

Area of Interest: Construction and Skilled Trades

Sustainable Architectural Design (formerly Green Architecture)

Ontario College Graduate Certificate

Program Code: 1501X01FWO

1 Year

Ottawa Campus

Our Program

Pursue a career that advances sustainability in our built environment.

In the one-year Sustainable Architectural Design Ontario College Graduate Certificate program, you develop the practical skills and theoretical knowledge to become a leader in sustainable building design. In the face of climate change, this program advances your knowledge of building design, technology and construction with a range of design strategies that reduce the carbon footprint.

Learn how to design healthy, liveable, and environmentally responsible buildings, aligning with Canadian construction methods and building codes. Design strategies learned in this program include sustainable site development, managing material resources, and conservation of energy and water. Study sustainable practices that will help mitigate the current climate crisis.

During the program, you complete Canada Green Building Council (CaGBC) courses which help prepare you to write the Leadership in Energy and Environmental Design (LEED) Green Associate (GA) exam, which is sought-after by many employers. The program provides opportunities for you to participate in student design competitions, design charrettes and client projects that challenge your knowledge and experience.

Throughout the program, you may apply your knowledge to a sustainable design project with a client in the industry. Once completed, you present your project to the client and a panel of sustainable design professionals.

Graduates are able to evaluate sustainable design practices and apply them to building construction projects. Graduates may be employed in a variety of fields and may be hired by:

- architects
- engineers
- sustainable building consultants
- contractors
- municipal, provincial or federal government offices

SUCCESS FACTORS

This program is well-suited for students who:

- Want to contribute to significant improvements in the environmental, social and economic performance of our buildings.
- Are interested in building their careers in building design, technology, and construction.
- Enjoy an applied approach to learning about how sustainable buildings are designed, constructed and used.

Employment

Learning Outcomes

The graduate has reliably demonstrated the ability to:

- Research, analyze and apply technical data from diverse sources to architectural projects using sustainable design principles.
- Communicate technical information effectively and accurately in a variety of modes.
- Provide leadership in the planning, design and implementation of architectural projects using sustainable design principles.
- Use industry-specific technology to support sustainable architectural design.
- Analyze and solve technical problems related to sustainable design projects using the principles of mathematics and science.
- Integrate civil, mechanical, structural and electrical disciplines into projects using sustainable design principles.
- Apply Canadian standards and regulations for construction to sustainable architectural design.
- 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
ARC1510	Sustainable Design Studio 1	56.0
ARC1511	Sustainable Methods and Materials I	42.0
ARC1512	Site Assessment and Analysis	42.0
ARC1522	Project Documentation and Presentation Skills	56.0
BSC8456	Renewable Energy Design	42.0
CAD8480	Building Modeling 1	42.0
MGT1510	Introduction to Sustainable Project Management	42.0
Level: 02	Courses	Hours
ARC1520G	Sustainable Design Studio 2	98.0
ARC1521	Sustainable Project Management and Costing	42.0
ARC1523	Standards and Accreditation	42.0
ARC1524	Sustainable Methods and Materials 2	42.0
BSC1520	Healthy Buildings	42.0
CAD8481	Building Modeling 2	42.0

Tuition and related ancillary fees for this program can be viewed by using the Tuition and Fees Estimator tool at <http://www.algonquincollege.com/fee-estimator>

Further information on fees can be found by visiting the Registrar's Office website at <http://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 <http://www.algonquincollege.com/coursematerials> for more information about books.

Admission Requirements for the 2024/2025 Academic Year

Program Eligibility

- Ontario College Diploma, Ontario College Advanced Diploma, Degree or equivalent in a related field, such as Architecture, Architectural Technology or Building Engineering Technology.
- 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 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 local 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: <http://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; OR Duolingo English Test (DET) Overall 120, minimum of 120 in Literacy and no score below 105.

Admission Requirements for 2023/2024 Academic Year

Program Eligibility

- Ontario College Diploma, Ontario College Advanced Diploma, Degree or equivalent in a related field, such as Architecture, Architectural Technology or Building Engineering Technology.
- 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 local 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> .
- 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.

Application Information

SUSTAINABLE ARCHITECTURAL DESIGN 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/> .

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
Contact: <https://www.algonquincollege.com/ro>

Contact Information

Program Coordinator(s)

- Eric Fruhauf, <mailto:fruhaue@algonquincollege.com> , 613-727-4723, ext. 6246

Course Descriptions

ARC1510 Sustainable Design Studio 1

Based on United Nations studies, buildings and the construction sector account for more than a third of energy demand and CO2 emissions annually. Students explore the design criteria for small

sustainable buildings. Through case study analysis 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. Students apply their knowledge and skills to design projects while collaborating in teams

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

ARC1511 Sustainable Methods and Materials I

Students learn the basics of Canadian Wood Frame Construction. They 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):none

ARC1520G Sustainable Design Studio 2

Sustainable architectural design plays a vital role in the reduction of CO2 emissions in the construction sector. Working in teams, students develop a culminating project that meets the needs of an industry client. Working with a client, they establish objectives, develop design strategies and resolve technological aspects of their proposed design. Students assess the sustainability performance of the project and generate technical presentation drawings and reports. Students present their projects to a panel of sustainable design professionals including their client.

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

ARC1521 Sustainable Project Management and Costing

Project management and project costing are essential to the economic success of a sustainable construction project. Students review economic issues related to sustainability on a global scale, preparing a detailed project costing and budget. They conduct a cost-benefit analysis of the systems used in their final design project, as well as projected cost studies that relate to energy savings and other conservation technologies.

Prerequisite(s): ARC1515
Corerequisite(s):none

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

Global certification and accreditation programs are evolving continuously as the construction industry matures. Through lectures, discussions and activities, students build an understanding of various standards, rating systems and professional accreditations. Students examine sustainability from the owners' or clients' perspective. They develop a sustainability plan based on context and select the most appropriate sustainability standard from this. Students prepare to write the Leadership in Energy and Environmental Design (LEED) Green Associate exam, providing them with the option to pursue this accreditation outside of the program.

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

ARC1524 Sustainable Methods and Materials 2

An understanding of advanced construction methods and building systems is required to develop sustainable solutions to combat climate change. Building on foundational knowledge of sustainable building methods and materials, students expand their understanding of material, carbon and water management choices through lectures and discussions. Using a variety of assessment tools, including life cycle analysis, students gain a more accurate picture of the impact of their decisions on a building renovation project.

Prerequisite(s): ARC1511
Corerequisite(s):none

BSC1520 Healthy Buildings

We spend most of our lives inside buildings, so it is vital that we create indoor environments that foster good health and well-being. Students research 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, 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 rapidly evolving component of sustainable building design. Students explore 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 their economic analyses. Students experience the design of renewable energy systems through a combination of independent research and case studies.

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

CAD8480 Building Modeling 1

Digital 3D modeling is an important tool in sustainable building design. Students use creation and editing commands in a variety of hands-on activities to build foundational skills in Autodesk Revit Architecture.

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

CAD8481 Building Modeling 2

Analyzing the performance of a building is vital to measuring the sustainability of the project. Further developing building information modeling skills, students explore intermediate and advanced features of Autodesk Revit Architecture. Students also explore 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