: \$ 20.00

Student Experience: \$ 18.00

Health Plan: \$ 153.19 *

U-Pass: \$ 415.04 *

U-Pass Admin: \$ 3.42 *

* Assessed once annually at the beginning of each academic year.

International students pay all fees listed above (excluding the Health Plan fee) plus:

International Premium: \$5,077.00

International Health Insurance: \$ 696.00

Fees are subject to change.

For further fees information please visit: <http://www.algonquincollege.com/ro> .

Supplies can be purchased at the campus store. For more information about books, go to <http://www3.algonquincollege.com/etextbooks> .

For a complete list of program-related incidental fees, please visit our website at <http://www3.algonquincollege.com/etextbooks> .

Admission Requirements for the 2019/2020 Academic Year

College Eligibility

- Ontario Secondary School Diploma (OSSD) or equivalent. Applicants with an OSSD showing senior English and/or Mathematics courses at the Basic Level, or with Workplace or Open courses, will be tested to determine their eligibility for admission; OR
- Academic and Career Entrance (ACE) certificate; OR General Educational Development (GED) certificate; OR
- Mature Student status (19 years of age or older and without a high school diploma at the start of the program). Eligibility may be determined by academic achievement testing for which a fee of \$50 (subject to change) will be charged.

Program Eligibility

- English, Grade 12 (ENG4C or equivalent).
- Mathematics, Grade 12 (MAP4C or equivalent).
- International applicants must provide proof of the subject-specific requirements noted above along with proof of either: (IELTS / TOEFL) IELTS-International English Language Testing Service (Academic) Overall band of 6.0 with a minimum of 5.5 in each band; OR TOEFL-Internet-based (iBT) Overall 80, with a minimum of 20 in each component: Reading 20; Listening 20; Speaking 20; Writing 20.
- Applicants with international transcripts must provide proof of the subject-specific requirements noted above and may be required to provide proof of language proficiency.

Should the number of qualified applicants exceed the number of available places, applicants will be selected on the basis of their proficiency in English and mathematics.

Note: Applicants are encouraged to acquire basic computer skills such as keyboard proficiency and the use of an office software suite (word processing, spreadsheets, etc.) prior to the start of the program.

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College Eligibility

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OR
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- General Educational Development (GED) certificate;
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- English, Grade 12 (ENG4C or equivalent).

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IELTS-International English Language Testing Service-Overall band of 6.0 with a minimum of 5.5 in each band.

OR

TOEFL-Internet-based (iBT)-overall 80, with the minimum of 20 in each component: Reading 20; Listening: 20 Speaking: 20, Writing: 20

Should the number of qualified applicants exceed the number of available places, applicants will be selected on the basis of their proficiency in English and mathematics.

Note: Applicants should have basic computer skills such as keyboard proficiency, Internet browsing and searching, and the use of an office software suite (word processing, spreadsheets, etc.) prior to the start of the program. The Mobile Learning Center Coach (C102) offers training in these skills if needed.

Note: New students who wish to apply to the Computer Systems Technology - Security (O156X01FWO) program must first apply to the Computer Systems Technician (O150X01FWO) program through <http://www.ontariocolleges.ca/>.

Application Information

COMPUTER SYSTEMS TECHNICIAN (CO-OP OPTION) Program Code O150X01FWO

Applications to full-time day programs must be submitted with official transcripts showing completion of the academic admission requirements through:

ontariocolleges.ca
60 Corporate Court
Guelph, Ontario N1G 5J3
1-888-892-2228

Students currently enrolled in an Ontario secondary school should notify their Guidance Office prior to their online application at <http://www.ontariocolleges.ca/>.

Applications for Fall Term and Winter Term admission received by February 1 will be given equal consideration. Applications received after February 1 will be processed on a first-come, first-served basis as long as places are available.

International applicants please visit this link for application process information:
<https://algonquincollege.force.com/myACint/>.

For further information on the admissions process, contact:

Registrar's Office
Algonquin College
1385 Woodroffe Ave, Student Central
Ottawa, ON K2G 1V8
Telephone: 613-727-0002
Toll-free: 1-800-565-4723
TTY: 613-727-7766
Fax: 613-727-7632
Email: <mailto:AskUs@algonquincollege.com>

Additional Information

Co-op is a real-world job search process requiring students to apply, interview, and earn jobs rather than being placed by the College. In the two terms prior to the cooperative education (Co-op) Work Term, students are required to independently complete online modules that assist with resume and cover letter writing, and interview technique preparation. Students must actively

conduct a self-directed job search and are responsible to secure approved program related paid co-op employment. Students compete for co-op positions alongside students from Algonquin and other Canadian and international colleges and universities. Algonquin College's Co-op Office provides assistance in developing co-op opportunities and facilitates the overall process but does not guarantee that a student will obtain employment in a cooperative education (Co-op) Work Term. Co-op employment opportunities requiring relocation may be considered, and are subject to departmental approval with the understanding that all associated expenses are incurred by students e.g., travel, work permits/visa applications, accommodation, etc.

Cooperative education (Co-op) Work Terms are typically four months in duration and are completed during a term when students are currently not studying on campus. For details on study-work progressions for specific programs, please visit <http://www.algonquincollege.com/coop>

This program is also offered at the Pembroke Campus. While the overall learning outcomes at the Woodroffe and Pembroke Campuses may be the same, the curriculum order and subject delivery are reflective of local circumstances which affect program delivery. Students wishing to transfer between Campuses should consult with their coordinator before making any decisions as there may be some impact on credit transfers.

The curriculum is reviewed annually to reflect evolving industry standards in the information technology field.

OACETT/CCTT NATIONALLY ACCREDITED PROGRAM

As of June 2006, the Computer Systems Technician program has met the national technology accreditation requirements as mandated by the Canadian Council of Technicians and Technologists (CCTT) and has received national accreditation status by the Canadian Technology Accreditation Board (CTAB) and the Ontario Association of Certified Engineering Technicians and Technologists (OACETT) which is reviewed and renewed tri-annually.

For program information, please email <mailto:coordcst@algonquincollege.com> or visit <http://www.algonquincollege.com/sat>.

Course Descriptions

CST8177 Gnu/Linux Operating Systems II

Focus is placed on the administration of a GNU/Linux stand alone server connected to the network. Students learn how to perform and use essential administrative tasks and tools; user account creation and management; installation and customization of a GNU/Linux operating system; management and troubleshooting of the boot process; process and services management. Students use scripting languages to accomplish administrative tasks.

Prerequisite(s): CST8207
Corequisite(s):none

CST8182 Networking Fundamentals

The foundational knowledge of computer networking and LAN/WAN communications is introduced. Students are also introduced to the terminology and concepts related to the implementation and operation of computer networks. Topics include basic network design, layered communications models, IP addressing and subnetting, and industry standards for network media, and protocols with an emphasis on the TCP/IP protocol suite and Ethernet. Material from the most recent version of the Cisco Network Academy Introduction to Networks curriculum and from the CompTIA Network+ certification is also included.

Prerequisite(s): none
Corequisite(s):none

CST8190 Pc Troubleshooting

Emphasis is placed on problem analysis methodology and techniques for finding, identifying, and correcting hardware, operating systems and software problems. Mean time between failures (MTBF) and mean time to repair (MTTR) concepts are illustrated along with statistical analysis of historical support data in order to establish or revise preventive and corrective maintenance (PM

and CM) schedules. Course content emphasizes symptoms, faults and solutions to problems found in PC-based desktop, server and laptop systems. Practical experience is gained by using common industry troubleshooting tools and utility software to resolve common problems. Labs are designed to test students troubleshooting skills using a series of computer systems with pre-set problems.

Prerequisite(s): CST8208

Corerequisite(s):none

CST8202 Windows Operating Systems I

An introduction to the Windows operating systems is provided. Students learn to use some of the core basic commands and perform common system setup and management tasks that are commonly carried out by computer professionals. Typical tasks covered include, but are not limited to, installing and configuring operating systems, installing device drivers, batch files and windows scripting, command-line environment, troubleshooting the boot process, and customizing and personalizing the operating environment.

Prerequisite(s): none

Corerequisite(s):none

CST8206 Foundation of It Service Management

An introduction to the basic understanding and concepts of IT Service Management as described in the IT Infrastructure Library (ITIL) is provided. Students gain knowledge of the ITIL terminology, structure, and best practices for service management. This knowledge is required for participation in an ITIL compliant organization as part of a service team. A basic overview of the relationship between the ITIL, COBIT and ISO2000 standards is also represented.

Prerequisite(s): none

Corerequisite(s):none

CST8207 Gnu/Linux Operating Systems I

Students learn the basic concepts and features of the GNU/Linux operating system and utilities, the world's most well-known Free/Libre Open Source Software (FLOSS) project and the underlying technology supporting Google, Facebook and Android smart phones. Students examine the power of the GNU/Linux command line and the basics of shell scripting and task automation. Students perform file system searches, full-text searches, and data-mine system log files to generate analyses of network attacks and intrusion attempts. Students also customize their shell programming environment to simplify repetitive tasks and support system administration functions.

Prerequisite(s): none

Corerequisite(s):none

CST8208 Pc System Technology

Focus is on recent, current and emerging PC hardware technologies for desktop and laptop PCs. Course content includes how computers work and the interaction between core PC components and peripheral devices. Students learn about form factors and standards of components, buses and ports to ensure compatibility within systems. Students explore PC customization, performance and optimization, system cooling and data storage, with emphasis on installing, configuring and troubleshooting PC components.

Prerequisite(s): CST8202

Corerequisite(s):none

CST8213 Network Services Administration

Students learn the concepts and skills required to set up, administer and secure essential network services on a GNU/Linux server platform. Services covered include at a minimum: DNS, email and web services. Students obtain practical experience by performing installation and configuration of these services in lab. Problem solving, research and teamwork are complementary course components.

Prerequisite(s): CST8177
Corerequisite(s):none

CST8239 Windows Operating Systems II

Building on previous experience with Windows Operating Systems, students explore the capabilities of Windows Server family. Topics include manual and automated installation, Microsoft DNS implementation, domain controllers using Active Directory, Group Policy, Terminal Services, Windows Server security and the Windows Distributed File System (DFS). This practical component allows students to install and configure Windows O/S with Active Directory and practise typical system administration tasks.

Prerequisite(s): CST8202
Corerequisite(s):none

CST8242 Windows Operating Systems III

Expanding on previous experience with the Windows Server O/S, students focus on how to install, deploy, configure, administer and integrate key network services on a Windows Server. Services covered include MS Exchange server, MS IIS web server, Active Directory/DHCP and Active DNS. Students learn about the participation of network services in an Active Directory environment, the integration of network services with DNS/DHCP, the challenges of network service administration in an enterprise environment as well as performance and security concerns.

Prerequisite(s): CST8239
Corerequisite(s):none

CST8245 Advanced Scripting

Students will build an interface using Python to manage a relational database. Based on previous scripting knowledge and experience, students will apply programming principles using Python to build more complex administrative solutions. In addition, students will learn about the theoretical concepts of relational database systems, practice database creation and management, and manipulate data using SQL.

Prerequisite(s): CST8213 and CST8242
Corerequisite(s):none

CST8247 It Security Fundamentals

This course focuses on the principles and practical application of information technology security. This includes: discussions about security policies, practice implementing policies using hardware and software devices, and evaluation of existing security controls. A variety of operating environments will be examined.

Prerequisite(s): CST8213 and CST8242
Corerequisite(s):none

CST8248 Emerging Technologies

The only thing constant in Information Technology is change. Students will be introduced to current and future emerging technologies and learn about their implementations as well as their possible impact.

Prerequisite(s): CST8213 and CST8242 and CST8271
Corerequisite(s):none

CST8249 Network Security

Students are introduced to the goals of IT security, common threats and counter measures, including firewalls, Intrusion Prevention Systems (IPS) and virtual private networks. Core skills

required to start working in a Security Operations Center (SOC) are covered.

Prerequisite(s): CST8271

Corerequisite(s):none

CST8270 Routing and Switching

Students learn about the architecture, components and operations of routers and switches in a small network. Students learn how to configure a router and a switch for basic functionality. Students configure and troubleshoot routers and switches and resolve common issues with virtual LANs and inter-VLAN routing in both IPv4 and IPv6 networks.

Prerequisite(s): CST8182

Corerequisite(s):none

CST8271 Enterprise Internetworks

Students examine the architecture, components, configuration and operation of routers and switches in a larger and more complex LAN. Topics include LAN design considerations as well as the configuration and troubleshooting of: Redundancy in the LAN, Spanning Tree, Link Aggregation, Single and Multi-area OSPF and EIGRP in both IPv4 and IPv6 networks. Material is included from the Cisco Network Academy Program course: Scaling Networks.

Prerequisite(s): CST8270

Corerequisite(s):none

CST8300 Achieving Success in Changing Environments

Rapid changes in technology have created personal and employment choices that challenge each of us to find our place as contributing citizens in the emerging society. Life in the 21st century presents significant opportunities, but it also creates potential hazards and ethical problems that demand responsible solutions. Students explore the possibilities ahead, assess their own aptitudes and strengths, and apply critical thinking and decision-making tools to help resolve some of the important issues in our complex society with its competing interests.

Prerequisite(s): none

Corerequisite(s):none

CST8304 Wireless Network Administration

The fundamentals of the 802.11 wireless protocols are covered. Beginning with a comprehensive view of the electromagnetic spectrum and how it relates to wireless networks, students explore such topics as: 802.11 protocol family; features and functions of wireless LAN components; WLAN design; WLAN security and design issues; setup, installation, configuration, and troubleshooting of wireless LAN hardware peripherals; and WiFi authentication protocols.

Prerequisite(s): CST8270

Corerequisite(s):none

ENL1813T Communications I

Communication remains an essential skill sought by employers, regardless of discipline or field of study. Using a practical, vocation-oriented approach, students focus on meeting the requirements of effective communication. Through a combination of lectures, exercises, and independent learning, students practice writing, speaking, reading, listening, locating and documenting information and using technology to communicate professionally. Students develop and strengthen communication skills that contribute to success in both educational and workplace environments.

Prerequisite(s): none

Corerequisite(s):none

ENL8720 Technical Communication for Technicians

Clear, concise and detailed communication is essential for technical workplaces. Students plan and execute a variety of formal and informal visual, oral and written communication tasks. Exercises and activities foster confidence and competence in workplace communication.

Prerequisite(s): ENL1813T
Corerequisite(s):none

GED0150 General Education Elective

Students choose one course, from a group of general education electives, which meets one of the following four theme requirements: Arts in Society, Civic Life, Social and Cultural Understanding, and Science and Technology.

Prerequisite(s): none
Corerequisite(s):none

MAT8002 Numeracy and Logic

Students acquire the knowledge to work with numerical systems and internal machine representations; binary/hex/octal/decimal math; sets, subsets and power sets; Boolean logic and truth tables; and introductory level statistical methods and basic probability rules.

Prerequisite(s): none
Corerequisite(s):none

WKT8001 Work Term I

Students complete a cooperative work term, and submit a written report which documents the location of employment and the duties performed.

Prerequisite(s): none
Corerequisite(s):none

WKT8002 Work Term II

Students complete a cooperative work term, and submit a written report which documents the location of employment and the duties performed.

Prerequisite(s): WKT8001
Corerequisite(s):none