Area of Interest: Environmental and Applied Sciences

Science and Technology Foundations

Ontario College Certificate

Program Code: 1528X01FWO

1 Year

Ottawa Campus

Our Program

Explore the fields of science and technology to define your career pathway.

Innovations in science and technology have improved our daily lives by making the world easier to navigate and more accessible. The one-year Science and Technology Foundations Ontario College Certificate allows you to explore academic and career opportunities within the fields of applied science and technology, while developing fundamental skills in these areas and preparing you for a well-suited academic and professional pathway.

In this program, you develop core skills through lectures and practical laboratories, which are common to all areas of applied science and technology, such as critical thinking, problem solving, team work, communication, computer skills, and applied mathematics. You increase your own awareness of industry and career opportunities within the fields of applied science and technology. You have an option of selecting two courses relating to either electronics or chemistry to guide possible career choices. You also develop strong academic and career planning skills to support you through the next stages of your studies and into your career.

This science and technology foundations program provides you with an introduction to more advanced programs in these fields, including, but not limited to:

- Biotechnology - Advanced
- Water and Wastewater Technician
- Environmental Technician
- Electro-Mechanical Engineering
- Mechanical Engineering Technology
- Manufacturing Engineering Technician

As a graduate, you will qualify to receive transfer credits in related programs for some courses taken in this program. Contact the Program Coordinator to explore specific transfer credit opportunities.

SUCCESS FACTORS

This program is well-suited for students who:

- Are attracted to new technologies.
- Can work independently or in a team environment.
- Enjoy the challenges of problem-solving.
- Are inquisitive and have an analytical nature.
- Are organized in their work and pay attention to detail.

Learning Outcomes

The graduate has reliably demonstrated the ability to:

- Use math skills to solve routine problems related to applied science and technology.
- Use critical thinking processes and problem-solving techniques to develop systematic approaches in applied science and technology.
- Communicate using appropriate language, strategies and techniques to convey messages clearly and concisely in applied science and technology environments.
- Use academic strategies to support success and wellness in lifelong learning and career development.
- Apply the basic technical skills required to complete a set of procedures in an applied science and technology lab.
- Apply digital literacy skills at an introductory level for success in applied science and technology.
- Examine the professional requirements and opportunities in various applied science and technology fields to inform academic and professional goals.
- 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
ENL2029T	Foundations of Communication	42.0
FAM0080	Life Skills for Academic Study	56.0
MAT0101	Mathematics for Technology 1	70.0
SCI0011	Applied Science for Technology	42.0
SCI0012	Applied Science for Technology Lab	56.0
SCI0013	Career Exploration in Science and Technology	28.0
Level: 02	**Courses**	**Hours**
DAT2004	Computer Applications	42.0
ENL1813T	Communications I	42.0
MAT8001T	Mathematics for Technology 2	70.0
Elective: choose 2	**Courses**	**Hours**
CHE1302	General Chemistry	56.0
CHE1303	Chemistry Lab	42.0
ELN1104	Electronics Tutorial	14.0
ELN9104	DC and AC Electronics	84.0
Choose one from equivalencies:	**Courses**	**Hours**
GED1528	General Education Elective	42.0

Fees for the 2023/2024 Academic Year

Tuition and 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:

- Approximately $800 for books and consumable supplies.

Admission Requirements for the 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) will be charged.

Program Eligibility

- English, Grade 12 (ENG4C 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.

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

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Application Information

SCIENCE AND TECHNOLOGY FOUNDATIONS
Program Code 1528X01FWO

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 1st will be given equal consideration. Applications received after February 1st 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

Contact Information

Program Coordinator(s)

- Elisabeth von Moos, mailto:vonmooe@algonquincollege.com , 613-727-4723, ext. 3451

Course Descriptions

CHE1302 General Chemistry

Biotechnologists require a strong background in the fundamentals of chemistry and principles of applied physics. Students gain an understanding of the periodic table and the chemical/physical properties of elements and compounds. Additionally, topics such as atomic structure, reaction stoichiometry, solution preparation, chemical equilibrium, chemical kinetics, acid-base chemistry and the use of buffers in biotechnology are studied.

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

CHE1303 Chemistry Lab

Chemistry is a physical science that helps explain our natural world. Students explore a chemistry from an atoms first approach. Through hands-on laboratory activities, students explore physical and chemical properties of matter and chemical bonding and chemical reactions. Illustrative experiments will provide hands on training with standard equipment used in laboratories.

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

DAT2004 Computer Applications

Knowledge of common computer applications is crucial in any modern workplace. Students examine the essentials of the computer operating system and use current software packages to perform practical workplace tasks. Tasks incorporate file management, file sharing, email and electronic calendars, documents with graphical illustrations, spreadsheets and presentations. Assignments are linked to vocationally-specific problems and projects.

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

ELN1104 Electronics Tutorial

Possessing basic knowledge of entry-level electronics and related careers help to guide career pathways. Through discussions, students explore the theory behind electrical circuits to develop fundamental knowledge of electronics. Students examine professional requirements and opportunities as well as lifelong learning strategies relating to the field of electronics.

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

ELN9104 DC and AC Electronics

An understanding of entry-level electronics is essential to all engineering fields. Students explore basic electrical components and how they are used in electrical circuits. Discovering and using resistors, capacitors and inductors to build circuits from schematic diagrams, students perform tests and measurements to promote their understanding of fundamental electronics. Through following the flow of energy in complete circuits, students apply troubleshooting strategies to identify, localize and correct malfunctions. Students use digital multimeters, oscilloscopes and signal generators to create and measure circuit characteristics. Students evaluate circuits using Ohm's Law, Kirchhoff's laws, superposition and other theorems. RL, RC and RLC circuits are examined. Good lab safety practices are stressed. Students provide written reports on their findings.

Prerequisite(s): none
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 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

ENL2029T Foundations of Communication

Students develop language and communication skills necessary to promote success in education pathways and careers. With effective workplace communication skills as the focus, students achieve correctness and confidence in presenting messages in various formats appropriate to workplace correspondence, report writing and teamwork activities. Students compose, edit and

revise a variety of workplace-oriented messages, practice presentation skills, and use technology to produce a collaborative project. In all written work, students develop and enhance their skills in English language usage, grammar, mechanics and style to meet professional workplace standards.

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

FAM0080 Life Skills for Academic Study

There are specific skills and competencies that students need to be successful in academic pursuits. Students develop skills in time management, learning strategies, critical thinking, online research and group work. Students gain skills to navigate this new learning environment and explore resources to support them. Students prepare for study at the post-secondary level through group discussions, self-reflection and collaboration with peers on projects.

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

GED1528 General Education Elective

For this course, you will have the opportunity to choose one from a group of general education electives. Your options will include courses which cover the following broad topic areas: (list the themes that have not been met by the mandated courses, e.g. Arts in Society, Civic Life, Social and Cultural Understanding, Personal Understanding, or Science and Technology).

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

MAT0101 Mathematics for Technology 1

A firm foundation in mathematics is crucial to studying and working in science and technology fields. Students solidify their understanding of key math concepts. Topics include arithmetic and basic algebra, geometry, trigonometry and functions. Students manipulate equations to solve problems which include surface, area, volume and angles. Through individual and group work, students hone essential math skills.

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

MAT8001T Mathematics for Technology 2

A deep understanding of more complex mathematical processes is essential to studying and working in the technology fields. Students solve and graph systems of linear and quadratic equations, factor and simplify fractional polynomial expressions, simplify fractional exponents and radicals, and solve exponential and logarithmic equations. The application of theory, learned through skills-based practise, prepares students to enter their chosen technological field of study.

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

SCI0011 Applied Science for Technology

Scientific research and experiments help to explain the world. Students use the scientific method to develop a solid foundation for critical thinking. Through discussions, students examine the fundamental scientific skills and principles applied in physics, chemistry, and microbiology. Students examine the importance of assessing the accuracy and precision of measurements and results.

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

SCI0012 Applied Science for Technology Lab

Experiencing authentic lab exercises develops basic skills and exposes students to areas of potential study and employment. Students examine the scientific method through activities and learn the fundamental scientific skills and principles applied in physics, chemistry and microbiology. Laboratory experiments emphasize developing laboratory skills and expertise including: solution preparation, use and care of equipment and the safe handling and disposal of chemicals and biological samples. Students explore introductory physics concepts in a laboratory environment. Students also assess the accuracy and precision of measurements and results.

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

SCI0013 Career Exploration in Science and Technology

Goal-setting and life-long learning are key factors in achieving academic and personal success. Students investigate a variety of employment options in the fields of applied science and technology. Through the use of career-guidance tools and techniques, students identify employment opportunities and pursue those that match their own interests and career goals. Students explore how their own academic learning and career development are intertwined.

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