Area of Interest: Engineering and Architecture

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

Ontario College Graduate Certificate
1 Year
Ottawa Campus

Academic Year: 2019/2020
Program Code: 1524X01FWO

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 energy, innovation, entrepreneurship and the development of efficient new energy technologies.

Learn about energy solutions such as efficiency, conservation and sustainability. 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 sets, evaluating the impact of energy efficiency and conservation programs and performing cost-benefit analyses, you obtain highly-regarded skills for the industry.

During your final semester, 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 a commercial building.

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 version of the program are subject to availability. Students who elect to apply to the non co-op version of the program may not have the opportunity to transfer to the co-op version at a later date.

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.

Employment

Graduates may find employment as conservation or energy management professionals; facilities managers that implement energy solutions in commercial, industrial and residential buildings; energy consultants or energy managers in a variety of workplace settings; energy evaluators; municipal energy 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 reports and proposals in a scientific format using accurate
• Prepare and present technical 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

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<td>ELE9001</td>
<td>Energy Concepts</td>
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<td>ELE9002</td>
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<tr>
<th>Level: 02</th>
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<td>Control Systems and Building Automation</td>
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<td>BSC6002</td>
<td>Energy Assessment</td>
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<td>ELE9003</td>
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<th>Co-op: 01</th>
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Fees for the 2019/2020 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](https://www.algonquincollege.com/fee-estimator).

Further information on fees can be found by visiting the Registrar’s Office site at [https://www.algonquincollege.com/ro](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 2020/2021 Academic Year

Program Eligibility

• Ontario College Diploma, Ontario College Advanced Diploma or Degree or equivalent.
• International applicants must provide proof of the subject specific requirements noted above along with proof of either: (IELTS / TOEFL) IELTS -International English Language Testing Service (Academic) Overall band of 6.5 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.

• Applicants with international transcripts must provide proof of the subject specific requirements noted above and may be required to provide proof of language proficiency.

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• Applicants with international transcripts must provide proof of the subject specific requirements noted above and may be required to provide proof of language proficiency.

Application Information

ENERGY MANAGEMENT (CO_OP AND REGULAR OPTIONS
Program Code 1524X01FWO

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/. A $95 fee applies.

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
Email: AskUs@algonquincollege.com

Additional Information

Apply directly to the co-op or non co-op version of this program through OntarioColleges.ca or our International Application Portal.

Cooperative education (Co-op) allows students to integrate their classroom learning with a real-world experience though 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.

Programs at Algonquin College are Bring Your Own Device (BYOD). To see the BYOD requirements for your program, please visit: https://www7.algonquincollege.com/byod/...

For more information, please contact the Program Coordinator, Martin Lee, at 613-727-4723 ext.6642 or mailto:leem@algonquincollege.com.

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 assessment of the goals, initiatives, risks, costs and benefits enables
organizations to make informed decisions. Students are exposed to the fundamentals of creating and presenting an effective business case, and learn to apply a library of tools and business case templates for energy projects, through in-class discussion and group case studies.

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

**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 can not 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