Area of Interest: Construction and Skilled Trades

Energy Management (Co-op and Non Co-op Version)

Ontario College Graduate Certificate Program Code: 1524X03FWO

1 Year

Ottawa Campus

Our Program

Energize your career in only 8 months.

The one-year Energy Management Ontario College Graduate Certificate prepares you for an exciting career in the energy sector and its transformation towards sustainability.

Learn about energy solutions such as renewable technology, sustainability, conservation and demand side management. Participate in laboratory work, contribute to a real-world project and learn from case-studies in the energy management industry. Explore how to implement, manage, administer and work on energy management practices throughout the program. By analyzing data, evaluating the impact of renewable technologies, energy efficiency and conservation measures and performing cost-benefit analyses, you obtain highly-regarded skills for the industry.

During your final semester, you participate in an energy management project with peers and industry partners. Through in-class discussions and collaboration, you plan and create an energy strategy for an organization and write an energy business case to support your recommendations.

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 admission to the co-op program does not guarantee a co-op placement.

Graduates may find employment in public, private and non-profit sectors, including:

- federal, provincial, territorial and municipal levels of government
- corporate agencies
- energy service providers
- commercial and industrial organizations related to the energy sector

Graduates may find opportunities as a(n):

- energy conservation professional
- energy consultant
- energy manager
- energy analyst

SUCCESS FACTORS

This program is well-suited for individuals who:

- Possess strong critical thinking and analytical skills.
- Have an aptitude for technology, electrical and/or mechanical systems.
- Are resourceful, self-motivated and enjoy challenges.

- Are committed to sustainability.
- Have strong communication and people skills.
- Possess leadership ability.

Employment

Graduates may find employment as conservation or energy management professionals; facilities managers that implement energy solutions in commercial, industrial and residential buildings; renewable energy consultants or energy managers in a variety of workplace settings; energy evaluators; municipal energy officers; energy policy analysts; sustainability officers, technologists with the utilities or power generation industry and in a range of sustainable energy roles.

Learning Outcomes

The graduate has reliably demonstrated the ability to:

- Analyze an organization`s current energy profile to plan and establish an energy management strategy.
- Monitor, track and benchmark energy data to compare performance and establish baselines and targets to determine trends.
- Conduct energy assessments to propose optimal energy solutions.
- Recommend energy management options, solutions and technologies to maintain long-term operational and infrastructure efficiency.
- Prepare and present technical and financial reports and proposals in a scientific format using accurate energy terminology.
- Research and apply industry accepted standards for energy analyses.
- Create and present persuasive business cases for energy projects.
- Manage energy project implementation to successfully meet organizational goals.
- Evaluate energy performance using measurement and verification strategies.
- 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
BSC6000	Advanced Building Systems	56.0
ELE9001	Energy Concepts	56.0
ELE9002	Energy Industry Landscape	42.0
ENV9000	Alternative Energy Systems	42.0
GEP1001	Cooperative Education and Job Readiness	18.0
MGT4500	Project Management Fundamentals	42.0
SCI4003	Scientific Communication for Public Policy	42.0
Level: 02	**Courses**	**Hours**
BSC6001	Control Systems and Building Automation	42.0

BSC6002	Energy Assessment	42.0
BSC6003	Presenting an Effective Energy Business Case	28.0
ELE9003	Smart Grid and Advanced Metering Technology	42.0
ENG9001	Advanced Analytics and Modelling	42.0
ENG9002	Energy Management Project	84.0
Co-op: 01	**Courses**	**Hours**
WKT4403	Energy Management Work Term	

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:

- Textbooks cost approximately $400 per term.
- Students are also required to purchase CSA-approved safety boots and hard hats.
- There will also be an addition to the Ancillary Fees in the amount of $100 for Matlab/Simulink.

Admission Requirements for the 2024/2025 Academic Year

Program Eligibility

- An Ontario College Advanced Diploma, or Degree, or equivalent, in mechanical or electrical engineering or a related field (e.g., energy, sustainability, building and environmental sciences); OR
- An Ontario College Advanced Diploma, or Degree, or equivalent, in a non-related field, with a minimum two years of relevant work experience in the mechanical or electrical engineering field or a related field.
- 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 6.5 with a minimum of 6.0 in each band; **OR** TOEFL-Internet-based (iBT)-overall 88, with a minimum of 22 in each component: Reading 22; Listening 22; Speaking 22; Writing 22; **OR** Duolingo English Test (DET) Overall 120, minimum of 120 in Literacy and no score below 105.

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Application Information

ENERGY MANAGEMENT (CO-OP AND NON CO-OP VERSION)
Program Code 1524X03FWO

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

Applications are available online 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 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
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

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.

Cooperative 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 online readiness activities and in-person 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 and other Canadian and international colleges and
universities. Algonquin College`s Co-op Department provides assistance in developing co-op job opportunities and facilitates 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 re-locate 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.

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 a mandatory part of an academic program.

For more information, please visit https://www.algonquincollege.com/coop .

Contact Information

Program Coordinator(s)

- Sudhir Tiwari, mailto:tiwaris@algonquincollege.com , 613-727-4723

Course Descriptions

BSC6000 Advanced Building Systems

Mechanical systems and equipment account for almost two-thirds of the electricity consumed in typical industrial and commercial sectors. Major topics include ways in which improvements to these systems could yield dramatic energy and cost savings. Students examine in-building electrical and mechanical systems and their impact on energy performance. Through in-class discussions and field trips, students gain an advanced perspective on energy management in various types of building systems.

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

BSC6001 Control Systems and Building Automation

To ensure the operational performance of a facility, as well as the comfort and safety of building occupants, intelligent systems including hardware, software and networks are integrated. Students examine the components of a Building Automation System, and through in-class discussion and field trips, gain the technical knowledge needed to make assessments and recommendations on their use.

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

BSC6002 Energy Assessment

A thorough and systematic review of how energy is used within a system is necessary before any recommendations or improvements can be made. Students learn which measurements are critical and what types of data impact energy flow. In-class discussions and real-world data provide experiential learning opportunities for conducting energy assessments.

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

BSC6003 Presenting an Effective Energy Business Case

A comprehensive energy management business case fosters informed decision-making within an organization regarding energy management goals, identifying priority actions to achieve goals, the costs and benefits of proposed actions and potential risks to the business case. Students are exposed to the fundamentals of creating and presenting an effective business case, learn the information requirements and methods for assessing proposed actions, apply business case templates to guide the drafting of business cases and apply these lessons to an actual energy management business case scenario.

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

ELE9001 Energy Concepts

Energy systems are complex and practitioners are required to have a broad understanding of the sector. Students explore the technical complexities of energy supply, distribution and consumption. In-class discussions and learning activities focus on the energy industry locally and globally.

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

ELE9002 Energy Industry Landscape

The energy industry is both highly regulated and complex. Students learn about the structure of the energy industry and how utilities operate. In-class lectures and discussions focus on the energy industry in North America with particular attention to the state of the energy industry in Ontario. Students learn various standards relevant to the energy industry.

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

ELE9003 Smart Grid and Advanced Metering Technology

Technology advances in sensing, computing and communications are resulting in an evolving and 'smarter' distribution grid. Students explore the technological, environmental and societal benefits of a Smart Grid. Focus is on practical applications of metering for energy providers, producers and consumers.

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

ENG9001 Advanced Analytics and Modelling

Consumption and cost of energy is influenced by many factors, all of which require an in-depth understanding before recommendations are made to improve or change a system. Students learn where to get data and how to normalize it so that it can be used accurately in comparisons when recommending different options. In class discussions, as well as use of key software systems and energy benchmarking data sources provide students with the tools to support data analysis.

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

ENG9002 Energy Management Project

Possessing real-world experience in the Energy Management field is desirable from an employer's perspective. Students work in groups with peers and industry partners, through in-class discussions and remote collaboration, to conduct a situational analysis and develop an energy strategy for a commercial building. Students report on and present findings and recommendations using actual data and real-world circumstances.

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

ENV9000 Alternative Energy Systems

Traditional forms of energy supply are evolving to incorporate newer technologies and innovations. Students learn about traditional and renewable forms of generation including distributed, co-generation, micro-grids and nano-grids. In-class discussions and field visits focus on providing students with the knowledge to assess viable forms of alternate energy supply.

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

MGT4500 Project Management Fundamentals

Managing projects is an essential component in today's business environment and mastering concepts, tools and techniques can help manage projects more efficiently. Students focus on the fundamental principles of project management: how to initiate, plan and execute a project that meets objectives and satisfies stakeholder's expectations. Through case studies and team-work, students examine key project management principles, tools and techniques and learn the concepts behind the foundation of project management.

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

SCI4003 Scientific Communication for Public Policy

Clear, concise and effective communication is required for success in this industry. Students explore and apply industry-specific technical writing strategies, such as assessing scientific procedures and clearly articulating complex technological problems. Through written assignments, presentations and simulating briefing activities, students develop written and spoken communication skills essential for professionals in this sector.

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

WKT4403 Energy Management Work Term

This course includes a work placement, a weekly recording of the activities done in a journal and a final summary report of the overall experience to be submitted before returning to school. The placement has to be in an energy management related industry. The timing of the placement depends on the progression pattern of the program and cannot be done before completion of the second level of the Energy Management program. The placement is monitored by the College. Feedback from the employer is considered in the final evaluation of the course. All assignments (journal entries and final report) must be provided to pass the course. The College Coop office assists in finding a placement however, it is the students responsibility to find, apply and get the work term as if they were applying for a job.

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