

Area of Interest: Construction and Skilled Trades

## Bachelor of Science (Building Science) (Honours)(Co-op) Pathway for Construction and Civil Engineering

Honours Degree

Program Code: 1512E03FWO

4 Years

Ottawa Campus

### Our Program

This four-year Bachelor of Science (Building Science) (Honours) degree prepares you to develop the skills and knowledge necessary to analyze and problem solve in optimizing the performance of buildings by bridging all facets of building design, construction, human comfort and sustainability.

Eligible graduates of the Construction Engineering Technician Ontario College Diploma program or the Civil Engineering Technology Ontario College Advanced Diploma program can apply to this pathway program and receive credit for 22 courses in the degree, reducing the time to degree completion to three years.

Opportunities for applied and hands-on experiences with building materials, components and systems are woven throughout the program of study. The program integrates theoretical and applied learning environments to provide opportunities for you to experience current and emerging technologies that support both the construction and operation of buildings.

This program responds to a critical need to prepare professionals with a better understanding of building physics, which is the core of the program. Throughout the program, you will develop the scientific mindset required to engage in scientific inquiry, reason in a scientific context and provide evidence-based approaches and solutions. You will also hone the skills and abilities needed to optimize buildings working as a system and address the fact that buildings are becoming ever-increasingly more complex. This is driven by the continuously growing demand for increased energy efficiency, comfort, structural durability and healthy environments.

You will develop abilities to recognize, forecast and document both successful and poor building performance as well as analytical skills to evaluate the impact of each component in the system and identify potential problems before they become hazards, or potential opportunities for improved performance.

Given that the complexity of working in a multidisciplinary industry requires group success, you will collaboratively conceive, develop and implement solutions as a team using holistic approaches. You will emerge as generalists able to handle these complexities through integrated construction practices. Algonquin Centre for Construction Excellence (ACCE) offers access to an integrated learning and applied research environment. ACCE provides an industry hub to train, inspire and collaborate with construction industry partners.

Interactive and dynamic courses encourage the development of personal and interpersonal skills that position you for success in your future employment. Students also gain real-world experience through a paid co-operative education (co-op) work term(s) (see Additional Information for more details). **Please note that places in the co-op work term(s) are subject to availability and academic eligibility. Please note admission to a co-op program does not guarantee a co-op placement.**

Industry trends and market analyses are indicative of employment opportunities for graduates. With the knowledge learned in this program, you may be able to find work as building scientists, architectural or construction project managers, energy consultants or building inspectors. You may also find employment as a researcher, junior analyst, entrepreneur or as technical staff with engineering firms or government agencies.

### Employment

Graduates may work in architect offices, engineering firms, contracting companies and government agencies and departments as researchers, junior analysts, project officers, building specialists, technical staff, architectural and construction project team leaders and consultants.

## Learning Outcomes

The graduate has reliably demonstrated the ability to:

- Integrate sustainable building practices and alternative energy solutions and present options that balance client specifications, site conditions, and human factors.
- Use sound, acceptable scientific and engineering principles for the solution and documentation of situations encountered during the construction or rehabilitation of buildings.
- Communicate effectively with all project stakeholders.
- Read, interpret, and, with direction, modify documents related to building plans, including working drawings that involve structural, electrical, and mechanical features.
- Formulate strategies for the efficient and effective commissioning and operation of buildings and building systems.
- Evaluate the practical applications of primary and secondary theoretical research related to existing and emerging construction methods, equipment, and materials.
- Analyze, test, and comment on the functionality of alternative structural, mechanical, and electrical solutions proposed for integration in both new projects and renovations.
- Contribute to the on-going economic viability of construction and engineering projects through the application of principles of estimating, accounting, and cost controls.
- Facilitate partnerships and productive interactions within project teams that involve knowledge-workers and skilled trade workers.
- Ensure work, activities, and practice are in compliance with established ethical and professional standards, as well as local, provincial, and national legislation.
- Adapt to changes in employment requirements through the development, implementation, and updating of professional and personal development plans.
- 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: 03          | Courses                                 | Hours |
|--------------------|-----------------------------------------|-------|
| BSC1400            | Building Science II                     | 42.0  |
| ENG1100            | Thermodynamics                          | 42.0  |
| GEP1001            | Cooperative Education and Job Readiness | 21.0  |
| MAT6443            | Calculus I                              | 56.0  |
| Elective: choose 1 | Courses                                 | Hours |
| BIO2200            | Botany                                  | 56.0  |
| ECO2000            | Environmental Economics                 | 42.0  |
| ENL2025            | Interpersonal Communication             | 42.0  |
| FLS3101            | French as a Second Language-Beginner 1  | 42.0  |

|                           |                                                                 |              |
|---------------------------|-----------------------------------------------------------------|--------------|
| FLS3102                   | French as a Second Language-Beginner 2                          | 42.0         |
| GED2300                   | Indigenous Self-Representation in Contemporary Canadian Culture | 42.0         |
| GEO2300                   | Principles of Urban Planning                                    | 56.0         |
| LAN3101                   | Spanish-Beginner 1                                              | 42.0         |
| LAN3102                   | Spanish-Beginner 2                                              | 42.0         |
| LAW2014                   | Law                                                             | 42.0         |
| PHI2002                   | Ethical Decision Making                                         | 42.0         |
| PSI2000                   | Navigating Canada's Political Landscape                         | 56.0         |
| PSY2100                   | Introductory Psychology                                         | 42.0         |
| SCI2000                   | Environmental Science                                           | 42.0         |
| SOC2000                   | Introduction to Sociology                                       | 56.0         |
| SOC2001                   | Anti-Racism: Theory and Practice                                | 42.0         |
| <b>Level: 04</b>          | <b>Courses</b>                                                  | <b>Hours</b> |
| BSC1200                   | Professional Practice                                           | 14.0         |
| CAD2400                   | Building Modelling II                                           | 28.0         |
| ELE1200                   | Electricity and Power Generation Fundamentals                   | 42.0         |
| ENL8810                   | Technical Communications                                        | 42.0         |
| GEP2001                   | Co-Op Job Search 1                                              | 21.0         |
| MAT8202                   | Calculus II                                                     | 56.0         |
| PHI2000                   | Introduction to Research                                        | 42.0         |
| <b>Co-op: 01</b>          | <b>Courses</b>                                                  | <b>Hours</b> |
| WKT2500                   | Work Term I                                                     | 0.0          |
| <b>Level: 05</b>          | <b>Courses</b>                                                  | <b>Hours</b> |
| MAT8203                   | Linear Algebra                                                  | 42.0         |
| MAT8205                   | Statistics and Probability                                      | 42.0         |
| SCI2300                   | Materials Science II                                            | 28.0         |
| <b>Elective: choose 2</b> | <b>Courses</b>                                                  | <b>Hours</b> |
| ENL4100                   | Creative Writing                                                | 42.0         |
| ENL4200                   | New Worlds and Alternative Realities: Speculative Fiction       | 42.0         |
| PHI4000                   | Philosophy and Popular Culture                                  | 42.0         |
| PHI4002                   | The Philosophy of Drugs                                         | 42.0         |
| PHI4003                   | The Philosophy of Love and Sex                                  | 42.0         |

|                           |                                                           |              |
|---------------------------|-----------------------------------------------------------|--------------|
| PHI4004                   | Technology, Society and the Environment                   | 42.0         |
| PHI4100                   | Survival in the Information Age: Risk and the Media       | 42.0         |
| PHY4000                   | Black Holes, Big Bangs and the Cosmos                     | 42.0         |
| SOC4000                   | Criminology                                               | 42.0         |
| SOC4001                   | Global Perspectives                                       | 42.0         |
| <b>Level: 06</b>          | <b>Courses</b>                                            | <b>Hours</b> |
| BSC3420                   | Building Systems 2                                        | 42.0         |
| BSC4000                   | Building Envelope II                                      | 42.0         |
| CAD3200                   | Building Information Modeling                             | 42.0         |
| DSN2211                   | Sustainable Design                                        | 28.0         |
| ENG3100                   | Heat Transfer                                             | 42.0         |
| GEP2002                   | Co-Op Job Search 2                                        | 21.0         |
| MAT8204                   | Differential Equations                                    | 42.0         |
| <b>Co-op: 02</b>          | <b>Courses</b>                                            | <b>Hours</b> |
| WKT3500                   | Work Term II                                              | 0.0          |
| <b>Level: 07</b>          | <b>Courses</b>                                            | <b>Hours</b> |
| BSC2300                   | Applied Numerical Methods                                 | 42.0         |
| BSC3100                   | Renewable Energy                                          | 42.0         |
| BSC3300                   | Energy Conservation and Auditing                          | 42.0         |
| BSC4300                   | Building Science Research Project I                       | 56.0         |
| CAD4100                   | Energy Modelling and Simulation                           | 42.0         |
| <b>Level: 08</b>          | <b>Courses</b>                                            | <b>Hours</b> |
| BSC3200                   | Alternative Energy                                        | 42.0         |
| BSC4210                   | Professional Portfolio Development                        | 7.0          |
| BSC4350                   | Building Science Research Project II                      | 56.0         |
| ENL4005                   | Report Writing                                            | 14.0         |
| <b>Elective: choose 1</b> | <b>Courses</b>                                            | <b>Hours</b> |
| ENL4100                   | Creative Writing                                          | 42.0         |
| ENL4200                   | New Worlds and Alternative Realities: Speculative Fiction | 42.0         |
| PHI4000                   | Philosophy and Popular Culture                            | 42.0         |
| PHI4002                   | The Philosophy of Drugs                                   | 42.0         |
| PHI4003                   | The Philosophy of Love and Sex                            | 42.0         |

|                                     |                                                     |              |
|-------------------------------------|-----------------------------------------------------|--------------|
| PHI4004                             | Technology, Society and the Environment             | 42.0         |
| PHI4100                             | Survival in the Information Age: Risk and the Media | 42.0         |
| PHY4000                             | Black Holes, Big Bangs and the Cosmos               | 42.0         |
| SOC4000                             | Criminology                                         | 42.0         |
| SOC4001                             | Global Perspectives                                 | 42.0         |
| <b>Elective 2: choose 1 Courses</b> |                                                     | <b>Hours</b> |
| BSC4100                             | Applied Energy Management                           | 42.0         |
| BSC4500                             | Building Enclosure Commissioning                    | 42.0         |

## Fees for the 2025/2026 Academic Year

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

Books and supplies cost approximately \$1200 per academic term and can be purchased from the campus store. For more information visit <https://www.algonquincollege.com/coursematerials/>

Students are expected to purchase CSA-approved safety footwear and safety glasses, which are required at the start of the term.

## Admission Requirements for the 2026/2027 Academic Year

### Program Eligibility

- Graduates from the Construction Engineering Technician Ontario College Diploma or the Civil Engineering Technology Advanced Diploma with Grade Point Averages of 2.7 are eligible to enter this degree program.

## Admission Requirements for 2025/2026 Academic Year

### Program Eligibility

- Graduates from the Construction Engineering Technician Ontario College Diploma or the Civil Engineering Technology Advanced Diploma with Grade Point Averages of 2.7 are eligible to enter this degree program.

## Application Information

### BACHELOR OF SCIENCE(BUILDING SCIENCE)(HONOURS) Program Code 1512E03FWO

Applications to full-time day programs must be submitted with official transcripts showing completion of the academic admission requirements through:

<https://www.ontariocolleges.ca/en>

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 <https://www.ontariocolleges.ca/en>

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.my.site.com/myac360/s/self-registration-page>

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**

Algonquin College has been granted consent by the Minister of Training, Colleges and Universities to offer this applied degree for a seven-year term starting February 5, 2021. The College shall ensure that all students admitted to the above-named program during the period of consent have the opportunity to complete the program within a reasonable timeframe.

## **CO-OP INFORMATION**

Co-operative 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 course, readiness activities and 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 College and other Canadian and international colleges and universities. Algonquin College's Co-op Department provides assistance in developing co-op job opportunities and guides 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 relocate 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. For more information on your program's co-op level(s), visit the courses tab on your program's webpage.

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 part of an academic program. The Co-op/Internship Work Permit does not authorize international students to work outside the requirements of their academic program.

For more information on co-op programs, the co-op work/study schedule, as well as general and program-specific co-op eligibility criteria, please visit <https://www.algonquincollege.com/coop-career-centre/>

Successful completion of all courses, including mandatory cooperative education (Co-op) Work Terms, is a requirement for graduation.

## **TRANSFER CREDIT RECOGNITION**

Applicants with degrees or degree level courses from Canadian institutions empowered to award degrees and from other degree granting institutions recognized by the Ontario Ministry of Colleges and Universities (MCU) are assessed on a case-by-case basis. To receive a course credit, a minimum grade of C (65%) is required. Official transcripts and course descriptions/outlines must be presented with the application for credit recognition. Applicants with degrees or degree level courses from countries other than Canada or from postsecondary institutions not recognized by



the MCU must have their degrees evaluated by a recognized Canadian public or private institution that specializes in the evaluation of international degree programs. MCU must have their degrees evaluated by a recognized Canadian public or private institution that specializes in the evaluation of international degree programs.

**ADVANCED STANDING**

Graduates of related Ontario College Diploma or Ontario College Advanced Diploma programs may be eligible for advanced standing into the degree program. Please visit the degree program listing or speak to the Program Coordinator for more information and to confirm eligibility.

**DEGREE ELECTIVE INFORMATION**

Students may choose from a variety of breadth courses. Courses from a range of disciplines are offered within the humanities, social sciences, sciences, global cultures and mathematics. Elective offerings vary from semester to semester.

**Contact Information****Program Coordinator(s)**

- Stephen Vardy, <mailto:vardys@algonquincollege.com> , 613-727-4723, ext. 5042

**Course Descriptions****BIO2200 Botany**

Biologists with an interest in plant life may choose to specialize in botany. Beginning with the organic features of life, focusing on plants, students investigate the diversity of plant life and the basis for distinction amongst various species. With a deeper knowledge of plant structures and variability, students consider the impact of plants in the modern world, including human interactions such as food production, building materials and medicine.

Prerequisite(s): none

Corerequisite(s):none

**BSC1200 Professional Practice**

Maintaining relevancy and currency within one's field is essential to a successful career. Students explore job opportunities in the field of building science and resources involved in certification (e.g. BSSO), conferences/events, professional organization (ASHRAE, etc.), research, education, best practices, individual professionalism, independent practice and consulting. Students start the development of a portfolio gathering work performed throughout the program.

Prerequisite(s): none

Corerequisite(s):none

**BSC1400 Building Science II**

Environmental elements greatly influence the operational aspects of any building. Students apply principles of physics to develop strategies to control air leakage and ventilation, moisture, heat gain/losses by solar radiation and rain penetration in buildings. Through the analysis of past and existing buildings, students discuss the major causes of envelope failures as well as examples of high performance buildings.

Prerequisite(s): BSC1100

Corerequisite(s):none

**BSC2300 Applied Numerical Methods**

Students reviews a variety of building science applications and problems using analytical techniques, mathematical knowledge and physics principles to describe, model, forecast and analyze performance. The objective is to use mathematical tools acquired in previous courses to learn how to approach and solve building science situations. Students examine subjects, such as mathematical modeling and engineering problem solving, sensitivity analysis, optimization, numerical heat transfer and computational fluid dynamics in building science applications.

Prerequisite(s): MAT8202  
Corerequisite(s):none

### **BSC3100 Renewable Energy**

The energy demands of new and existing buildings are an expense that many building owners and managers have accepted as a requirement, but emerging sources of renewable energy are presenting new options. Students work collaboratively to broaden their knowledge of renewable energy sources available for residential and commercial applications and conduct some tests with living lab tools. Beyond the question of generation and storage of this energy, students outline and investigate the benefits and drawbacks that currently exist with respect to integration of these sources with contemporary building systems.

Prerequisite(s): ELE1200  
Corerequisite(s):none

### **BSC3200 Alternative Energy**

Students extend their knowledge of energy sources through a consideration of non-fossil fuel options that are currently available or being researched for development. Beyond questions of generation, storage, and integration with contemporary building systems, students analyze the societal response and economic impact of alternative sources of energy that place a greater emphasis on reducing carbon emissions.

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

### **BSC3300 Energy Conservation and Auditing**

In buildings of all sizes for all types of applications, essential components in the establishment and preservation of environmental comfort also play a role in a building's energy utilization. Mindful of code and LEED certification, students, with the support of living lab tools, further develop a picture of the built environment as a holistic system of integrated parts. Students use techniques to assess and improve opportunities to use energy efficiently and reduce energy consumption, while maintaining interior human comfort. Categorizing energy utilization through energy audits, students identify worthwhile energy-saving strategies.

Prerequisite(s): BSC3420  
Corerequisite(s):none

### **BSC3420 Building Systems 2**

Students further their knowledge by examining the critical building systems and prioritizing system design and equipment selection for fire protection, plumbing, utilities, hydronics, air handling, lighting and acoustics for commercial buildings, with additional attention given to residential systems. Students deepen their understanding of these systems and continue emphasizing equipment energy efficiency, economics and sustainability. Through labs and a research project students develop their knowledge and skills to contribute to efficient and comfortable building designs.

Prerequisite(s): BSC2210  
Corerequisite(s):none

### **BSC4000 Building Envelope II**

Proper design and detailing of roof systems is crucial for the adequate performance of the building envelope. Through case studies and examples, students examine a range of roofing systems from their design through their application and maintenance. To define the scope of repairs, students conduct the required diagnostic approaches, investigate failures and identify possible remedies.

Prerequisite(s): BSC3400  
Corerequisite(s):none



**BSC4100 Applied Energy Management**

Using existing and emerging research available from a variety of related disciplines, students examine new and accredited hardware, and software that enable a variety of approaches for the management of energy and the control of the interior environment. Some topics root the theories and concepts in the site planning stages, while others work from a retrofit or renovation perspective.

Prerequisite(s): BSC3300  
Corerequisite(s):none

**BSC4210 Professional Portfolio Development**

In the profession of building science, the ability to construct a portfolio is an important skill. Students collect all the projects for their portfolio throughout the program to present in a professional format.

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

**BSC4300 Building Science Research Project I**

Working individually or in small teams, students engage in a research project that contributes to the body of knowledge in applied building science. Students focus on the choice of topic, the design of the project, the development of the project proposal, and preliminary research and testing.

Prerequisite(s): ARC1000  
Corerequisite(s):none

**BSC4350 Building Science Research Project II**

Students complete the research project that was started in the previous semester. The research project is presented to peers and faculty in the form of both a written report and a presentation. Prior to the delivery of these submissions, students ensure that the necessary level of research and testing has been completed and documented.

Prerequisite(s): BSC4300  
Corerequisite(s):none

**BSC4500 Building Enclosure Commissioning**

A critical aspect of building science is quality assurance measured against desired goals, criteria and objectives, and this is best achieved by the Building Enclosure Commissioning (BECx) process. Students gain knowledge through and participate in simulations of the BECx process, which is utilized to validate that the design and performance of materials, components, systems and assemblies achieve the objectives and requirements of a building project owner. Students further develop and refine knowledge and understanding of building enclosure materials, components, systems and assemblies - such as foundations, walls, roofs windows/doors, and skylights - their importance, and how they are assessed, both qualitatively through visual review and quantitatively through laboratory or field testing to meet the relevant performance standards. Students develop a realistic and applied approach to the BECx field. Comprehension of the BECx process provides students with an enhanced knowledge base in how buildings operate that is directly transferable to the work force.

Prerequisite(s): BSC4000  
Corerequisite(s):none

**CAD2400 Building Modelling II**

Being able to leverage technology to clearly represent detailed building models is necessary in

clearly communicating project details. Through the introduction of Revit Architecture, students learn basic creation, editing commands, annotation and view controls in dealing with residential buildings. Students create an elementary residential model and drawing set employing basic concepts of Building Information Modeling (BIM).

Prerequisite(s): CAD2300 and DSN1100

Corerequisite(s):none

### **CAD3200 Building Information Modeling**

In construction and the building lifecycle process, alignment and improvement of both qualitative and quantitative metrics is guaranteed in building information modelling. Students apply the theoretical and mathematical principles behind software tools designed to increase productivity in building design and construction. Students develop a three-dimensional model that allows them to add aspects of time and cost to a construction project. Information related to the properties of systems and materials are applied to enable the assessment of various aspects of building performance under particular scenarios. In addition, students develop a process that produces a building information model. This model can then be used for analysis during design, and construction in order to forecast interior building conditions, comfort, energy use, illumination or structural behaviour.

Prerequisite(s): CAD2400

Corerequisite(s):none

### **CAD4100 Energy Modelling and Simulation**

Students explore a number of advanced software tools that use powerful analytical mechanisms to model the whole building during the design of new construction or during major renovations. With the emphasis on energy modeling and simulation students identify the cross-system impacts of individual decisions on building envelope, lighting, electrical power, ventilation and mechanical heating and cooling system performance.

Prerequisite(s): CAD3200 and ENG3100

Corerequisite(s):none

### **DSN2211 Sustainable Design**

Sustainable design is the conception and insight of an environmentally responsive expression as a part of the evolving matrix of nature. The integration of elements that contribute to LEED certification is an essential part of sustainable design. Students connect their knowledge and skills in design and building systems to the requirements of the LEED pointing system. Working in teams, and using complete and partially complete plans, students analyze designs and propose opportunities to increase the level of LEED certification for a building. Within this context, students also explore passive solar design and low energy design.

Prerequisite(s): DSN2300

Corerequisite(s):none

### **ECO2000 Environmental Economics**

Issues pertaining to the environment have a major financial impact on society and government. Environmental economics examines the way human decisions affect the quality of the environment, how human values and institutions shape our demands for improvements in the quality and about designing effective public policies to bring about these improvements. Students examine problems and solutions relating to environmental policy analysis in the Canadian context.

Prerequisite(s): none

Corerequisite(s):none

### **ELE1200 Electricity and Power Generation Fundamentals**

Students acquire some fundamental knowledge of the way in which electricity is generated. Discussions and exercises focus on addressing questions of energy efficiency and energy savings.

Students become proficient with a number of theoretical calculations for current and voltage. Practical labs and demonstrations supplement the theoretical knowledge.

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

### **ENG1100 Thermodynamics**

Engineering-related disciplines, such as building science, draw heavily on a variety of sciences in order to identify, describe and solve problems presented by real-world situations. In order to engage in this approach to problem solving, students begin an exploration of theoretical and practical applications of a number of laws of science. Through exercises, and research projects, students visualize solutions to problems that are supported both scientifically and mathematically.

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

### **ENG3100 Heat Transfer**

Students further develop their problem-solving abilities through a continued exploration of the theoretical and practical applications of more complex laws of science. Assignments and discussions focus on the principles involving higher level mathematics to resolve problems that are more directly related to applications in building science, such as heat transfer, and energy systems. Students also begin an examination of the role of computer based models and simulations.

Prerequisite(s): ENG1100  
Corerequisite(s):none

### **ENL2025 Interpersonal Communication**

Effectively communicating with others, both professionally and personally, is an art that requires conscious development. Students address the techniques related to interpersonal communication challenges in the diverse workplace. Focus is on communication barriers, verbal and non-verbal communication, listening, team work, and relational dynamics. Through role play, analysis, and case studies, students engage in simulated and authentic interpersonal communication situations.

Prerequisite(s): ENL1100  
Corerequisite(s):none

### **ENL4005 Report Writing**

Technical report writing remains a crucial skill for professionals within technical disciplines. In this course, students define and describe a problem of significant technical complexity and present a suitable technological/scientific solution within a formal report structure. Drawing upon skills previously acquired, students plan, conduct research for, and create a written report.

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

### **ENL4100 Creative Writing**

Whether for personal or public consumption, many people enjoy writing short fiction to express their creative energy while improving upon their overall writing abilities. Working with professional short stories as models, students examine the stylistic components that contribute to the excitement, atmosphere, and overall readability of short fiction. Students share their work and provide formal feedback on the work of others.

Prerequisite(s): ENL1100  
Corerequisite(s):none

### **ENL4100 Creative Writing**

Whether for personal or public consumption, many people enjoy writing short fiction to express their creative energy while improving upon their overall writing abilities. Working with professional short stories as models, students examine the stylistic components that contribute to the excitement, atmosphere, and overall readability of short fiction. Students share their work and provide formal feedback on the work of others.

Prerequisite(s): ENL1100

Corerequisite(s):none

### **ENL4200 New Worlds and Alternative Realities: Speculative Fiction**

Speculative fiction gathers together all those works of fiction in which new worlds or alternative realities are envisioned. Within this category of prose, students have the opportunity to explore the various sub-genres that present readers with new ways of thinking about some of the issues that face society. Students also develop skills in critical analysis using a variety of approaches and methodologies from literary studies.

Prerequisite(s): none

Corerequisite(s):none

### **ENL4200 New Worlds and Alternative Realities: Speculative Fiction**

Speculative fiction gathers together all those works of fiction in which new worlds or alternative realities are envisioned. Within this category of prose, students have the opportunity to explore the various sub-genres that present readers with new ways of thinking about some of the issues that face society. Students also develop skills in critical analysis using a variety of approaches and methodologies from literary studies.

Prerequisite(s): none

Corerequisite(s):none

### **ENL8810 Technical Communications**

Students develop an appreciation of both the applications and the implications of technical communication. Through a combination of written and oral assignments, the practical requirements of technical communication, along with some of its theoretical foundations, are investigated. As part of these investigations, students examine, discuss and prepare the components of a formal technical report.

Prerequisite(s): none

Corerequisite(s):none

### **FLS3101 French as a Second Language-Beginner 1**

The French language is an asset when communicating in the workplace. Students with no prior knowledge of French acquire basic forms and structures to interact and communicate in a simple way with French speakers. Class instruction and practice, repeated feedback, and exposure to a variety of language samples support students to gain basic oral expression and comprehension using simple phrases that develop vocabulary, pronunciation, and comprehension. Students begin to appreciate cultural and linguistic differences when French is used in the workplace.

Prerequisite(s): none

Corerequisite(s):none

### **FLS3102 French as a Second Language-Beginner 2**

The workplace benefits from having professionals with knowledge of the French language. Students with basic knowledge of French gain more control over forms and structures to interact and communicate in a simple way with French speakers. Class instruction and practice, repeated feedback, and exposure to a variety of language samples provide students with opportunities to enhance their basic oral expression and comprehension using simple phrases that further develop vocabulary, pronunciation, and comprehension. Students deepen their knowledge of cultural and linguistic differences of French in the workplace.

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

### **GED2300 Indigenous Self-Representation in Contemporary Canadian Culture**

Historically, Indigenous peoples and their cultures have been dramatically misrepresented and stereotyped in Canadian literature, music, visual arts, film, and television as a result of ongoing attempts to colonize, marginalize, romanticize, and assimilate them. Starting with an historical overview of the oppressive act of misrepresenting, appropriating, and stereotyping Indigenous peoples and their cultures in Canada, students explore how contemporary Indigenous artists have responded to these misrepresentations by subverting, critiquing, challenging, and changing the representations of Indigenous peoples and their cultures in their own artistic works. Significant works of contemporary literature, music, visual arts, film, and television created by contemporary Indigenous artists who give voice to their experiences in Canada serve as the basis for critical analysis and creative reflection on the processes of self-representation and cultural reclamation of Indigenous voices and identity in Canada.

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

### **GEO2300 Principles of Urban Planning**

Increasingly cities and communities are feeling the pressure of expansion, and people from all walks of life feel disconnected from the processes, procedures, and decisions that are affecting everyday life. Students consider urban transformation with a focus on practicing sustainability by exploring innovations in land use, transportation, resource planning and economic development, resulting in employment opportunities, as well as healthy and vibrant cities. Students use local and regional activities as a starting point for developing a knowledge base for future social and community involvement. Research projects and assignments encourage students to identify the gaps between theoretical approaches to urban planning and the practical applications as evidenced in their local surroundings.

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

### **GEP2001 Co-Op Job Search 1**

Students are guided through a self-directed co-op job search using Algonquin's web-based resource centre, HireAC, as well as independent resources. Students will access information on key job search processes, including Co-op and Career Centre job search procedures and how to declare a self-developed job that meets co-op guidelines. Students will apply and further develop their knowledge on networking, interview techniques and job search strategies to improve their chances of success in securing co-op employment through a competitive job search process. Additional support is provided through individual coaching and group sessions, including job application reviews, mock interviews and assistance for students experiencing unique employment challenges.

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



**GEP2002 Co-Op Job Search 2**

Students are guided through a second self-directed co-op job search using Algonquin's web-based resource centre, HireAC, as well as independent resources. Students will access information on key job search processes, including Co-op and Career Centre job search procedures and how to declare a self-developed job that meets co-op guidelines. Students will apply and further develop their knowledge on networking, interview techniques and job search strategies to improve their chances of success in securing co-op employment through a competitive job search process. Additional support is provided through individual coaching and group sessions, including job application reviews, mock interviews and assistance for students experiencing unique employment challenges.

Prerequisite(s): none

Corerequisite(s):none

**LAN3101 Spanish-Beginner 1**

The Spanish language is an asset when communicating in the workplace. Students with no prior knowledge of Spanish acquire basic forms and structures to interact and communicate in a simple way with Spanish speakers. Class instruction and practice, repeated feedback, and exposure to a variety of language samples support students to gain basic oral expression and comprehension using simple phrases that develop vocabulary, pronunciation, and comprehension. Students begin to appreciate cultural and linguistic differences when Spanish is used in the workplace.

Prerequisite(s): none

Corerequisite(s):none

**LAN3102 Spanish-Beginner 2**

The workplace benefits from having professionals with knowledge of the Spanish language. Students with basic knowledge of Spanish gain more control over forms and structures to interact and communicate in a simple way with Spanish speakers. Class instruction and practice, repeated feedback, and exposure to a variety of language samples provide students with opportunities to enhance their basic oral expression and comprehension using simple phrases that further develop vocabulary, pronunciation, and comprehension. Students deepen their knowledge of cultural and linguistic differences of Spanish in the workplace.

Prerequisite(s): none

Corerequisite(s):none

**LAW2014 Law**

The reach of the rule of law extends into our lives on a daily basis. As much as it is present in our lives, very few people are aware of the processes, procedures and theories that guide and underpin the development and maintenance of a functional legal system. With attention to key historical figures and events, students explore the scope, jurisdiction, and key concepts of the sub-disciplines within the field of law. Through an introduction to legal arguments and methodologies, students distinguish between various legal systems and wrestle with the difference between law and justice.

Prerequisite(s): none

Corerequisite(s):none

**MAT6443 Calculus I**

Differential calculus is the study of the definition, properties and applications of the derivative of a function. Students study limits and continuity of functions. They learn the definition and interpretation of the derivative as a rate of change. Students use differentiation rules to find derivatives of algebraic and transcendental functions. They also apply implicit and logarithmic differentiation to find derivatives. Students study a variety of applications of derivatives such as finding a tangent to a curve, curve sketching, and finding an approximate solution to an equation using Newton's method. They also solve rates of change and related rates problems.



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

**MAT8202 Calculus II**

Integral calculus is the study of the definitions, properties and applications of two related concepts, the indefinite integral and the definite integral. Students calculate both indefinite and definite integrals using a variety of integration techniques, such as integration by substitution, by parts, by partial fractions and by trigonometric substitution. They use the Trapezoidal and Simpson's Rules to perform numerical integrations. Students study a variety of applications of integration, such as area, volume and work problems.

Prerequisite(s): MAT6443  
Corerequisite(s):none

**MAT8203 Linear Algebra**

Students are provided an introduction to the basic concepts and techniques of linear algebra including systems of linear equations, matrix operations, determinants, vectors in n-space, linear transformations, eigenvalues, and eigen vectors, together with selected applications, such as linear programming, economic models, least squares and population growth.

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

**MAT8204 Differential Equations**

Physical situations such as beam deflection, harmonic motion, circuit theory or Newton's laws require solving first or second-order ordinary differential equations. Students learn to solve first-order differential equations that are Separable Equations, Linear Equations, Equations with Integrating Factors, Exact Equations and Homogenous Equations. Both homogeneous and non-homogeneous second and higher-order differential equations are solved using the method of undetermined coefficients, Laplace Transforms and by variation of parameters. Fourier series are studied and used to solve differential equations.

Prerequisite(s): MAT8202  
Corerequisite(s):none

**MAT8205 Statistics and Probability**

Students review basic statistics operations including probability, random sampling, variability, and the binomial, normal and Poisson's distributions. Students apply these statistical tools in hypothesis testing and in performing regressions and analysis. Students also apply these tools to statistical process control (SPC), as well as address tolerance and accuracy issues particularly as related to manufacturing and design. Examples are drawn not only from the physical and social sciences but also from business.

Prerequisite(s): MAT8202  
Corerequisite(s):none

**PHI2000 Introduction to Research**

Academic research requires students to possess a fundamental knowledge of accepted methodologies and practices. An overview of the research process and tools prepares students to engage in scholarly work. Emphasis is on evaluation, selection and documentation of primary and secondary sources, as well as the development of a research project.

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

**PHI2002 Ethical Decision Making**

To avoid potential prosecution, companies and their employees are well-advised to engage in ethical decision-making practices in all business situations. Students examine ethical concepts and principles, compare a variety of ethical decision-making models and utilize these principles and models to make ethically sound decisions in a variety of contexts. Students also design a code of ethics, practice making ethically-based decisions and develop the analytical skills required to recognize, evaluate and resolve ethical dilemmas in the workplace.

Prerequisite(s): PHI1000  
Corerequisite(s):none

### **PHI4000 Philosophy and Popular Culture**

Many facets of today's popular culture engage, directly or indirectly, with the concerns of a variety of philosophical traditions. Drawing on a number of examples, students explore both the way popular culture permeates and spreads through society and the way it interprets and presents philosophical questions. Students develop skills and techniques for assessing the soundness and validity of thought experiments.

Prerequisite(s): PHI1000  
Corerequisite(s):none

### **PHI4000 Philosophy and Popular Culture**

Many facets of today's popular culture engage, directly or indirectly, with the concerns of a variety of philosophical traditions. Drawing on a number of examples, students explore both the way popular culture permeates and spreads through society and the way it interprets and presents philosophical questions. Students develop skills and techniques for assessing the soundness and validity of thought experiments.

Prerequisite(s): PHI1000  
Corerequisite(s):none

### **PHI4002 The Philosophy of Drugs**

Drugs are everywhere: professionals prescribe them to us to make us "better"; we take them recreationally; we give them to our children, pets and other loved ones; we buy them on the streets and in grocery stores. What are "drugs"? Why are some drugs legal and others not? How do drugs get to market? What ethical issues are relevant in a global drug industry? Are current intellectual property regimes appropriate if the goal of drug research is to promote benefits to society? Students critically examine these, and other, questions through the lens of historical and contemporary ethical, philosophical and legal theories and arguments. Students engage in various peer-oriented learning activities throughout the course.

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

### **PHI4002 The Philosophy of Drugs**

Drugs are everywhere: professionals prescribe them to us to make us "better"; we take them recreationally; we give them to our children, pets and other loved ones; we buy them on the streets and in grocery stores. What are "drugs"? Why are some drugs legal and others not? How do drugs get to market? What ethical issues are relevant in a global drug industry? Are current intellectual property regimes appropriate if the goal of drug research is to promote benefits to society? Students critically examine these, and other, questions through the lens of historical and contemporary ethical, philosophical and legal theories and arguments. Students engage in various peer-oriented learning activities throughout the course.

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

### **PHI4003 The Philosophy of Love and Sex**

Love and sex are central to the human condition, and have been topics of academic inquiry and

controversy throughout history. Various practices surrounding love and sex are celebrated in Western culture, such as monogamy and marriage, while other practices, such as polygamy and pedophilia, are condemned. Why is this? Students critically explore these and other issues surrounding love and sex using examples from popular music, movies and literature, framing those issues with the help of historical and contemporary philosophical theories and arguments. Students engage in various peer-oriented learning activities throughout the course.

Prerequisite(s): none

Corerequisite(s):none

### **PHI4003 The Philosophy of Love and Sex**

Love and sex are central to the human condition, and have been topics of academic inquiry and controversy throughout history. Various practices surrounding love and sex are celebrated in Western culture, such as monogamy and marriage, while other practices, such as polygamy and pedophilia, are condemned. Why is this? Students critically explore these and other issues surrounding love and sex using examples from popular music, movies and literature, framing those issues with the help of historical and contemporary philosophical theories and arguments. Students engage in various peer-oriented learning activities throughout the course.

Prerequisite(s): none

Corerequisite(s):none

### **PHI4004 Technology, Society and the Environment**

Environmental issues have come to occupy a central place in the marketplace, politics, policy, and society at large. Owing largely to the many environmental consequences that have accompanied industrialization, we humans have been forced to rethink the complex relationship between technology, society and the environment. Students investigate philosophical concepts and theories surrounding technology, society and the environment including: the "naturalness" of technology, sustainability and animal rights. Students critically examine course material by focusing on questions such as: What is nature, and what role do/should humans occupy in it? What do we owe non-human organisms? What do we owe future generations? Students engage in various peer-oriented learning activities throughout the course.

Prerequisite(s): none

Corerequisite(s):none

### **PHI4004 Technology, Society and the Environment**

Environmental issues have come to occupy a central place in the marketplace, politics, policy, and society at large. Owing largely to the many environmental consequences that have accompanied industrialization, we humans have been forced to rethink the complex relationship between technology, society and the environment. Students investigate philosophical concepts and theories surrounding technology, society and the environment including: the "naturalness" of technology, sustainability and animal rights. Students critically examine course material by focusing on questions such as: What is nature, and what role do/should humans occupy in it? What do we owe non-human organisms? What do we owe future generations? Students engage in various peer-oriented learning activities throughout the course.

Prerequisite(s): none

Corerequisite(s):none

### **PHI4100 Survival in the Information Age: Risk and the Media**

On an almost daily basis, the media, through its various outlets - television, radio, web sites, RSS, and podcasts - reports on issues that address our wellbeing. Through discussions, readings, and assignments, students enhance their ability to interpret and question information presented by the media by better understanding the inherent risks. Issues like alternative medicine (i.e. vaccinations) and socio-legal issues (i.e. bullying, hacking, surveillance, privacy) provide grounds for students to use principles from the social science as a means to think critically about real and perceived risks in daily life.

Prerequisite(s): PHI1000

Corerequisite(s):none

**PHI4100 Survival in the Information Age: Risk and the Media**

On an almost daily basis, the media, through its various outlets - television, radio, web sites, RSS, and podcasts - reports on issues that address our wellbeing. Through discussions, readings, and assignments, students enhance their ability to interpret and question information presented by the media by better understanding the inherent risks. Issues like alternative medicine (i.e. vaccinations) and socio-legal issues (i.e. bullying, hacking, surveillance, privacy) provide grounds for students to use principles from the social science as a means to think critically about real and perceived risks in daily life.

Prerequisite(s): PHI1000

Corerequisite(s):none

**PHY4000 Black Holes, Big Bangs and the Cosmos**

The dynamic and exciting field of Cosmology outlines our current understanding of the Universe from its start, at the so-called Big Bang, through the ensuing 13 plus billion years to the present and beyond. Students learn how to discuss our present understanding of the three phases of the Universe as well as its five part make up, with matter making up only 4% of the whole. Students explain our knowledge of the various phases of evolution of the Cosmos and also the latest theories and experiments that are trying to address our uncertainties. Throughout the course, students evaluate and debate many of today's ideas and concepts revolving around cosmology.

Prerequisite(s): none

Corerequisite(s):none

**PHY4000 Black Holes, Big Bangs and the Cosmos**

The dynamic and exciting field of Cosmology outlines our current understanding of the Universe from its start, at the so-called Big Bang, through the ensuing 13 plus billion years to the present and beyond. Students learn how to discuss our present understanding of the three phases of the Universe as well as its five part make up, with matter making up only 4% of the whole. Students explain our knowledge of the various phases of evolution of the Cosmos and also the latest theories and experiments that are trying to address our uncertainties. Throughout the course, students evaluate and debate many of today's ideas and concepts revolving around cosmology.

Prerequisite(s): none

Corerequisite(s):none

**PSI2000 Navigating Canada's Political Landscape**

A developed knowledge of government and politics is key to an effective participation in public life. Drawing on current events, students explore the societal, cultural and constitutional context along with the major political parties and institutions that shape the Canadian political landscape. Students develop skills and techniques that allow them to position politicians, parties, and policies, past and present, on the spectrum of political ideology and Canadian political traditions. Working together and individually, students analyze issues from the perspective of various political approaches.

Prerequisite(s): none

Corerequisite(s):none

**PSY2100 Introductory Psychology**

With its applications to behaviour and personality, psychology extends its reach into many aspects of our personal lives. The broad applications of this social science in both an applied and theoretical context are premised on a number of fundamental principles. Students explore historical breakthroughs that define the current boundaries of the discipline and interact with a number of the foundational concepts that resonate throughout daily life and popular culture. Students develop an introductory knowledge in the various schools of thought within the discipline.

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

**SCI2000 Environmental Science**

Environmental science is an interdisciplinary study of how the earth works, human interaction with the earth and how to address the existing environmental problems. Students explore natural capital and the degradation. Students engage in case studies, critical thinking and analysis of alternatives in exploring solutions and trade-offs in trying to address degradation.

Prerequisite(s): ENL1100 and PHI1000  
Corerequisite(s):none

**SCI2300 Materials Science II**

Selection of building material greatly influences building performance. Students continue their study of the materials used to construct and repair the building envelope. Through the analysis of material's atomic structure, hygrothermal properties and compatibility students compare different materials used in the envelope linings to forecast the performance of assemblies. Considering the physical phenomena that affect materials behavior students examine mechanisms of deterioration.

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

**SOC2000 Introduction to Sociology**

When working with individuals and groups it is important to understand both the background and influences present. Students develop a familiarity with sociological theories and methodological approaches used to study individual and group behaviours. Students also examine variables that include culture, social class, race, and gender and how these variables may impact work with diverse individuals and groups.

Prerequisite(s): ENL1100  
Corerequisite(s):none

**SOC2001 Anti-Racism: Theory and Practice**

Anti-racism is the practice of identifying, challenging, and changing the values, structures, and behaviours that perpetuate systemic racism. Students explore concepts of anti-oppressive practice, anti-racist pedagogy, diversity, and inclusion at the personal, societal, and institutional levels. Students develop an understanding of historical and present-day groups and figures that challenge oppressive structures in Canadian society. Through various learning activities and discussion boards, students will develop the necessary knowledge, attitude, and skills to become an authentic ally within society.

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

**SOC4000 Criminology**

The interdisciplinary study of social science examining the individual and social aspects of crime is known as criminology. Students work through an introduction to the social science perspective on crime. Presentations, discussions, and assignments allow students to investigate the various theoretical positions related to crime and criminal behaviour. Working forward from the types and definitions of crime, students trace some of the links between government policy and the impacts of these policies on both society and the individual.

Prerequisite(s): SOC2000  
Corerequisite(s):none

**SOC4000 Criminology**



The interdisciplinary study of social science examining the individual and social aspects of crime is known as criminology. Students work through an introduction to the social science perspective on crime. Presentations, discussions, and assignments allow students to investigate the various theoretical positions related to crime and criminal behaviour. Working forward from the types and definitions of crime, students trace some of the links between government policy and the impacts of these policies on both society and the individual.

Prerequisite(s): SOC2000  
Corerequisite(s):none

### **SOC4001 Global Perspectives**

Sociology, through its exploration of the organization of society and the connections between people and their surroundings, provides new ways of looking at the world. Using fundamental knowledge in the field of sociology, students analyze globalization and its impact on Canadian society. Students take opposing views to debate the opportunities and challenges that come with globalization.

Prerequisite(s): SOC2000  
Corerequisite(s):none

### **SOC4001 Global Perspectives**

Sociology, through its exploration of the organization of society and the connections between people and their surroundings, provides new ways of looking at the world. Using fundamental knowledge in the field of sociology, students analyze globalization and its impact on Canadian society. Students take opposing views to debate the opportunities and challenges that come with globalization.

Prerequisite(s): SOC2000  
Corerequisite(s):none

### **WKT2500 Work Term I**

Immediately following semester four, the first co-op placement provides students with experiential opportunities within the construction industry and related industries. The first work term centres on attaining entry-level positions that immerse students in a variety of activities allowing them to apply principles and concepts developed over the first two years of study. Students returning from Co-op Placement I bring additional practical considerations to their third year of study.

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

### **WKT3500 Work Term II**

Immediately following academic term six, the second co-op placement provides students with experiential opportunities within the construction industry and related industries. The second work term centres on applying knowledge and skills developed since the last placement and accepting increasing responsibilities. Students returning from Co-op Placement II draw on their experience for a number of their final year seminars.

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