Area of Interest: Advanced Technology

Computer Engineering Technology - Computing Science (Co-op and Non Co-op Version)

Ontario College Advanced Diploma Program Code: 0006X03FWO

3 Years

Ottawa Campus

Our Program

Gain the analytical thinking and problem-solving skills for a career in programming and software development.

The three-year Computer Engineering Technology - Computing Science Ontario College Advanced Diploma program prepares you for an information technology (IT) career in the private or public sectors. You gain the knowledge and skills to use a broad range of IT-based analytical thinking and problem-solving skills in support of the day-to-day operation of an enterprise`s software systems or in the development of new systems.

Learn a variety of programming languages (Java, C#, C++, C, and others) and operating systems (Windows, Unix/Linux, and QNX). In addition, you study the development tools and debugging techniques used to design, code and test integrated and/or embedded applications and software systems.

In your final year, you work in teams on sponsored real-world projects to develop a comprehensive application as part of the software engineering portion of the program. You also have the opportunity to select an elective course from an approved list, in areas that include game programming, business programming (Cobol), and business intelligence and data analytics.

The majority of the program consists of courses in systems programming, software development, testing and maintenance. The balance of the curriculum consists of courses in technical communications skills (both oral and written), mathematics and general education electives.

Students also have the option to gain real-world experience through a paid co-operative education (co-op) work term (see Additional Information for more details). Please note that places in the co-op work term are subject to availability and academic eligibility. **Please note that admission to the co-op program does not guarantee a co-op placement.**

Graduates may find employment as systems, integration, and applications programmers and/or testers, and as customer service representatives providing training and product support to clients of high technology corporations.

Graduates may also pursue careers in such diverse areas as:

- game and multimedia development
- GUI (graphical user interface) development
- IT communications, IT security, real-time and database systems
- web-based applications
- technical roles in all levels of government (Federal, Provincial and Municipal)

SUCCESS FACTORS

This program is well-suited for students who:

- Can work effectively in a teamwork environment.

- Can apply critical and analytical thinking and have good problem-solving skills.
- Are imaginative, attentive to detail and enjoy challenging their minds.
- Are interested in computers and various software applications.
- Have a strong commitment and dedication to their studies.

Employment

Graduates may find employment as systems, integration, and applications programmers and/or testers, and as customer service representatives providing training and product support to clients of high technology corporations. Graduates may also pursue careers in such diverse areas as game and multimedia development; GUI (graphical user interface) development; IT communications, IT security, real-time and database systems; web-based applications; and technical roles in all levels of government (federal, provincial, and municipal).

Learning Outcomes

The graduate has reliably demonstrated the ability to:

- Identify, analyze, design, develop, implement, verify and document the requirements for a computing environment.
- Diagnose, troubleshoot, document and monitor technical problems using appropriate methodologies and tools.
- Analyze, design, implement and maintain secure computing environments.
- Analyze, develop and maintain robust computing system solutions through validation testing and industry best practices.
- Communicate and collaborate with team members and stakeholders to ensure effective working relationship.
- Select and apply strategies for personal and professional development to enhance work performance.
- Apply project management principles and tools when responding to requirements and monitoring projects within a computing environment.
- Adhere to ethical, social media, legal, regulatory and economic requirements and/or principles in the development and management of the computing solutions and systems.
- Investigate emerging trends to respond to technical challenges.
- Integrate multiple software and hardware components using appropriate systems, methodologies, and connection protocols.
- Analyze, plan, design, develop, test, and implement computing devices and networked systems (software or hardware) in accordance with appropriate functional requirements and standards.
- Apply principles of digital and analog circuits to design, implement, and troubleshoot computing devices, including embedded components and systems.
- Design, build, test, implement, and maintain embedded (including IoT) devices and applications.
- Develop, test and maintain software applications for systems integration.
- Apply general software principles of data structures, design patterns and structured data parsing in accordance with industry standards.
- 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
CST8116	Introduction to Computer Programming	70.0
CST8118	Computer Essentials	56.0
CST8215	Introduction to Database	70.0
CST8300	Achieving Success in Changing Environments	42.0
ENL1813T	Communications I	42.0
MAT8001C	Technical Mathematics for Computer Science	56.0
Level: 02	**Courses**	**Hours**
CST8102	Operating System Fundamentals (GNU/Linux)	70.0
CST8108	Network Programming Basics	70.0
CST8132	Object-Oriented Programming	70.0
ENL2019T	Technical Communication for Engineering Technologies	42.0
GEP1001	Cooperative Education and Job Readiness	21.0
MAT8201	Calculus 1	42.0
Level: 03	**Courses**	**Hours**
CST8130	Data Structures	70.0
CST8216	Processor Architecture	70.0
CST8234	C Language	70.0
CST8238	Web Programming	70.0
Co-op: 01	**Courses**	**Hours**
WKT8001	Work Term I	
Level: 04	**Courses**	**Hours**
CST8152	Compilers	70.0
CST8219	C++ Programming	70.0
CST8221	Java Application Programming	70.0
CST8233	Numerical Computing	70.0
Choose one from equivalencies:	**Courses**	**Hours**
GED0006X	General Education Elective	42.0
Co-op: 02	**Courses**	**Hours**
WKT8002	Work Term II	
Co-op: 03	**Courses**	**Hours**

WKT8003	Work Term III	
Level: 05	**Courses**	**Hours**
CST8218	Web Enterprise Applications	70.0
CST8227	Interfacing	70.0
CST8355	Software Design and Testing	28.0
ENL4001	Technology Report Preparation	14.0
Elective: choose 1	**Courses**	**Hours**
ENG4001	Project 1	28.0
ENG4002	Engineering Project for Entrepreneurs	28.0
CST8237	Game Programming	56.0
CST8283	Business Programming	56.0
CST8390	Business Intelligence and Data Analytics	56.0
Level: 06	**Courses**	**Hours**
CST8244	Real-Time Programming	70.0
CST8359	.NET Enterprise Application Development	70.0
ENG4003	Project 2	28.0
ENL4003	Technology Report	14.0
Choose one from equivalencies:	**Courses**	**Hours**
GED0006X	General Education Elective	42.0

Fees for the 2024/2025 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:
Supplies can be purchased from the campus store. For more information visit https://www.algonquincollege.com/coursematerials .

Admission Requirements for the 2025/2026 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 will be charged.

Program Eligibility

- English, Grade 12 (ENG4C or equivalent).

- Mathematics, (Grade 12 MCT4C) or (Grade 11 MCR3U) or equivalent; or (Grade 12 MAP4C with a grade of 80% or higher) or (Grade 11 MCF3M with a grade of 70% or higher).

- 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.

Not sure if you meet all of the requirements? Academic Upgrading may be able to help with that: https://www.algonquincollege.com/access/ .

Should the number of qualified applicants exceed the number of 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 proficiency with 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. While programming experience is not a requirement to enter the program, aptitude for programming is necessary and would include strong language, problem solving and logic skills. This is often demonstrated by skill and enjoyment in solving word problems in math.

Applicants who have been out of school for a period of time are encouraged to take a refresher course in mathematics, prior to the start of classes. Refresher/upgrading courses are available through Academic Upgrading courses, the Centre for Continuing and Online Learning and through local school boards.

Admission Requirements for 2024/2025 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).

Program Eligibility

- English, Grade 12 (ENG4C or equivalent).

- Mathematics, (Grade 12 MCT4C) or (Grade 11 MCR3U) or equivalent; or (Grade 12 MAP4C with a grade of 80% or higher) or (Grade 11 MCF3M with a grade of 70% or higher).

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Application Information

COMPUTER ENGINEERING TECHNOLOGY - COMPUTING SCIENCE (CO-OP AND NON CO-OP VERSION)
Program Code 0006X03FWO

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 https://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
Ottawa, ON K2G 1V8
Telephone: 613-727-0002
Toll-free: 1-800-565-4723
TTY: 613-727-7766
Fax: 613-727-7632
Contact: https://www.algonquincollege.com/ro

Additional Information

CO-OP INFORMATION:

All applicants apply directly to the co-op version of this program through https://www.ontariocolleges.ca/ or our International Application Portal. Students may elect to participate in the co-op version, two terms prior to the first co-op work term, subject to availability and academic eligibility.

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 .

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

Contact Information

Program Coordinator(s)

- Howard Rosenblum, mailto:coordsci@algonquincollege.com , 613-727-4723, ext. 3463

Course Descriptions

CST8102 Operating System Fundamentals (GNU/Linux)

Operating systems form the backbone of information technology systems coordinating the interaction between hardware and software. Students explore the basic concepts and components of Operating Systems (OS), and how they function and interact with hardware and software components. Students examine the details of operating system structures, process management, storage management, installation, configuration, and administration both in theory and through practical assignments based on the GNU/Linux operating system. Lab work is designed to implement the theory by developing skills using the powerful GNU/Linux command-line tools and utilities.

Prerequisite(s): CST8116 and CST8118
Corerequisite(s):none

CST8108 Network Programming Basics

Software programming in today's environment requires detailed knowledge of the underlying network topology and its implementation. Gaining an appreciation and perspective of this technology is imperative to developing good network programming applications. Topics include the basic structure and design of networks, layered communications models, industry standards for network media and protocols with an emphasis on data communications, TCP/IP protocol suite, Ethernet and socket programming. Labs include practical exercises in using socket programming along with common networking tools for diagnosing and troubleshooting typical network

programming problems.

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

CST8116 Introduction to Computer Programming

Possessing the fundamentals of logic, problem-solving and programming language structure provides a solid foundation for further study in the field. Students develop introductory knowledge of computer programming with emphasis on problem analysis and design, using algorithms, pseudocode, flowcharts, UML Class Diagrams and testing, with the Java programming language used as a means to implement problem solution designs. Through an introduction to the Java programming language students use sequential structures, selection structures, repetition structures, variables, constants, methods, constructors, one-dimensional arrays, object-oriented programming, classes, objects, abstraction, encapsulation, inputs, outputs, coding conventions and documentation. Theory is reinforced with application by means of practical laboratory assessments.

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

CST8118 Computer Essentials

Maintaining a computer, using operating system and productivity software, and expressing related environmental and sustainability concerns, is an important part of working with Information Technology. Students explain computer hardware, and use operating system software to maintain, utilize, and secure a computer. Students practice the use of spreadsheet software to solve problems, use formulas, and visualize data with charts. Students discuss computer hardware and software with regards to financial and environmental sustainability. Theory is reinforced with application by means of practical laboratory assessments, including using virtualization software to install guest operating systems onto a host computer.

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

CST8130 Data Structures

Learn to use a variety of data structures and associated processing algorithms to manage massive amounts of data. Explore concepts using Object-Oriented Programming (in Java). Implement some solutions using first principle coding and others using predefined Collection and Map classes. Master techniques to assess the relative performance of alternative solutions (Big-O analysis) and make well-reasoned choices of selected data structures.

Prerequisite(s): CST8132
Corerequisite(s):none

CST8132 Object-Oriented Programming

Learn extended Object-Oriented Programming concepts and develop the solid programming skills that are prerequisites for higher-level courses. Java is used to illustrate the theoretical concepts and develop solutions to real-world problems of increasing complexity.

Prerequisite(s): CST8116
Corerequisite(s):none

CST8152 Compilers

Introduction to the basic principles, techniques, and tools used to translate text expressed in one language to equivalent text expressed in another language. The concepts discussed and the programming concepts studied in previous courses are applied to develop and program the front-end of a simple compiler or interpreter using ANSI C as implementation language. The ideas and techniques discussed could be applied to general software design and to parsing of structured files, such as HTML, XML, register and configuration files.

Prerequisite(s): CST8234
Corerequisite(s):none

CST8215 Introduction to Database

Databases are used to store data and are a core component of many information technology systems. Students learn the fundamentals of relational databases design using Entity Relation Diagrams (ERDs), and use Structured Query Language (SQL) to create, modify and query a database. Students design and create databases that are maintainable, secure and adaptable to change in business requirements, using normalization. Students become familiar with the functions of a Database Management System (DBMS) and its components in comparison with legacy systems and alternative information storage mechanisms.

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

CST8216 Processor Architecture

Elementary electronic components, basic numerical systems and operations and Boolean logic are explored with their relationship to a microprocessor/microcomputer. Students also learn microcontroller programming using assembly language. The theory is supported by lab exercises involving the creation and analysis of circuits using simulation software and the programming of a microcontroller.

Prerequisite(s): CST8118 and CST8132
Corerequisite(s):none

CST8218 Web Enterprise Applications

Students expand on HTML, Java and database knowledge to develop skills in building scalable applications using the Jakarta Enterprise Edition framework. Students apply these skills in developing a web application project with a database layer, business logic, presentation logic and client-side components, as well as a RESTful interface for SPA, B2B and Mobile support. Design topics involve multitier architecture, Object Relational Mapping, XML, internationalization and web security.

Prerequisite(s): CST8221 and CST8238
Corerequisite(s):none

CST8219 C++ Programming

Learn C++, building on the concepts of memory management and object-oriented programming studied in other languages in previous courses. Used as a language of choice for high performance applications, the C++ language expands the C paradigm to include encapsulation, operator overloading, inheritance and polymorphism. In addition, C++ Standard Library is introduced as a ready-made framework for application development.

Prerequisite(s): CST8234
Corerequisite(s):none

CST8221 Java Application Programming

Students learn advanced Java technology by developing multi-tiered applications featuring a rich graphical user interface (GUI). Students also learn how to build a GUI, object-oriented design patterns, networking, multi-threading and database connectivity and deployment.

Prerequisite(s): CST8130
Corerequisite(s):none

CST8227 Interfacing

Specific constraints, challenges, and attributes that are unique to embedded systems are explored. The role and capabilities of such compact systems in today's world is analyzed, with detailed reference to available processing speed, storage and power consumption. Students gain knowledge of sensors and actuators, their operational parameters and characteristics. Methods for interfacing, sampling, and controlling the devices are studied, including polled vs. interrupt driven, D to A and A to D conversions and simple digital vs. PWM outputs. Practical lab exercises include interfacing to real world devices using a small embedded development board.

Prerequisite(s): CST8152 and CST8216
Corerequisite(s):none

CST8233 Numerical Computing

Learn the usefulness and power of numerical computing methods to perform a wide range of engineering and scientific tasks processing real-world data using R as the underlying programming language. These include series implementation of mathematical functions, statistical data analysis, fitting data with linear regression, numerical differentiation and integration and solving ordinary differential equations to simulate real-time dynamical systems.

Prerequisite(s): CST8234 and MAT8201
Corerequisite(s):none

CST8234 C Language

Students learn the basics of the C Programming language. Building upon the foundation laid in prerequisite courses, application design, development, debugging and testing in the Unix/Linux operating system environment are addressed. Topics covered include regular expressions, memory management, I/O and file system resources (buffered and unbuffered), and safe programming practices are emphasized.

Prerequisite(s): CST8102 and CST8116
Corerequisite(s):none

CST8237 Game Programming

Combine skills learned in previous courses to develop advanced multimedia and game applications that run on a PC. Using the power of the Graphics Processing Unit (GPU) on the video card it is possible to program shaders that simulate real-life objects moving under the laws of physics. As an end product, students develop a complete virtual 3D world with terrain, and a dynamic environment that the user can explore and interact with.

Prerequisite(s): CST8130 and CST8234
Corerequisite(s):none

CST8238 Web Programming

Students learn website design and implementation. HTML5, JavaScript, PHP and XML are used to explore web-based solutions to problems of increasing interactivity and complexity. Online lectures are reinforced by practical assignments that encourage students to construct and maintain their own websites.

Prerequisite(s): CST8108 and CST8116 and CST8215 or CST8109 and CST8116 and CST8215
Corerequisite(s):none

CST8244 Real-Time Programming

Building on prior knowledge of Linux/Unix, learn the difference between Real-Time/Embedded system programming and batch processing. Design real-time applications in C Language using the QNX Real-Time Operating System and the special functions built into QNX to enhance RT and embedded system programming - exceptions, messages resource managers and timers. Design topics include finite state machines, multi-threading, and distributed multi-processor systems.

Prerequisite(s): CST8227

Corerequisite(s):none

CST8283 Business Programming

Information systems built using the COBOL programming language support important institutions such as government services and the banking sectors. Students create COBOL programs in a business environment using structured methodology in the latest visual programming environment. Topics include output design, logic design tools, structured, top-down and modular coding, testing and debugging, and documentation. Students examine interactive, file-based, and database processing of data related to business problems. Arrays, indexed files, database access and sub-programs are explored.

Prerequisite(s): CST8116
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

CST8355 Software Design and Testing

Learn the basics of Agile software development including the Scrum, Kanban and Scrumban methodologies. The phases of software development are introduced including gathering and analyzing requirements; document, design, code and test working software prototypes. Knowledge about testing, debugging and QA process is expanded. Students will be required to do a short presentation based on their research.

Prerequisite(s): CST8152
Corerequisite(s):none

CST8359 .NET Enterprise Application Development

Students use C#/ASP.NET/WebServices/MS SQL to produce applications for a wide range of different environments. Students set up and deploy ASP.NET MVC and ASP.NET Razor Pages applications, deploy applications on Azure AppService. Learn Azure SQL and Azure Storage Account and create databases and distributed storage in Azure cloud computing environment. The students will also learn about developing, documenting,and deploying Restful web services using ASP.NET WebAPI.

Prerequisite(s): CST8221
Corerequisite(s):none

CST8390 Business Intelligence and Data Analytics

Business Intelligence (BI) can be broadly defined as a set of applications, infrastructure, and best practices that integrate and transform raw data into actionable information used for planning, monitoring and analyzing processes. The foundation underlying this process is the Data Analytics that explore the data, identify the relationships and patterns in a meaningful way. Students examine the components and best practices of BI technology, and how it guides operational to strategic business decisions in the context of real-world applications. Data analytics techniques are used to derive insight using statistical software to provide insight into patterns and trends not immediately obvious in the raw data.

Prerequisite(s): CST8116 and CST8215 and MAT8001C
Corerequisite(s):none

ENG4001 Project 1

Experience with practical projects provides students with learning opportunities to gain insight and experience, thereby making connections to industry. Through collaborative participation in applied research projects or self-directed in-class projects, student groups undertake problems of significant technical complexity and work towards solutions using project management methodologies. Student groups initiate projects, working closely with stakeholders in real-world workplace environments. Note: Project 1 and Project 2 courses must be successfully completed in two consecutive terms.

Prerequisite(s): CST8152 and CST8219 and CST8221 and CST8233 and CST8238
Corerequisite(s):CST8355 and ENL4001

ENG4002 Engineering Project for Entrepreneurs

Experiencing the process of creating and validating a new product or service idea provides students with the opportunity to decide whether the path of an entrepreneur is suited to them. Through the processes of ideation and customer idea validation, students continue to refine an idea until it is ready to pitch to investors. Students with successful pitches earn funds to build their prototype the following term in ENG4003.

Prerequisite(s): CST8152 and CST8219 and CST8221 and CST8233 and CST8238
Corerequisite(s):ENL4001

ENG4003 Project 2

The ability to identify and satisfy stakeholder expectations is essential for successful project development and completion. Following up on topics selected in Project 1, student groups continue to execute projects of significant technical complexity in an applied research context. Student groups work in consultation with faculty and/or external stakeholders to create deliverables by monitoring and controlling the project resources. The solutions developed are defended in formal oral and written presentations. Note: Project 1 and Project 2 courses must be successfully completed in two consecutive terms.

Prerequisite(s): CST8355 and ENG4001 or CST8355 and ENG4002
Corerequisite(s):ENL4003

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 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

ENL2019T Technical Communication for Engineering Technologies

The ability to communicate effectively in a technically-oriented interdisciplinary workplace is a foundational skill in an innovation-driven economy. Students are exposed to exercises and assignments designed to foster independent and collaborative critical thinking, research, writing, visual communication and presentation skills related to technical topics.

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

ENL4001 Technology Report Preparation

Students define and describe a problem of significant technical complexity and present a suitable technological solution. Drawing upon skills previously acquired, students plan, conduct research for and begin the creation of a written report that is based upon the guidelines established by the Ontario Association of Certified Engineering Technicians and Technologists (OACETT).

Prerequisite(s): ENL2019T or ENL1819T
Corerequisite(s):ENG4001 or ENG4002

ENL4003 Technology Report

Students complete the report defined in ENL4001. The completed report forms the basis of an oral presentation to faculty, peers and interested industry personnel in the final weeks of the term. ENL4001 and ENL4003 must be taken in the same academic year unless an exception is approved.

Prerequisite(s): ENL4001
Corerequisite(s):ENG4003

GED0006X 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

GED0006X 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

MAT8001C Technical Mathematics for Computer Science

The study of algebraic and transcendental functions is an essential prerequisite to Calculus. Students manipulate algebraic expressions, solve algebraic equations and learn the properties of and graph algebraic and transcendental functions. Students investigate computer number systems in addition to Boolean algebra and logic to help solve problems involving computer systems. Students also study the addition and subtraction of vectors using vector components. Delivered in a modular format, this course is equivalent to the completion of all of the following math modules MAT8100 - A, B, C, F, L, and T.

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

MAT8201 Calculus 1

Calculus is used to determine many important physical quantities. Students differentiate algebraic and transcendental functions and sketch various curves. Students integrate simple algebraic and transcendental functions. Students use integration to solve applications relating to their program of study, such as the area under a curve.

Prerequisite(s): MAT8050 and MAT8051 or MAT8050P and MAT8051 or MAT8100 or MAT8100P or MAT8001C
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

WKT8003 Work Term III

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

Prerequisite(s): WKT8002
Corerequisite(s):none