Honours Bachelor of Construction Management

Applying for Ministerial Consent Under the Post-secondary Education Choice and Excellence Act, 2000

September 12, 2019

Durham College of Applied Arts & Technology
2000 Simcoe Street North
Oshawa, Ontario
L1G 0C5

1610 Champlain Avenue
Whitby, Ontario
L1N 6A7

https://durhamcollege.ca/
1. Introduction

1.1 Organization and Program Information

**Full Legal Name of Organization:** Durham College of Applied Arts & Technology

**Operating Name of Organization:** Durham College

**Common Acronym of Organization:** DC

**URL for Organization Homepage:** www.durhamcollege.ca

**Proposed Degree Nomenclature:** Honours Bachelor of Construction Management

**Location (specific address) Where Program to be Delivered:** Durham College
Oshawa Campus
2000 Simcoe Street North
Oshawa, Ontario
L1G 0C5

And

Durham College
Whitby Campus
1610 Champlain Avenue
Whitby, Ontario
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Durham College
2000 Simcoe Street North
Oshawa, Ontario
Date of Submission: September 12, 2019
Anticipated Start Date: September 2021
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1.3 Executive Summary

Durham College’s (DC) proposed new program, Honours Bachelor of Construction Management (HBCM), was developed in response to the construction industry’s significant expansion and the need for employees with management skills with specific competencies in project management, site planning, contract management, estimating and bidding. DC’s educational experience and leadership in the local economy makes this degree well positioned to educate future construction leaders to meet labour market demand. The impact of the increasing availability of infrastructure funding will be particularly pronounced in Ontario, where three of the five most expensive infrastructure projects will be undertaken, including the Eglinton Crosstown Light Rail Transit ($6.6 billion), Darlington Nuclear Refurbishment ($12.8 billion) and Bruce Power Refurbishment ($13.0 billion). The Toronto Regional Board of Trade forecasts that spending on infrastructure projects over the next 15 years will exceed $214 billion and require approximately 9000 new skilled workers annually, growing to 11,000 each year by 2028. In addition to the infrastructure growth, the bulk of residential construction will be undertaken in the Greater Toronto Area (GTA) and will also strengthen the demand for new workers within the sector.

The proposed HBCM program will provide students with the knowledge, skills and abilities in the industrial, residential, institutional, and commercial construction industry. The education offered will be multi-disciplinary in scope and will prepare graduates to fill roles in leadership and management positions within the larger construction industry.

This introduction section provides a high level summary of the HBCM submission, which includes alignment with the 2017-2020 DC Strategic Mandate Agreement (SMA), and provides the rationale for the program design, evidence of the economic need, student interest and educational pathways.

Strategic Fit
DC’s 2017-2020 Strategic Plan builds on previous plans and charts a course for the next three years. The development of new postsecondary programs, including degrees, has been a strategic focus for DC. In June 2017, DC was granted Ministry consent to offer its first degree program, the Honours Bachelor of Health Care Technology Management (BHCTM), the only program of its kind in Canada. In July 2019, DC received consent for its second degree program, the Honours Bachelor of Behavioural Science, which will launch in September 2020.

There are many areas of expertise, growth, and strength within DC, allowing the institution to chart its own course of action to further enhance academic excellence. As per the SMA, the Ministry acknowledged DC’s commitment to address local needs and strategic development with high-growth industries. Two of the several areas of strength and growth identified in the SMA are civil and technology miscellaneous (see Section 13, Optional Materials, Appendix B, DC Strategic Mandate Agreement).

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One strength of the proposed Honours Bachelor of Construction Management degree is the interdisciplinary nature of the program with the collaboration of three academic schools including, the School of Science and Engineering and Technology (SET), the School of Skilled Trades, Apprenticeship and Renewable Technology (START) and the School of Business, IT and Management (BITM), providing expertise in the areas of engineering, architecture and business management, respectively. DC currently provides signature diploma and certificate programs in architectural and civil engineering technology related fields through SET including Civil Engineering Technician, Civil Engineering Technology, and Architectural Technology. START offers complementary programs in applied construction programs such as Building Construction Technician, Carpentry, and Renovation Technician, and offers a cluster of trades programs including Electrical, Plumbing, Welding, and Heating, Ventilation and Air Conditioning. BITM specializes in business management programs that include Supply Chain and Operations, Supply Chain and Operations Management, Human Resources – Business Administration, and Human Resources – Business Management. The addition of an HBCM degree program complements the suite of civil engineering, applied trades and business programs listed above. All of these programs have regional and local community supports in place through well-established and active Program Advisory Committees (PAC) and field placement providers.

The HBCM program will provide graduates of the Civil Engineering Technology advanced diploma a pathway opportunity to pursue further education at the honours bachelor’s level. Graduates of the other programs mentioned above will be able to apply for credit transfer to a number of degree-level courses. Graduates of this program will also be able to pursue further education at the master’s degree level in related fields.

Design of the Honours Bachelor of Construction Management Program
The preliminary rationale for developing a degree in construction management included the preparation of an economic needs assessment. This document was prepared by DC's Office of Research Services, Innovation and Entrepreneurship (ORSIE). ORSIE also prepared and released needs or interest assessment surveys for current students and graduates from related programs, and for employers and industry stakeholders. A Subject Matter Expert (SME) with expertise, practical and academic skills, knowledge, and appropriate credentials in the area of construction project management was hired to guide the development of the degree program curriculum. The SME and internal program development team collaborated to create the program learning outcomes, program themes, program of study, program abstract, and course titles and descriptions.

Subsequently, the program development team facilitated two focus group sessions for the ad-hoc PAC. The ad-hoc PAC represented employers from the private and public sector ranging from home building to institutional, commercial and industrial, as well as a senior academic in the field. During the first meeting, ad-hoc PAC members confirmed the labour market analysis outlined in the economic needs assessment. The economic assessment indicated there is a significant need for graduates with the knowledge and skills that would be developed throughout the course of the degree program. Input was
gathered from the ad-hoc PAC regarding the program learning outcomes, course content, and course sequencing. Ad-hoc PAC members underlined the industry specific competencies required of graduates (see Section 4, Program Content, for PAC membership and minutes).

Course developers with appropriate credentials and expertise in the subject matter were contracted to develop course outlines, with guided support offered throughout the process by curriculum specialists from the Centre for Academic and Faculty Enrichment (C.A.F.E.), and specific DC faculty and administration. The curriculum was developed utilizing the knowledge and experience of the assembled team, an extensive research effort to ensure the most current and relevant curriculum content, and was written to meet the degree level requirements of the Ontario Qualifications Framework (OQF), as well as the Postsecondary Education Quality Assessment Board (PEQAB) standards and benchmarks.

The program includes all aspects of a degree program as highlighted in the PEQAB Manual for Ontario Colleges including:

- A technical and professional education based on the fundamental principles of construction management;
- A curriculum designed to reflect the depth and breadth within the field and is a balance of theory and practice throughout the program, including an optional 420-hour field placement and a mandatory 420-hour field placement work-integrated learning experience;
- Core courses in specific themes of engineering, architecture, construction management that cultivate analytical skills to evaluate new information and apply knowledge in the field;
- A balance of non-core courses component which constitutes 20 percent of the program curriculum to enhance students’ understanding of the environment in which they will function as professionals and educated citizens; and
- A final Integrative Project Studio course presented in the final semester that demonstrates students have successfully met the required knowledge and skills as outlined in the degree level, OQF and core program learning outcomes.

There are 120 credits in the HBCM (four-year, eight semester) degree program. There are 17 courses focused on developing knowledge in the area of construction management and its applications; nine courses to develop knowledge related to engineering, four courses in the area of architecture, two courses related to ethics, professionalism, and professional development, and one course dedicated to research methods. These core courses are complemented by eight elective breadth courses whereby students will have a choice to study topics in areas of personal interest or further develop their expertise in a specific area of professional interest. The courses are rigorous and designed to challenge the students with increasingly complex applications and issues. Students must research, analyze and synthesize concepts and solutions of increasing difficulty and complexity throughout the program. The two supervised 14-week field placements (one optional and one mandatory) give students an opportunity to apply their knowledge in construction settings, working in different types of construction environments. The Integrative Project Studio course allows
students to clearly demonstrate the synthesis of the knowledge gleaned throughout the program.

A desk review was conducted by an external qualified academic expert in the field, Dr. Mohamed Elbarkouky. Dr. Elbarkouky thoroughly assessed the program during its development phases, and recognized the value, quality, and importance of this baccalaureate degree program. He noted the program provides graduates with the breadth and depth of knowledge to enable them to become successful managers and leaders of construction projects. (See Section 15, DC’s Response to the Desk Review Report.)

DC is confident that the proposed curriculum meets the needs of the labour market, the required program learning outcomes for degree completion at the honours bachelor level, and requirements for further post-graduate studies. (See Section 4, Program Content for complete details regarding the program design.)

Work-Integrated Learning
The HBCM program includes two 14-week paid/unpaid field placement opportunities. The first is optional between years 2 and 3 and the second is a mandatory field placement between years 3 and 4. The mandatory field placement requires successful completion of 24 core course credits prior to placement. The practical aspects of field work in conjunction with academic studies, enables the student to better demonstrate the synthesis between theory and practice. The placement experience develops the students’ knowledge related to methods and techniques. The work-integrated learning outcomes reflect and contribute to the core program learning outcomes. Details regarding student support and evaluation for the field placement component are provided in Section 4, Program Content.

Capacity to Deliver
The college has shown it has the capacity to deliver degree level programing and was granted Ministry consent to offer two degrees. DC launched the Honours Bachelor of Health Care Technology Management program in fall 2018 and the Honours Bachelor of Behavioural Science will commence in fall 2020.

Additionally, DC employees have provided direct service to Trent University and Ontario Tech University (formerly the University of Ontario Institute of Technology (UOIT)) for degree level programs for over 35 years. Trent University began offering university level courses on the DC campus in Oshawa in 1982. DC provided many of the services for Trent in Oshawa to students and its employees including, Information Technology (IT) services and library management. The strong historic performance of DC was one of the pivotal reasons which led to the creation of Ontario Tech University.

DC currently employs many faculty members with PhDs or master’s level credentials. Future faculty positions for the proposed program will be filled by qualified professionals with appropriate employment experience, teaching backgrounds and degrees, primarily PhDs, in construction management, civil architecture, civil engineering, and other related disciplines (see Section 6, Capacity to Deliver, Faculty Plan). DC offers its faculty members and employees many options for professional development and
opportunities to seek advanced education, as detailed in DC’s Professional Development policy and procedure (see Section 14, Policies).

The School of Interdisciplinary Studies develops, manages, and delivers the elective courses for the diploma and degree programs at DC. To broaden and enhance their general scholarship and educational experience, students in the HBCM program are required to take eight non-core courses in areas other than their core field of study.

The Oshawa and Whitby campuses share in the delivery of the proposed HBCM program of study capitalizing on the strengths inherent in each campus. Both campuses provide library resources, access to state of the art classrooms, and support services to ensure student success throughout their educational experience. The Whitby campus provides modern laboratories required for construction management students.

See Section 6, Capacity to Deliver, for further details regarding DC’s demonstrated ability to offer degree level programs.

**Financial Capacity**
The current well-equipped and modern student centred classrooms, laboratories, IT infrastructure and library resources will meet the needs of the degree program. The budget projection allocates appropriate funds to enhance the library collection, and human resources including, program faculty, librarians and support staff as the program is launched. It is estimated that the revenue and expense requirements for the start-up and operation of the HBCM will be balanced in the fourth year of program delivery.

DC has also determined equipment and space requirements to launch and deliver the program. The HBCM program requires classroom and computer laboratory space as well as the use of materials testing space to execute a variety of research and practical learning experiences. Specialized software is outfitted in computer laboratories. (See Section 6, Capacity to Deliver, Appendices H and I.)

Revenue estimates are based on tuition fees of $7,650 and a program weighting of 1.1. Expenses reflect all direct academic costs and administrative overheads, student bursaries, library services, etc.

**Labour Market and Economic Need**
The evidence of need for an HBCM degree is based on the significant emerging demand from the industrial, residential, institutional, and commercial construction industry, local need in the Durham Region, expected graduate employment and compensation outcomes, and the limited number of similar programs currently offered in the system. There is evidence to support the need to launch this program, including sustained growth of the construction market and major public infrastructure projects across Toronto and the Durham region including: Toronto cross-town light rail transit, the Ottawa Light Rail project, the Lakeshore East GO rail extension and the Darlington refurbishment project. In order to fill labour market demand created by these projects the Toronto Regional Board of Trade expects the requirement of 9000 new skilled
workers each year, growing to 11,000 each year by 2028.\(^3\) Over the next 15 years, it is expected that a total of 118,000 new jobs will be available.

These labour market conditions combined with the shortage of skilled workers in the construction industry will cause the demand to be even more pronounced in the occupations that require an advanced level of skill such as construction managers, estimators, job site superintendents and project managers. In order to meet this emerging need, DC plans to introduce the HBCM.

Members of the ad-hoc PAC clearly expressed their current and anticipated need to have graduates prepared for future employment in a variety of career opportunities within the field of construction management. The ad-hoc PAC also confirmed company interest in providing field placement experiences for the students. Median wages for relevant construction occupations are relatively high paying in both the provincial and national outlooks\(^4\). In addition, the employment outlook for related occupations is fair to good. (See Section 7, Credential Recognition.)

**Employer and Industry Support**

A multidisciplinary team of experts formed an ad-hoc PAC. Committee members included an academic, industry leaders, and representatives from public and private service providers in construction related fields of practice and specialization. These individuals gathered on two occasions to provide input on industry trends, career outcomes, curriculum, program learning outcomes, and breadth of field placement opportunities of the degree program.

The ad-hoc PAC expressed an immediate and rapidly growing need for employees with the skills and knowledge graduates of this degree will possess. The ad-hoc PAC also confirmed that the particular curriculum themes of focus in construction management will meet current and evolving industry expectations and the needs of the industry they will serve. Ad-hoc PAC minutes and participant information can be found in Section 4, Program Content, Appendix A and B of the degree submission.

In 2019, DC surveyed 36 Ontario organizations from both the public and private for-profit sectors, 97 percent of which were primarily located in the Durham Region or GTA. The survey results confirmed that employers are having difficulty hiring qualified personnel with expertise in construction management. Of the survey participants, 97 percent believed that this degree would improve their organizations ability to hire employees with suitable knowledge, skills and credentials.

DC has received letters supporting the development of this degree which are provided in the submission within Section 7, Credential Recognition.

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\(^3\) [https://ontarioconstructionreport.com/ontario-residential-construction-spurs-7-7-billion-national-building-permit-total-in-may-third-highest-recorded/](https://ontarioconstructionreport.com/ontario-residential-construction-spurs-7-7-billion-national-building-permit-total-in-may-third-highest-recorded/)

\(^4\) Source: Employment and Social Development Canada [www.jobbank.gc.ca/marketreport/outlook](http://www.jobbank.gc.ca/marketreport/outlook)
**Student Demand**

In 2019, DC surveyed 235 current students from DC related programs, including: Human Resources – Business, Human Resource Administration, Supply Chain and Operations – Business, Supply Chain and Operations Management – Business Administration, Entrepreneurship and Small Business and Building Construction Technician, Architecture Technology, Civil Engineering Technician and Civil Engineering Technology. The vast majority of the survey participants (85 percent) agreed that offering the degree program is a good idea and 100 percent of Civil Engineering students indicated they would be likely to enrol if they were granted credit transfer.

There is one Ontario college currently offering a similar program, George Brown College. In 2018, there were 302 total applications to this degree program, 154 first choice applications, and 87 confirmations. Between 2014 and 2018 the number of 3rd and 4th year enrolments at George Brown College significantly increased with a rolling average change of 4.6% and 6.6%. DC anticipates enrolment of 20 students in the first year of the program.

**Regulatory Considerations**

The construction industry is not currently regulated by any Canadian regulatory or accrediting body. However, there are a number of voluntary certifications that DC will consider after the launch of the program, these include: Gold Seal Certified (GSC), Construction Estimator Certified (CEC), Accreditation Board for Engineering Technology (ABET), American Council for Construction Education (ACCE), Ontario Association of Certified Engineering Technicians and Technologists (OACETT), and Canadian Institute of Quantity Surveyors (CIQS) certifications.

Through analysis of certification requirements and discussion with the ad-hoc PAC, it was determined that the proposed program would address many educational requirements for preparation of various certificates. (See Section 8, Regulations and Accreditation.)

**Program Nomenclature**

The HBCM nomenclature convention clearly describes the area of study, the baccalaureate academic level of study, and correlates the program to the OQF for honours bachelor degrees and PEQAB degree level standards. (See Section 9, Nomenclature.)

**Credit Transfer and Credentials Recognition**

The development of the HBCM program included extensive consultation with content experts, industry professionals, academics, and employers in the field of construction management. The resulting program curriculum ensures that graduates are prepared for employment in their field of study as well as further scholarly pursuits.

The program was provided curriculum support and acknowledgement of graduate pathways from the desk reviewer from Northern Alberta Institute of Technology and the ad-hoc PAC membership from Arizona State University. Additionally, DC also sought credential recognition with institutions offering post graduate level programs in Canada.
and the United States including Florida International University, and Washington State University. These institutions stated that the proposed HBCM degree includes the theory, practical and academic rigour required for admission consideration into a related master’s degree level credentials. See Section 7, Credential Recognition for the letters of support from the universities who will consider program graduates for master’s level studies.

DC also conducted gap analyses for related diploma programs. The analyses of programs demonstrated that graduates from the Civil Engineering Technology advanced diploma program (MTCU 61003) could receive transfer credits toward the HBCM program. Graduates of the Civil Engineering Technology advanced diploma program will be granted 45 credits toward the degree program resulting in a specialized program of studies and will begin the program in semester 4. Complete details regarding the gap analyses and transfer credits are available in Section 4, Program Content of the degree submission.

**Summary**

DC has decided to augment its postsecondary offerings by adding the HBCM degree program for the following strategic reasons:

- DC has the proven capacity to provide quality programming in related fields;
- The current employment prospects for graduates of the proposed program are strong, as evidenced by primary and secondary research;
- The proposed program is attractive to potential students, providing pathways from secondary school and from existing advanced diploma programs towards degree-level education; and
- Graduates of the proposed program will be prepared to make meaningful contributions in a range of organizations towards the prosperity, sustainability and resiliency of Ontario’s economic future.
1.4 Program Abstract

The HBCM program provides graduates with the knowledge, skills and abilities required for in-depth construction management in residential, industrial, commercial, and institutional sectors of the construction industry.

Graduates of the program will have a firm grounding in the theory, principles, and practices of construction science as well as the business acumen and leadership to be part of a project team, which includes site planning and quality assurance processes. Graduates will have the knowledge and skills required to effectively facilitate the management of construction projects to successful completion.

The program provides a strong foundation in civil engineering, building construction, and architecture technology and an in-depth study of business management skills. The program emphasizes critical and analytical thinking skills, the importance of interdisciplinary practice, and strong leadership.

Graduates will be prepared to successfully gain employment as assistant construction managers, project coordinators, junior estimators, and contract administrators. With additional education and/or experience, graduates may be considered for roles as construction managers, project coordinators, project managers, and site superintendents in the construction sector. In addition, graduates of the program will have the knowledge and skills to pursue further graduate study in Construction Management or related fields.
2. Degree Level Standard

Contents

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  2.1.6 Awareness of Limits of Knowledge .................................................................................... 9
2.1 Degree Level Summary

The Honours Bachelor of Construction Management (HBCM) program has been developed and designed to ensure the program meets or exceeds the degree level standard, as outlined in the Ontario Qualifications Framework (OQF). To ensure this standard has been attained, the program was developed by a Subject Matter Expert with expertise, practical and academic skills, knowledge, and appropriate credentials in the area of construction project management. The SME and internal program development team collaborated to create the program learning outcomes, program themes, program of study, program abstract, and course titles and descriptions.

Course developers with appropriate credentials and expertise in the subject matter developed course outlines, with guided support offered throughout the process by curriculum specialists from the Centre for Academic and Faculty Enrichment (C.A.F.E.), and specific Durham College (DC) faculty and administration. The curriculum was developed utilizing the knowledge and experience of the assembled team, conducting extensive research efforts to ensure the most current and relevant curriculum content, and written to meet the degree level requirements of the OQF, as well as the Postsecondary Education Quality Assessment Board (PEQAB) standards and benchmarks.

An ad-hoc Program Advisory Committee (PAC) confirmed and endorsed the relevance of the curriculum, course sequence, and program objectives. The ad-hoc PAC was comprised of members from industry and one member with a doctorate in Civil Engineering. Many of the members had professional specializations/certifications in Engineering, Business, and Management, and were experts in the field of Construction Management, who represented potential future employers of the graduates and industry partnerships. The members reviewed the curriculum and made valuable contributions to its development.

The development of this degree program was lead by and will be offered by three of DC’s academic schools, including the School of Skilled Trades, Apprenticeships and Renewable Technology, the School of Science and Engineering Technology, and the School of Business, IT and Management. It is important to note that many other departments within DC contributed to the development of the HBCM program, including the Office of Research Services, Innovation and Entrepreneurship, the School of Interdisciplinary Studies and the C.A.F.E.

The curriculum was benchmarked against similar programs offered in Ontario, Canada, and the United States. The program was reviewed by Dr. Mohamed Elbarkouky, PhD, Program Chair of the Bachelor of Technology in Construction Management from Northern Alberta Institute of Technology. Dr. Elbarkouky is an external expert in both the field of Education and Construction Project Management who provided feedback and recommendations to revise and enhance the program. Dr. Elbarkouky was supportive of the proposed program of study and his recommendations served to add further specificity to the program learning outcomes and ensured the foundational
knowledge courses scaffolded well to advanced technique and theory courses. (See Section 15, Desk Review.)

### 2.1.1 Depth and Breadth of Knowledge

<table>
<thead>
<tr>
<th>PEQAB Degree level standard for bachelor honours degree in an applied area of study</th>
<th>Honours Bachelor of Construction Management Degree Level Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) A developed knowledge and critical understanding of the key concepts, methodologies, theoretical approaches and assumptions in a discipline overall as well as in a specialized area of discipline;</td>
<td>Using an iterative and scaffolding curriculum model, the program builds on the students’ existing knowledge and experience, increasing in depth, breadth and complexity, as students progress through the program. Students begin by developing a knowledge base in both the core and breadth subjects. In the first two years of study, core courses such as Business Foundations, Foundations of Project Management, Building Science and Systems, and Building Structures ensure that students learn the foundations, key concepts and theories of construction methods, materials and systems, estimating, project management and business foundations.</td>
</tr>
<tr>
<td>b) A developed understanding of many of the major fields in a discipline, including, where appropriate, from an interdisciplinary perspective, and how the fields may intersect with fields in related disciplines;</td>
<td>The program also includes both an optional and mandatory 420-hour work-integrated learning (WIL) experience. In each WIL experience, students work in a variety of settings, providing an opportunity for students to practice their evolving technical and decision-making skills through the application of knowledge, under supervision. The knowledge gained here can be applied in senior courses.</td>
</tr>
<tr>
<td>c) A developed ability to:</td>
<td>Review of academic and professional literature as well as review of current research, supports the development of the students’ critical analysis skills.</td>
</tr>
<tr>
<td>i. gather, review, evaluate and interpret information;</td>
<td>Senior level, group-based work provides an opportunity for students to further develop technical, management, construction law, and leadership skills. Students participate in discussions and active learning that synthesize their knowledge and experience. Core courses in the program provide students a fulsome understanding of the major fields, and foster their research and application skills, specifically in the Introduction to Construction Management, Business Management and Strategy, Construction Contract Administration</td>
</tr>
<tr>
<td>ii. compare the merits of alternate hypotheses or creative options, relevant to one or more of the major fields in a discipline</td>
<td></td>
</tr>
<tr>
<td>d) A developed, detailed knowledge of and experience in research in an area of the discipline;</td>
<td></td>
</tr>
<tr>
<td>e) Developed critical thinking and analytical skills inside and outside the discipline;</td>
<td></td>
</tr>
</tbody>
</table>
f) The ability to apply learning from one or more areas outside the discipline.


The HBCM degree will prepare graduates for immediate employment in their field of practice or for further study in the discipline of Construction Management. The integration of theory, practice, and research in the applied degree approach is particularly appropriate, since trends in Construction Management require practitioners to apply their breadth of knowledge in a variety of settings and with a variety of clients.

### 2.1.2 Conceptual and Methodological Awareness/Research and Scholarship

<table>
<thead>
<tr>
<th>PEQAB Degree level standard for bachelor honours degree in an applied area of study</th>
<th>Honors Bachelor of Construction Management Degree Level Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>An understanding of methods of enquiry or creative activity, or both, in their primary area of study that enables the student to:</td>
<td>The proposed program has been designed to encourage inquiry, to engage students in the systematic gathering, and critical analysis of information to be applied to problem-solving and writing. The development of these skills are encouraged through opportunities to analyze current methods, systems, techniques and processes. Specifically, students will develop the ability to review, present, and critically evaluate quantitative data and to apply the concepts and principles in core courses such as Algebraic and Geometric Mathematics, Construction Methods, Materials and Equipment, Construction Estimating 1 and 2, Introduction to Calculus for Construction, and Building Information Modelling 1: Drafting and Drawings and Building Information Modelling 2: Advanced.</td>
</tr>
<tr>
<td>a. Evaluate the appropriateness of different approaches to solving problems using well established ideas and techniques;</td>
<td>In each semester, students develop major reports and projects that provide an opportunity to review current literature and develop cogent and persuasive arguments on various topics. Through analysis students explore the challenges and limitations of existing materials, systems and processes.</td>
</tr>
<tr>
<td>b. Devise and sustain arguments or solve problems using these methods;</td>
<td></td>
</tr>
<tr>
<td>c. Describe and comment upon particular aspects of current research or equivalent advanced scholarship.</td>
<td></td>
</tr>
</tbody>
</table>
WIL experiences (optional and mandatory) will give students opportunities to apply their problem-solving strategies. The field placement will provide students with a variety of opportunities to select and apply methods, techniques and processes and to evaluate these for their effectiveness, reliability and validity.

The Research Methods course provides students with the knowledge and skills needed to be successful in the Integrative Project Studio course in semester eight. This capstone course provides students with an opportunity to demonstrate their ability to pursue research, application and analysis at an advanced level, to develop solutions to complex arguments in a simulated project, and to effectively communicate the completed project.

Throughout the program, students engage in reflective practice. In the final semester, students are asked to reflect on their studies and work experiences throughout the program. Individually and in collaboration with their peers, students analyze the importance of completed research and placement experiences.

Graduates of this program will be prepared to research, assess and revise in order to select appropriate processes, methods, theories and strategies to achieve positive outcomes for projects and relevant stakeholders.

### 2.1.3 Communication Skills

<table>
<thead>
<tr>
<th>PEQAB Degree level standard for bachelor honours degree in an applied area of study</th>
<th>Honours Bachelor of Construction Management Degree Level Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>The ability to communicate information, arguments and analysis accurately and reliably, orally and in writing, to specialist and non-specialist audiences using</td>
<td>Essential to the field of Construction Management, is the ability to communicate effectively, both orally and in writing, to audiences. To this end, specific courses develop the students’ ability to gather and analyze information, and formulate arguments and conclusions based on the key concepts of the field of study.</td>
</tr>
</tbody>
</table>
structured and coherent arguments, and, where appropriate, informed by key concepts and techniques of the discipline.

| The first semester of the program includes the designated non-core breadth course entitled Communications 1: Critical Thinking and Writing which provides students the technical aspects of researching and evaluating the validity of current literature, and the art of writing an academic paper, while avoiding plagiarism. The third semester core course entitled Technical Writing focuses on communicating effectively in a professional capacity.

In the second and third years of the program, courses including Construction Costs and Bidding focus on professional issues in practice and the importance of communication. The courses also inform students of the ethical and legal responsibilities for communicating in practice.

In the fourth year of the program, courses work to enhance students’ communication and interpersonal skills. In the Human Resources and Labour Relations Research course, students are provided an overview of the concepts and principles relevant to human resources management, labour relations and the important role of communication in these concepts.

Presentations and group work throughout the program including Construction Supply Chain and Risk Management allow students to reflect on their practical experiences, further review the literature, and share their deepening understandings with their colleagues through the synthesis of fieldwork, research and/or case studies. Written assignments throughout the program provide extensive opportunities for students to demonstrate their ability to gather information, analyze, and formulate coherent, logical and systematic approaches to arguments in writing. Many courses provide evaluation rubrics to ensure that written assignments reflect the ability to develop arguments at increasingly complex levels. Coursework, breadth electives, and field placements provide extensive opportunities for students to develop effective communication skills. |
### 2.1.4 Application of Knowledge

<table>
<thead>
<tr>
<th>PEQAB Degree level standard for bachelor honours degree in an applied area of study</th>
<th>Honours Bachelor of Construction Management Degree Level Summary</th>
</tr>
</thead>
</table>
| a. The ability to review, present, and critically evaluate quantitative and qualitative information to:  
  i. develop lines of argument;  
  ii. make sound judgments in accordance with the major theories, concepts and methods of the subject(s) of study;  
  iii. apply underlying concepts, principles, and techniques of analysis, both within and outside the discipline  
  iv. where appropriate, use this knowledge in the creative process | The proposed program provides students with numerous opportunities to apply the major concepts, principles and theories of Construction Management in a variety of settings and at different stages of the project life cycle. During the WIL experience (optional and mandatory), students work under supervision in an industry setting, and are challenged to synthesize and apply their knowledge. Under supervision and within multidisciplinary teams, students use their knowledge to collect and evaluate data related to complex project issues, propose solutions to the defined problems and to defend proposals with sound knowledge and scholarly research.  
In core courses, students are required to critically analyze increasingly complex case studies. In this, students demonstrate the ability to synthesize concepts and principles and propose evidence-based solutions to applied cases in the field of Construction Management. Courses include Construction Planning and Scheduling, Material Science and Testing, QA/QC in Construction, and Project Accounting Control.  
In the Introduction to Architectural and Engineering Design course, as well as senior level courses, students complete research related projects that require the critical review and presentation of quantitative data and written arguments. The skills and knowledge gained ensures students develop sound reasoning skills based on Construction Management concepts and principles. |
| b. The ability to use a basic range of established techniques to:  
  i. Initiate and undertake critical evaluation of arguments, assumptions, abstract concepts and information;  
  ii. propose solutions;  
  iii. frame appropriate questions for the purpose of solving a problem |
iv. solve a problem or create a new work

c. The ability to make use of scholarly reviews and primary sources.

2.1.5 Professional Capacity/Autonomy

<table>
<thead>
<tr>
<th>PEQAB Degree level standard for bachelor honours degree in an applied area of study</th>
<th>Honours Bachelor of Construction Management Degree Level Summary</th>
</tr>
</thead>
</table>
| a. The qualities and transferable skills necessary for further study, employment, community involvement and other activities requiring:  
  i. the exercise of initiative, personal responsibility, and accountability in both personal and group contexts;  
  ii. working reflectively with others;  
  iii. decision-making in complex contexts;  
| The program consistently emphasizes for students the significance of professionalism, ethics, reflective practice and ongoing professional development. The course entitled Leadership in Construction Project Management focuses on professional responsibility, relationship management, accountability and understanding the scope and limits of knowledge. Specific topics addressed include ethics in construction management and professional development within the field develops the students’ abilities to work with others and understand working within a team. The courses Introduction to Construction Law and Management of Construction Sites provide students opportunities to practice decision-making, professional responsibility, and to apply their evolving skills to increasingly complex project-related issues within a team environment.  
| b. The ability to manage their own learning in changing circumstances, both within and outside the discipline, and to select an appropriate program of further study;  
| c. Behaviour consistent with academic integrity and social responsibility. |
### 2.1.6 Awareness of Limits of Knowledge

<table>
<thead>
<tr>
<th>PEQAB Degree level standard for bachelor honours degree in an applied area of study</th>
<th>Honours Bachelor of Construction Management Degree Level Summary</th>
</tr>
</thead>
</table>
| An understanding of the limits to their own knowledge and ability, and an appreciation of the uncertainty, ambiguity, and limits to knowledge and how this might influence analysis and interpretations. | Students in the HBCM program develop a sound foundational knowledge of their chosen field through coursework, and have opportunities to apply these theoretical frameworks through an in-depth study of various topics within the Construction Management discipline.  

The field of construction management is a continuously evolving area of study which is informed by engineering, architecture, management and business administration. Consequently, there are many complexities in the application of theory to practice. Throughout the program students will be challenged to identify the inherent complexities of construction management, to critically analyse the most current process, methods and theories, to research these ambiguities and then apply evolving problem solving and decision-making skills in fieldwork and courses including Building Codes and Regulations and Construction Project Financial Analysis. |
## 3. Admission, Promotion, and Graduation

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3.1 Direct Entry Admission Requirements

3.1.1 Admission Requirements for Degree Programs

Applicants will apply through the Ontario College Application Services (OCAS) website.


Current policies and procedures related to admissions are accessible to students on Durham College’s (DC) website: [http://www.durhamcollege.ca/about-us/corporate-links/governance/policies](http://www.durhamcollege.ca/about-us/corporate-links/governance/policies)

See Section 14 of the degree submission to access DC’s Domestic Admissions Policy and Procedure ADMIN-208 and International Admissions Policy and Procedure ACAD-107.

3.1.2 Conditional Offer of Admission

Conditional offer of admission refers to an offer of admission that has been issued, which is pending the successful completion of one or more published program admission requirements. Applicants admitted conditionally must fulfil the conditional requirements by published deadlines. Failure to do so will result in withdrawal from the program.

3.1.3 Re-admission

Students will be required to petition the Strategic Enrolment Services office to continue their studies if their program has been interrupted by:

1. Not registering for two consecutive semesters; or
2. Failure to complete the program in double the duration of the program plus one semester.

3.1.4 Admission Review

Upon request, an applicant may request a review of an admission decision. Specific timeframes and processes apply to the review. The process begins with a review by the admissions officer. Applicants not satisfied may then request a review by the Manager, Admissions and then a review by the Associate Vice President/Registrar, Student Affairs. DC will reply within five business days to the applicant following each of the requests. The procedure is clearly outlined in the Admissions policy and procedure.
3.2 Admission Categories

Admission to DC degree programs can be accomplished as a secondary school graduate, as a mature student, or transfer student. In addition to the following descriptions, applicants need to refer to the detailed admission requirements and specific subject requirements of their program of interest. Meeting minimum admission criteria does not guarantee the applicant’s admission into the program.

Honours Bachelor of Construction Management Admission Criteria

This table indicates how the proposed Honours Bachelor of Construction Management (HBCM) program meets the requirements of the Postsecondary Education Quality Assurance Assessment Board (PEQAB).

3.2.1 Direct Entry - Domestic

<table>
<thead>
<tr>
<th>Admission Category</th>
<th>Admission Requirements</th>
</tr>
</thead>
</table>
| Eligibility Criteria | Benchmarks:  
1. Admission requirements are appropriate to the learning outcome goals of the program and the degree level standard.  
2. Admission to a bachelor program normally requires, at a minimum, an Ontario Secondary School Diploma (OSSD) or equivalent, six university or university/college courses at the Grade 12 level, a minimum average of 65% and any additional requirements. |
| Durham College | As a general requirement, DC requires degree candidates to have the following secondary school credits or their equivalent:  
1. OSSD or equivalent  
2. Six Grade 12 courses at the U or M level with a minimum overall average of 65%  
3. Grade 12 English – required with a final grade of at least 65% |
| Program Specific | HBCM candidates must have the following secondary school credits or their equivalent:  
1. OSSD or equivalent or Mature Student Status  
2. Six Grade 12 courses at the U or M level at a minimum average of 65% including:  
3. Grade 12 U English or equivalent with a final grade minimum of 60%  
4. Grade 12 U Math or equivalent with a final grade minimum of 60%  
5. Recommended: Calculus and Vectors, Physics |
<table>
<thead>
<tr>
<th>Related work/volunteer</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Requirements-work, portfolio, admission test, interviews</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### 3.2.2 Direct Entry – International

<table>
<thead>
<tr>
<th>Direct – International</th>
<th>Admission Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eligibility Criteria</td>
<td>Benchmarks:</td>
</tr>
<tr>
<td></td>
<td>1. Admission requirements are appropriate to the learning outcome goals of the program and the degree level standard.</td>
</tr>
<tr>
<td></td>
<td>2. Admission to a bachelor program normally requires at a minimum an OSSD or equivalent, six university or university/college courses at the Grade 12 level, a minimum average of 65% and any additional requirements.</td>
</tr>
<tr>
<td></td>
<td>3. For applicants for whom English is a second language and who have not had formal education in an English Language School System, proof of English language proficiency is required by providing a score achieved through an approved English Language Proficiency Test.</td>
</tr>
<tr>
<td>Durham College</td>
<td>• International students are required to provide proof of academic standing equivalent to Grade 12 in Ontario or an OSSD.</td>
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<tr>
<td></td>
<td>• Original or translated and notarized copies of academic qualifications (e.g. transcripts, diplomas, degrees, grades)</td>
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<td>• Evidence of proficiency in English, which can be satisfied by one of the following criteria:</td>
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<tr>
<td></td>
<td>a. Mother tongue or first language of English</td>
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<td>b. The required proficiency (according to program) on one of the English language tests acceptable to DC (Academic IELTS, IBT TOEFL, PTE, CAEL)</td>
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<tr>
<td></td>
<td>c. Graduation from a DC approved English language training partner.</td>
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</table>
Program Specific

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. OSSD or equivalent</td>
<td></td>
</tr>
<tr>
<td>2. Six Grade 12 courses or equivalent at a minimum average of 65% including:</td>
<td></td>
</tr>
<tr>
<td>a. If English was the language of delivery and examination, Grade 12 English with a final grade minimum of 60%</td>
<td></td>
</tr>
<tr>
<td>b. Grade 12 U Math or equivalent with a final grade minimum of 60%</td>
<td></td>
</tr>
<tr>
<td>c. Recommended: Calculus and Vectors, Physics</td>
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</tr>
<tr>
<td>3. Proof of English proficiency equivalent to IELTS 6.5 with no band less than 6.0</td>
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Related work/volunteer

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Details</th>
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<tbody>
<tr>
<td>N/A</td>
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</table>

Other Requirements

<table>
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<tr>
<th>Requirement</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
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3.2.3 Mature Students

<table>
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<tr>
<th>Mature Students</th>
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<tbody>
<tr>
<td><strong>Admission Requirements</strong></td>
</tr>
<tr>
<td>Eligibility Criteria</td>
</tr>
<tr>
<td>1. Mature students have demonstrated academic abilities equivalent to those of Ontario high school graduates, verified by successful completion of courses at the postsecondary level.</td>
</tr>
<tr>
<td>Durham College</td>
</tr>
<tr>
<td>1. Mature student status refers to applicants who are 19 and older as of the first day of classes without an OSSD or equivalent but with the admission required courses. Mature students must submit proof of credits in the above courses or equivalent credits at the postsecondary level.</td>
</tr>
<tr>
<td>Program Specific</td>
</tr>
<tr>
<td>Same as above</td>
</tr>
<tr>
<td>Related work/volunteer</td>
</tr>
<tr>
<td>N/A</td>
</tr>
<tr>
<td>Other Requirements</td>
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<td>N/A</td>
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</table>

Honours Bachelor of Construction Management  Section 3, Page 5
# 3.2.4 Credit Transfer

<table>
<thead>
<tr>
<th>Category</th>
<th>Credit Transfer</th>
</tr>
</thead>
</table>
| Eligibility Criteria | 1. Credits accepted for admission to a degree program are in proportion to the affinity with and/or applicability to the specialty of the program;  
2. Are fair, reasonable and consistent;  
3. Identify the basis on which the decisions are made;  
4. Require a gap analysis;  
5. Ensure that the degree level standard and program learning outcomes are met; and  
6. Identify any requirements for bridging studies. |
| Durham College     | Block transfer of credits depends on the affinity of the previous program and its learning outcomes with the degree outcomes, and are determined through gap analysis. While the limits on transfer of credits have been removed by PEQAB, it is difficult to foresee any situation where the transfer of credits would exceed the previous limitations. The 20% breadth requirement is an integral part of the program.  
Transfer of credits can occur by external or internal credits. External credit refers to the official acknowledgement of course credit from another educational institution in situations where: the course learning outcomes are 80% similar to a course at DC; and the student has achieved either a 60% minimum grade or the passing grade for the equivalent course at DC, whichever is higher. Internal credit refers to official acknowledgement of equivalent course credit completed at DC where: the course learning outcomes are 80% similar. |
| Program Specific   | For the HBCM program transfer credits will be awarded to qualified transfer students from the Civil Engineering Technology advanced diploma program.  
**Civil Engineering Technology, Advanced Diploma**  
Graduates from this diploma program will be granted 45 credits toward the degree program. Transfer students will have a specialized Program of Studies and will begin the program in semester 4. Students will complete the program in five semesters.  
Students will receive credit for two non-core breadth elective courses, two designated non-core breadth courses, and eleven core courses including: Introduction to Construction Management, Algebraic and Geometric Mathematics, |
<table>
<thead>
<tr>
<th>Promotion and Graduation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category</strong></td>
</tr>
<tr>
<td><strong>Eligibility Criteria</strong></td>
</tr>
<tr>
<td>Promotion and graduation requirements are consistent with the learning outcome goals of the program and include:</td>
</tr>
<tr>
<td>1. policies governing academic remediation, sanctions and suspension for students who do not meet minimum achievement requirements;</td>
</tr>
<tr>
<td>2. a grading system that is easily understandable, meaningful and convertible to students, other postsecondary institutions and potential employers, whether expressed as letter grades, percentages or grade points;</td>
</tr>
<tr>
<td>3. regardless of the grading scheme, grades for acceptable performance correspond to student work that demonstrates the degree level standard has been achieved;</td>
</tr>
<tr>
<td>4. minimum overall average acceptable achievement for progression (across all degree requirements, including the breadth and discipline-related requirements) not lower than the level typically designated by C- or 60–62%;</td>
</tr>
<tr>
<td>5. minimum overall average acceptable achievement in discipline-related requirements for progression in the program not lower than the level typically designated by C- or 60–62%; and</td>
</tr>
<tr>
<td>6. a level of overall achievement expected in the core discipline(s) of study higher than the overall average.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Durham College</th>
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</thead>
<tbody>
<tr>
<td>Candidates for graduation are required to meet or exceed the following criteria:</td>
</tr>
<tr>
<td>1. a student shall complete at least 25% of the program’s courses through DC;</td>
</tr>
<tr>
<td>2. it is the student’s responsibility to be aware of program-specific requirements for graduation;</td>
</tr>
<tr>
<td>3. including, but not limited to: a minimum cumulative program grade point average of 2.5;</td>
</tr>
<tr>
<td>4. the maximum time for a student to graduate from a full-time program is twice the duration of the program plus one semester;</td>
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<td>7.</td>
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<td>8.</td>
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<td>9.</td>
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<tr>
<td>10.</td>
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<tr>
<td>11.</td>
</tr>
</tbody>
</table>

| Program Specific | Same as noted above. |
3.2.6 Mandatory Work-Integrated Learning

<table>
<thead>
<tr>
<th>Mandatory Work Placement/Field Placement/Internship</th>
<th>Eligibility Criteria</th>
</tr>
</thead>
</table>
| Durham College                                      | 1. Successful achievement of requirements of the term with an overall rating of satisfactory.  
|                                                     | 2. Requirements of placement semester must be completed within the semester. Students may not progress to the next semester until this requirement is met.  
|                                                     | 3. Students must have successfully met all core requirements preceding the placement semester. Students will need to defer placement until this condition is met. |
| Program Specific                                    | A rating of satisfactory upon completion. The completion of all required project work within the semester. |

3.2.7 Overall Achievement

<table>
<thead>
<tr>
<th>Overall Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
</tr>
<tr>
<td>Eligibility Criteria</td>
</tr>
<tr>
<td>Durham College</td>
</tr>
</tbody>
</table>

**Academic Standing**

**Good Standing**

Students will be required to maintain a semester grade point average of 2.5 or higher to remain in good standing.

**On Probation**

Students who achieve a semester grade point average of between 1.5 and 2.5 will be placed on academic probation.

To be removed from academic probation, students must achieve a semester grade point average of 2.5 or higher.

Students who are placed on academic probation a total of three times in their program will be placed on academic suspension and will be withdrawn from their program.
Academic Suspension

Students who achieve a semester grade point average of less than 1.5 will be placed on academic suspension.

To be removed from academic suspension, students must achieve a semester grade point average of 2.5 or higher.

Students who are placed on academic suspension a total of two times in their program will be withdrawn from their program.

Students that have been academically withdrawn may apply for readmission after two semesters.

Program Specific

Graduation from the program requires:
1. successful completion of all coursework with a cumulative program grade point average of 2.5 or higher;
2. completion within the allowable timeframe of two times plus one semester the program duration;
3. breadth courses represent a minimum of 20% of the completed course work;
4. that 25% of courses have been completed at DC; and
5. Prior Learning Assessment does not represent more than 75% of the credential being granted.

3.2.8 Transfer Students

<table>
<thead>
<tr>
<th>Category</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eligibility Criteria</td>
<td>Applicants who have previously attended a postsecondary institution full-time must apply as a regular applicant, and then be considered for credit transfer.</td>
</tr>
<tr>
<td>Durham College</td>
<td>Same as above</td>
</tr>
<tr>
<td>Program Specific</td>
<td>Same as above</td>
</tr>
</tbody>
</table>
### 3.2.9 English Language Proficiency Policy

International applicants for whom English is not the first language must provide one of the following:

<table>
<thead>
<tr>
<th>English Language Test Requirements</th>
<th>Most postsecondary programs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IELTS: 6.0 with no band less than 5.5</td>
</tr>
<tr>
<td></td>
<td>IBT TOEFL: 80, with minimum section score of 20</td>
</tr>
<tr>
<td></td>
<td>PTE Academic: 53 minimum overall, no section below 49 L,W,S,R</td>
</tr>
<tr>
<td></td>
<td>CAEL: Overall score of 60 with no section below 60</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>English Language Test Requirements</th>
<th>All fast-track and graduate certificates programs, and degree programs, plus the following postsecondary programs: Dental Assisting (Levels I and II), Dental Reception and Administration, Journalism – Mass Media, Music Business Management, Police Foundations, Public Relations, Social Service Worker, Sports Administration/Sports Management, Health Care Technology Management – Honours Bachelor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IELTS 6.5 with no band less than 6.0</td>
</tr>
<tr>
<td></td>
<td>IBT TOEFL: 88, with minimum section score of 22</td>
</tr>
<tr>
<td></td>
<td>PTE Academic: 60 minimum overall, no section below 57 L,W,S,R</td>
</tr>
<tr>
<td></td>
<td>CAEL: Overall score of 70, no section below 70</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>English Language Test Requirements</th>
<th>Practical Nursing, Communicative Disorders Assistant (Graduate Certificate)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.0 with no band less than 6.5</td>
</tr>
<tr>
<td></td>
<td>IBT TOEFL: 94, with minimum section score of 23</td>
</tr>
<tr>
<td></td>
<td>PTE Academic: Not applicable</td>
</tr>
</tbody>
</table>

Details regarding DC’s English language proficiency requirements can be accessed on the website using the following link: [https://durhamcollege.ca/info-for/international/study-dc/english-language-centre/english-language-proficiency-and-elt-partners](https://durhamcollege.ca/info-for/international/study-dc/english-language-centre/english-language-proficiency-and-elt-partners)

In addition, DC will accept students who have graduated from one of our approved partner English Language schools. DC also provides on-campus, English as a Second Language (ESL), support to its students through the English Language Centre (ELC).
The ELC provides many services to students whose first language is not English, including:

- Six levels to develop the competencies needed for academic programs at DC;
- Out-of-class learning activities;
- English only environment; and
- Conversation groups, cultural and social activities, optional field trips and activities. The English language schools work closely with the International Office to ensure students have facilitated access to the available programs.

More information regarding services provided by the ELC can be viewed on the DC website page via this link: [https://durhamcollege.ca/info-for/international/study-dc/english-language-centre/english-language-proficiency-and-elt-partners](https://durhamcollege.ca/info-for/international/study-dc/english-language-centre/english-language-proficiency-and-elt-partners)

### 3.3 Admission for Mature Students

Eligibility criteria for mature students are embedded within both the Domestic Admissions and International Admissions policy and procedure, item 5.1.2 College Eligibility - Degree Programs.

Students applying for credit transfer or as mature students will compete for admission with all other direct entry applicants.

See Section 14, Policies, of the degree submission to review the DC Domestic Admissions Policy and Procedure ADMIN-208 and International Admissions Policy and Procedure ACAD-107.

### 3.4 Credit Transfer and Advanced Standing

#### 3.4.1 Transfer Applicants

Applicants with previous full-time postsecondary studies must apply as a regular applicant. Transfer credits will be considered once an applicant is determined to be eligible for admission.

#### 3.4.2 Previous Studies at the Baccalaureate Level

Applicants with previous baccalaureate level study may be considered if they meet all of the following requirements:

- Possession of program specific admission requirements or the equivalents;
- The successful completion of at least one year of postsecondary study at a Canadian institution; and
- The applicant is in good standing at the most recent postsecondary institution.
3.4.3 Transfer Credits

DC recognizes that learning takes place in all aspects of life. Courses successfully completed at other postsecondary institutions will be recognized when equivalency is established by reviewing appropriate documents. Time limits will apply to the granting of transfer credits. Transfer credits may be considered for individual courses, where the completed course work represents the equivalent (at least 80 percent) content and complexity to the program course, and therefore no further work needs to be completed.

Applicants for credit transfer must demonstrate the equivalency through documentation of successful completion, official transcripts, and course outlines or similar course content details. Students must apply for transfer credits through the Office of Strategic Enrolment Services.

Prior Learning Assessment and Recognition (PLAR) courses will not replace more than 75 percent of the course credits in any applied degree program as specified in the policy.

Course(s) approved through Letters of Permission will not replace more than 75 percent of the course credits.

DC will award appropriate credits for previous studies and will review in detail all requests based on course and program comparisons and on an individual basis.

Policies and procedures relating to credit transfer, including bridging requirements for diploma to degree laddering, will ensure that the degree level standard and program learning outcomes are met.

If transfer credits are awarded for learning done at a postsecondary institution that is not:
   a) A Canadian institution empowered to award degrees either on the basis of their own statutes or ministerial consent; or
   b) A degree granting institution recognized by the Department of Education or by an accrediting agency which itself is accredited by the Council of Higher Education Accreditation in the United States; or
   c) A degree granting institution from another jurisdiction which has similar accreditation status,

then DC will ensure that the content and outcomes of the studies for which transfer credit is being awarded, have a substantial academic affinity with the proposed program, and are at the degree level.

Subject experts trained in assessment of learning will review student submissions. Advanced standing and credit recognition policies and procedures are reviewed through the PEQAB process to ensure they are reasonable, consistent and fair. Advanced
standing reviewers receive training and support to maintain the quality and consistency of reviews.

See Section 14, Policies, of the degree submission to review the following DC policies: Credit Transfer Policy and Procedure ADMIN-252 Prior Learning Assessment and Recognition (PLAR) Policy and Procedure ADMIN-251

3.4.4 Degree Completion Arrangement

This degree program provides degree completion for graduates of the Civil Engineering Technology advanced diploma program. A detailed gap analysis and credit transfer description is provided in detail in Section 4, Program Content, of the degree submission.

3.5 Students at-Academic-Risk

DC provides academic support to students who may lack the skills, knowledge, behaviours and/or academic ability to progress in their chosen programs of study. Providing a range of intervention strategies to assist at-risk students in overcoming obstacles to academic achievement, fosters resiliency in our students, supports student retention and mitigates the personal and social costs of academic under-performance. The Students at Academic Risk Policy and Procedure describe the processes used, and supports available to assist students who are struggling academically.

See Section 14, Policies, of the degree submission to review the following DC policies and procedures: Academic Progression Policy and Procedure ACAD-127 Course Outlines Policy and Procedure ACAD-108 Students at Academic Risk Policy and Procedure ACAD-114

3.7 Foreign Transcripts

Foreign transcripts will require a Credential Assessment Report issued by World Education Services (WES) or International Credential Assessment Service (ICAS). Students must contact the agency to forward the report to OCAS (Ontario Colleges Application Service). Only original documents will be considered.

Students will be required to submit either a post graduate comprehensive – course by course report from ICAS or a comprehensive report from WES. This assessment must be received at ontariocolleges.ca on or before February 1st to be considered for the highly competitive programs. In some cases, the assessment could take as long as 12 weeks. DC recommends that students submit both their Secondary (High School) documents report and Postsecondary (College/University) documents; this will assist DC in assessing the application for entry.
To obtain a Credential Assessment Report, students are referred to either ICAS or WES for information about obtaining a report and having it transmitted to the college.

### 3.8 Durham College GPA Scales

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Grade</th>
<th>Grade Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>90%</td>
<td>100%</td>
<td>A+</td>
<td>5.00</td>
</tr>
<tr>
<td>85%</td>
<td>89%</td>
<td>A</td>
<td>4.50</td>
</tr>
<tr>
<td>80%</td>
<td>84%</td>
<td>A-</td>
<td>4.00</td>
</tr>
<tr>
<td>75%</td>
<td>79%</td>
<td>B+</td>
<td>3.50</td>
</tr>
<tr>
<td>70%</td>
<td>74%</td>
<td>B</td>
<td>3.00</td>
</tr>
<tr>
<td>65%</td>
<td>69%</td>
<td>C+</td>
<td>2.50</td>
</tr>
<tr>
<td>60%</td>
<td>64%</td>
<td>C</td>
<td>2.00</td>
</tr>
<tr>
<td>55%</td>
<td>59%</td>
<td>D+</td>
<td>1.50</td>
</tr>
<tr>
<td>50%</td>
<td>54%</td>
<td>D</td>
<td>1.00</td>
</tr>
<tr>
<td>0%</td>
<td>50%</td>
<td>F</td>
<td>0.00</td>
</tr>
</tbody>
</table>
4. Program Content

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  Culture, Arts, Humanities and Self (Lower) ..................................... 46
  Culture, Arts, Humanities and Self (Upper) ..................................... 48
4.4.5 Non-Core Course Outlines ................................................................. Removed for web submission
  Principles of Microeconomics ..............................................................
  Political Science ..............................................................................
  Canadian Law – An Introduction ......................................................
  Introduction to Sociology .................................................................
  Issues in Sociology ........................................................................
  Leadership – Optimizing Results Through Others ........................
  Leadership – Emotionally Intelligent Manager ............................
  Astronomy: Exploring the Night Sky .............................................
Technology – Its History and Implications .................................................................
Introduction to Ecology ..........................................................................................
Environmental Protection and Global Wellness .....................................................
Green and Alternative Energy Sources .....................................................................
Cancer Influences – Science and Society ..............................................................
Communications 1: Critical Thinking and Writing ..................................................
Canadian Culture .....................................................................................................
Introduction to Canadian Literature ........................................................................
Ideas that Matter: An Introduction to Ancient Greek Philosophy ..........................
Introduction to Psychology ....................................................................................
Technical Writing ...................................................................................................
Classical Mythology ...............................................................................................
2.4 Construction Estimating 2

Semester 3

3.1 Building Information Modelling 1: Drafting and Drawings
3.2 Materials Science and Testing
3.3 Construction Planning and Scheduling
3.4 Foundations of Project Management

Semester 4

4.1 Building Information Modelling 2: Advanced
4.2 Building Structures
4.3 Quality Assurance and Quality Control in Construction
4.4 Building Science and Systems
4.5 Field Placement Preparation

Semester 5

5.1 Construction Organizational Behaviour
5.2 Introduction to Construction Law
5.3 Construction Costs and Bidding
5.4 Research Methods

Semester 6

6.1 Management of Construction Sites
6.2 Building Codes and Regulations
6.3 Project Accounting Control
6.4 Construction Project Financial Analysis

Semester 7

7.1 Sustainable Building Construction
7.2 Business Management and Strategy
7.3 Construction Contract Administration and Law
7.4 Human Resources and Labour Relations Research

Semester 8

8.1 Construction Supply Chain and Risk Management
8.2 Construction Project Delivery Systems
8.3 Leadership in Construction Project Management
8.4 Integrative Project Studio

4.10 Gap Analysis
4.10.1 Gap Analysis – Diploma to Degree Transfer: Civil Engineering Technology Advanced Diploma Program
4.11 Appendices ........................................................................................................... Removed for web submission

Appendix A: Ad-hoc Program Advisory Committee Meeting, January 30, 2019 ........
Appendix B: Ad-hoc Program Advisory Committee Meeting, June 7, 2019 ............
Appendix C: Field Placement Evaluation Form .............................................................
Program Content Summary

Durham College (DC) has taken steps to confirm that the content of this proposed program, in both subject matter and final outcomes, meets the degree-level standard as stated in the Manual for Ontario Colleges in the following ways:

- The non-core course component of the program meets the Postsecondary Education Quality Assessment Board’s (PEQAB) standards where at least 20 percent of the curriculum credit hours are outside the field of study, in order to further the student’s breadth of knowledge. The non-core component in the Honours Bachelor of Construction Management (HBCM) degree program constitutes 20 percent of the program curriculum.

- The development team has conducted in-depth research to compare this program with other related diploma and degree programs in Ontario. This research confirms that the program addresses some similar curriculum content within the Civil Engineering Technology (CET) advanced diploma program (MTCU 61003). However, the degree offers a more in-depth study in the field of construction management, providing a greater emphasis on integration of theory with practice, intellectual rigour, scholarship, academic breadth and depth. In addition, this proposed program differs significantly from non-degree study in fostering a conceptual and applied understanding of the greater construction management field (see Section 4.10, Gap Analysis).

- This degree program reflects an intentional focus on employability skills acutely recognizing the need for graduates with greater capacity for conceptual and analytical thought and professional practice. Professional-practice learning opportunities are inherent within the classroom through experiential learning opportunities, case studies and guest speakers across two campuses and three schools plus a fourth school offering non-core breadth courses. Further, a required 420 hour field placement during the summer term has been embedded into the program between semester 6 and 7. In response to the ad-hoc Program Advisory Committee (PAC) recommendation to increase opportunities for work-integrated learning experience, an optional work-integrated learning experience has been added between semesters 4 and 5. Each work-integrated learning opportunity provides students the ability to apply the theory learned in coursework.

- The proposed program has been designed in alignment with the undergraduate degree level expectations of the Ontario Qualifications Framework (OQF) (see Section 2, Degree Level) and compared with other baccalaureate programs in construction management in Ontario and elsewhere. It compares favourably in terms of breadth and rigour, as witnessed by the desk reviewer’s report (see Section 15, Desk Review) and letters of recognition (see Section 7, Credential Recognition).
In terms of the curriculum quality and currency, an external qualified academic in the field, Dr. Mohamed Elbarkouky, Program Chair, Bachelor Degree in Construction Management, Northern Alberta Institute of Technology, thoroughly assessed the core program during its development phase, and recognized the value, quality, and importance of this baccalaureate degree program. He noted that the program provides graduates with the breadth and depth of knowledge to enable them to become successful managers and leaders of construction projects. Further, Dr. Elbarkouky commented that this program will impress potential employers, and that graduates could be perceived as good candidates for Masters programs.

He suggested a few program modifications which were considered by the development team, program administrators, and course developers. Subsequently, the curriculum was amended where appropriate. Dr. Elbarkouky’s curriculum vitae (CV), a summary of his report, and DC’s detailed response have been included in this submission (see Section 15, Desk Review).

In addition, outside qualified academics in the field, including Dr. Anthony Lamanna, P.E., Ph.D, F.ACI, F.ASCE, Program Chair and Professor, Del E. Webb School of Construction, Arizona State University, assessed the curriculum (except for non-core courses) as a member of the ad-hoc PAC and provided specific feedback which has been incorporated into the final drafts of course outlines.

The program has been endorsed by our ad-hoc PAC, as current and useful and addresses the needs of the construction field in the Greater Toronto Area and beyond.
4.1 Ad-Hoc Program Advisory Committee

The School of Skilled Trades, Apprenticeship and Renewable Technology hosted two ad-hoc PAC meetings consisting of a diverse group of industry professionals, an academic from a related discipline, and employers in the field of construction management. The participants represented a wide range of stakeholder groups including companies, associations, municipal and regional service providers, and a post-secondary academic institution.

During the first meeting, the participants were provided with general information regarding the degree proposal submission process, a detailed review of the economic needs analysis, prepared by DC’s Office of Research Services, Innovation and Entrepreneurship (ORSIE), and rationale for developing and offering this program. The ad-hoc PAC was provided with the draft program learning outcomes, program abstract, program of studies, and course descriptions. The participants advised that graduates of the program are needed in the field and could find entry-level employment as assistant construction managers, project coordinators and contract administrators.

The ad-hoc PAC also provided feedback regarding the program of studies and suggested modifications in course sequencing which was taken into consideration to ensure the program addressed key areas within the sector.

During the second meeting, the ad-hoc PAC confirmed the program of studies, course sequencing and the program learning outcomes. The motion to seek approval from the Ministry of Training, Colleges and Universities (MTCU) was accepted and approved by the ad-hoc PAC members.

Minutes from the January 30, 2019 and June 7, 2019 ad-hoc PAC meetings are available below, 4.11 Appendices:

Appendix A: Ad-hoc Program Advisory Committee Meeting, January 30, 2019
Appendix B: Ad-hoc Program Advisory Committee Meeting, June 7, 2019

The meeting participants are listed in the following tables:
4.2 Professional Accreditation

The construction industry is not currently regulated by any Canadian regulatory or accrediting body. However, there are a number of voluntary certifications that DC will consider after the launch of the program, these include: Gold-Seal Certified (GSC), Construction Estimator Certified (CEC), Accreditation Board for Engineering Technology (ABET), Chartered Institute of Building (CIOB), American Council for Construction Education (ACCE), Ontario Association of Certified Engineering Technicians and Technologists (OACETT), and Canadian Institute of Quantity Surveyors (CIQS) certifications.

4.3 Learning Outcomes

The collaborative efforts of the industry representatives, subject matter experts, faculty members and curriculum specialists finalized eleven HBCM core program learning outcomes. DC has also created nine degree level learning outcomes and four non-core learning outcomes as follows:

Core Program Learning Outcomes

1. Analyze architectural, engineering, and legal documentation to assess deliverables and maintain schedules for residential, industrial, commercial, and institutional construction projects.
2. Analyze cost estimates and compare actual costs to plan, budget, and control allocated resources for construction projects.
3. Create construction schedules that include stakeholders and the sequence of construction activities to ensure and monitor alignment with project deliverables and requirements.
4. Assess construction methods, building equipment, safety, and labour requirements to ensure compliance to regulatory and contract laws.
5. Collaborate with multi-disciplinary teams using leadership, management, communication, and negotiation strategies to support ethical business decisions in construction projects.
6. Manage the selection of construction methods and materials by using quality assurance mechanisms and control techniques to evaluate the risk associated with the materials and methods used in a construction project.
7. Support the construction project life cycle through statistical analysis, information and digital literacy skills by researching, selecting, and integrating industry-standard information technology and systems.
8. Generate evidence-informed recommendations and utilize best practices to support socially-responsible sustainable construction.
9. Evaluate deliverables using building information modeling in consultation with the project management team to procure materials, equipment, and labour for construction projects.
10. Employ negotiation principles and historically-proven construction management models to propose recommendations and solutions that address challenges and concerns on construction sites.
11. Create a project estimate using construction principles of quantity surveying, pricing, bidding, and tendering that encompasses project material, equipment, labour, and cost requirements.

**Durham College Degree Level Program Learning Outcomes**

1. Utilize knowledge of key concepts, methodologies, current advances, theoretical approaches and assumptions, and interdisciplinary perspectives in their discipline.
2. Research, analyze, compare and assess hypotheses from one or more of the major disciplinary fields.
3. Apply critical thinking and analytical skills inside and outside the discipline.
4. Apply methods of enquiry, plan and conduct applied research, and/or engage in creative activity, in their primary area of study.
5. Critically interpret and utilize qualitative and quantitative information.
6. Perform a range of established techniques.
7. Communicate accurately and reliably, orally and in writing, to a range of audiences.
8. Evaluate and perform roles and responsibilities acknowledging limits of knowledge and abilities.
9. Manage and maintain personal and professional lifelong learning.

**Non-Core Program Learning Outcomes**

1. Utilize critical thinking, research and inquiry skills, quantitative and qualitative reasoning, and scholarly written and oral communication skills.
2. Exhibit more than an introductory knowledge in the humanities, sciences, social sciences, global cultures and/or mathematics.
3. Express a comprehension of society, culture, diversity, and skills relevant to civic engagement.
4. Exhibit more than an introductory knowledge of the distinctive assumptions and modes of analysis of a discipline outside the core field of study.

**Work-Integrated Learning Outcomes**

1. Apply field and industry specific knowledge, principles and procedures to assist various stakeholders in the workplace.
2. Collaborate with supervisors and colleagues and other stakeholders to carry out a project.
3. Assess project, task and assignment requirements to support effective contribution to the workplace.
4. Use communication and visualization tools and techniques to determine requirements, provide status updates, and respond to feedback to various stakeholders about projects, tasks and assignments.
5. Identify areas for professional development by engaging in ongoing self-evaluation of knowledge and skills.
6. Review workplace objectives and purpose to understand and contribute to the organizational culture that fosters intra- and inter-professional relationships with individuals and teams.
7. Demonstrate a positive attitude, accountability, dependability, and respect to maintain a responsible work ethic and professional manner.

4.3.1 Program Learning Outcomes and Corresponding Courses

The HBCM program is designed to provide professional competencies which link the knowledge, skills and abilities required for in-depth construction management in residential, industrial, commercial, and institutional sectors of the construction industry.

The program provides a strong foundation in civil engineering, building construction, and architecture technology and an in-depth study of business management skills. The program emphasizes critical and analytical thinking skills, the importance of interdisciplinary practice, and strong leadership.

4.3.2 Core Program Learning Outcomes

The development team aligned the design of program learning outcomes with the University Degree Level Expectations (UDLE) as pre-set by the OQF. The following six categories of expectations provided structure to a set of overall program outcomes:

<table>
<thead>
<tr>
<th>University Degree Level Expectations</th>
<th>Durham College Program Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Depth and Breadth of Knowledge</td>
<td>6. Manage the selection of construction methods and materials by using quality assurance mechanisms and control techniques to evaluate the risk associated with the materials and methods used in a construction project.</td>
</tr>
<tr>
<td></td>
<td>10. Employ negotiation principles and historically-proven construction management models to propose recommendations and solutions that address challenges and concerns on construction sites using negotiation principles and historical precedents.</td>
</tr>
<tr>
<td>2. Conceptual and Methodological Awareness/Research and Scholarship</td>
<td>2. Analyze cost estimates and compare actual costs to plan, budget, and allocate resources construction projects.</td>
</tr>
<tr>
<td>4. Communication Skills</td>
<td>5. Collaborate with multi-disciplinary teams using leadership, management, communication, and negotiation strategies to support ethical business decisions in construction projects.</td>
</tr>
<tr>
<td>-------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>5. Awareness of the Limits of Knowledge</td>
<td>8. Generate evidence-informed recommendations and utilize best practices to support socially-responsible sustainable construction.</td>
</tr>
</tbody>
</table>

3. Application of Knowledge

1. Analyze architectural, engineering, and legal documentation to assess deliverables and maintain schedules for residential, industrial, commercial, and institutional construction projects.

7. Support the construction project life cycle through statistical analysis, information and digital literacy skills by researching, selecting, and integrating industry-standard information technology and systems.
6. Professional Capacity/Autonomy

3. Create construction schedules that integrate stakeholders and sequence of construction to ensure and monitor alignment with project deliverables and requirements.

9. Evaluate deliverables using building information modeling in consultation with the project management team to procure materials, equipment, and labour for construction projects.

The following table demonstrates the alignment of the core courses, course segments and work-integrated learning to the HBCM core program learning outcomes.

<table>
<thead>
<tr>
<th>Honours Bachelor of Construction Management Program Learning Outcomes</th>
<th>Courses, Course Segments or Work-Integrated Learning (WIL) that Contribute to Achievement of Outcome</th>
</tr>
</thead>
</table>
| 1. Analyze architectural, engineering, and legal documentation to assess deliverables and maintain schedules for residential, industrial, commercial, and institutional construction projects. | ● Construction Estimating 1  
● Introduction to Architectural Engineering Design  
● Building Information Modelling 1: Drafting and Drawings  
● Building Information Modelling 2: Advanced  
● Introduction to Construction Law  
● Research Methods  
● Construction Project Financial Analysis  
● Management of Construction Sites  
● Field Placement (Mandatory)  
● Construction Contract Administration and Law  
● Construction Project Delivery Systems  
● Intregrative Project Studio |
| 2. Analyze cost estimates and compare actual costs to plan, budget, and control allocated resources for construction projects. | ● Algebraic and Geometric Mathematics  
● Construction Estimating 1  
● Introduction to Calculus for Construction  
● Construction Estimating 2  
● Construction Costs and Bidding  
● Research Methods |
<table>
<thead>
<tr>
<th>Honours Bachelor of Construction Management Program Learning Outcomes</th>
<th>Courses, Course Segments or Work-Integrated Learning (WIL) that Contribute to Achievement of Outcome</th>
</tr>
</thead>
</table>
| 3. Create construction schedules that include stakeholders and the sequence of construction activities to ensure and monitor alignment with project deliverables and requirements. | • Project Accounting Control  
• Construction Project Financial Analysis  
• Management of Construction Sites  
• Construction Supply Chain and Risk Management  
• Integrative Project Studio  
• Construction Planning and Scheduling  
• Foundations of Project Management  
• Building Structures  
• Introduction to Construction Law  
• Human Resources and Labour Relations Research  
• Field Placement (Mandatory)  
• Construction Project Delivery Systems  
• Integrative Project Studio |
| 4. Assess construction methods, building equipment, safety, and labour requirements to ensure compliance to regulatory and contract laws. | • Introduction to Construction Management  
• Construction Methods, Materials, and Equipment  
• Introduction to Architectural and Engineering Design  
• Building Information Modelling 1: Drafting and Drawings  
• Materials Science and Testing  
• Building Information Modelling 2: Advanced  
• Building Science and Systems  
• Building Structures  
• QA/QC in Construction  
• Field Placement (Mandatory)  
• Introduction to Construction Law  
• Building Codes and Regulations  
• Management of Construction Sites  
• Construction Contract Administration and Law  
• Sustainable Building Construction |
<table>
<thead>
<tr>
<th>Honours Bachelor of Construction Management Program Learning Outcomes</th>
<th>Courses, Course Segments or Work-Integrated Learning (WIL) that Contribute to Achievement of Outcome</th>
</tr>
</thead>
</table>
| 5. Collaborate with multi-disciplinary teams using leadership, management, communication, and negotiation strategies to support ethical business decisions in construction projects. | • Introduction to Construction Management  
• Business Foundations  
• Construction Estimating 2  
• Foundations of Project Management  
• Construction Organizational Behaviour  
• Construction Costs and Bidding  
• Research Methods  
• Project Accounting Control  
• Construction Project Financial Analysis  
• Building Codes and Regulations  
• Management of Construction Sites  
• Field Placement (Mandatory)  
• Business Management and Strategy  
• Sustainable Building Construction  
• Construction Project Delivery Systems  
• Leadership in Construction Project Management  
• Integrative Project Studio |
| 6. Manage the selection of construction methods and materials by using quality assurance mechanisms and control techniques to evaluate the risk associated with the materials and methods used in a construction project. | • Construction Methods, Materials, and Equipment  
• Introduction to Architectural and Engineering Design  
• Construction Estimating 2  
• Materials Science and Testing  
• Foundations of Project Management  
• Building Information Modelling 2: Advanced  
• Building Science and Systems  
• Building Structures  
• QA/QC in Construction  
• Research Methods  
• Construction Project Financial Analysis  
• Building Codes and Regulations  
• Field Placement (Mandatory) |
<table>
<thead>
<tr>
<th>Honours Bachelor of Construction Management Program Learning Outcomes</th>
<th>Courses, Course Segments or Work-Integrated Learning (WIL) that Contribute to Achievement of Outcome</th>
</tr>
</thead>
</table>
| 7. Support the construction project life cycle through statistical analysis, information and digital literacy skills by researching, selecting, and integrating industry-standard information technology and systems. | - Introduction to Construction Management  
- Building Information Modelling 1: Drafting and Drawings  
- Construction Planning and Scheduling  
- Building Information Modelling 2: Advanced  
- Field Placement (Mandatory)  
- Research Methods  
- Human Resources and Labour Relations  
- Integrative Project Studio |
| 8. Generate evidence-informed recommendations and utilize best practices to support socially-responsible sustainable construction. | - Construction Estimating 1  
- Introduction to Architectural and Engineering Design  
- Construction Planning and Scheduling  
- Materials Science and Testing  
- Foundations of Project Management  
- Building Science and Systems  
- QA/QC in Construction  
- Construction Organizational Behaviour  
- Introduction to Construction Law  
- Research Methods  
- Building Codes and Regulations  
- Sustainable Building Design  
- Leadership in Construction Project Management  
- Integrative Project Studio |
<table>
<thead>
<tr>
<th>Honours Bachelor of Construction Management Program Learning Outcomes</th>
<th>Courses, Course Segments or Work-Integrated Learning (WIL) that Contribute to Achievement of Outcome</th>
</tr>
</thead>
</table>
| 9. Evaluate deliverables using building information modeling in consultation with the project management team to procure materials, equipment, and labour for construction projects. | • Building Information Modelling 1: Drafting and Drawings  
• Construction Planning and Scheduling  
• Building Information Modelling 2: Advanced  
• Construction Contract Administration and Law  
• Human Resources and Labour Relations Research  
• Construction Supply Chain and Risk Management  
• Construction Project Delivery Systems  
• Integrative Project Studio |
| 10. Employ negotiation principles and historically-proven construction management models to propose recommendations and solutions that address challenges and concerns on construction sites. | • Business Foundations  
• Material Science and Testing  
• Foundations of Project Management  
• QA/QC in Construction  
• Construction Organizational Behaviour  
• Construction Costs and Bidding  
• Project Accounting Control  
• Management of Construction Sites  
• Business Management and Strategy  
• Construction Contract Administration and Law  
• Sustainable Building Construction  
• Human Resources and Labour Relations Research  
• Field Placement (Mandatory)  
• Construction Supply Chain and Risk Management  
• Leadership in Construction Project Management  
• Integrative Project Studio |
| 11. Create a project estimate using construction principles of quantity surveying, pricing, bidding, and tendering that encompasses project material, equipment, labour, and cost requirements. | • Algebraic and Geometric Mathematics  
• Construction Estimating 1  
• Introduction to Calculus for Construction  
• Construction Estimating 2 |
<table>
<thead>
<tr>
<th>Honours Bachelor of Construction Management Program Learning Outcomes</th>
<th>Courses, Course Segments or Work-Integrated Learning (WIL) that Contribute to Achievement of Outcome</th>
</tr>
</thead>
</table>
|                                                                 | • Construction Costs and Bidding  
|                                                                 | • Research Methods  
|                                                                 | • Project Accounting Control  
|                                                                 | • Construction Project Financial Analysis  
|                                                                 | • Human Resources and Labour Relations Research  
|                                                                 | • Field Placement (Mandatory)  
|                                                                 | • Construction Supply Chain and Risk Management  
|                                                                 | • Integrative Project Studio |

### 4.3.3 Degree Level Learning Outcomes

**Durham College Degree Level Learning Outcomes**

DC’s degree level learning outcomes reflect the college’s expectations of all honours bachelor program graduates. Upon graduation of an honours bachelor degree program, the graduate will demonstrate sufficient rigour, breadth and depth required to satisfy the OQF. It is important to note that all of the courses in the degree contribute to the attainment of the degree level outcomes but the following courses or course segments emphasize specific aspects of the outcomes.

<table>
<thead>
<tr>
<th>Durham College Degree Level Learning Outcomes</th>
<th>Courses or course segments that contribute to achievement of outcome</th>
</tr>
</thead>
</table>
| 1. Utilize knowledge of key concepts, methodologies, current advances, theoretical approaches and assumptions, and interdisciplinary perspectives in their discipline. | • Introduction to Construction Management  
|                                                                 | • Algebraic and Geometric Mathematics  
|                                                                 | • Construction Methods, Materials, and Equipment  
|                                                                 | • Construction Estimating 1  
|                                                                 | • Business Foundations  
|                                                                 | • Introduction to Architectural and Engineering Design  
|                                                                 | • Introduction to Calculus for Construction  
<p>|                                                                 | • Construction Estimating 2 |</p>
<table>
<thead>
<tr>
<th>Durham College Degree Level Learning Outcomes</th>
<th>Courses or course segments that contribute to achievement of outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Building Information Modelling 1: Drafting and Drawings</td>
</tr>
<tr>
<td></td>
<td>• Construction Planning and Scheduling</td>
</tr>
<tr>
<td></td>
<td>• Materials Science and Testing</td>
</tr>
<tr>
<td></td>
<td>• Foundations of Project Management</td>
</tr>
<tr>
<td></td>
<td>• Building Information Modelling 2: Advanced</td>
</tr>
<tr>
<td></td>
<td>• Building Science and Systems</td>
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<tr>
<td></td>
<td>• Building Structures</td>
</tr>
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<td>• QA/QC in Construction</td>
</tr>
<tr>
<td></td>
<td>• Field Placement (Mandatory)</td>
</tr>
<tr>
<td></td>
<td>• Construction Organizational Behaviour</td>
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<tr>
<td></td>
<td>• Introduction to Construction Law</td>
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<td>• Management of Construction Sites</td>
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<td></td>
<td>• Construction Contract Administration and Law</td>
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<td></td>
<td>• Sustainable Building Construction</td>
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<td>• Human Resources and Labour Relations Research</td>
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<tr>
<td></td>
<td>• Construction Supply Chain and Risk Management</td>
</tr>
<tr>
<td></td>
<td>• Construction Project Delivery Systems</td>
</tr>
<tr>
<td></td>
<td>• Integrative Project Studio</td>
</tr>
<tr>
<td></td>
<td>• Non-Core Breadth Electives</td>
</tr>
</tbody>
</table>

2. Research, analyze, compare and assess hypotheses from one or more of the major disciplinary fields.

|                                             | Business Foundations                                          |
|                                             | Materials Science and Testing                                 |
|                                             | QA/QC in Construction                                         |
|                                             | Research Methods                                              |
|                                             | Construction Project Financial Analysis                       |
|                                             | Construction Contract Administration and Law                  |
### Durham College Degree Level Learning Outcomes

<table>
<thead>
<tr>
<th>Courses or course segments that contribute to achievement of outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Human Resources and Labour Relations Research</td>
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<tr>
<td>• Integrative Project Studio</td>
</tr>
<tr>
<td>• Non-Core Breadth Electives</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Apply critical thinking and analytical skills inside and outside the discipline.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Introduction to Construction Management</td>
</tr>
<tr>
<td>• Algebraic and Geometric Mathematics</td>
</tr>
<tr>
<td>• Business Foundations</td>
</tr>
<tr>
<td>• Introduction to Calculus for Construction</td>
</tr>
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<td>• Materials Science and Testing</td>
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<tr>
<td>• Foundations of Project Management</td>
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<td>• QA/QC in Construction</td>
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<td>• Construction Project Financial Analysis</td>
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<tr>
<td>• Building Code and Regulations</td>
</tr>
<tr>
<td>• Management of Construction Sites</td>
</tr>
<tr>
<td>• Business Management and Strategy</td>
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<tr>
<td>• Construction Contract Administration and Law</td>
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<td>• Human Resources and Labour Relations Research</td>
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<td>• Construction Supply Chain and Risk Management</td>
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<td>• Construction Project Delivery Systems</td>
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<td>• Integrative Project Studio</td>
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<tr>
<td>• Non-Core Breadth Electives</td>
</tr>
</tbody>
</table>
## Durham College Degree Level Learning Outcomes

<table>
<thead>
<tr>
<th>Courses or course segments that contribute to achievement of outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Apply methods of inquiry, plan and conduct applied research, and/or engage in creative activity, in their primary area of study.</td>
</tr>
<tr>
<td>- Introduction to Construction Management</td>
</tr>
<tr>
<td>- Construction Methods, Materials, and Equipment</td>
</tr>
<tr>
<td>- QA/QC in Construction</td>
</tr>
<tr>
<td>- Research Methods</td>
</tr>
<tr>
<td>- Construction Project Financial Analysis</td>
</tr>
<tr>
<td>- Building Code and Regulations</td>
</tr>
<tr>
<td>- Sustainable Building Construction</td>
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<tr>
<td>- Human Resources and Labour Relations Research</td>
</tr>
<tr>
<td>- Integrative Project Studio</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Courses or course segments that contribute to achievement of outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Critically interpret and utilize qualitative and quantitative information.</td>
</tr>
<tr>
<td>- Algebraic and Geometric Mathematics</td>
</tr>
<tr>
<td>- Construction Estimating 1</td>
</tr>
<tr>
<td>- Introduction to Calculus for Construction</td>
</tr>
<tr>
<td>- Construction Estimating 2</td>
</tr>
<tr>
<td>- Building Information Modelling 1: Drafting and Drawings</td>
</tr>
<tr>
<td>- Construction Planning and Scheduling</td>
</tr>
<tr>
<td>- Materials Science and Testing</td>
</tr>
<tr>
<td>- Foundations of Project Management</td>
</tr>
<tr>
<td>- Building Information Modelling 2: Advanced</td>
</tr>
<tr>
<td>- Building Science and Systems</td>
</tr>
<tr>
<td>- QA/QC in Construction</td>
</tr>
<tr>
<td>- Construction Costs and Bidding</td>
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<td>- Building Code and Regulations</td>
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</tr>
<tr>
<td>- Integrative Project Studio</td>
</tr>
<tr>
<td>- Non-Core Breadth Electives</td>
</tr>
<tr>
<td>Durham College Degree Level Learning Outcomes</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
</tr>
</tbody>
</table>
| 6. Perform a range of established techniques.  | • Algebraic and Geometric Mathematics  
• Construction Estimating 1  
• Business Foundations  
• Introduction to Calculus for Construction  
• Construction Estimating 2  
• Building Information Modelling 1: Drafting and Drawings  
• Construction Planning and Scheduling  
• Materials Science and Testing  
• Foundations of Project Management  
• Building Information Modelling 2: Advanced  
• Building Science and Systems  
• QA/QC in Construction  
• Construction Organizational Behaviour  
• Construction Costs and Bidding  
• Field Placement (Mandatory)  
• Research Methods  
• Project Accounting Control  
• Construction Contract Administration and Law  
• Construction Supply Chain and Risk Management  
• Integrative Project Studio |
| 7. Communicate accurately and reliably, orally and in writing, to a range of audiences. | • Introduction to Construction Management  
• Construction Estimating 1  
• Business Foundations  
• Construction Estimating 2  
• Construction Planning and Scheduling  
• Foundations of Project Management  
• QA/QC in Construction  
• Field Placement (Mandatory) |
<table>
<thead>
<tr>
<th>Durham College Degree Level Learning Outcomes</th>
<th>Courses or course segments that contribute to achievement of outcome</th>
</tr>
</thead>
</table>
| 8. Evaluate and perform roles and responsibilities acknowledging limits of knowledge and abilities. | - Construction Methods, Materials, and Equipment  
- Construction Estimating 1  
- Business Foundations  
- Introduction to Architectural and Engineering Design  
- Construction Estimating 2  
- Construction Planning and Scheduling  
- Materials Science and Testing  
- Foundations of Project Management  
- QA/QC in Construction  
- Field Placement (Mandatory)  
- Construction Organizational Behaviour  
- Introduction to Construction Law  
- Research Methods  
- Management of Construction Sites |
<table>
<thead>
<tr>
<th>Durham College Degree Level Learning Outcomes</th>
<th>Courses or course segments that contribute to achievement of outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Construction Contract Administration and Law</td>
</tr>
<tr>
<td></td>
<td>• Human Resources and Labour Relations Research</td>
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<tr>
<td></td>
<td>• Construction Supply Chain and Risk Management</td>
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<tr>
<td></td>
<td>• Construction Project Delivery Systems</td>
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<tr>
<td></td>
<td>• Leadership in Construction Project Management</td>
</tr>
<tr>
<td></td>
<td>• Integrative Project Studio</td>
</tr>
<tr>
<td></td>
<td>• Non-Core Breadth Electives</td>
</tr>
</tbody>
</table>

9. Manage and maintain personal and professional lifelong learning.

|                                               | • Business Foundations                                     |
|                                               | • QA/QC in Construction                                    |
|                                               | • Work-Integrated Learning (Mandatory) (Optional)           |
|                                               | • Construction Organizational Behaviour                    |
|                                               | • Building Code and Regulations                             |
|                                               | • Sustainable Building Construction                        |
|                                               | • Non-Core Breadth Electives                                |
4.3.4 Non-Core Program Level Learning Outcomes

Non-core courses:
Non-core courses, as defined in the PEQAB guidelines, “are those that contribute to knowledge in fields unrelated to the main field(s) of study”. The non-core curriculum contributes to the achievement of:

a. Critical thinking, quantitative reasoning, written and oral communication skills;
b. Knowledge of society and culture, and skills relevant to civic engagement;
c. Knowledge in the humanities, sciences, social sciences, global cultures and/or mathematics; and
d. More than introductory knowledge of the distinctive assumptions and modes of analysis of a discipline outside the core field(s) of study.”

Breadth courses enhance the experience, awareness, and knowledge of the graduates as they take their place in the local and global community, professional groups, and the workplace.

Breadth courses have been subdivided into three categories:

1. Society and Commerce
   This category consists of but is not limited to, sociology, political science, Canadian Government, introduction to Canadian law, project management, economics and trade, and the role of social media.

2. Science and Technology
   This category includes environment (local and global), alternative energy sources, statistics, and other topics in basic sciences, natural sciences and technology.

3. Culture, Arts, Humanities and Self
   This category consists of Canadian culture, history, English literature, fine arts, leadership, ethics, critical thinking and technical writing, psychology, interdisciplinary studies, and life-long learning.

Non-core (breadth) learning outcomes:
1. Utilize critical thinking, research and inquiry skills, quantitative and qualitative reasoning, and scholarly written and oral communication skills.
2. Exhibit more than an introductory knowledge in the humanities, sciences, social sciences, global cultures and/or mathematics.
3. Express a comprehension of society, culture, diversity, and skills relevant to civic engagement.
4. Exhibit more than an introductory knowledge of the distinctive assumptions and modes of analysis of a discipline outside the core field of study.
### 4.4 Course Descriptions

#### 4.4.1 Program Map by Themes

<table>
<thead>
<tr>
<th>Sem</th>
<th>Engineering</th>
<th>Architecture</th>
<th>Construction Management</th>
<th>Experiential Learning Opportunities</th>
<th>Non-Core Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.1 Algebraic and Geometric Mathematics</td>
<td></td>
<td>1.3 Introduction to Construction Management</td>
<td></td>
<td>1.5 Communications 1: Critical Thinking and Writing</td>
</tr>
<tr>
<td></td>
<td>1.2 Construction Methods, Materials, and Equipment</td>
<td></td>
<td>1.4 Construction Estimating 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2.1 Introduction to Calculus for Construction</td>
<td>2.2 Introduction to Architectural and Engineering Design</td>
<td>2.3 Business Foundations</td>
<td></td>
<td>2.5 Breadth Elective</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.4 Construction Estimating 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3.1 Building Information Modelling 1: Drafting and Drawings</td>
<td></td>
<td>3.3 Construction Planning and Scheduling</td>
<td></td>
<td>3.5 Technical Writing</td>
</tr>
<tr>
<td></td>
<td>3.2 Materials Science and Testing</td>
<td></td>
<td>3.4 Foundations of Project Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year</td>
<td>Courses</td>
<td>Summer Field Placement – 14 Weeks (Optional non-credit)</td>
<td>Summer Field Placement – 14 Weeks (Mandatory non-credit)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>---------------------------------------------</td>
<td>--------------------------------------------------------</td>
<td>--------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4.1 Building Information Modelling 2: Advanced</td>
<td>4.4 Building Science and Systems</td>
<td>4.6 Breadth Elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.2 Building Structures</td>
<td>4.5 Field Placement Preparation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.3 Quality Assurance and Quality Control in Construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>5.1 Construction Organizational Behaviour</td>
<td>5.2 Introduction to Construction Law</td>
<td>5.5 Breadth Elective</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>5.2 Introduction to Construction Law</td>
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4.4.2 Core Course Descriptions

Semester 1

1.1 Algebraic and Geometric Mathematics
Students develop problem solving skills by applying topics of study to related practical problems. Topics of study include: unit conversion, review of algebra, advanced geometry, trigonometry and trigonometric functions as well as statistical analysis.

Students apply an understanding of spreadsheet software for graphing a variety of functions, and to solve more advanced mathematical problems in an engineering context.

4 hours/week (3 lecture, 1 lab)

1.2 Construction Methods, Materials, and Equipment
Students examine and study the common construction materials, site variables, equipment, and construction processes relating to residential and ICI construction sectors as influenced by environment and energy efficiency standards. The course provides a basic knowledge of the terminology, the history, and the physical and chemical properties of materials including an introduction to soil types. The course also explores manufacturing and fabrication processes, typical installation methods, and efficiency of utilization and organization in a construction, repurposing or renovation project. Also, the materials and products are evaluated in relation to their suitability as affected by their durability, performance, sustainability, and energy conservation. Metals, wood, concrete, masonry, steel, plastics, drywall, thermal insulations, insulating concrete forms, doors, and windows are among the materials reviewed.

4 hours/week (2 lecture, 2 lab)

1.3 Introduction to Construction Management
Students explore the breadth of concepts in the construction industry and develop a deeper knowledge of all of the factors that impact the industry through research-based analysis and trend awareness. The history of construction management as a profession is explored, with an emphasis on developing a broad knowledge of this discipline in relation to the project life cycle. This class highlights how the construction industry functions in relation to the gross domestic product (GDP) and how construction drives the economy from a theoretical and practical standpoint including an exploration of labour regulations and hiring practices. Students gain awareness of various stakeholders and analyze construction management processes that are routinely involved in construction projects in relation to the various sectors of the industry. Topics such as design- bid-build, design-build, and construction management at risk (CMAR) are covered. Career opportunities in the construction industry are introduced and explored along with an introduction to the type of contracts and contractors found in the sector.

3 hours/week (3 lecture)
1.4 Construction Estimating 1
This course introduces students to the history behind estimating and pricing of construction projects, and the bidding procedure commonly used in the construction industry as well as basic principles of project definition and scoping, input requirements, and estimating for a construction project. The course covers general principles of measurement of construction work, focusing on sound estimating procedures, application and importance of estimating in the project life cycle. The course emphasizes specific methods of measurement, quantity surveying and the use of estimating forms for earthworks, masonry, above-grade concrete, and wood frame.

3 hours/week (1 lecture, 2 lab)

1.5 Breadth Elective: Communications 1: Critical Thinking and Writing
This course introduces students to essential writing skills for business. Types of scholarly and non-scholarly writing will be reviewed. Grammar, style, and standards for different audiences will be explained and reinforced through practice. Methods to construct and critically evaluate arguments will be explained. Research, organization, revision, layout, and copy editing skills will be developed through group and individual assignments.

3 hours/week

Semester 2

2.1 Introduction to Calculus for Construction
This course explores integral calculus and its application to construction scenarios. Vectors and their components and application in relation to force and motion are also addressed.

4 hours/week (3 lecture, 1 lab)

2.2 Introduction to Architectural and Engineering Design
The purpose of this course is to provide students with a foundational understanding of architectural and engineering theory as it relates to the construction industry. Topics covered include architecture and engineering history, specifically how the discipline came to be, the roles and responsibilities within the discipline, and basic principles of design and construction such as responsible design theory.

3 hours/week (3 lecture)

2.3 Business Foundations
In this course, learners are introduced to management techniques, the management of financial resources through business accounting techniques, organizational theory, business planning, marketing and business promotion, and ethical business practices. This course covers a wide variety of fundamental topics that relate to management such as micro and macro economic principles. Learners explore the historical factors that affect the success of businesses in Canada, the different types of businesses competing in a global economy, and the entrepreneurial spirit and character to start a business.
2.4 Construction Estimating 2
This course builds upon the foundation principles for estimating materials, labour and equipment including advanced principles of project definition and scoping, input requirements and estimating for a construction project. The course covers general principles of measurement of construction work, focusing on sound estimating procedures and application for quantifying mechanical, electrical, finishes, and exterior systems, as well as miscellaneous work items within the project life cycle.

3 hours/week (2 lecture, 1 lab)

Semester 3

3.1 Building Information Modelling 1: Drafting and Drawings
The main objective of this course is to familiarize students with the tools needed to create a model and to document a project using Revit structure. This course deals with the techniques and standards required to communicate graphically. Students' ability to interpret and read architectural and construction plans, drawings, terminology, scales, symbols, and specifications used in residential and industrial, commercial, and institutional (ICI) construction are explored.

The course covers the basic principles of Revit Structure Technology and Building Information Modelling (BIM). Revit structure 2017 is demonstrated with extensive hands-on experience in a computer lab. Different topics are covered such as the advantage of BIM, Revit interface, modelling tools, and building structure elements including columns, beams, beam systems, floors, foundation, reinforcement, toposurface, annotations, detailing, sheets, and printing.

3 hours/week (3 lab)

3.2 Materials Science and Testing
Students learn about the importance of understanding how materials react to the environment in which they are used. This theory and practice course lays the necessary foundation for understanding the science behind internal axial load, shear, and bending on simple structural material. The effects on materials are expressed quantitatively in terms of stress and strain using mathematical and physical analysis through testing.

Students assess the adequacy of beams, columns, and shafts to theoretically predict various failure modes based on standards. Students carry out a number of experiments that help them to understand and visualize how structural materials and soils behave under various conditions.

4 hours/week (2 lecture, 2 lab)
3.3 Construction Planning and Scheduling
This course introduces students to the various concepts and tools for construction planning, scheduling, and control using network methods of project scheduling, such as AON, PERT, bar-charting, line-of-balance, and VPM techniques in order to effectively manage project deliverables. Current concepts and computer applications are used for scheduling, recommendations, resource allocation, and time/cost analysis.

3 hours/week (3 lab)

3.4 Foundations of Project Management
This course provides the theory and concepts for students to plan, organize, and manage resources and to take a leadership role in the successful completion of a specific project for a client. Bringing a project in on schedule, on budget, and up to design standards are key components of the course, which includes discussion of the skills, tools, and the techniques needed to manage projects successfully as part of a team through effective communication (oral and textual) throughout a project life cycle. Students apply cost-control practices, assist with planning, sequencing, phasing, and scheduling of work for projects, as well as assist in preparing project status reports for review and recommendation to clients. Safety plans compliant with the Ontario Health and Safety Act, as well as professional ethical practices are an important component of the course.

3 hours/week (3 lecture)

3.5 Breadth Elective: Technical Writing
In this course, students are familiarized with the appropriate communication skills and the expectations of professional communications with clients, through letters, memos, and emails and also focuses on the skills required to produce technical reports and documentation. Research skills required for writing accurate technical reports for projects, and completing Requests for Proposals (RFPs), Requests for Qualifications (RFQs), and prequalification are emphasized in this course.

3 hours/week

Semester 4

4.1 Building Information Modelling 2: Advanced
This course provides practical applications of advanced Building Information Modelling (BIM) practices in architecture, engineering, and construction (AEC) design processes as well as the stages of estimating/defining the requirements of a construction project. Specific focus on BIM as a management tool during construction project delivery are examined, using hypothetical and actual construction projects and scenarios.

3 hours/week (3 lab)
4.2 Building Structures
Students explore the theory and design concepts of different construction systems and practices used for residential, industrial, commercial, and institutional purposes. Students focus on the Canadian construction industry by researching previous construction projects and plans. Students are introduced to framing techniques, components, and systems used in the industry; these include concrete, steel, and timber construction as well as how to determine a foundation system. Concepts in this course include loading on structural members, structural details, and construction requirements.

3 hours/week (3 lecture)

4.3 Quality Assurance and Quality Control in Construction
Quality Assurance (QA) and Quality Control (QC) are extremely important aspects of any construction project without which successful completion of the project can’t be imagined. This course starts with the history of QA and QC to provide the analytical theory behind quality concepts. The course covers general QA and QC Policy, and the QA/QC Manager’s Responsibilities. Students learn about the following topics: Site Procedures, Inspection and Testing, Use of statistics, Inspection Planning, Material Procurement and Storage, Procurement Process, Civil Materials Storage, Quality Control Planning, Concrete Mixing and Testing, Layout of work, Work by subcontractors, Reinforcing steel, ISO Standards, Inspection to meet all requirements for project close-out, Civil QC Records and Reports, QA/QC Meetings, and QA/QC Reviews.

3 hours/week (3 lecture)

4.4 Building Science and Systems
This course addresses the design overview of various building systems for houses and larger buildings including heating, ventilation, air conditioning, plumbing, water, waste, fire control, security, and electrical systems. The technical and theoretical principles of the physical science of building infrastructures as it specifically relates to human comfort such as thermal and moisture considerations are addressed. The focus of the course is to provide a fundamental understanding of the components that are important to functionality and safety. Public safety issues are also discussed in terms of technical requirements.

3 hours/week (3 lecture)

4.5 Field Placement Preparation
This course is designed to prepare students for their field placement experience. Students will learn about the roles and responsibilities of those in the field of construction management, the various companies and organizations in which they are employed, and the placement opportunities available that will facilitate progression towards their professional goals and aspirations. Students will be introduced to placement search techniques, field placement learning objectives, roles of company supervisors, and college advisors. To succeed in this course, students will complete the
necessary forms and paperwork required for field placement as well as participate in the selection process for field placement.

1 hour/week (1 lecture)

**Field Placement (Optional non-credit)**
The field placement learning experience is viewed as an integral part of the Bachelor of Construction Management. The practical aspects of construction management, in conjunction with the academic studies, enables the student to better understand methods and techniques for construction activities and working collaboratively with people. Field placements are expected to reflect and to contribute to the program learning outcomes. Students will experience working in the construction industry and situations where contributions and success are evaluated in a different manner than in an academic setting.

420 optional hours total

**Semester 5**

5.1 **Construction Organizational Behaviour**
This course provides a study of the history, theories, principles, and practices of supervision in organizations. Emphasis is placed on how supervisors organize an effective work unit, initiate change, stimulate individual or group performance, and cope with workplace dynamics. Effective oral communication skills are stressed and practiced.

3 hours/week (3 lecture)

5.2 **Introduction to Construction Law**
This course is an introduction to the principles of contract law as they relate to the construction industry. The various types of construction contracts, including labour contracts, and bidding documents are introduced and examined. This subject introduces standard forms which are used in the construction industry and issued by the Canadian Construction Documents Committee and the Canadian Construction Association. Concepts such as insurance, liability, tort law, construction bonding, warranties and guarantees, and the Construction Lien Act are addressed along with project close-out. Professional ethics as they relate to the discipline, as well as alternative dispute resolution (negotiation) and various contract types, are covered.

3 hours/week (3 lecture)

5.3 **Construction Costs and Bidding**
Successful financial and cost management of construction projects within budget, deadlines, and resource limitations is essential to construction management. This course emphasizes cash flow, overhead, trends, accounting functions, and projections in cost-control theory. Students apply quantity surveying principles to further develop and learn pricing, bidding, and tendering as well as project cost-control techniques when recommending alternatives in construction projects. Through practical
assignments and a two phase project allow the student to demonstrate and apply cost-control techniques. These essential principles of estimating quantity and price for materials, equipment, and labour considerations are developed with practical assignments that prepare students for a bid submission of a construction project in the National Bid Competition held by the The Construction Institute of Canada (TCIC) in Semester 6.

4 hours/week (2 lecture, 2 lab)

5.4 Research Methods
The course introduces students to the research process and its main activities, including hypothesis formulation and data collection and analysis, literature review, etc. within quantitative, qualitative, and mixed methods approaches to research. The students will gain the knowledge and skills required for critically evaluating published research, conducting their own research projects, and understanding the importance of research ethics and integrating it into the research process.

3 hours/week

Semester 6

6.1 Management of Construction Sites
This course includes the theory and practice of construction site supervision, leadership, and management as applied in the construction industry. Students learn the processes involved in controlling a project, planning managerial activities, as well as organizing jobs, duties, deliverables, and resources as part of a multi-disciplinary team. This course uses case studies and in-class discussions to help learners explore direct on-site activities and how to communicate instructions to employees as well as the wide range of activities required of a site superintendent (such as worksite control, purchase orders, material control, budget control, cost control, estimating, contract control, progress reports and scheduling).

3 hours/week (3 lecture)

6.2 Building Codes and Regulations
This course is designed to familiarize students with the concepts and details of the Ontario Building Code (OBC). Students study how the Building Code was crafted, as well as the regulatory and compliance requirements at each government level (municipal by-laws, provincial legislation, and federal law). The uses of the objective-based code format used in the National Building Code and the OBC is a component of this course. This course focuses on the functionality of OBC Act and differences between its parts. The classification of buildings based on size, height, and occupancy are studied as specified in Part 9 and Part 3 of the OBC. This course also explores accessibility from the OBC as it relates to AODA requirements. Building system requirements for new construction are reviewed along with the change of use and renovation objectives for existing buildings.

3 hours/week (3 lecture)
6.3 Project Accounting Control
This course aims to provide students with knowledge and application of theory to have an effective cost-control system to achieve the estimated profit on projects and to monitor and predict results of project deliverables through the use of accounting principles.

Students explore the techniques used to control costs, with an emphasis on financial statements, financial ratios, applications of engineering economy, cash flow analysis, financing, and cost information systems. These essential principles of project cost control are be developed through a project which students will submit at the end of the semester.

4 hours/week (2 lecture, 2 lab)

6.4 Construction Project Financial Analysis
This course is primarily concerned with property development, investment, and finances. Topics covered are development processes, researching and selecting sites, market trends, ethical cost estimating, developing integrated financial cash flow, land development, lease, buy or build analysis, project economics during construction, financial modeling using spreadsheet software, risk analysis, and recommendations. The course also reviews the different types of project finance and delivery methods. These essential principles of project cost planning are be developed through a project which students will submit to the National Bid Competition.

3 hours/week (3 lecture)

Field Placement (Mandatory non-credit)
The field placement learning experience is viewed as an integral part of the Bachelor of Construction Management. The practical aspects of construction management, in conjunction with the academic studies, enables the student to better understand methods and techniques for construction activities and working collaboratively with people. Field placements are expected to reflect and to contribute to the program learning outcomes. Students will experience working in the construction industry and situations where contributions and success are evaluated in a different manner than in an academic setting.

420 optional hours total
Semester 7

7.1 Sustainable Building Construction
This course focuses on sustainable construction through an introduction to environmental science. Principles such as: problem definition, social, economic and environmental sustainability, measures of sustainability over the life cycle, examination of current industry practices such as carbon emissions, lean construction and recycling, and the financial and resource impacts of sustainable construction are framed with reference to environmental impact. This course also includes an independent student investigation and research component on new methods of sustainability. The course prepare students for the Leadership in Energy and Environmental (LEED©) Green Building Rating System certification exam as well as the Building Research Establishment Environmental Assessment Method (BREEAM).

3 hours/week (3 lecture)

7.2 Business Management and Strategy
This course covers a wide variety of topics that relate to strategically managing a business. It looks at the key concepts, principles and tools as it relates to strategy formulation and gaining a competitive advantage. It will examine the decisions, analyses and actions that are taken at the managerial level within businesses and the effect they have on company performance. The course will guide students through how to create competitive advantages, formulate business strategies and also look at ways to implement these strategies.

3 hours/week (3 lecture)

7.3 Construction Contract Administration and Law
This course focuses on the rights of the parties under a standard construction contract in relation to legal obligations. The course includes a practical application and examination of clauses related to instructions, changes, progress payments, holdbacks, and completion certificates.

Leadership skills and negotiation techniques are also reviewed and applied in a practical context including the completion of RFPs and RFQs. Utilization of construction administration documents, systems, and procedures to meet project requirements are also be explored. The course will also look at CCDC, general conditions of a contract, supplemental general conditions, information for tenderers, order of precedence, substantial performance, and release of funds.

3 hours/week (3 lecture)

7.4 Human Resources and Labour Relations Research
In this course, students explore foundational theories in organizational behaviour and use human resource strategies related to the construction industry in real-world applications. Students use research skills to explore labour relations, health and safety, and historically relevant construction methods.
Students are introduced to the foundational principles of strong leadership and team management by examining effective strategies for hiring, motivating, managing, and retaining staff. In the course, students discuss the strategic importance of Human Resources and the role of HRM; competitive challenges facing Human Resources; job analysis and design; Human Resources planning; recruitment and selection; health and safety; and employee rights and discipline.

4 hours/week (2 lecture, 2 lab)

Semester 8

8.1 Construction Supply Chain and Risk Management
This course covers construction procurement processes and supply chain management. It reviews procurement strategies, procurement of goods, services and works, types of contracts and associated risk assessment and management in the procurement process. The course also explores project delivery methods and the bidding process including bid evaluation, selection, and award. Students also assess contract administration, project control and monitoring, construction site and project management in a team setting. The course examines integration of supply-chain management to the construction processes for the successful procurement of deliverables with an in-depth review of procurement risks, concepts, and applications.

3 hours/week (2 lecture, 1 lab)

8.2 Construction Project Delivery Systems
This course provides students with exposure to alternative project delivery methods and expands on leadership roles in project delivery. Key topics covered include Design-Bid-Build, Design-Build, Construction Management for Services Only, Construction Management at Risk, Public-Private Partnerships, Integrated Project Delivery, Lean Construction, and Program Management, as well as Integrated Design and Sustainability. Course learning is achieved through the review of real contracts and actual case studies, participation in group competition, and preparation of realistic project delivery proposals.

3 hours/week (3 lecture)

8.3 Leadership in Construction Project Management
This course explores leadership needs for the industry and leadership trends. Using historical data, students will analyze challenges in construction management cases and projects. This course will explore project manager functions in the project life cycle in order to be an industry leader. Students will learn from those in the industry to develop their own leadership ability and style. Students will also review the different construction management professional certifications related to the program.

3 hours/week (3 lecture)
8.4 Integrative Project Studio
In this course students practice and apply knowledge and skills to successfully complete a construction project through the project lifecycle as part of a team. Students work with a prime consultant, an owner of a project, where they will have to construct a project in a team setting.

Students apply knowledge of construction procurement and risk management, as well as contract administration. Students use research about construction materials, theory, and methods in order to successfully bring their project to completion. Problems that arise during the life cycle of the project provide and involve student's technical, analytical, and creative skills.

4 hours/week (1 lecture, 3 lab)
### 4.4.3 Non-Core Courses

Lower versus Upper Level Course Characteristics:
- All lower level courses are foundation courses.
- All upper level courses require that students have completed one lower level breadth course in at least two of the three breadth categories as a prerequisite.
- Students are required to complete one upper level breadth courses in at least two of the three breadth categories.

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<td>Upper Level</td>
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<td>HURS 22001</td>
<td>Leadership- Emotionally Intelligent Manager</td>
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4.4.4 Non-Core Course Descriptions

Society and Commerce (Lower)

Principles of Microeconomics
This course presents the fundamental concepts of a principal area of economics, identified as microeconomics. It provides the basis for economic thinking and analysis in the workplace and the community. It also offers the foundation for further studies in the field of economics. The course considers supply and demand and the processes and influences in a market economy. The course investigates the decision making processes of both consumers and companies and their interrelationships involving consumption activities, cost theories and optimal production determinations. The causes of significant market weakness are investigated and possible influences in altering public policy to improve market performance are explored.

3 hours/week.

Political Science
This introductory course provides a concise analysis of the most important federal political institutions in Canada and how they function. The course describes and dissects key elements of federal institutions, providing enough history to place them in a modern context. While the emphasis is on Canada, a cross cultural perspective is often used for comparative analysis. Students will be evaluated through a combination of in-class assignments, a group assignment, and in-class quizzes and tests.

3 hours/week.

Canadian Law – An Introduction
This introductory course is designed to introduce the student to the historical context and operation of our legal system, the institutions within the system, roles of persons within those institutions and the process of thought which applies to current Canadian legal issues. Students in this course should gain a general understanding of how laws are defined, created, implemented and interpreted to give meaning and solutions to modern social problems. Students will apply the function of law in a practical manner through case scenarios and/or case analyses. Concepts introduced in the course will be analyzed through various exercises and tests utilizing true/false, multiple choice and short answer components.

3 hours/week.

Introduction to Sociology
Sociology is the study of people and how they interact with each other and various social groups. This course deals with the study of people's lives, their relationship to society as a whole, and how people are affected by the society in which they live. The concepts, theories and methods of the discipline will be introduced and discussed with particular emphasis on the dynamics of Canadian society and Canadian social problems.
Society and Commerce (Upper)

Leadership- Optimizing Results through Others
Leadership competencies are examined so that students gain an enhanced appreciation for the essentials of excellent management. Coaching is introduced as a prime method of improving leadership capabilities along with delegation of responsibilities, time management and other leadership factors. Students study concepts of maximizing personal and group performance utilizing various management, dispute resolution and coaching styles. Students are challenged to evaluate and develop practical leadership skills for the workplace and the community.

3 hours/week.

Leadership- Emotionally Intelligent Manager
This course examines emotional intelligence, its definition and its role in leadership competency. The feelings and emotions of a leader affect her or his actions and decisions. The dynamics of feelings and emotions within a team influences the effectiveness and productivity of a team as well as its organizational climate. In the context of leadership theory, the course investigates the nature of emotions and the influences of the emotions of the leader impacts the attitudes of the group. The relationship between positive emotions and proficient performance and informed decisions is evaluated. Similarly, the impact of hiding or suppressing ones emotions is studied. The course is intended to assist the student in enhancing the development of their own leadership competencies and stimulate them to continuously improve their emotional intelligent leadership skills in career and community applications.

3 hours/week.

Issues in Sociology
The basic premise of sociology is that human existence is social existence. This continuation course from Introduction to Sociology expands on the notions of sociology’s unique perspectives, key concepts, and modes of exploring the social world. Issues in Sociology will further explore the study of the interaction of people with each other and with various social groups, with special emphasis on the contemporary topics of gender, poverty, homelessness, Aboriginals, health care, and the environment.

3 hours/week.

Science and Technology (Lower)

Astronomy: Exploring the Night Sky
Students in this course will examine celestial objects and phenomena that originate outside the atmosphere of Earth. Celestial objects such as our moon, sun, planets, stars, nebulae, meteoroids, asteroids, comets and galaxies will be explored. Students will use scientific inquiry to develop an understanding of how matter and energy influences our universe. Students will also uncover the mysteries behind how a telescope works, the Earth’s seasons, and the evolution of stars. Students will be evaluated through research, small group discussions, and hands on activities.
Technology - Its History and Implications
The course highlights some of the key technological advancements over many centuries. Students will examine the changing interface between technology and society and investigate how the advancements have and are impacting society in different ways. There have been massive improvements in convenience and productivity but everyone has not benefitted equally from the advancements. The course first examines the history of agricultural development and the associated societal shifts. Changes in thinking during the renaissance period are examined and the technological developments during the industrial revolution are examined. Considerable focus is placed on the electrical and electronic revolution and the effects on the resulting, more recent, pervasiveness of surveillance are discussed. Various theories of technology are examined. Significant advancement in food safety and medicine are also highlighted.

3 hours/week.

Introduction to Ecology
This course introduces the principles of ecology and focuses on the factors that influence ecosystems. After a general discussion of aquatic and terrestrial environments, individual components of an ecosystem are examined and their interrelationship with the environment. Populations and species interaction are examined as the course takes a broader view of ecology. The course content broadens into community and ecosystem ecology. In acquiring knowledge of the individual components and factors initially, it is easier to grasp the concepts of larger ecosystems. The course culminates with the study of human impacts on ecology with the study of resource use, habitat loss, biodiversity, and conservation. 3 hours/week.

Science and Technology (Upper)

Environmental Protection and Global Wellness
Learn more about the prominent environmental issues of our time. This course focuses on current environmental issues that present varying degrees concern to the health of humans, ecosystems and our planet. It examines the topics beyond the media headlines and looks at the policies, politics and basic science of the many of the interesting environmental challenges. Topics include, but are not limited to, climate change, arctic ecosystems, water conservation and water quality, endocrine disrupting substances (gender benders), resource depletion, the dilemma of pesticide use and natural toxins in foods. The course begins with a brief look at the responsibilities of the federal, provincial and municipal governments as they relate to environmental jurisdiction. Then, each issue will be considered in the Canadian and global context. As the major environmental issues change, the course topics are adjusted to match the contemporary issues of importance.

3 hours/week.
Green and Alternative Energy Sources
Students investigate the popular interest in solar, wind, geothermal and other green and alternative energy systems and their current contribution to the electrical supply in Ontario. Students study active and passive solar systems applied to residential and commercial sectors. The fundamentals of collecting energy from sunlight and converting it into electricity are examined. Also, the basic principles of solar thermal are explored. This course introduces the basic design, principles of installation and operation of geothermal systems. Students observe the operation and control of the geothermal systems at both the Whitby and Oshawa campuses of DC. The basic theory of harvesting energy from wind is introduced. Through the combination of fundamental principles and practical studies, students identify and compare the operating principles of different commercially available wind turbine designs. A brief introduction of the fundamentals of nuclear energy for generation of electricity is studied. Other clean energy alternatives including biomass gasifiers are studied.

3 hours/week.

Cancer Influences – Science and Society
Students in this course will use a variety of perspectives to broadly examine how science, technology and society have advanced the prevention, diagnosis, and treatment of common cancers. Students will explore the basis of cancer biology, critically examine factors that increase cancer risk, and analyze the effectiveness of current technologies in order to relate scientific inquiry to public perception of cancer, informed decision-making, and cancer citizenship within local and global contexts. Students will be evaluated using a combination of tests, written and oral assignments, and projects in which they will critically examine factors influencing the cancer landscape.

3 hours/week.

Culture, Arts, Humanities and Self (Lower)
Communications 1: Critical Thinking and Writing
This course introduces students to essential writing skills for business. Types of scholarly and non-scholarly writing will be reviewed. Grammar, style, and standards for different audiences will be explained and reinforced through practice. Methods to construct and critically evaluate arguments will be explained. Research, organization, revision, layout, and copy editing skills will be developed through group and individual assignments.

3 hours/week.

Canadian Culture
This course engages the student to critically reflect on Canada's complex social, economic, political, environmental and cultural realities with an interdisciplinary approach to contemporary issues that contrasts widely circulated assumptions and ideas with critical viewpoints. Canadian society is characterized by a multitude of social cleavages based on history, geography, language, ethnic origins, gender, ability and
economic status which, taken together, provide differing views of the nation’s identity. The student will be offered the opportunity to explore those views and analyze the factors that inform them through readings and discussions from conventional viewpoints as well as writings of academics and writers from marginalized segments of Canadian society.

3 hours/week.

**Introduction to Canadian Literature**
This course seeks to introduce students to Canadian literature in all its facets and complexities. It will provide students with a wide-ranging overview of Canadian literature, its major authors and their works. Students will explore what it means to be a part of a culture and identity which is distinctly Canadian and discover how this defines its literary cannon. The intricate, convoluted, and often vexing question of what defines Canadian identity has been habitually reflected in its literature, rendering its study a truly warranted and significant academic pursuit.

3 hours/week.

**Ideas that Matter: An Introduction to Ancient Greek Philosophy**
Ancient Greek philosophy is the first chapter of Western philosophy, and in many ways an unparalleled one. We will discuss the emergence of Western thought (philosophy and science) about 2600 years ago in the city of Miletus. Then we will study the philosophers who followed: Parmenides, the Sophists, Socrates, Plato and Aristotle, among others. Some of the questions we are going to explore are: What is the nature of reality? What does it take to know something? What is man’s place in the universe? What is the best political system? What is a life worth living? We shall attempt to find answers through lectures and class discussion. Students will be evaluated by a variety of written assignments, discussions, and tests.

3 hours/week.

**Introduction to Psychology**
Following a brief history of psychology this course introduces students to the basic concepts and issues of modern psychology including the scientific study of behaviour, motivation, personality development, learning, consciousness, sensation and perception, the biological basis of behaviour and social psychology. Connections to everyday experiences will ground the introduction through student-centred learning activities.

3 hours/week.

**Technical Writing**
In this course, students are familiarized with the appropriate communication skills and the expectations of professional communications with clients, through letters, memos, and emails and also focuses on the skills required to produce technical reports and documentation. Research skills required for writing accurate technical reports for projects, and completing Requests for Proposals (RFPs), Requests for Qualifications (RFQs), and prequalification are emphasized in this course.
Culture, Arts, Humanities and Self (Upper)

Classical Mythology
Of all the traditions handed down by the Greeks and Romans, their mythology has been one of the most far-reaching and longest-lasting. It has inspired artists, writers, philosophers, composers and filmmakers from countless peoples over countless generations. The aim of this course is to help students acquire a familiarity with the principal classical myths, and the ways those myths are represented in Greek and Roman literature and art. A familiarity with this material will significantly enrich one’s appreciation of art, literature and music, as well as provide fascinating insights into past and present western cultures.

3 hours/week.

Social Media and Society
In this course, students will examine the major developments in social media and explore in depth how social media is changing media, business, government, the economy, development and education in fundamental ways. In conjunction, focus will be placed on new research trends that are motivated by social media. Driven by classical sociological theory and contemporary industry data, students will think critically about the impact of the profound changes to the global communication landscape with the advent of explosive social media tools such as Facebook, YouTube, Wikipedia, and Twitter. Further, students will examine the correlation between the exploding social media market and its use in promotion for both profit and not for profit organizations. Students will be introduced to a variety of social media environments and controversial arguments that surround the use of social media in today’s society. This course requires active participation of students and a willingness to immerse in social media practices.

3 hours/week.

Curiosity: Malcolm Gladwell and Social Science
In this course, students will examine a selection of writings by social scientist, journalist and cultural commentator Malcolm Gladwell. The course is organized into three parts: Part I: Theories, Predictions and Diagnoses, Part II: Obsessives, Pioneers and Other Varieties of Modern Genius, and Part III: Personality, Character and Intelligence. Each section will link existing social science research with stories of real people and events. Students will explore the implications of this research and its impact on their day-to-day lives. Emphasis will be placed on examining conventionally unchallenged social concepts, such as intelligence, success and reason, through the lenses of curiosity and critical thinking.

3 hours/week.
### 4.6 Course Schedule II

<table>
<thead>
<tr>
<th>Year and Semester</th>
<th>Course Title</th>
<th>Total Core Course Semester Hours</th>
<th>Total Non-Core Course Semester Hours</th>
<th>Course Prerequisites and Co-Requisites</th>
<th>Highest Qualification Earned and Discipline of Study</th>
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<td></td>
<td>1.2 Construction Methods, Materials, and Equipment</td>
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<td></td>
<td>1.3 Introduction to Construction Management</td>
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<td>1.4 Construction Estimating 1</td>
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<td>PhD in construction management or related field</td>
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<td></td>
<td>1.5 Communications 1: Critical Thinking and Writing</td>
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<td>2.1 Introduction to Calculus for Construction</td>
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<td>1.3 Algebraic and Geometric Mathematics</td>
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<td>2.2 Introduction to Architectural and Engineering Design</td>
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<td>PhD in construction management or related field</td>
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<tr>
<td>Year and Semester</td>
<td>Course Title</td>
<td>Total Core Course Semester Hours</td>
<td>Total Non-Core Course Semester Hours</td>
<td>Course Prerequisites and Co-Requisites</td>
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<td>Building Information Modelling1: Drafting and Drawings</td>
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<td>2.2 Introduction to Architectural and Engineering Design</td>
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<td>Foundations of Project Management</td>
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<td>2.4 Construction Estimating 2</td>
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<tr>
<td>Year and Semester</td>
<td>Course Title</td>
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<td>Total Non-Core Course Semester Hours</td>
<td>Course Prerequisites and Co-Requisites</td>
<td>Highest Qualification Earned and Discipline of Study</td>
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<td>Building Information Modelling 2: Advanced</td>
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<td>Building Structures</td>
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<td>Quality Assurance and Quality Control in Construction</td>
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<td>3.4 Foundations of Project Management</td>
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<td>Building Science and Systems</td>
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<td>Field Placement Preparation</td>
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<td>Total Non-Core Course Semester Hours</td>
<td>Course Prerequisites and Co-Requisites</td>
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<td>5.1 Construction Organizational Behaviour</td>
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<td>5.2 Introduction to Construction Law</td>
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<td>5.3 Construction Costs and Bidding</td>
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<td>2.4 Construction Estimating 2</td>
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<td>5.4 Research Methods</td>
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<td>Doctor of Business Administration, Finance; Master of Business Administration, General Business</td>
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<td>5.5 Breadth Elective</td>
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<td>Semester 6</td>
<td>6.1 Management of Construction Sites</td>
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<td>3.3 Construction Planning and Scheduling</td>
<td>Master of Arts or Master of Science in construction management</td>
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<td>6.2 Building Codes and Regulations</td>
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<td>4.2 Building Structures</td>
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<td>Year and Semester</td>
<td>Course Title</td>
<td>Total Core Course Semester Hours</td>
<td>Total Non-Core Course Semester Hours</td>
<td>Course Prerequisites and Co-Requisites</td>
<td>Highest Qualification Earned and Discipline of Study</td>
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<tr>
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<td>Field Placement – Mandatory (14 weeks / 420 hours)</td>
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<td>Semester 7</td>
<td>7.1 Sustainable Building Construction</td>
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<td>7.2 Business Management and Strategy</td>
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<td>5.2 Construction Organizational Behaviour</td>
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<td></td>
<td>7.3 Construction Contract Administration and Law</td>
<td>42</td>
<td>5.2 Introduction to Construction Law</td>
<td>Master of Arts in Law</td>
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<td></td>
<td>7.4 Human Resources and Labour Relations Research</td>
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<td>6.1 Management of Construction Sites</td>
<td>Master of Education</td>
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</table>

Honours Bachelor of Construction Management  
Section 4, Page 312
<table>
<thead>
<tr>
<th>Year and Semester</th>
<th>Course Title</th>
<th>Total Core Course Semester Hours</th>
<th>Total Non-Core Course Semester Hours</th>
<th>Course Prerequisites and Co-Requisites</th>
<th>Highest Qualification Earned and Discipline of Study</th>
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<td>8.1</td>
<td>Construction Supply Chain and Risk Management</td>
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<td>3.3 Construction Planning and Scheduling</td>
<td>PhD in Supply Chain and Operations</td>
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<td>8.2</td>
<td>Construction Project Delivery Systems</td>
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<td></td>
<td>7.3 Construction Contract Administration and Law</td>
<td>PhD in construction management or related field</td>
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<td>8.3</td>
<td>Leadership in Construction Project Management</td>
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<td>7.4 Human Resources and Labour Relations Research</td>
<td>PhD in construction management or related field</td>
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<td>8.4</td>
<td>Integrative Project Studio</td>
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<td>5.5 Research Methods</td>
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<td>8.5</td>
<td>Breadth Elective</td>
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<tr>
<td><strong>Field Placement (Mandatory)</strong></td>
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<td>Year and Semester</td>
<td>Course Title</td>
<td>Total Core Course Semester Hours</td>
<td>Total Non-Core Course Semester Hours</td>
<td>Course Prerequisites and Co-Requisites</td>
<td>Highest Qualification Earned and Discipline of Study</td>
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<td>2226 (plus optional 420 hour field placement)</td>
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</table>
4.7 Non-Core Elective Schedules

Lower versus Upper Level Course Characteristics:

- All lower level courses are foundation courses.
- All upper level courses require that students have completed one lower level breadth course in at least two of the three breadth categories as a prerequisite.
- Students are required to complete one upper level breadth courses in at least two of the three breadth categories.

4.7.2 Non-Core Elective Course Schedule II

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Total Non-Core Course Credit Hours</th>
<th>Level</th>
<th>Designation</th>
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<tbody>
<tr>
<td>Principles of Microeconomics</td>
<td>3</td>
<td>Lower</td>
<td>PhD, Business Administration in Management Science</td>
</tr>
<tr>
<td>Political Science</td>
<td>3</td>
<td>Upper</td>
<td>PhD, History</td>
</tr>
<tr>
<td>Canadian Law – An Introduction</td>
<td>3</td>
<td>Upper</td>
<td>LLM or JD</td>
</tr>
<tr>
<td>Introduction to Sociology</td>
<td>3</td>
<td>Lower</td>
<td>PhD, Sociology</td>
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<tr>
<td>Leadership – Optimizing Results Through Others</td>
<td>3</td>
<td>Lower</td>
<td>Master of Business Administration</td>
</tr>
<tr>
<td>Leadership – Emotionally Intelligent Manager</td>
<td>3</td>
<td>Lower</td>
<td>Master of Business Administration</td>
</tr>
<tr>
<td>Issues in Sociology</td>
<td>3</td>
<td>Lower</td>
<td>PhD, Sociology</td>
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<tr>
<td>Astronomy: Exploring the Night Sky</td>
<td>3</td>
<td>Upper</td>
<td>Master of Science, Astronomy</td>
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<tr>
<td>Technology: Its History and Implications</td>
<td>3</td>
<td>Lower</td>
<td>PhD, Philosophy of Science and Technology</td>
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<tr>
<td>Introduction to Ecology</td>
<td>3</td>
<td>Upper</td>
<td>PhD in Applied Bioscience; Masters in Applied Bioscience</td>
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<td>Environmental Protection and Global Wellness</td>
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<td>Upper</td>
<td>PhD in Applied Bioscience; Masters in Applied Bioscience</td>
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<td>Credits</td>
<td>Year Level</td>
<td>Degree Requirement</td>
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<td>Green and Alternative Energy Sources</td>
<td>3</td>
<td>Lower</td>
<td>PhD, Earth Sciences, Environmental or Related Field</td>
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<tr>
<td>Cancer Influences – Science and Society</td>
<td>3</td>
<td>Upper</td>
<td>Master of Science, Molecular Genetics</td>
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<tr>
<td>Communications 1: Critical Thinking and Writing</td>
<td>3</td>
<td>Lower</td>
<td>Master of Arts, English Literature</td>
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<td>Canadian Culture</td>
<td>3</td>
<td>Lower</td>
<td>Master of Arts, Canadian Studies and Indigenous Studies</td>
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<td>Technical Writing</td>
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<td>Lower</td>
<td>Master of Arts</td>
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<tr>
<td>Introduction to Canadian Literature</td>
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<td>Upper</td>
<td>Master of Arts, English Literature</td>
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<td>Ideas that Matter: An Introduction to Ancient Greek Philosophy</td>
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<td>Lower</td>
<td>PhD, Philosophy</td>
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<td>Introduction to Psychology</td>
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<td>Classical Mythology</td>
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<td>Social Media and Society</td>
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<td>Curiosity: Malcolm Gladwell and Social Science</td>
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4.8 Work-Integrated Learning Experience

4.8.1 Program Structure

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<th>Winter semester</th>
<th>Spring/Summer</th>
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<td>Year 1</td>
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<td>On-campus</td>
<td>Vacation</td>
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<td>Year 2</td>
<td>On-campus</td>
<td>On-campus</td>
<td>Field Placement</td>
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<td>Field Placement</td>
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<td>(Mandatory)</td>
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<td>Year 4</td>
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<td>On-campus</td>
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</tr>
</tbody>
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4.8.2 Description of Field Placement Work-Integrated Learning Experience

The field placement is viewed as an integral part of the HBCM degree. The practical aspects of field work in conjunction with the academic studies enables the student to better understand the methods, techniques and theories associated with construction management. The placement provides the students with opportunities to develop professional skills for working collaboratively with people. Field placements are expected to reflect the program learning outcomes and reinforce student learning in the world of work.

The sector based Program Advisory Committee has suggested several probable field placement opportunities and some of those suggestions are as follows:

- Estimating
- Building information modelling tracking and entering

In response to the ad-hoc Program Advisory Committee recommendations, the degree program has been designed with two field placement opportunities, one optional (420 hour) and one mandatory (420 hours). The intention of having two field placements is to provide learners with more experience in the construction industry. It is expected that by the second mandatory field placement learners will be better prepared to work on more complex tasks and activities. Field placements are intended to be a paid/unpaid work term equivalent to 420 hours. When a paid work term is not feasible, a non-paid work term equivalent to 420 hours will be approved by the Field Placement Officer.
4.8.3 Support for Students Seeking Field Placement Work-Integrated Learning Experience

Students will be fully supported throughout their field placement experience by a Field Placement Officer, a Student Advisor, and an employer supervisor.

The DC Field Placement Officer will negotiate, update and expand the list of employers willing to provide a paid or non-paid field placement for students. The Field Placement Officer or faculty supervisor will also approve the field placement, ensuring it can provide appropriate learning experiences for the students and will meet the work-integrated learning outcomes and program learning outcomes.

The Student Advisor will provide oversight and assistance to students regarding the nature and position responsibilities of their selected field placement. The Student Advisor will communicate regularly with the employer supervisor and will assign the student’s final grade based on the feedback documented on the Field Placement Evaluation Form (see Appendix C).

The field placement employer assigns a supervisor who provides supervision and mentoring for their assigned student during the field placement experience. The employer supervisor and the student will discuss the student’s performance on a regular basis and constructive feedback will be provided by the employer supervisor to direct the student’s learning and actions in developing their skills, and to achieve the learning outcomes. The employer supervisor is also responsible for completing the Field Placement Evaluation Form at the interim and final stages of the field placement.

Supported by the Field Placement Team, the student is responsible for sourcing and securing their field placement work-integrated learning experience. A list of paid and non-paid field placement employers will be available to students to use in their search for field placement opportunities. It is the student’s responsibility to source the following elements of the field placement:

- identify their preferred area of practice;
- seek assistance from the college’s Career Development Office to prepare their resumes, cover letters, and the interview process;
- liaise with employers providing field placements; and
- seek assistance from the Field Placement Officer with online searches of employers agencies beyond the list of established placement sites.
4.8.4 Work-Integrated Learning Outcomes

1. Apply field and industry specific knowledge, principles and procedures to assist various stakeholders in the workplace.
2. Collaborate with supervisors and colleagues and other stakeholders to carry out a project.
3. Assess project, task and assignment requirements to support effective contribution to the workplace.
4. Use communication and visualization tools and techniques to determine requirements, provide status updates, and respond to feedback to various stakeholders about projects, tasks and assignments.
5. Identify areas for professional development by engaging in ongoing self-evaluation of knowledge and skills.
6. Review workplace objectives and purpose to understand and contribute to the organizational culture that fosters intra- and inter-professional relationships with individuals and teams.
7. Demonstrate a positive attitude, accountability, dependability, and respect to maintain a responsible work ethic and professional manner.
4.10 Gap Analysis

DC conducted a gap analyses for the CET advanced diploma program which has close affinity to the proposed HBCM program. The following narrative provides an overview of the outcomes from this activity.

4.10.1 Gap Analysis – Diploma to Degree Transfer: Civil Engineering Technology Advanced Diploma Program

Summary of Gaps
The HBCM program learning outcomes have been compared to the MTCU program standards for the CET advanced diploma program, as it is considered a related program of study. Preliminary surveys of students in the program indicate that graduates have an interest in pursuing this degree. The table that follows details the gaps in knowledge and skills.

Civil Engineering Technology Advanced Diploma Program
A gap analysis was completed between MTCU program standards (MTCU Code 61003) for the CET advanced diploma program and the program learning outcomes of the HBCM program.
5. Program Delivery Standard

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Appendix G: IT Computer Resources

Appendix H: Software Available to Students
5.1. Quality Assurance

Durham College (DC) is committed to offering quality programs to its students. Program quality assurance processes are well established and ensure the college’s commitment to offering students both theoretical and practical skills, that employers are seeking. DC ensures that its students have access to state-of-the-art learning environments that include student-centred classrooms and laboratories featuring leading-edge equipment and facilities. A program’s life-cycle, from its original concept to cancellation, is based on the college’s quality assurance mechanisms and is carefully considered using evidence-based decision-making principles. DC is continuously improving program quality to support academic excellence and a successful student experience.

The quality assurance mechanisms include the policies, procedures, practices, committees and stakeholders that guide the following processes:

- New program development and approval;
- Annual and comprehensive program review; and
- Minor and major program change processes.

5.1.1 Programs and Courses - Development, Review and Renewal

DC is committed to excellence in postsecondary education. Delivery of quality academic programming is a cornerstone of the mission and vision for DC. To ensure that degree programs meet and exceed the Ontario Qualifications Framework and the Ministry of Training for Colleges and Universities (MTCU) standards, several policies and procedures have been established for program development, review, and renewal. DC undergoes a comprehensive assessment for both the development and review of programs. The focus is to validate that degree standards are being met, appropriate teaching and evaluation methods are used, and appropriate services and facilities are available to college students and employees. These elements are assessed within an accountability framework, which ensures the findings are applied to guide development of programs, revisions of design and delivery of curriculum, and especially, that the intended learning outcomes are being met.

The following contribute to establishing and maintaining the quality of the degree program delivery:

- An accountability framework for the development, review and renewal of degree program curriculum that includes several specific academic development committees, including the Program Proposal Review Committee (PPRC), Program Advisory Committee (PAC), oversight by the Vice President, Academic, approval by the Board of Governors, and input from industry through focus groups, membership on the PAC, and Records/Letters of Support;
- Formal processes for the development of the Program of Study (POS), curriculum development and curriculum mapping including assessments and evaluation in collaboration with curriculum developers, subject matter experts, and with the support and expertise of the curriculum specialists in the Centre for Academic and Faculty Enrichment (C.A.F.E.);
- Survey data/feedback from current students and recent graduates from related programs and employers in related industries;
Durham College

- The review of student, graduate, and employer satisfaction through the Key Performance Indicators (KPI) survey data;
- The review of student feedback through course and faculty evaluations;
- Policy mandated annual and comprehensive program review processes;
- The monitoring and upgrading of resources for teaching and learning including faculty development, program specific resources such as laboratories, and general college facilities;
- The interdisciplinary program development and review committee, PPRC, that reviews all new degree program development proposals and current program changes, support the process within their individual areas of expertise, and ongoing review of degree programs; and
- An independent external review of all degree proposals by an academic holding the terminal credential with subject matter expertise in the field of study (or a closely related field) is completed.

Please refer to Section 14, Policies, of the degree submission: Program Quality Assurance Process Policy and Procedure ACAD-121

Program Curriculum
DC defines curriculum to include program learning outcomes, course learning outcomes, essential employability skills outcomes, general education/breadth courses, content and subject matter, learning activities and experiences, and assessment and evaluation – all of which enable the achievement of learning outcomes. Curriculum is developed with the input from a program’s key stakeholders, including government, external advisory bodies, industry experts, students and faculty members.

Please refer to Section 14, Policies, of the degree submission: Curriculum Development Policy and Procedure ACAD-102

Program Learning Outcomes
The development of all new DC programs begins with the design and writing of the intended Program Learning Outcomes (PLO). Learning outcomes are statements describing essential, complex performances. They indicate what a student is expected to know, understand, or do, as a result of a learning experience. From the outset, the PLOs serve as the foundation for programs and are used to guide and build the program’s content and curriculum. These proposed outcomes are vetted by the ad-hoc PAC, which includes industry experts, employers in the field of practice, academics from related or similar program, and accrediting/regulatory bodies.

Please refer to Section 1, Policies, of the degree submission: Program Learning Outcomes Policy and Procedure ACAD-120

Course Outlines
Documented course outlines are the main tool for ensuring consistency in learning outcomes and evaluation criteria, and for communicating curriculum. DC curriculum will be developed using a standard course outline template.
The first part of the course outline template includes the learning outcomes (course specific and essential employability skills), which represent the skills, knowledge and attitudes that the student is expected to demonstrate by the end of the course. These learning outcomes are also explicitly linked to the descriptions of the evaluation strategies in the course. In addition, the course outline also contains a week-by-week or module-by-module Learning Plan that includes intended learning activities and learning objectives. The outline concludes with information related to classroom policies and expectations.

All course outlines are developed through an online browser-based application called WebCOT (Course Outline Tool). This ensures consistency in the look and feel of the final document and accountability for the quality of the content. Each outline goes through three levels of oversight; the editor, the reviewer and the approver. This ensures that all aspects of the document meet our quality standards.

Please refer to Section 14, Policies, of the degree submission:
Curriculum Development Policy and Procedure ACAD-102
Program Learning Outcomes Policy and Procedure ACAD-120
Course Outlines Policy and Procedure ACAD-108

5.1.2 New Program Development

The New Program Development and Approval policy and procedure outlines the framework and support for the formal development and submission of the college’s postsecondary programs. Adherence to this policy and procedure ensures that the degree level standards will be met, and that curriculum design and delivery methods will result in students achieving the intended learning outcomes.

Beginning with a recommendation, which may come from an internal or external source, the idea for new programming is sponsored by an academic dean. The rationale, including market research from potential students, and economic indicators, and a competitive analysis of other colleges and universities is the foundation for the development of a program proposal. External consultations with representatives from the public and private sectors along with industry leaders ensure that the proposed program will be relevant and inform the program development processes. Each new program recruits members to an ad-hoc PAC, which includes employers, industry experts, and appropriately credentialed college and university academics to guide curriculum development. Consultations with associated professional organizations, and accreditation or licensing bodies ensure the program will meet established professional standards.

The program proposal document includes the philosophical alignment of the program with the strategic priorities of the college and an analysis of the logistics of financial, physical, and human resources required. Once completed, the program proposal document is presented to the PPRC and/or the DC Leadership Team. The New Program and Approval policy and procedure outlines the formal decision making process of new program proposals which includes a recommendation to the Vice
President, Academic by the PPRC and final approval by the Vice President, Academic and the DC Board of Governors.

See below section 5.5. Appendices, Appendix A: Program Proposal Review Committee Terms of Reference

Please refer to Section 14, Policies, of the degree submission:
New Program Development and Approval Policy and Procedure ACAD-104

5.1.3 Program Advisory Committees

PAC members represent industry leaders, practitioners, college and university academics, and affiliation, regulatory or accreditation body representatives. This advising group meets semi-annually and throughout the life of the degree program. Their ongoing consultation and recommendations ensures the currency and relevance of the program and its curriculum to the industry or field of practice.

The role of the PAC is outlined in the DC Board of Governors By-Law No. 2 regarding Advisory Committee for Programs of Instruction. Please refer to Section 14, Policies, of the degree submission.

5.1.4 Program Development Support

Centre for Academic and Faculty Enrichment

The C.A.F.E. provides expertise and leadership for DC by supporting degree curriculum development, and all aspects of teaching and learning. The C.A.F.E. staff use an established and methodical process for curriculum development. Templates associated with course outlines, curriculum sequences of instruction, program learning outcomes and evaluation mapping, are utilized to ensure that the depth, complexity, and breadth of the program meet the degree level standards, and that students gain the skills and knowledge to meet the intended learning outcomes. The curriculum mapping process of the entire program ensures the alignment of the outcomes to curriculum, increasing complexity of curriculum over the duration of the program, and the authentic evaluation of the students’ learning. The C.A.F.E. team provide support for teaching and learning strategies for all faculty members as they develop the details of their lessons. The C.A.F.E. team works with faculty, program coordinators, and the academic deans during annual and comprehensive program review, program change processes and consent renewal to ensure the programs remain current and relevant and that the resources being used are the most current.

The C.A.F.E. team is also equipped with knowledge and expertise in the use of educational technology. Full-time and contract faculty can access support with various learning tools including, the learning management system, DC Connect. C.A.F.E. members assess the level of comfort and abilities with current technologies and tools and then work directly with faculty members to support their use of technology in their lessons. The C.A.F.E. website provides numerous resources for all those involved in the development and review of its courses and programs and provides guidance and support to the academic deans, full-time and contract faculty members, subject matter
Faculty Professional Development
DC is committed to supporting and ensuring the academic quality and capacity of all faculty through professional development. Faculty are encouraged and supported to continuously pursue a variety of educational and experiential opportunities that will result in personal enrichment, enhanced knowledge and/or skill development in their field of expertise, enhancement of teaching and learning skills and knowledge, and/or promotion of curricular and instructional innovation.

The Academic Employees Collective Agreement provides 10 days of professional development per year for faculty. In addition, after six years of full-time service, faculty are eligible for paid professional development leave for up to 12 months.

See Article 20: Professional Development Leave of the Academic Employees Collective Agreement on OPSEU’s website for full details regarding faculty access to professional development.

Please refer to Section 14, Policies, of the degree submission to view the following policies and procedures:
New Academic Hiring Requirements Policy and Procedure EMPL-316
New Full-Time Faculty Development Program Policy and Procedure EMPL-312
Professional Development Policy and Procedure EMPL-307
Professional Development Leave-Academic Policy and Procedure EMPL-314
Employee Access to Part-time Courses at a Reduced Fee Policy and Procedure EMPL-305

Academic Employees Collective Agreement: https://opseu.org/sites/default/files/2017-2021_academic_collective_agreement_final_eng_signed_website.pdf

5.1.5 College Degree Steering Committee
Under the direction of the Vice President, Academic, DC has formed a College Degree Steering Committee whose mandate is to support, guide, operationalize and review all aspects of the degree programs. The following working groups are responsible for oversight and implementation of the processes, for contributing expertise, for ensuring quality assurance, and for operationalizing the degree programs in all respects:

- **The Systems Implementation Working Group** is responsible for the operationalizing of the degrees in terms of admissions, registration, tuition, reporting, program of studies, progression, graduation, information technology, policies and procedures, financial aid and awards, and student satisfaction;
- **The Marketing and Recruitment Working Group** is responsible for all areas of communications regarding the degrees. All internal and external announcements, recruitment endeavours, and marketing strategies through the web, social media and in print will be reviewed and implemented by this group;
• The Human Resources Working Group provides oversight in the implementation of hiring practices, orientation, training, and academic and non-academic support for full-time and part-time faculty members;
• The Capital, Space, Budget and Library Working Group considers all of these factors for the development, launch and maintenance of DC degree programs; and
• The Student Services Working Group provides oversight, expertise and specialized implementation of support services required by college degree students in matters such as academic and non-academic coaching, mental health and wellness, accessibility and accommodations for student with disabilities and exceptionalities, athletics, career development, student academic support and tutoring.

5.1.6 Program Review and Renewal

As an integral component of quality assurance, DC utilizes a program performance framework to review and renew postsecondary academic programs. The formal processes that are used to identify areas for improvement and innovation, ensure program responsiveness to economic and societal needs, ensure compliance with the MTCU Framework for Programs of Instruction, as well as meet and exceed the expectations of students and employers include, Annual Program Review (APR), Comprehensive Program Review (CPR), and Major and Minor Program Change.

Annual Program Review

APR is a self-study process which consists of an assessment of the current quality of the program using established criteria within the APR report template. The APR process is conducted by the executive dean/associate dean (or designate) in the academic school and the program faculty members and is guided by the mission and strategic plan of the College. The APR process includes the collection and analysis of information relevant to the academic program and a critical self-assessment against set criteria with the intention of developing a set of recommendations to be implemented, as needed.

Comprehensive Program Review

DC’s CPR process is a cyclical, comprehensive assessment of all of the elements of program function, delivery and curricular content, the communication of findings, and the implementation of improvement strategies. The CPR uses program information including APR reports, stakeholder feedback, external assessment, and collaborative exercises of self-assessment to analyze the program. Through critical analysis and reflection by the program team, a final report is developed with the intention of providing evidence of areas of strength, opportunity, and areas in need of improvement. The CPR process results in the development of a set of recommendations, with relevant action plans.

Minor Changes

Minor changes refers to changes to programs of study that will not significantly impact students enrolled in current or future years of study or the learning outcomes of the program, but may have a minimal impact on course titles, credits, pre-requisites, co-requisites, course sequencing and/or a course delivery method.
Major Changes

Major changes refers to changes to programs of study that will impact students entering or re-entering the program in future years and may include one or more of the following:

- A significant financial impact to the college or the student;
- A potential impact on marketing and recruitment initiatives;
- A direct impact on program admission requirements;
- A significant change in program delivery method (e.g. online, hybrid, compressed, fast-track);
- An increase or decrease in course or program hours or courses resulting in additional or fewer semesters;
- A program title modification;
- Changes to program learning outcomes;
- Changes to the credential awarded (this will result in new program – New Program Development policy and procedure); and
- Changes to the program resulting from new/updated program standards as issued by MTCU.

The college’s Academic Program Review and Renewal and Program Change policy and procedure documents provide a comprehensive overview of these processes.

Please refer to Section 14, Policies, of the degree submission to view the following policies and procedures:
Academic Program Review and Renewal Policy and Procedure ACAD-105
Program Change Policy and Procedure ACAD-124
5.2. Student Feedback

5.2.1 Student Feedback Questionnaire

Student success is a priority goal for DC. This goal is embedded in the mission statement “the student experience comes first” and includes high-quality teaching, learning, and service experiences. Student feedback related to their experiences at DC from pre-registration to post-graduation and employment is gathered. Faculty are encouraged to solicit ongoing feedback from their students regarding their learning experiences in the classroom or laboratory.

In addition, based on the parameters of the Faculty Performance Appraisal policy and procedure, students complete the Student Feedback Questionnaire (SFQ). This questionnaire is administered to students to gather feedback that help to assess the quality of the course/program and teaching in their courses. The survey collects information regarding the course in the following themes:

- Organization and clarity;
- Expertise and enthusiasm;
- Group interaction;
- Rapport with students; and
- Assessments and grading.

Full-time Faculty Performance appraisals will be conducted a minimum of once per academic year by the executive dean or designate and will include:

- a classroom observation and Classroom Observation Form;
- SFQs (at least two per academic year);
- a Faculty Self-Reflection;
- a follow up meeting with the executive dean or designate; and
- a Faculty Performance Appraisal Summary.

Faculty Performance appraisals for probationary faculty will be conducted in each teaching semester, or more frequently if deemed appropriate, by the executive dean or designate and will include:

- a classroom observation and Classroom Observation Form;
- one class of SFQs;
- a Faculty Self-Reflection;
- a follow up meeting with the executive dean or designate; and
- a Faculty Performance Appraisal Summary.

Contract Faculty (sessional, partial-load and part-time) Performance appraisals will be conducted during the initial teaching semester and, at a minimum, once every four teaching semesters thereafter, by the executive dean and includes:

- a classroom observation, and Classroom Observation Form; and
- one class of SFQ.

The feedback from the SFQ will be provided to the faculty and the executive dean or designate. SFQs will be retained in the faculty member’s file in Human Resources.
addition, the School SFQ Summary Report will be provided to the Vice President, Academic and the appropriate executive dean. The SFQ information is also reflected in the Faculty Performance Appraisal Summary document.

See below 5.5. Appendices:
Appendix B: Student Feedback Questionnaire
Appendix E: Faculty Performance Appraisal Summary

Please refer to Section 14, Policies, of the degree submission:
Faculty Performance Appraisal Policy and Procedure EMPL-304
Academic Program Review and Renewal Policy and Procedure ACAD-105

5.2.2 Student Complaints
The college recognizes that student concerns or complaints may arise related to aspects of a program, their learning experience, or services provided. The college is committed to addressing these concerns in a responsive and timely manner. Various policies and procedures address many academic and service related concerns or complaints, such as the Student Complaints and Feedback policies and procedures. Where no obvious policy exists the Student Complaints policy and procedure provides students with a means to raise their concerns about any aspects of a program, their learning experience, or services received. The Students Complaints policy and procedure affords both an informal and formal complaint process and the opportunity to appeal a decision that might result from the process. Prior to admission, students are made aware of their rights and responsibilities through the information received from the Office of Strategic Enrolment Services.

Please refer to Section 14, Policies, of the degree submission to view the following policies and procedures:

Student Complaints Policy and Procedure ADMIN-239
Feedback Policy and Procedure ADMIN-264

DC students can also refer to the Grade Appeals policy and procedure if concerns or questions arise about their course grades. The existence and impartial operation of a grade appeals process affords recourse to students regarding assessment of their academic performance

Please refer to Section 14, Policies, of the degree submission to review the Grade Appeals Policy and Procedure ACAD-111.

See below 5.5 Appendices:
Appendix C: School-Level Academic Appeal Form
Appendix D: College-Level Academic Appeal Form
5.2.3 DC Cares

“DC Cares” is a comprehensive communication strategy for the DC community. Any member of the campus community may enter comments using the campus website, email, student portal on MyCampus, or in writing via any of the campus feedback boxes onsite. To ensure consistency and commitment to the students and employees, the following practices have been developed:

- A standardized response time;
- A process for forwarding /acknowledging feedback; and
- A commitment to meeting accessibility needs and standards.

See DC Cares on DC’s website link: http://www.durhamcollege.ca/dccares

5.2.4 Key Performance Indicators

KPI’s were introduced by the Ontario provincial government in 1998 to facilitate the collection and reporting of performance data measuring how well colleges were meeting the satisfaction of students, graduates, and employers. This data is coupled with graduation and employment rates. The data is collected annually through a collaborative process that includes the college, MTCU, and an external survey consultant who compiles the results. Employer and graduate survey data is collected with consent through online and telephone interviews. The data divided into five categories is reported back to the college’s academic schools and support service areas ensuring the results are used to inform ongoing program and student services improvements.

Further analysis of KPI results are generated by the Office of Research Services, Innovation and Entrepreneurship (ORSIE) for each DC program and services area through KPI Report Cards. Data included in the KPI Report Cards include program specific details related to longitudinal trending observations of the past five years; strengths and areas for improvement; and student, graduate and/or employer comments. Each program provides an APR report to the Vice President, Academic detailing action plans identifying program revisions or other interventions to address issues identified through the KPI reports or other recommendations from the curriculum review process.

Highlights of the 2018 Student Satisfaction KPI’s and explanations focused on the information needs of the students can be found on DC’s website at http://www.durhamcollege.ca/about-us/corporate-links/performance-indicators/key-performance-indicators-kpi

See section 5.5 Appendices, Appendix F: Key Performance Indicator Student Satisfaction Survey Questionnaire.
5.3. Academic Student Support

5.3.1 Academic Advising- Pre Registration and Ongoing

Student Academic Learning Services (SALS) is dedicated to the academic success of DC students. SALS offers a full range of services to DC students by employing creative individuals, and providing group and online resources. Those services include writing specialists, ESL supports, and subject specialists for specific student advising and peer tutoring. Detailed information regarding the supports and services provided by SALS is available on DC’s website through this link: [http://www.durhamcollege.ca/student-experience/helping-you-succeed/student-academic-learning-services-sals](http://www.durhamcollege.ca/student-experience/helping-you-succeed/student-academic-learning-services-sals)

Academic supports for students are also available in the each of the school offices. Academic advising delivered by Student Advisors is a comprehensive service that is aimed to guide students through their college experience by customizing academic plans to suit their individual needs.

Student Advisors help students to:
- identify career goals and make sound academic decisions;
- develop academic plans to promote success in the event of failed subjects or low grade point average (GPA);
- make decisions regarding full-time/part-time studies;
- review graduation requirements;
- set up academic plans with individual students;
- find equivalent credits;
- transfer to another program or pathways to further education; and
- access other college services to support student success.

Student Advisors also work closely with the different support services to enhance the quality of students’ academic life. DC offers a variety of academic and personal support including student academic learning services, peer tutoring, subject specialists, writing specialists, ESL supports, academic accommodations, test centre, coaching, residence academic leaders, student life transition support, aboriginal, diversity, women’s centre, LGBTQ, international student supports, counselling and wellness, career development, awards and bursaries and financial aid. All of these support teams contribute to the achieving the personal success and academic goals of the student.

5.3.2 Students-at-Academic Risk

DC acknowledges that students and employees are active partners in the teaching and learning process. The college has many supports available to students who demonstrate the need for academic assistance. Through early identification students are able to receive a range of specific academic and/or support services to assist them in overcoming obstacles to their academic goals. Students are made aware of the requirements for satisfactory academic progress through their program guides, and course outlines. The Students-at-Academic Risk policy and procedure identify the process, responsibilities, and supports available for students not maintaining a successful GPA.
A student who does not maintain a GPA of 2.0 is encouraged to access academic or other supports including:
- Peer tutoring;
- Tutorials and workshops;
- ESL support;
- Learning strategists;
- Computer assisted learning;
- Writing specialists;
- Accommodations for auditory, visual, medical, physical, psychiatric or learning disabilities;
- Staff-to-student mentoring;
- Health and wellness counselling and education;
- Financial aid, bursaries, scholarships, work-study programs and budget planning;
- Diversity advocacy and support;
- Career development services; and
- Community referrals.

Students who are not progressing satisfactorily will be notified in writing and placed on academic probation. Academic probation may include specific conditions which a student must fulfill before they can continue in the program. A student who is unable to meet the conditions established in the academic probation may be required to withdraw from the program. Should a student be withdrawn from a program, a student advisor guides students to appropriate internal and external resources and supports to explore future academic and/or career options.

See Section 14, Policies, of the degree submission
Students at Academic Risk Policy and Procedure ACAD-114
Student Well-Being and Campus Response Policy and Procedure ADMIN-227

5.4. Online Delivery

Core course outlines in this submission have been written for classroom and laboratory/observation settings. However, the proposed program will consider future online or hybrid delivery for core and non-core courses. Students will use the learning management system, D2L Brightspace Learning Environment, locally branded as DC Connect, to support and reinforce the classroom and lab learning. DC Connect will facilitate the delivery of relevant content, timely communication with professors, the submission of assignments, and the distribution of marks.

5.4.1 Information Technology and e-Learning Supports

Information technology (IT) is an integral aspect of the student experience at DC. Students develop skills in IT to support their learning and future career success. E-learning encompasses several elements including online, hybrid, web-based, and technology-based learning. The students of the proposed program will be using technology-based learning to enhance learning in the classroom, allowing faculty and
students to collaborate, communicate, and connect in course specific environments, and as a result enhance the academic community.

In addition, students, faculty and staff have full, unlimited access to online courses, classes, training, tutorials and learning paths on LinkedIn Learning.

Several policies and procedures, supports and products, and services are in place to ensure students' protection and success in the technology-based learning environment.

See Section 14, Policies, of the degree submission: Acceptable Use of Information Technology Policy and Procedure ADMIN-206

5.4.2 Learning Management System – DC Connect

DC’s learning management system is D2L Brightspace Learning Environment and is referred to internally as DC Connect. DC Connect provides organized, consistent and timely course-related communication between faculty and students. Effective use of a learning management system is intended to assist faculty members with course administration while supporting student engagement, increasing flexible learning opportunities, and enabling quality learning experiences. The learning management system can provide an efficient and effective vehicle for ongoing formative student feedback.

A learning management system refers to both software applications and web-based technologies that are used by faculty and students to access, plan, implement, supplement, monitor, and/or assess learning or to communicate about learning.

DC Connect is used for:
- Content and teaching material distribution;
- Communications;
- Fostering interpersonal connections;
- Access and support of different learning styles and needs;
- Interaction with peers, faculty and content;
- Supporting group work;
- Supporting collaboration;
- Encouraging reading;
- Supporting writing;
- Providing options for giving students feedback;
- Evaluation and grading; and
- Marks management and communication.

The Learning Management System (LMS) Usage policy and procedure establish the methods and expectations for the use of DC Connect so there is a consistent level of practice. Faculty are expected to develop their expertise of DC Connect to make use of the features to communicate with students, post course content, provide interactive learning opportunities and post grades.
Integrated with DC Connect are a number of extension applications that enhance its usability and functionality. These applications include Adobe Connect, Turnitin, Respondus, and Turning Point.

See Section 14, Policies, of the degree submission to review the Learning Management System Usage Policy and Procedure ACAD-118

5.4.3 Computer Access

Students have several access points for computing at the Oshawa and Whitby campuses. The Oshawa Campus Library has 130 computers for public and library research use and additional computers in the instructional classrooms in the library. Kiosk computers are available for guest access and the library has wireless and internet connections available. The 75,000 square foot Computer Learning Commons has 150 work stations for academic purposes, wired laptop connections and designated wireless areas for laptops. Both PC and MAC computers are available to students in the Computer Learning Commons. Computer labs situated throughout the college include more than 1,500 computers with 1,050 PC, 125 MAC units and printer services available for student use. The Whitby campus Computer Learning Commons offers students PC computer use (70) and computer labs located throughout the campus include more than 250 PC’s. The software collection is available to students and most computers are imaged with the complete suite.

More information regarding Information Technology Services can be found on DC’s website: [http://www.durhamcollege.ca/info-for/current-students/information-technology-services-its](http://www.durhamcollege.ca/info-for/current-students/information-technology-services-its)

See Section E6. Appendix G: IT Computer Resources
See Section E6. Appendix H: Software Available to Students

5.4.4 Technical Supports for Computing

The IT Help Desk operates seven days per week for a total of 101.5 hours per week. Students may phone or use the IT Service Portal to communicate with certified technicians and IT support personnel during these hours. As well, the IT Service Desk Portal allows students at any time to:

- Review the network status and check performance information for Google;
- Book audio-visual or media equipment;
- Access FAQs regarding IT issues;
- Connect to tutorial videos relating to IT; and
- Send a self-service ticket to IT for technical support.

5.4.5 IT Infrastructure

DC has the capacity to fill up to 50,000 simultaneous wireless connections through the existing 1,500 access points. As a result DC has the capacity to support a high speed wireless environment including many outdoor sitting areas. The IT infrastructure at DC optimizes usage, performance, and quality of service, thus greatly improving latency.
and available bandwidth for academic purpose, with all infrastructure being built on latest generation network devices including switches, routers and firewalls.

Students’ security is protected using the 802.1x authentication with wpa-tkip/wpa2-aes enterprise encryption.

The wired environment at DC is facilitated through approximately 12,000 nodes at 1Gbps speed to each desktop provided by campus distribution switches, connected at 10 Gbps speed to core network switches.

To ensure constant, fast and highly available internet service to the students, employees and faculty, DC maintains dual connections with both Cogent and Bell in a redundant, automatic failover configuration (Cogent as the main internet connection with a standby backup connection through Bell). The total bandwidth available is 4 Gbps.

See Section 5.5 Appendices, Appendix H: Software Available to Students
7. Credential Recognition

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    7.4.1 Letters of Recognition – Organizations, Associations and Employers ................ Removed for web submission
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The development of the Honours Bachelor of Construction Management (HBCM) degree included an analysis of the economic need and occupational analysis of the field as well as extensive consultation with various stakeholders including content experts, professionals, academics, and employers in the field of construction management. The resulting program curriculum ensures that graduates are prepared for employment in their field of study as well as further scholarly pursuits.

7.1 Economic Need and Analysis of Occupations

Durham College (DC) prepared an economic needs analysis which included survey feedback from current students and graduates of related programs and industry employers. This data informed the development of the degree, and abstracts of the analysis have been embedded in the submission as well as Appendix C of the Ministry funding submission.

The HBCM program has been designed to provide students with knowledge of emerging trends in the residential, commercial, institutional and industrial construction industries. The curriculum offered will be multi-disciplinary in scope and will prepare graduates to fill roles in leadership and management positions within the broader construction industry. DC’s interest in offering the HBCM is well supported by the current economic context.

In 2011, the construction industry outpaced the national economy in output and employment growth. Overall this industry accounted for 6.0% of Canada’s total Gross Domestic Product (GDP) and contributed $76.5 billion to the overall economy. Building permits are a widely recognized indicator of the health of the construction industry and have increased in value every year since 2002 (excepting 2008-2009) contributing a total of $8.4 billion dollars to the economy in 2011. These national trends have also been observed at the provincial level with Ontario’s construction industry growing by 50 percent between 2002 and 2017. Currently in the province of Ontario, employment in the construction industry is estimated to account for 413,600 direct jobs split between residential and non-residential construction.

The Toronto Region Board of Trade (TRBT) forecasts that spending on infrastructure projects over the next 15 years will exceed $214 billion while an anticipated construction of 800,000 new residential units is projected to infuse an additional $230 billion into the Greater Toronto Area (GTA) construction industry. To fulfil the labour market demand created by these projects, the TRBT expects that this will require approximately 9,000 new skilled workers to enter the construction industry each year, growing to 11,000 each year by 2028. Over the next 15 years, it is expected that a total of 118,000 new jobs will be available.

1 http://www.statcan.gc.ca/pub/11-402-x/2012000/chap/construction/construction-eng.htm
3 https://www.bot.com/Portals/0/unsecure/Advocacy/TRBOT_Talent_Study_2016.pdf
Labour supply is expected to be further challenged due to a substantial growth in the number of retirements in this industry. In the GTA alone 29,000 workers are expected to retire from the construction industry over the next 15 years further boosting the number of new workers needed to an estimated 147,000.

Amid the massive growth in available job openings in the construction industry comes fierce competition for skilled workers. This competition ultimately results in upward pressure on wages rendering the labour market prospects increasingly attractive for prospective entrants.

These findings are further substantiated by the TRBT’s report which places Construction Managers as the third most in demand job of 50 construction industry occupations expected to be in demand over the near term. TRBT further estimates that sourcing from the region’s non-apprenticeship post-secondary system will become increasingly necessary as the majority of these occupations require advanced levels of education (often a bachelor’s degree) in order to gain entry into the position. These labour market conditions combined with the shortage of skilled workers in the construction industry will cause the demand to be even more pronounced in the occupations that require an advanced level of skill such as construction managers, estimators, job site superintendents and project managers.

The National Occupational Classification (NOC) provides a standardized framework for organizing the labour force in a coherent system. The following four key 4-digit NOC codes identify the core set of occupations within the construction management field: 0712 – Home building and renovation managers; 0711 – Construction managers; 0016 – Senior managers-construction, transportation, production and utilities; and 7205 – Contractors and supervisors, other construction trades, installers, repairers and servicers.

The provincial outlook for these occupations is good through 2024. Durham Region is projected to gain 248 jobs, bringing the total number of available jobs in these occupations to 1,509 by 2022. Additionally, these jobs are expected to be compensated at rates similar to higher paying centres like Toronto. It should also be noted that the percentage change signifying growth is highest in Durham and Toronto, indicating positive labour market outcomes for job seekers in these areas.

### 7.2 Postsecondary Education Consultation

The curriculum was developed with the guidance of a subject matter expert and supported by curriculum specialists in the DC Centre for Academic and Faculty Enrichment (C.A.F.E.) using course development templates and a curriculum mapping framework that ensured:

- alignment of curriculum;
- increasing complexity of content including breadth and depth;
- authentic evaluation of both a formative and summative nature; and

---

4 Labour Force Survey
• curriculum meets the requirements of the Postsecondary Education Quality Assessment Board (PEQAB) and Ontario Qualification Framework (OQF): Baccalaureate Degree Standard.

Throughout the development of the proposed degree program DC consulted with academics from other institutions, including an external reviewer to confirm that the curriculum would meet the OQF- honours bachelor’s degree level standard. The reviewer, an expert in the field, assessed the curriculum to ensure its rigour, currency, relevancy, and the depth and breadth of knowledge, ensuring the preparation of graduates for employment and for further study in advanced degrees. Dr. Mohamed Elbarkouky, PhD, Program Chair of the Bachelor of Technology in Construction Management from Northern Alberta Institute of Technology (NAIT) reviewed the proposed degree curriculum. His detailed report noted that the program:

“achieves the required program knowledge depth and breadth that result in the graduates becoming more aware of theory, practices, and principles of construction science, as well as the different areas of application of construction management concepts and methodology. Hence, graduates of the program will develop adequate critical thinking and analytical skills that enable them to grow as leaders of construction project teams to manage construction projects of multi-disciplinary nature.”

Dr. Elbarkouky conducted a thorough review of all of the core course outlines, and his overall assessment is that the program meets the expectations of an honours bachelor's degree level program. Dr. Elbarkouky’s report is available in Section 15, Desk Review. The program team considered all of his comments and feedback. The changes to the program and rationale are provided in the College’s response to the external reviewer’s report. See Section 15, Desk Review.
7.4 Employer Consultation and Recognition

DC explored employer support for the proposed HBCM degree through survey feedback from employers, engagement in preliminary program advisory committee meetings and through attendance at several construction networking events and conferences.

Ontario construction organizations were invited to complete a survey over the period of December 2018 to March 2019 to enable a better understanding of the skills requirements and employment opportunities available in various sectors of the construction industry. A total of 36 employers from both public and private sectors ranging from home building to institutional, commercial and industrial participated in the survey. The majority, 97 percent, are primarily located within the Durham Region or the GTA.

The survey results indicate that most (97 percent) find it difficult to hire qualified personnel with construction management expertise. Additionally, 97 percent believe that the proposed construction management degree would improve their organization’s ability to hire qualified individuals with construction management expertise. Importantly, employers anticipated that over the next 18 months, they would hire 58 new construction managers. When hiring a recent graduate, 83 percent indicated that a degree would be considered a plus for new hires, while an additional 14 percent of employers consider a degree as highly valued and a mandatory requirement. There was overwhelming (97 percent) support from employers for offering a construction management degree at DC. Importantly, 86 percent of the employers surveyed indicated they would hire a graduate of the proposed construction management degree, 77 percent would be willing to provide paid co-op placements and 71 percent would provide a field placement.

Curriculum was further informed through consultation with the ad-hoc PAC, which included industry professionals, employers and an academic with experience in the field of construction management. Two formal meetings were held January 30, 2019 and June 7, 2019, where industry professionals provided input into the proposed curriculum to provide insight into the requisite knowledge, skills and abilities to maximize graduate’s potential for employment and promotion in the construction industry. The ad-hoc PAC members unanimously supported the proposed HBCM and were eager to see graduates enter the workforce.

The following letters have been received by DC in support of the proposed HBCM.

- Heat and Frost Insulators & Allied Workers Local 95
- Toronto Construction Association
- Regional Municipality of Durham
- Home Builders’ Association
- J.J McGuire General Contractors Inc.
- Ontario Road Builders Association
8. Regulations and Accreditation

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  Chartered Institute of Building (CIOB) ...................................................... 2
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  Appendix A: Voluntary Certifications in the Construction Management Industry and Critical Process for Recognition......................................................... 4
  Appendix B: Voluntary Certification and Alignment to Course Curriculum....... 9
The construction industry is not currently regulated by any Canadian regulatory or accrediting body. However, there are a number of voluntary certifications that Durham College (DC) will consider pursuing after the launch of the program as many accrediting organizations require graduates of the program before accreditation of the program can be considered.

The development team reviewed the requirements of voluntary accrediting organizations and has done a preliminary assessment of the requirements for recognition of the Honours Bachelor of Construction Management (HBCM) (see Appendix A). The development team also considered curriculum requirements during the development of each course and have included a map (see below) of courses and alignment to requirements of the organization.

After program launch, these certifications will be further investigated:

8.1 Certifications

**Canadian Institute of Quantity Surveyors (CIQS)**
Certification: Professional Quantity Surveyor

Certification as a professional quantity surveyor will position the graduates of the HBCM as recognized leaders in the field of quantity surveying which is supported by courses such as Construction Estimating and Construction Cost and Bidding. This certification is the standard for those working directly with economics of construction and infrastructure in Canada, and members are part of national and specialized provincial network of surveyors and estimators.

**Chartered Institute of Building (CIOB)**
Certification: Chartered Membership (MCIOB)

Membership in CIOB demonstrates that graduates of the HBCM are part of a network of managers whose portfolio of academic requirements and experience has been reviewed by certified professionals in the field. Courses in the degree program reflect the maintenance of a high standard in the study of the built environment of CIOB certified members such as Construction Methods, Materials, and Equipment; Materials Science and Testing; Building Structures; and Construction Project Delivery Systems.

**Royal Institution of Chartered Surveyors (RICS)**
Certification: Associate Member- AssocRICS

Certification with RICS will allow graduates of the HBCM exposure to an international network of professionals who work in the broad sub-discipline of building surveying, estimation, and evaluation. Associate member certification demonstrates competency in ethics, communication and negotiation, health and safety standards, accounting principles, business management, leadership, and sustainability.
Gold Seal
Certification: Gold Seal

This certification provided by the Canadian Construction Association reflects the industry and is a standardized program that supports construction management expectations nationally. Gold Seal certified persons demonstrate competency in the field of construction. It is a mark of excellence and reliability in the field of construction management and is a respected certification in the Canadian construction industry.

8.2 Accreditations

American Council for Construction Education (ACCE)
Programs accreditation with American Council for Construction Education demonstrate a standard of policy awareness, ethics, methodologies, contract best practices knowledge, safety, and sustainability. ACCE is supported by a register of industry volunteers which who are committed to supporting quality in construction management degrees. These volunteers conduct reviews for accreditation and ACCE certification upholds the quality of the curriculum and program of study of DC’s HBCM.

Accreditation Board for Engineering Technology (ABET)
ABET accredited programs demonstrate that the degree program meets a standard of educational quality which is maintained by periodic review. Accreditation by external professional industry and academic experts certifies that the professional knowledge gained in the HBCM meets quality assurance standards in the applied science and engineering field and also demonstrates technical excellence. Because this certification applies to the degree only, the criteria speaks to the curricular quality of DC’s degree and would be the first degree to ABET certified in Canada.
8.3 Appendices

**Appendix A: Voluntary Certifications in the Construction Management Industry and Critical Process for Recognition**

<table>
<thead>
<tr>
<th>Accreditation</th>
<th>Application Date</th>
<th>Process/Critical Path</th>
<th>Renewal</th>
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</thead>
<tbody>
<tr>
<td>Gold Seal</td>
<td>Application process online</td>
<td>Students need 25 education and training credits to challenge the Gold Seal exam.</td>
<td>Any change in an accredited course must be reported to Gold Seal.</td>
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<tr>
<td></td>
<td>The evaluation of a course or program is undertaken only upon application submission.</td>
<td>6 hours = 1 credit</td>
<td>Any change that alters the circumstances under which the course was</td>
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<tr>
<td></td>
<td>No date specified</td>
<td>Students require a Construction Industry Ethics course.</td>
<td>accredited may result in an immediate reassessment.</td>
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<tr>
<td></td>
<td>Only the courses are accredited and not the educational institutions or agencies.</td>
<td>If student has Construction Estimator Certified (CEC) certificate from CIQS then</td>
<td>Submission of documents may be sufficient for reassessment.</td>
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<td></td>
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<td>automatically eligible for the Gold Seal exam.</td>
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<td></td>
<td>Able to remain in candidacy status for 5 years.</td>
<td>• Form A-1, Application for Candidate Status and/or Accreditation Review (2 pages)</td>
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<td></td>
<td>Site visit only done when at least 25 students have graduated.</td>
<td>• Web site of Institution catalog</td>
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<td></td>
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<td>• Construction program mission and goals statement</td>
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<td></td>
<td></td>
<td>• Construction program curriculum and course descriptions</td>
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<td></td>
<td>• Program curriculum placed in the following categories:</td>
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<td></td>
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<td>• General Education</td>
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Accreditation is valid for five years.
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<thead>
<tr>
<th>Accreditation</th>
<th>Application Date</th>
<th>Process/Critical Path</th>
<th>Renewal</th>
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<td>o Mathematics and Science</td>
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<td>o Construction Science</td>
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<td></td>
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<td>o Business and Management</td>
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<td>o Construction</td>
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<td>o Other Requirements</td>
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<td>• A syllabus for each course taught by the construction unit, stating course objectives in relation to the program goals and objectives, outlining instructional methods, and containing a topical outline; and resumes of all faculty members assigned to the construction program.</td>
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<td>• A brief description of the industry advisory committee for the program.</td>
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<td></td>
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<td>• A description of the program’s Quality Improvement Program.</td>
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<td>2. If approved for candidacy then have to submit a self-study (25 page document)</td>
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<td>3. If self-study approved then site visit (3 days Sun-Tues)</td>
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<td></td>
<td></td>
<td>Fees: $4,500 for visit $2,750 yearly accrediting fee</td>
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<tr>
<td>ABET</td>
<td>18 month, 5 step process</td>
<td>We will conduct an accreditation review outside the U.S. only with</td>
<td>“Accreditation Renewed Periodically”</td>
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</table>

ABET 18 month, 5 step process

We will conduct an accreditation review outside the U.S. only with

“Accreditation Renewed Periodically”
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<th>Accreditation</th>
<th>Application Date</th>
<th>Process/Critical Path</th>
<th>Renewal</th>
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</thead>
<tbody>
<tr>
<td>Accreditation Board for Engineering Technology</td>
<td>Dates for each step listed in critical path. Must have at least one graduate prior to site visit.</td>
<td>explicit permission from all applicable national education authorities in that program’s country or region. Name must be descriptive of program content and ours falls under ANSAC (Applied and Natural Science Accreditation Commission) 1. Readiness Review (by October 1st, but have to request review by September 1st) (20 pages) 2. Submit a Request for Approval form (3 pages) and a Request for Evaluation (by January 31st ) 3. Self-Study Report (by July 1st) (30 pages) 4. On-Site visit (between September and December)</td>
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<tr>
<td>CIOB Chartered Institute of Building</td>
<td>Would apply after degree is granted for accreditation visit and requires speaking with students in the program.</td>
<td>1. Accredited Centre Status (5 page document) 2. Course Accreditation (31 page document)</td>
<td>Accreditation is valid for five years.</td>
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Fees:
Readiness Review $1,000
Site Visit $8,075
Fees each year: $2,600
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<tr>
<th>Accreditation</th>
<th>Application Date</th>
<th>Process/Critical Path</th>
<th>Renewal</th>
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</table>
| RICS Royal Institute of Construction Surveyors Associate Member | No date, need to contact them to start the process. Student experience is part of the evaluation, so this would be done after degree has started. | 1. Program is identified as suitable for accreditation  
   - Program volume must be at least 3,600 hours for a bachelor’s degree (credit equivalent)  
   - Mapping to an RICS Construction pathway  
   - Student experience  
   - Internal quality assurance  
   - Assessment procedures  
   - Staff quality (academic)  
   - Resources  
   - Curriculum relevance to industry  
   - Collaboration with RICS  
   - Ethical standards  
   - Inclusion and diversity  
  2. Site visit |         |
| CIQS Professional Quantity Surveyor    | No date, need to contact them to start the process. | 1. Review by CIQS of course to CIQS curriculum alignment  
   2. Graduates of these programs have to complete the Test of Professional Experience |         |
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<th>Accreditation</th>
<th>Application Date</th>
<th>Process/Critical Path</th>
<th>Renewal</th>
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<td>Part B and C (diaries and practice problem) in order to become a Professional Quantity Surveyor (PQS).</td>
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</table>
Appendix B: Voluntary Certification and Alignment to Course Curriculum

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<thead>
<tr>
<th>Accrediting Body</th>
<th>CIQS</th>
<th>Gold Seal</th>
<th>ACCE</th>
<th>ABET</th>
<th>CIOB</th>
<th>RICS</th>
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<td><strong>Year 1 Semester 1</strong></td>
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<td>Introduction to Construction Management</td>
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<td>Algebraic and Geometric Mathematics</td>
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<td>Construction Methods, Materials, and Equipment</td>
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<td>Construction Estimating I</td>
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<td>Breadth Elective: Communications 1: Critical Thinking and Writing</td>
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<td>Accrediting Body</td>
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<td><strong>Year 2 Semester 1</strong></td>
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<td>Building Information Modeling 1</td>
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<td>Materials Science and Testing</td>
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<td>Construction Planning and Scheduling</td>
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<td>Breadth Elective: Technical Writing</td>
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9. Nomenclature

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9.1 Rationale

To ensure Durham College’s (DC) degree program meets the Postsecondary Education Quality Assessment Board (PEQAB) nomenclature standard, strong consideration was given to ensure that the program nomenclature reflected the postsecondary education achieved, facilitated public understanding of the qualification, and assisted students, employers, and other postsecondary institutions to recognize the level, nature, and discipline of study.

As per the PEQAB Manual, several baccalaureate degree nomenclature conventions were considered including Bachelor of Faculty (Subject), Bachelor of Applied Faculty (Subject), and Bachelor of Subject. With this consideration, as well as to align with other DC degrees, it was determined that the Bachelor of Subject convention would be proposed for this Honours Bachelor of Construction Management degree program.

The program development team at DC considered and rejected the Bachelor of Technology (Construction Management) nomenclature found in some comparator degree programs. The chosen Bachelor of Subject nomenclature convention differentiates the proposed program from comparator programs as it reflects the managerial focus inherent in the design of the degree program as opposed to a technological program focus found in other Bachelor of Faculty (Subject) degree nomenclature. This nomenclature convention was discussed and approved by the ad-hoc Program Advisory Committee.

The Honours Bachelor of Construction Management program consists of 120 credits and includes 40 courses covering the following topics:

- Seventeen fundamental and advanced courses in construction business, management and leadership, which include courses in estimating, bidding, law and project management;
- Nine courses focusing on engineering, which include courses in math, materials, and quality assurance;
- Four architecture themed courses to focus on building design, systems, codes and sustainability;
- One research methods course;
- One capstone course; and
- Eight non-core breadth electives courses.

This program of study reflects the professional focus of the degree through content, rigour, and increasing complexity throughout the program, resulting in the program outcomes. It ensures the depth and breadth of the students’ preparation culminating in the graduates’ knowledge, skill and judgements to identify, analyze, and formulate strategies and solutions while understanding the limits of their knowledge within their occupational field. The applied nature of this degree expresses the graduates’ synthesis of theory and practice. This will be confirmed by the successful completion of the mandatory field placement experience between semesters six and seven and the final
capstone project scheduled in semester eight. Additionally, an optional field placement is offered between semester four and five.

The Honours Bachelor of Construction Management nomenclature convention meets the PEQAB degree nomenclature standard as it clearly describes the baccalaureate academic level of study, the field of study, and addresses the Ontario Qualifications Framework and the PEQAB honours bachelor degree standards.
10. Internal Quality Assurance and Development

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10.1 Internal Quality Assurance and Development at Durham College

Durham College (DC) has previously submitted detailed documentation regarding internal quality assurance and development policies and processes that meet all of the Board’s benchmarks.

See Section 14, Policies, for DC’s policies regarding internal quality assurance and development.
11. Academic Freedom and Integrity

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11.1 Academic Freedom and Integrity at Durham College

Durham College has previously submitted detailed documentation regarding academic freedom and integrity policies and processes that meet all of the Board’s benchmarks.

See Section 14, Policies, for DC’s policies regarding academic freedom, academic honesty, intellectual property, ethical research and copyright.
12. Student Protection

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Appendix A: Registration and Policy Acknowledgement for Durham College......Removed for web submission
Durham College (DC) has previously submitted detailed documentation regarding student protection policies and processes that meet all of the Board’s benchmarks. See Section 14, Policies, for DC’s policies regarding student protection.

12.1 Public Information


12.2 Student and Consumer Interests

DC ensures that students are aware of policies and procedures relevant to student life. Students are required to complete the Registration and Policy Acknowledgement for Durham College form when registering for any DC course.

See Appendix A: Registration and Policy Acknowledgement for Durham College.
13. Optional Materials

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13.1 Appendices

Appendix A: Durham College Strategic Plan (2017-2020)

Durham College’s (DC) Strategic Plan 2017-2020 was developed in collaboration and consultation with internal and external stakeholders and community partners.

The strategic plan is published and available on DC’s website:

Appendix B: Durham College Strategic Mandate Agreement (2017-2020)

DC’s Strategic Mandate Agreement (SMA) considers and reflects the college’s commitment to the development and launching of degree programs. DC’s three-year plan continues to include the development of six degrees. In September 2018, DC launched its first degree, Honours Bachelor of Health Care Technology Management, and was recently granted consent by the Ministry of Training, Colleges and Universities (MTCU) for the second Honours Bachelor degree in Behavioural Science.

The 2017-2020 Strategic Mandate Agreement is published and available on the Government of Ontario website:

https://www.ontario.ca/page/2017-20-strategic-mandate-agreement-durham-college-applied-arts-and-technology
Appendix C: Durham College Business Plan (2019-2020)

The 2019-2020 Business Plan consists of 22 objectives divided among our four pillars – Our Students, Our People, Our Business and Our Community – and complements the college’s other guiding documents – the Enrolment Management Plan, the Academic Plan and the Internationalization and Global Engagement Plan.

The DC 2019-2020 Business Plan is published and available on DC’s website:

Appendix D: Durham College Academic Plan (2017-2020)

The DC Academic Plan ensures DC moves confidently into the coming three years and is ready to respond to constantly changing student populations and expectations, employer needs, professional practices and workplace technologies.

The goals and objectives are designed to foster and encourage specific and meaningful strategies to support the plan through each academic school and department. This plan is about DC’s commitment to student success through exceptional academic quality, exemplary teaching and learning experiences, strong international engagement, exceptional applied research and the strategic management of enrolment. It is a plan that positions DC for success.

The DC Academic Plan (2017/2018 – 2019/2020) is published and available on DC’s website:


DC’s Interactive version of the Annual Report is available on its website: https://durhamcollege.ca/annual-report/

Applied research at DC, facilitated by Office of Research Services, Innovation and Entrepreneurship (ORSIE), solves industry and social challenges through innovation and collaboration, by engaging industry, faculty, students, and the community-at-large in research projects to address the needs of a technology-driven knowledge economy. ORSIE is the single point of contact for industry, government, and community groups interested in collaborative applied research that has an impact. The talent, facilities, and capabilities of those within the campus and community become synergetic when encouraged and supported, transforming and advancing economic prosperity in the Durham Region.

More information regarding ORSIE is available on the DC website via this link: https://durhamcollege.ca/about/office-of-research-services-innovation-and-entrepreneurship-orsie


Appendix G: Internationalization and Global Engagement Plan (August 2017)