Area of Interest: Engineering and Architecture

Green Architecture

Ontario College Graduate Certificate    Academic Year: 2020/2021
1 Year                               Program Code: 1501X01FWO
Ottawa Campus

Our Program

Pursue a career that makes our built environment more sustainable.

The one-year Green Architecture Ontario College Graduate Certificate program, gives you the practical skills and theoretical knowledge to stay up-to-date on sustainable building design strategies. The field of green architecture is heavily expanding. This program complements your knowledge of building design, technology and construction with a range of design strategies that reduce our ecological footprint.

Learn how to design buildings that are healthy and liveable while being environmentally responsible. Some design strategies learned in this program are sustainable site development, managing material resources, and conservation of energy and water. Study sustainable practices that help make the world a more eco-friendly place.

During the program, you complete Canada Green Building Council (CaGBC) courses and workshops. These help prepare you to write the Leadership in Energy and Environmental Design (LEED) Green Associate (GA) exam toward the LEED (GA) credential. (You are responsible to arrange and pay for the exam separately if you so choose.) Doing so gives you an added credential that many employers are seeking. The program also provides opportunities for you to participate in student design competitions, design charrettes or client projects that challenge your knowledge and experience.

In your final term, you have the opportunity to apply your knowledge to a sustainable design project. Once completed, you present your project to a panel of sustainable design professionals.

Graduates are able to evaluate and analyze current practices in building design, and are well positioned to be considered for significant roles working on sustainable projects. Graduates have the opportunity to be employed in a number of fields. You may be hired by:

• architects
• engineers
• green building consultants
• contractors
• municipal, provincial or federal government offices

SUCCESS FACTORS
This program is well-suited for students who:

• Want to significantly improve the environmental, social and economic performance of our buildings.
• Are interested in pursuing alternative career options.
Enjoy an applied approach to learning about how sustainable buildings are designed, constructed and used.

Have previous education and/or experience in architecture, building engineering, interior design, construction or a related field.

**Employment**

Graduates may find employment with architects, engineers, green building consultants and contractors. Opportunities also exist in municipal, provincial and federal government offices concerned with building design and construction, real estate and facilities management.

**Learning Outcomes**

The graduate has reliably demonstrated the ability to:

- Assemble, analyze, adapt and appropriately apply technical data from architectural documents and related sources to complex contexts and documents.
- Coordinate and facilitate the collection, processing, and interpretation of technical data related to green architecture projects.
- Communicate technical information effectively and accurately in a variety of modes.
- Assist in planning and designing green architecture projects.
- Use electronic technology to support architectural projects.
- Analyze and solve technical problems related to green architecture projects using the principles of mathematics and science.
- Assess the environmental, social and economic impacts of architectural projects.
- Integrate civil, mechanical, structural and electrical disciplines into green architecture projects.
- Provide leadership in the planning and implementation of green architecture projects.
- 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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<th>Courses</th>
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<td>Eco Design</td>
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<td>ARC1511</td>
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<td>ARC1512</td>
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<td>BSC8456</td>
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<td>Introduction to Sustainable Project Management</td>
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<tr>
<th>Level: 02</th>
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<td>ARC1520G</td>
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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 website at [https://www.algonquincollege.com/ro](https://www.algonquincollege.com/ro). Fees are subject to change.

Additional program related expenses include:
Books, supplies and colour printing cost approximately $1,400 for the entire program. See [https://www.algonquincollege.com/coursematerials/](https://www.algonquincollege.com/coursematerials/) for more information about books.

**Admission Requirements for the 2021/2022 Academic Year**

**Program Eligibility**

- Ontario College Diploma, Ontario College Advanced Diploma, Degree or equivalent in a related field, such as Architecture, Architectural Technology, Architectural Technician, Building Construction Technician, Building Engineering Technology or Interior Design.

- Applicants are also required to submit a resume and a portfolio of their Architectural work (in PDF format) which demonstrates knowledge and skills in the following four areas:
  - Architectural building design fundamentals (site planning, floor planning, massing, and working with a building program).
  - Architectural drawing skills, both by hand and using Architectural computer software such as AutoCAD and Revit Architecture.
  - Fundamental knowledge of building science, materials, technology and systems (architectural, structural, mechanical, electrical).
  - Fundamental knowledge of building codes and regulations.

- Applicants without the required diploma or degree will be assessed individually and will be required to complete an Eligibility Package.

- Eligibility package submission details can be found on the Algonquin College Additional Admission Requirements website: [https://www.algonquincollege.com/admissionspackages](https://www.algonquincollege.com/admissionspackages).

- 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.

**Admission Requirements for 2020/2021 Academic Year**

**Program Eligibility**

- Ontario College Diploma, Ontario College Advanced Diploma, Degree or equivalent in a related field, such as Architecture, Architectural Technology, Architectural Technician, Building Construction Technician, Building Engineering Technology or Interior Design.

- Applicants without the required diploma or degree will be assessed individually and will be required to complete an Eligibility Package. Eligibility package submission details can be found on the Algonquin College Additional Admission Requirements website: [http://www.algonquincollege.com/admissionspackages](http://www.algonquincollege.com/admissionspackages).

- Applicants should have the following skills and knowledge:
  - Architectural building design fundamentals (site planning, floor planning, massing, and working with a building program).
  - Architectural drawing skills, both by hand and using Architectural computer software such as AutoCAD and Revit Architecture.
• Fundamental knowledge of building science, materials, technology and systems (architectural, structural, mechanical, electrical).

• Fundamental knowledge of building codes and regulations.

• Applicants are required to submit a resume and a portfolio of their Architectural work (in PDF format) that demonstrate the required knowledge and skills. These documents can include work experience, drawings, photos, projects, reports, etc. If an applicant is weaker in one or two of the four areas noted above, they may still be considered for the program, but a review of their work, skills and experience is necessary before a final decision is made.

• 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.

Application Information

GREEN ARCHITECTURE
Program Code 1501X01FWO

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.

Note: 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 Avenue
Ottawa, ON K2G 1V8
Telephone: 613-727-0002
Toll-free: 1-800-565-4723
TTY: 613-727-7766
Fax: 613-727-7632
Email: mailto:AskUs@algonquincollege.com

Additional Information

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/ .

Scheduling:
Most of the classes in the Green Architecture program are scheduled from 4 p.m. to 10 p.m. time period, Monday to Friday. Some courses may be scheduled earlier in the day.

Workload:
For each hour of scheduled class time, students can expect to spend one to two hours on homework outside of class.
Course Descriptions

ARC1510 Eco Design

Students explore the design criteria for small sustainable buildings. Through case study research into principles of site orientation, space zoning, openings and materials, students develop the analytical skills required to identify variables that have an impact on sustainable building design. A design project allows students to use the knowledge and skills in an applied fashion.

Prerequisite(s): none  
Corerequisite(s): ARC1511 and ARC1512 and ARC1522

ARC1511 Sustainable Methods and Materials I

Students assess alternative construction methods, materials and emerging technologies that enable the use of environmentally responsible construction materials in a variety of climates. Through lectures, discussions, case studies and student-driven research projects, students develop a repertoire of reliable technical information that allows them to understand the application of sustainable materials.

Prerequisite(s): none  
Corerequisite(s): ARC1510

ARC1512 Site Assessment and Analysis

Making the most of sustainable building opportunities requires a thorough assessment and analysis of the site under consideration. Be it a new development project, an in-fill, or a minor renovation, students immerse themselves in the analysis and assessment required to ensure that sustainable building projects meet both their environmental and financial goals. Using a variety of case studies, students have the opportunity to develop their analytical skills.

Prerequisite(s): none  
Corerequisite(s): ARC1510

ARC1520G Final Project

Students develop a final project by establishing objectives, developing design strategies and resolving technological aspects of their design. Students assess the sustainability performance of the project. Working in teams, students generate technical presentation drawings and reports from which to estimate the cost of construction. Students present their projects to a panel of sustainable design professionals. Students also take on applied research projects, performing more in-depth analysis of specific aspects of sustainable building performance.

Prerequisite(s): ARC1510  
Corerequisite(s): ARC1521

ARC1521 Sustainable Project Management and Costing

The concepts of advanced project management along with project costing are examined. Economic issues related to sustainability on a global scale are reviewed. Students conduct a cost-benefit analysis of the systems used in their final design project for ARC1520G, as well as projected cost studies that relate to energy savings and other conservation technologies. Finally, students write a report defending their position on one or more sustainability-related issues.

Prerequisite(s): ARC1511 and MGT1510  
Corerequisite(s):ARC1520G

ARC1522 Project Documentation and Presentation Skills

Students develop skills in communicating technical information for architectural projects.
graphically, verbally and in written form. Students create a technical report that documents their project in ARC1510. They are exposed to advanced graphic and oral presentation skills that are used to prepare and deliver their final project presentation in ARC1510.

Prerequisite(s): none
Corerequisite(s): ARC1510

ARC1523 Standards and Accreditation

Through lectures, discussions and activities, students gain an understanding of various standards, rating systems and professional accreditations, and then apply that knowledge by developing a Sustainability Plan for a project. Students also complete a study course that helps prepare them to write the Leadership in Energy and Environmental Design (LEED) Green Associate exam. (Students are responsible to arrange and pay for the exam separately if they choose to do so.) By engaging in industry related activities, students contribute to sustainable building and community development, and are connected with industry professionals and associations.

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

ARC1524 Sustainable Methods and Materials II

Building on knowledge acquired in ARC1511, students expand their understanding of material, carbon and water management choices through lectures and discussions. They then apply this knowledge as they explore options and the impact of their decisions on a building renovation project. Using a variety of assessment tools, including life cycle analysis, students gain a more accurate picture of the real impact of their decisions.

Prerequisite(s): ARC1511
Corerequisite(s):ARC1520G

BSC1520 Healthy Buildings

Students conduct research into technologies and strategies for residential and commercial building projects, which have a direct impact on indoor environmental quality. Options are explored for materials, air quality systems, lighting, ventilation, appliances and shading devices. Through collaborative exploration of the topics, presentations and student-led seminars, students compile current information that enables effective cost-benefit analysis and integration of these technologies into new and retrofit building projects.

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

BSC8456 Renewable Energy Design

Renewable energy systems are a key component of sustainable building design. Students learn the basics of electricity, power and energy, and relate that knowledge to both passive and active solar energy strategies and other renewable energy systems. Topics such as passive solar heating, photovoltaics, solar water heating and co-generation are examined, as well as costs and economic analysis. Students experience the design of renewable energy systems through a combination of independent research and instructor-led case studies.

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

CAD8480 Computer Modeling for Buildings

Computer 3D modeling is rapidly becoming an important tool in sustainable building design. Students are introduced to Autodesk Revit Architecture, where they are provided hands-on experience learning the basic creation and editing commands.

Prerequisite(s): none
Corerequisite(s):none
**CAD8481 Building Modeling and Analysis**

Further developing skills and knowledge gained from CAD8480, students learn intermediate and advanced features of Autodesk Revit Architecture. Students also learn how the software can be used in conjunction with building performance analysis tools.

Prerequisite(s): CAD8480  
Corerequisite(s): none

**MGT1510 Introduction to Sustainable Project Management**

As sustainable architectural projects involve a wider array of disciplines, systems, materials and equipment, the ability to manage and coordinate various aspects of a project are increasingly important skills to develop. Students explore the fundamentals of project management and apply them to scenarios involving sustainable development.

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