Area of Interest: Engineering and Architecture

**Bachelor of Building Science (Honours) (3-Year Bridging) (Co-op)**

Honours Degree  
Academic Year: 2018/2019  
4 Years  
Program Code: 1512A03FWO  
Ottawa Campus

**Our Program**

This four-year Bachelor of Building Science degree prepares graduates for opportunities in the construction industry and related fields that support and implement ongoing research and development related to building materials and building systems. Using a holistic approach, students develop an appreciation of buildings as a set of interconnected systems that can be built, modified, and adapted to meet requirements for functionality, energy consumption and human comfort.

Opportunities for applied and hands-on experiences with building materials, components and systems are woven through many of the courses. Students focus on the necessary fundamentals in mathematics and science while experiencing the practical applications within the discipline of building science. A sound grasp of underlying scientific principles enables students to integrate a balance of theoretical and practical knowledge in a relevant fashion for existing and emerging real-world problems.

Historical background and integration of sustainable practices are two other threads that extend throughout the program and complement the knowledge, skills and attitudes that students acquire through their studies. Advanced learning environments provide the opportunity for students to experience current and emerging technologies that support both the construction and operation of buildings.

Interactive and dynamic courses, along with cooperative education, encourage the development of personal and interpersonal skills in parallel with the sound engineering principles that lead to the analytical problem-solving skills that position graduates for success in their future employment.

This program includes two mandatory cooperative education (Co-op) Work Term(s). Qualified students with a minimum GPA of 2.7, will be requested to apply for paid co-op employment to gain valuable work experience and networks with industry. *See Additional Information for more details.*

**Bring Your Own Device (BYOD):** Students are expected to have and use a laptop or mobile computing device when registered in this on-campus program. Hardware and software specifications required by your program are outlined at [http://http://algonquincollege.com/byod](http://http://algonquincollege.com/byod). Mobile devices/laptops and supplies can be purchased directly from Algonquin’s New Technology Store at educational rates.

**SUCCESS FACTORS**

This program is well suited for students who:

- Appreciate the role of mathematics and applied science in the development of engineering solutions.
- Can work independently and contribute to problem-solving teams.
- Like to use drawings and spatial reasoning to visualize possibilities.
- Are inquisitive about the reasoning behind the choices and decisions that are made during building construction.
• Enjoy the challenge of researching and testing building methods and materials.
• Are interested in working with individuals who offer diverse perspectives.

**Employment**

Graduates may work in architect’s 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 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 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**

<table>
<thead>
<tr>
<th>Level: 03</th>
<th>Courses</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>BSC2100</td>
<td>Building Frame and Structural Studies</td>
<td>60.0</td>
</tr>
<tr>
<td>ENG1100</td>
<td>Engineering Principles</td>
<td>45.0</td>
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<tr>
<td>ENG2100</td>
<td>Geotechnical Engineering</td>
<td>45.0</td>
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<tr>
<td>ENL8810</td>
<td>Technical Communications</td>
<td>45.0</td>
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<tr>
<td>MAT8204</td>
<td>Differential Equations</td>
<td>45.0</td>
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<tr>
<td>SOC2000</td>
<td>Introduction to Sociology</td>
<td>60.0</td>
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<tr>
<th>Level: 04</th>
<th>Courses</th>
<th>Hours</th>
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<tbody>
<tr>
<td>BSC2200</td>
<td>Building Systems</td>
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<tr>
<td>BSC2300</td>
<td>Building Science Applied Mathematics</td>
<td>60.0</td>
</tr>
<tr>
<td>CON2200</td>
<td>Business Development for the Construction Industry</td>
<td>45.0</td>
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<td>Course Code</td>
<td>Course Title</td>
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<tr>
<td>DSN2200</td>
<td>Sustainable Design</td>
<td>45.0</td>
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<tr>
<td><strong>Elective: choose 1 Courses</strong></td>
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<tr>
<td>ENL4100</td>
<td>Creative Writing</td>
<td>45.0</td>
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<tr>
<td>ENL4200</td>
<td>New Worlds and Alternative Realities: Speculative Fiction</td>
<td>45.0</td>
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<tr>
<td>PHI4000</td>
<td>Philosophy and Popular Culture</td>
<td>45.0</td>
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<tr>
<td>PHI4100</td>
<td>Survival in the Information Age: Risk and the Media</td>
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<tr>
<td>PHY4000</td>
<td>Black Holes, Big Bangs and the Cosmos</td>
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<tr>
<td>SOC4000</td>
<td>Criminology</td>
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<tr>
<td>SOC4001</td>
<td>Global Perspectives</td>
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<td><strong>Co-op: 01 Courses</strong></td>
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<tr>
<td>WKT2500</td>
<td>Work Term I</td>
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<td><strong>Level: 05 Courses</strong></td>
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<tr>
<td>BIO2200</td>
<td>Botany</td>
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<tr>
<td>BSC3100</td>
<td>Renewable Energy</td>
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<tr>
<td>GEO2300</td>
<td>Principles of Urban Planning</td>
<td>60.0</td>
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<tr>
<td>MAT8205</td>
<td>Statistics and Probability</td>
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<tr>
<td>MGT3100</td>
<td>Introduction to Construction Project Management</td>
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<tr>
<td><strong>Level: 06 Courses</strong></td>
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<tr>
<td>BSC3200</td>
<td>Alternative Energy</td>
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<tr>
<td>BSC3300</td>
<td>Energy Conservation and Auditing</td>
<td>45.0</td>
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<td>CAD3200</td>
<td>Building Information Modeling</td>
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<td>CON3200</td>
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<tr>
<td>ENG3100</td>
<td>Advanced Engineering Principles</td>
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<tr>
<td><strong>Co-op: 02 Courses</strong></td>
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<tr>
<td>WKT3500</td>
<td>Work Term II</td>
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<tr>
<td><strong>Level: 07 Courses</strong></td>
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<tr>
<td>BSC4100</td>
<td>Applied Energy Management</td>
<td>45.0</td>
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<tr>
<td>BSC4200</td>
<td>Professional Portfolio Development</td>
<td>30.0</td>
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<tr>
<td>BSC4300</td>
<td>Building Science Research Project I</td>
<td>60.0</td>
</tr>
<tr>
<td>CAD4100</td>
<td>Advanced Modeling and Simulation</td>
<td>45.0</td>
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<tr>
<td><strong>Level: 08 Courses</strong></td>
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<tr>
<td>BSC4350</td>
<td>Building Science Research Project II</td>
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<tr>
<td>BSC4400</td>
<td>Seminar in Sustainable Solutions</td>
<td>45.0</td>
</tr>
<tr>
<td>CON4200</td>
<td>Construction Methods for Renovation and Rehabilitation</td>
<td>45.0</td>
</tr>
<tr>
<td>MGT4200</td>
<td>Scenarios in Team Leadership</td>
<td>30.0</td>
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</table>

**Fees for the 2018/2019 Academic Year**

Program fees listed are for the 2018/2019 Academic Year.

Total Level 03 program fees are $4,932.95 as detailed below:

**Program Fees:**
- Tuition: $3,680.68
- Co-op Instalment 1 $ 173.00

**Compulsory Ancillary Fees:**
- Student Activity: $ 217.37
- Sports: $ 72.63
- Technology: $ 159.62
- Transcript: $ 20.00
- Health Services: $ 20.00
- Student Experience: $ 18.00
Health Plan: $ 153.19 *
U-Pass: $ 415.04 *
U-Pass Admin: $ 3.42 *

* Assessed once annually at the beginning of each academic year.

International students pay all fees listed above (excluding the Health Plan fee) plus:
International Premium: $3,777.00
International Health Insurance: $ 696.00

Fees are subject to change.

For further fees information please visit: [http://www.algonquincollege.com/ro](http://www.algonquincollege.com/ro).

Books and supplies cost approximately $1,200 per academic term and can be purchased in the campus store. See [http://www3.algonquincollege.com/etextbooks](http://www3.algonquincollege.com/etextbooks) for more information about books.

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 2019/2020 Academic Year

Program Eligibility

Graduates from one of the following Ontario College Diplomas with the noted Grade Point Averages are eligible to bridge directly into semester three (year 2) of the eight semester (4 year) Bachelor of Building Science (BBS) Degree program:

- Architectural Technician, Ontario College Diploma with an overall GPA of 2.7 (70%); OR
- Construction Engineering Technician, Ontario College Diploma with an overall GPA of 2.7 (70%); OR
- Mechanical Engineering Technology, Ontario College Advanced Diploma with an overall GPA of 2.7 (70%) minimum. (* a bridging course is required and will be added to the student level 3 course load.)
- Students who have completed the Architectural Technician or Construction Engineering Technician Ontario College Diploma programs are strongly recommended to complete an Integral calculus course or equivalent. (* a bridging course is required and will be added to the students’ level 3 course load).

Admission Requirements for 2018/2019 Academic Year

Program Eligibility

- Graduates from one of the following Ontario College Diplomas with the noted Grade Point Averages are eligible to bridge directly into semester three (year 2) of the eight semester (4 year) Bachelor of Building Science (BBS) Degree program: Architectural Technician, Ontario College Diploma with an overall GPA of 2.7 (70%); OR
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- Mechanical Engineering Technology, Ontario College Advanced Diploma with an overall GPA of 2.7 (70%) minimum. (* A bridging course is required and will be added to the student level 3 course load.)

Students who have completed the Architectural Technician or Construction Engineering Technician Ontario College Diploma programs are strongly recommended to complete an Integral calculus course or equivalent. (* A bridging course is required and will be added to the students level 3 course load).

Application Information

BACHELOR OF BUILDING SCIENCE (HONOURS) (2-YEAR BRIDGING) (CO-OP)
Program Code 1512A03FWO
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 http://www.ontariocolleges.ca/. A $95 fee applies.

Applications for Fall Term and Winter Term admission received by February 1 will be given equal consideration. Applications received after February 1 will be processed on a first-come, first-served basis as long as places are available.

International applicants 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
Student Central
Ottawa, ON K2G 1V8
Telephone: 613-727-0002
Toll-free: 1-800-565-4723
TTY: 613-727-7766
Fax: 613-727-7632
Email: AskUs@algonquincollege.com

Additional Information

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 September 12, 2012. 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.

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 Training, Colleges and Universities (MTCU) will be 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 MTCU must have their degrees evaluated by a recognized Canadian public or private institution that specializes in the evaluation of international degree programs. MTCU 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 from one of the following Ontario College Diplomas with the noted Grade Point Averages are eligible to bridge directly into semester three (year 2) of the eight semester (4 year) Bachelor of Building Science (BBS) Degree program:

Architectural Technician, Ontario College Diploma with an overall GPA of 2.7 (70%) minimum or Construction Engineering Technician, Ontario College Diploma with an overall GPA of 2.7 (70%) minimum or Mechanical Engineering Technology, Ontario Diploma with an overall GPA of 2.7 (70%) minimum*. Students who have completed the Architectural Technician or Construction Engineering Technician Ontario College Diploma programs are strongly recommended to complete an Integral calculus course or equivalent. (* a bridging course is required and will be added to the students’ level 3 course load.)

Please note that applicants who have not completed the required Ontario College Diploma or Advanced Diploma may still apply for Advanced Standing and will be assessed on a case-by-case basis to determine the extent of course credit transfer and requirements for degree completion.
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.

CO-OP INFORMATION

Co-op is a real-world job search process requiring students to apply, interview, and earn jobs rather than being placed by the College. In the term prior to the co-operative education (Co-op) Work Term, students are required to independently complete online modules that assist with resume and cover letter writing, and interview technique preparation. Students must actively conduct a self-directed job search and are responsible to secure approved program related paid co-op employment. Students compete for co-op positions alongside students from Algonquin and other Canadian and international colleges and universities. Algonquin College’s Co-op Office provides assistance in developing co-op opportunities and facilitates the overall process but does not guarantee that a student will obtain employment in a co-operative education (Co-op) Work Term. Co-op employment opportunities requiring relocation may be considered, and are subject to departmental approval with the understanding that all associated expenses are incurred by students e.g., travel, work permits/visa applications, accommodation, etc.

Cooperative education (Co-op) Work Terms are typically four months in duration and are completed during a term when students are currently not studying on campus. For details on study-work progressions for specific programs, please visit http://www.algonquincollege.com/coop.

Successful completion of all courses, including the mandatory co-operative education (Co-op) Work Term(s) is a requirement for graduation.

For more information, please visit www.algonquincollege.com for program updates as they become available or contact the Program Coordinator, Steve Vardy, at 613-727-4723 ext. 5042 or mailto:vardys@algonquincollege.com.

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

BSC2100 Building Frame and Structural Studies

Building frames and structures endure a variety of different strains and stresses over the lifespan of a building. Additional expected and unexpected environmental factors can also erode stability over time. Many of these strains and stresses interact with building materials in different ways, and in this course, students delve into the theoretical and mathematical principles that enable successful structural and framing design. Using case studies, scenarios, and lab activities involving living lab tools, students evaluate successful and no successful examples of building frames and structures.

Prerequisite(s): SCI1200
Corerequisite(s): none

BSC2200 Building Systems

Through readings, discussion, and primary research using living lab tools, students explore the electrical, plumbing and safety systems that add comfort and control to buildings of all types. Beyond tracing the historical development of these specialized fields, students develop an understanding of the role of skilled trades in the implementation and maintenance of these systems. Special attention is paid to both building code requirements, and interpretation of design drawings.
for these fields.
Prerequisite(s): ELE1200 and ENG1100
Corerequisite(s): none

BSC2300 Building Science Applied Mathematics
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): MAT8204
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): BSC2200 and ELE1200
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): BSC2200
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): BSC2200 and BSC3300
Corerequisite(s): none
BSC4200 Professional Portfolio Development

Using a guided workshop format, students review their experience and education to date and look ahead to the requirements for employment. The preparation of professional job search documents and a formal or informal portfolio assists students in the identification of personal and professional strengths. Additional discussions around workplace ethics and opportunities for membership in professional associations rounds out this preparation for graduation and employment.

Prerequisite(s): none
Corequisite(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): none
Corequisite(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
Corequisite(s): none

BSC4400 Seminar in Sustainable Solutions

In this collaborative learning experience, students research and hypothesize about the direction sustainable solutions may take in the years ahead. Reaching back through the many courses in the program, students look for avenues to integrate sustainability in the context of construction methods and materials, in structural components, the building envelope, building systems and building operations. Students also strive to place any proposals in their historical context in order to consider the broadest application for their recommendations. In addition, students survey contemporary and new concepts, practices and strategies that promote the application of sustainable solutions by enhancing efficiencies and decreasing the demand for resources.

Prerequisite(s): none
Corequisite(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): CAD1200
Corequisite(s): none
CAD4100 Advanced Modeling 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
Corequisite(s): none

CON2200 Business Development for the Construction Industry
As a substantial economic sector, the construction industry reaches many facets of today's society. On the strength of a broad industry overview, students explore three specific business skills at play in the construction industry. With its focus on responding to clients and their requirements, students work with the concepts and principles of client relationship management from both an organizational and consulting perspective. To this service focus is added a financial edge in the form of estimating. Through guided exercises, students become familiar with valuable estimating skills that can make the difference between profit and debt. Finally, students balance these two seemingly contradictory elements with value engineering concepts that respond to client needs in a financial viable fashion.

Prerequisite(s): BSC1100
Corequisite(s): none

CON3200 Seminar in Constructability
Using the knowledge and skills acquired to date in the program, students solve problems that arise when construction practicality meets aesthetic design. Students contribute to this seminar through the presentation of solutions to case studies from a variety of contexts. Through this contribution, students both lead a case team and participate as a team member for other cases.

Prerequisite(s): BSC2100 and BSC2200
Corequisite(s): none

CON4200 Construction Methods for Renovation and Rehabilitation
Building from scratch is not always the most feasible solution in today's marketplace, and so owners turn to renovation and rehabilitation as an alternative. Through the application of existing knowledge to cases and scenarios, students examine a variety of procedures, pitfalls and concerns that emerge in these situations. Emphasis is placed not only on code requirements and environmental legislations, but also on accurate assessment of the existing systems, and structures in order to minimize the need to overhaul entire components without sacrificing the building's functionality.

Prerequisite(s): none
Corequisite(s): none

DSN2200 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): DSN1200
Corequisite(s): none

ENG1100 Engineering Principles
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

**ENG2100 Geotechnical Engineering**

Accurate assessments of the sub-grade geological materials found on a given site are a vital part of the decision-making process related to the construction of foundations and other support mechanisms for buildings. Through a variety of activities, students investigate the ways in which scientific principles of physics interact with environmental principles to create risks that must be overcome in order for buildings to be safe.

Prerequisite(s): SCI1200
Corerequisite(s): none

**ENG3100 Advanced Engineering Principles**

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 and MAT8204
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): ENL1100
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
Bachelor of Building Science (Honours) (3-Year Bridging) (Co-op)

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

**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 study first order differential equations and solve these equations using separation of variables, integrating combinations, integrating functions and Laplace Transforms. 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. Systems of ordinary differential equations are solved by substitutions and using matrix notation. 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

**MGT3100 Introduction to Construction Project Management**

It might reasonably be said that the only constant in a construction project is the variables. Students focus their attention on the dynamic features of construction projects that make them both challenging and unique. From equipment to materials to environmental conditions to human resources, students explore the project management role as a means of appreciating the contribution they can make to a project.

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

**MGT4200 Scenarios in Team Leadership**

With the prevalence of team and project-based organizational models in the construction industry, skills in team participation and leadership are integral for success. Students benefit from interactive activities combining seminar discussions with simulated and real scenarios to build leadership skills and experience the challenges that can arise in high-stress, team-based work environments.

Prerequisite(s): MGT3100
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

**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

**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

**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

**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