Computer Systems Technician (Co-op and Non Co-op Version)

Ontario College Diploma   Program Code: 0150X10FPM

42 Weeks

Pembroke Campus

Our Program

Turn your technical skills into a career supporting today`s advancing IT solutions.

This two-year Ontario College Diploma program, delivered in a compressed format over 42 weeks, provides you with the technical knowledge and expertise to support the use of computers and networks. You also develop your communication and administration skills, including the ability to work in teams and use project management and customer service techniques.

Focus on the technical aspects of commonly used components and troubleshooting techniques for computer hardware, operating systems, networking technologies, system administration, and a suite of related support and application software packages. Gain requirements and subject matter knowledge found in certifications such as:

- Computer Technology Industry Association (CompTIA) A+

- Network+

- Linux+

- Security+

Some courses fulfill part of the basic requirements of Microsoft Technology Associate (MTA) and Microsoft Certified Technology Specialist (MCTS) certifications.

Graduates are able to work individually or as part of a team to implement and maintain information technology (IT) solutions that correspond to the day-to-day requirements of individuals and organizations. From repairing desktop computers to network administration, graduates work in a broad range of employment settings in a variety of sectors, in both large and small organizations.

SUCCESS FACTORS

This program is well-suited for students who:

- Are interested in learning how to implement and troubleshoot computer technology, operating systems and networking technology solutions.

- Enjoy the challenge of a constantly evolving field.

- Can work independently or in a team environment.

- Have good problem-solving and analytical skills.

Employment

Graduates may find employment as technical support specialists for PCs and Networks in a wide variety of corporate environments in the industrial, governmental and service sectors. Positions may also include system administration and maintenance for LAN/WAN (Local Area Network/Wide Area Network), Internet/Intranet and Unix/Linux environments, hardware/software sales representatives, customer service support representatives, technical support specialists, network installation and implementation specialists.

Learning Outcomes

The graduate has reliably demonstrated 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.

- Assist with the implementation of computer systems and cloud solutions.

- Install, configure, troubleshoot, maintain, upgrade and decommission computing system infrastructures.

- Automate routine tasks using scripting tools and programming languages.

- Install and monitor a database management system in response to specified requirements.

- Provide technical support for computing system infrastructures that aligns with industry best practice.

- 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
CST7205	PC Systems Technology	56.0
CST7206	Networking Fundamentals	70.0
CST7207	GNU/Linux System Support	70.0
CST7210	Windows Desktop Support	56.0
ENL7777	Communications I	42.0
GEP1001	Cooperative Education and Job Readiness	18.0
MAT7401	Numeracy and Logic	42.0
PRL7532	College and Career Success	42.0
Level: 02	Courses	Hours
CST7220	PC Troubleshooting	56.0

CST7223	Foundation of IT Service Management	42.0
CST7224	Windows Domain Administration	70.0
CST7270	Routing and Switching Fundamentals	70.0
CST7277	GNU/Linux Server Administration	56.0
ENL7618	Technical Communication - Computer Systems Technician	42.0
Choose one from equivalencies:	**Courses**	**Hours**
GED1150	General Education Elective	42.0
Co-op: 01	**Courses**	**Hours**
WKT7102	Cooperative Education Work Term	
Level: 03	**Courses**	**Hours**
CST7230	Network Security	70.0
CST7234	Database Management and Interfacing	56.0
CST7236	Network Services Administration	56.0
CST7237	Windows Enterprise Administration	70.0
CST7238	Technical Project	14.0
CST7272	Introduction to Enterprise Networking	70.0
Choose one from equivalencies:	**Courses**	**Hours**
GED1150	General Education Elective	42.0

Fees for the 2023/2024 Academic Year

Tuition and related ancillary fees for this program can be viewed by using the Tuition and Fees Estimator tool at https://www.algonquincollege.com/fee-estimator .

Further information on fees can be found by visiting the Registrar`s Office website at https://www.algonquincollege.com/ro .

Fees are subject to change.

Additional program related expenses include:

- eTextbooks: As a student in a program that has adopted a combination of hardcopy and digital resources, your required textbooks may be purchased at the campus bookstore, or available as digital resources.

- Books and supplies cost approximately $400 - $500 per term.

- In addition, students should expect to spend between $80 - $100 for the tools necessary in the labs.

Admission Requirements for the 2024/2025 Academic Year

College Eligibility

- Ontario Secondary School Diploma (OSSD) or equivalent. Applicants with an OSSD showing

- 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).

- Applicants with international transcripts must provide proof of the subject-specific requirements noted above and may be required to provide proof of language proficiency. Domestic applicants with international transcripts must be evaluated through the International Credential Assessment Service of Canada (ICAS) or World Education Services (WES).

- 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;OR Duolingo English Test (DET) Overall 110, minimum of 110 in Literacy and no score below 95.

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.

Admission Requirements for 2023/2024 Academic Year

College Eligibility

Application Information

COMPUTER SYSTEMS TECHNICIAN (CO-OP AND NON CO-OP VERSION)
Program Code 0150X10FPM

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 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 applying from out-of-country can obtain the International Student Application Form at https://algonquincollege.force.com/myACint/ or by contacting the Registrar`s Office.

For further information on the admissions process, contact:

Registrar`s Office
Algonquin College in the Ottawa Valley

1 College Way
Pembroke, ON K8A0C8
Local: 613-735-4700
Toll-free 1-800-565-4723
TTY: 1-866-620-3845
Fax: 613-735-4739
 https://algonquincollege.com/pembroke

Additional Information

CO-OP INFORMATION:
All applicants apply directly to the co-op version of this program through
http://www.ontariocolleges.ca/ or our International Application Portal. Applicants not wishing to pursue the co-op version will have the opportunity to opt-out after being admitted to the program but prior to the first co-op work term.

Co-operative education (Co-op) allows students to integrate their classroom learning with a real-world experience through paid work terms. Two academic terms prior to the cooperative education work term, students are required to actively participate in and successfully complete the self-directed co-op course, readiness activities and workshops.

Students must actively conduct a guided, self-directed job search and are responsible for securing approved program-related paid co-op employment. Students compete for co-op positions alongside students from Algonquin College and other Canadian and international colleges and universities. Algonquin College`s Co-op Department provides assistance in developing co-op job opportunities and guides the overall process, but does not guarantee that a student will obtain employment in a co-op work term. Co-op students may be required to relocate to take part in the co-op employment opportunities available in their industry and must cover all associated expenses; e.g., travel, work permits, visa applications, accommodation and all other incurred expenses.

Co-op work terms are typically 14 weeks in duration and are completed during a term when students are not taking courses. For more information on your program`s co-op level(s), visit the courses tab on your program`s webpage.

International students enrolled in a co-op program are required by Immigration, Refugees and Citizenship Canada (IRCC) to have a valid Co-op/Internship Work Permit prior to commencing their work term. Without this document International students are not legally eligible to engage in work in Canada that is part of an academic program. The Co-op/Internship Work Permit does not authorize international students to work outside the requirements of their academic program.

For more information on co-op programs, the co-op work/study schedule, as well as general and program-specific co-op eligibility criteria, please visit https://www.algonquincollege.com/coop .

The program is also offered at the Woodroffe Campus. While the overall learning outcomes at the Pembroke and Woodroffe Campuses are the same, the curriculum order and subject delivery are reflective of local circumstances which may 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.

Contact Information

Program Coordinator(s)

- Matthew Neadow, mailto:neadowm@algonquincollege.com , 613-735-4700, ext. 2715

Course Descriptions

CST7205 PC Systems Technology

Computer technology is built upon hardware, which requires regular maintenance as well as periodic upgrading and repair. Students work with PC hardware technologies in laptops, desktops and servers. Students explain the functionality and interaction of computer components and peripherals and identify standards of system components to ensure compatibility. In the hands-on lab students assemble PCs and install and configure PC components.

Prerequisite(s): none

Corerequisite(s):none

CST7206 Networking Fundamentals

The modern world is connected, and networking technologies form the foundation of data communication. Students describe the architecture, topology, protocols, components and models of the Internet and other computer networks. Based on the OSI and TCP layered models, students examine the function of protocols and services at each layer of the TCP/IP protocol suite. Students design an IP addressing scheme for simple LAN topologies and apply the design to a simple network built using routers and switches.

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

CST7207 GNU/Linux System Support

GNU/Linux is an open source operating system that operates on a variety of computing devices such as mobile devices, server systems and supercomputers. Students apply the basic concepts, features and commands to setup, configure and manage a stand-alone GNU/Linux operating system. Students explore the flexibility of the GNU/Linux command line, the use of simple utilities to perform increasingly complex management tasks and the basics of shell scripting to simplify repetitive tasks.

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

CST7210 Windows Desktop Support

MS Windows desktop is a commonly implemented desktop operating system in industry. Students prepare a MS Windows client system for participation in a Windows-based network. Through a combination of theory and hands-on lab, students install and configure the operating environment of a Windows desktop operating system, manage resources by applying common security principles, automate tasks using PowerShell, and troubleshoot common error conditions.

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

CST7220 PC Troubleshooting

A problem-solving methodology is the foundation for effectively troubleshooting computing problems to support IT infrastructures. Students develop a systematic approach to troubleshooting hardware, operating systems and software problems. To identify and correct symptoms and faults found in PC-based systems, students apply problem analysis, methodology and techniques and investigate industry troubleshooting tools and utility software. In addition, students explore preventive and corrective measures in order to increase system reliability and minimize downtime. Labs are designed to test students troubleshooting skills using a series of computer systems with pre-set problems.

Prerequisite(s): CST7205
Corerequisite(s):none

CST7223 Foundation of IT Service Management

Technical customer support is an essential business service, and knowledge of IT Service Management, as described in the IT Infrastructure Library (ITIL), is required to work in an ITIL compliant organization as part of a service team. Students explain common structures and explore best practices of service management with a focus on ITIL. In addition, students practice soft skills, such as effective listening and communication to establish professional relationships with customers that have IT related issues and requests.

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

CST7224 Windows Domain Administration

MS Windows Server is an enterprise-level operating system that supports the computing requirements of a modern business. Students manage an MS Windows domain network with Active Directory and Group Policies. Students explore different server roles and domain configurations, install MS Windows server domain controllers, setup centralized management with Active Directory and Group Policies, and automate system administration tasks using PowerShell. In addition, students explore virtualization concepts supported by MS Windows.

Prerequisite(s): CST7210
Corerequisite(s):none

CST7230 Network Security

The objective of network security is to maintain access to network resources for legitimate users and is an integral part of network administration. Students describe the guiding principles and practical applications of information technology security, such as the goals of computer security, common threats and counter measures. Further, students analyze network monitoring data for security threats, implement network security technologies on several operating system platforms and examine incident response handling processes.

Prerequisite(s): CST7270
Corerequisite(s):none

CST7234 Database Management and Interfacing

Data as a business asset requires the implementation of data storage and management technologies. Students explain the theoretical concepts of relational database systems, practice database server setup and management, design a database based on business requirements and manipulate data using SQL. In addition, students apply programming principles to build a management interface for a relational database using Python.

Prerequisite(s): CST7277
Corerequisite(s):none

CST7236 Network Services Administration

The client-server model, an essential part of network computing, enables client systems to use services, such as email or web services, over the Internet. Students configure essential network services based on the client-server model: students setup and maintain common client-server services by installing the server, establishing network connectivity and configuring the service protocol to support connections from multiple clients. Students are expected to research and troubleshoot failed connections, system errors and service errors. Fundamental problem-solving methodologies, independent research and teamwork are complementary course components.

Prerequisite(s): CST7224
Corerequisite(s):none

CST7237 Windows Enterprise Administration

Modern enterprise-level IT solutions include on-site network service administration, as well as cloud integration. To optimize the management of enterprise-level MS Windows networks, students configure multi-master domain environments, setup MS Windows server roles, build virtualization solutions and examine Azure, Microsoft's public cloud computing platform. In addition, students implement email, an essential business communication tool, with MS Exchange mail server.

Prerequisite(s): CST7224
Corerequisite(s):none

CST7238 Technical Project

Computer Systems Technicians support a variety of projects within an organization. Students participate as team members in the planning, scheduling, management and deployment of a

7

technical project. Through presentations and reports, students enhance documentation skills by providing current, clear and accurate project-related information.

Prerequisite(s): CST7224 and CST7236
Corerequisite(s):none

CST7270 Routing and Switching Fundamentals

A fundamental concept of networking is to connect network segments. Students implement switched networks based on industry standard design and protocols, and connect switched networks using simple routing configurations. To improve the robustness of switched network setups, students apply security controls and provide redundancy at the data-link layer. In addition, students configure a small wireless network.

Prerequisite(s): CST7206
Corerequisite(s):none

CST7272 Introduction to Enterprise Networking

Network scalability features are an integral part of Enterprise network administration. Students configure dynamic routing protocols, develop scalable addressing schemes using network address translation (NAT) and IPv6 and assess redundant network designs. In addition, students continue to develop strategies to enhance network security with a practical focus on traffic filtering. Lastly, students explore network monitoring tools and techniques.

Prerequisite(s): CST7270
Corerequisite(s):none

CST7277 GNU/Linux Server Administration

The GNU/Linux operating system, known for its flexibility and stability, is implemented as a server solution in a variety of business establishments. Students configure and administer a GNU/Linux server system by setting up and networking the operating system, managing a multi-user environment, and configuring essential system services. As an integral part of server administration students troubleshoot common system and service errors, apply hardening principles to secure the system, and write scripts to perform routine management functions.

Prerequisite(s): CST7207
Corerequisite(s):none

ENL7618 Technical Communication - Computer Systems Technician

Students achieve graduate level communication skills that computer systems technicians require in order to be successful in the workplace. Topics, such as technical report writing; researching, interpreting, reframing, and presenting technical information; teamwork; presenting information orally; and other communication skills required in today's workplace are examined.

Prerequisite(s): ENL7777
Corerequisite(s):none

ENL7777 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 practise 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

GED1150 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

GED1150 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

GEP1001 Cooperative Education and Job Readiness

Students are guided through a series of activities that prepare them to conduct a professional job search and succeed in the workplace. Through a detailed orientation students learn the cooperative education program policies and procedures related to searching and securing a work term opportunity. Students identify their strengths and transferable skills and participate in workshop-style sessions that focus on cover letter and resume development, interview techniques and job search strategies. Students learn how to navigate a web-based resource centre, which is used to post employment and cooperative education job opportunities. Students reflect on workplace success, ethics and responsibilities.

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

MAT7401 Numeracy and Logic

Computer systems technicians are required to work with number systems used in computer technology. Students perform conversions and mathematical operations involving binary, octal and hexadecimal numbering systems, apply Boolean logic and evaluate truth tables. In addition, students examine introductory level statistical methods and basic probability rules.

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

PRL7532 College and Career Success

Students develop and expand their abilities as lifelong learners. These abilities are essential to students as they take their place in college, community, family and working life. Course content includes awareness of self as a learner and study of learning, motivation and problem-solving theories. Important throughout are attitudes which help students to deal with a complex, changing world. Teaching/learning methods include classroom discussion and exercises, reflective journals to monitor, evaluate and guide the student's development, as well as lectures.

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

WKT7102 Cooperative Education Work Term

For students who qualify academically and who choose to participate, there is the opportunity to enhance their diploma with an officially recognized co-op designation. This designation is achieved by successfully completing a paid co-op educational employment experience where students have the chance to gain valuable work experience, network and make contacts in the industry and assess their skills and weaknesses in a real-world work environment.

Prerequisite(s): none

Corerequisite(s):none