Area of Interest: Engineering and Architecture

Building Information Modeling - Lifecycle Management

Ontario College Graduate Certificate

Academic Year: 2020/2021
1 Year
Ottawa Campus

Program Code: 1525X01FWO

Our Program

One of Canada’s first programs to specialize in the Building Information Modeling (BIM) sector.

The Building Information Modeling - Lifecycle Management (BIM-LM) Ontario College Graduate Certificate program is a fast and effective way to increase your career options. Expanding your skills to include how to manage data and process the lifecycle of a building in the architecture, construction, building owner or operator industry areas.

This one-year program is tailored to develop your skills in BIM management techniques, which support productivity improvements in construction and facilities management. Recognized by both the Canada BIM Council (CanBIM) and building SMART Canada (bSC), this program is taught by industry professionals who have specialized Building Information Modelling expertise.

Through a series of theory courses and extensive practical labs, you learn:

• the history and development of the BIM field and how it is being used in the core (Architecture, Engineering, Construction, Owner and Operator (AECOO) industry
• the tools and technologies used, and the appropriate applications of them
• planning and collaboration skills and techniques
• project management, including contract language, project delivery methods, information exchange standards and the requirements and legal matters that need to be considered
• ongoing standards and guidelines

You also participate each semester in a week-long project called BIM Blitz, where you demonstrate your accumulated knowledge in a simulation of a real-world project.

BIM is a rapidly-emerging field, and demand is increasing for those who have specialized in this sector. Graduates of this program may work in all levels of government, including municipal, provincial and federal - as well as within the construction, architecture and interior design industries.

SUCCESS FACTORS

This program is well-suited for students who:

• Have an interest in the social and technical aspects of the built environment.
• Work well as a team member or in a leadership role.
• Thrive in a highly computer-based environment
• Can apply principles to problem-solve and find unique solutions.

Employment

Graduates may be employed as BIM Specialists, BIM Managers, BIM Project Managers, BIM coordinators, Project Model Managers, BIM Process Leaders, Virtual Design and Construction Managers, Construction Information Managers, Lifecycle Information Managers, BIM Project Leads,
Learning Outcomes

The graduate has reliably demonstrated the ability to:

• Streamline processes through the application of Building Information Modelling (BIM) concepts and principles to improve productivity.

• Develop and use standardized technology and procedures that support information exchange regionally, nationally and internationally.

• Develop and recommend documentation and communication strategies to improve BIM lifecycle workflow.

• Mitigate risks related to intellectual property and regulatory considerations to anticipate legal issues.

• Recommend and justify BIM lifecycle management operational changes to improve productivity, efficiency and coordination.

• Apply leadership and team-building skills in interdisciplinary settings to improve productivity, efficiency and coordination of BIM lifecycle management.

• Apply quality assurance processes to ensure project delivery and lifecycle requirements in accordance with identified standards.

• Identify and apply industry standards and guidelines to facilitate the communication and use of model-based information.

• Identify and apply discipline-specific practices that contribute to the local and global community through social responsibility, economic commitment and environmental stewardship.

Program of Study

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<th>Level: 01</th>
<th>Courses</th>
<th>Hours</th>
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<tr>
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<td>BIM1011 BIM Fundamentals I: Definitions and Principles</td>
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<td>BIM1020 Tools and Technology I</td>
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<td>BIM1051 Standards and Guidelines I</td>
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<td>BIM2011 BIM Fundamentals II: Global Achievements</td>
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<td>BIM2020 Tools and Technology II</td>
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Fees for the 2020/2021 Academic Year

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

Further information on fees can be found by visiting the Registrar’s Office website at [http://www.algonquincollege.com/ro](http://www.algonquincollege.com/ro).
Fees are subject to change.

Additional program related expenses include:

- One (1) performance laptop for 3D modeling with video-conferencing capabilities (budget $2K-3K),
- high-speed internet connection for virtual collaboration (when not on campus) (budget $50/month x 8 months = $400),
- software and/or apps to purchase (TBD) (budget $1,000),
- one (1) course pack per class (10 classes - budget 10x$50 = $500).
- Total = $3,900.

Admission Requirements for the 2021/2022 Academic Year

Program Eligibility

- Ontario College Diploma, Ontario College Advanced Diploma or Degree or equivalent in a related building construction industry; OR
- A diploma (in a non-related building construction field) with 3 years working experience in a Building Construction industry. These applicants will be assessed individually and will be required to complete an Eligibility Package.

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

- Applicants with international transcripts must provide proof of the subject specific requirements noted above and may be required to provide proof of language proficiency. Domestic applicants with international transcripts must be evaluated through the International Credential Assessment Service of Canada (ICAS) or World Education Services (WES).

- IELTS-International English Language Testing Service (Academic) Overall band of 6.5 with a minimum of 6.0 in each band; OR TOEFL-Internet-based (iBT)-overall 90, with the minimum in each component: Reading 22; Listening 22; Speaking 22; Writing 24.

- Applicants with international transcripts must provide proof of the subject-specific requirements noted above and may be required to provide proof of language proficiency.

Admission Requirements for 2020/2021 Academic Year

Program Eligibility

- Ontario College Diploma, Ontario College Advanced Diploma or Degree or equivalent in a related building construction industry; OR
- A diploma (in a non-related building construction field) with 3 years working experience in a Building Construction industry.

- These applicants will be assessed individually and will be required to complete an Eligibility Package. Eligibility Package submission details can be found on the Algonquin College Additional Admission Requirements website: [http://www.algonquincollege.com/admissionspackages](http://www.algonquincollege.com/admissionspackages).

- International applicants must provide proof of the subject specific requirements noted above along with proof of either: (IELTS / TOEFL) IELTS-International English Language Testing Service (Academic) Overall band of 6.5 with a minimum of 6.0 in each band; OR TOEFL-Internet-based (iBT)-overall 90, with the minimum in each component: Reading 22; Listening 22; Speaking 22; Writing 24.

- Applicants with international transcripts must provide proof of the subject specific requirements noted above and may be required to provide proof of language proficiency.

Application Information
BUILDING INFORMATION MODELING - LIFECYCLE MANAGEMENT
Program Code 1525X01FWO

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

ontariocolleges.ca
60 Corporate Court
Guelph, Ontario N1G 5J3
1-888-892-2228

Applications are available online at http://www.ontariocolleges.ca/. A $95 fee applies.

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

International applicants applying from out-of-country can obtain the International Student Application Form at https://algonquincollege.force.com/myACint/ or by contacting the Registrar’s Office.

For further information on the admissions process, contact:

Registrar’s Office
Algonquin College
1385 Woodroffe Ave
Ottawa, ON K2G 1V8
Telephone: 613-727-0002
Toll-free: 1-800-565-4723
TTY: 613-727-7766
Fax: 613-727-7632
Email: mailto:AskUs@algonquincollege.com

Additional Information

Programs at Algonquin College are Bring Your Own Device (BYOD). To see the BYOD requirements for your program, please visit: https://www7.algonquincollege.com/byod/.

For more information, please contact Nahlah Al-Ogaidi, Program Coordinator at mailto:alogain@algonquincollege.com or 613-727-4723 ext.6293

Eric Marois, Department Chair at mailto:Eric.Marois@algonquincollege.com or 613-727-4723 ext. 7562.

Course Descriptions

BIM1011 BIM Fundamentals I: Definitions and Principles

Establishing the value and role of the key elements of BIM is critical to managing workflow and success. Students explore BIM’s history and current status through industry’s evolving adoption of BIM’s concepts, principles and processes within the context of the AECOO industry (Architecture, Engineering, Construction, Owner and Operator). Through historical and present day scenarios, students build a sound foundation and appreciation for current Building Information Modelling practices, and their roles and responsibilities as leaders in the field.

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

BIM1020 Tools and Technology I

Explaining available BIM tools and technologies and their capacities at various stages of a project or asset lifecycle are critical to BIM planning, execution and management. Students explore and evaluate the nature and goals of interoperability and information sharing, and describe and classify the wide range of platforms and software available worldwide. Students work independently and in groups and to research and sequence tools commonly adapted from idea to design while differentiating local and international markets.
Prerequisite(s): none
Corerequisite(s): none

**BIM1030 Workflow and Collaboration I**

Planning and communication are critical components of successful BIM use on a project. Students apply tool-specific knowledge and skills to workflow scenarios that require planning and collaboration strategies critical for success. Through directed concrete experiences with various communication mediums and planning frameworks, students develop the ability to leverage BIM technology, seek out and implement efficiencies to minimize the cultural shifts that arise with the transition to a BIM-centric environment.

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

**BIM1040 Project Definition and Deliverables I**

Successfully defining and delivering a project in BIM requires client buy-in and supporting contract language relative to its delivery method and options. Within a collaborative, multi-disciplinary team environment, students explore the context of BIM: its contract language, project delivery methods, information exchange standards, and the requirements and legal matters that lead and ensure successful delivery. Through focused undertakings, students discuss and reflect on strategies planned and implemented in the project delivery lifecycle from idea to design and how this is accomplished through the various project milestones.

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

**BIM1051 Standards and Guidelines I**

Inspecting the ongoing development and implementation of BIM standards, guidelines and best practices is critical to understanding standardized information exchange and delivery methods. Students analyze and categorize the abundance of BIM standards, guidelines and best practice documentation available in local and international settings, as well as their histories and breakthroughs. Particular attention is devoted to challenges in which the needs of the end user have yet to be met. Students consolidate the current and ongoing efforts undertaken to harmonize and manage the content of these sources and predict potential future directions.

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

**BIM1060 Blitz Project: Idea to Design for the Manager**

Practical experiences are critical in ensuring BIM managers meet industry needs, so that they are ready to meet the challenges in their new roles with confidence and expertise. Students apply BIM principles and procedures to the phases of the lifecycle, with specific focus on planning, collaboration, management and operational requirements. Through a culminating project in a lab setting, teams plan and deliver in real-time a joint, integrated and collaborative BIM project, as experienced in the real world.

Prerequisite(s): BIM1011 and BIM1020 and BIM1030 and BIM1040 and BIM1051
Corerequisite(s): none

**BIM2011 BIM Fundamentals II: Global Achievements**

The application of parametric technology, lean business processes and information management best practices are critical productivity improvements that BIM implementation can bring to the construction and facilities industries. Students explore how BIM is being adopted around the globe, determine where distinct achievements have been made and develop a plan to introduce similar improvements using BIM in local conditions. Through reviews of case studies and conducting of interviews, students capture and evaluate where productivity improvements have been achieved from BIM use.
Building Information Modeling -
Lifecycle Management

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

BIM2020 Tools and Technology II

The process and timelines of traditional delivery methods are impacted by the act of developing model-based information. Students learn how decision-making within the planning and model development stages impacts what is possible or efficient downstream. Through lab-based work, students cover the usage of BIM tools and technology applied to the construction to operations phases, such as coordination, scheduling, cost estimating and facility management. Through hands-on learning, students develop a practical understanding of how information flows between applications in a BIM environment and through the lifecycle.

Prerequisite(s): BIM1020
Corerequisite(s): none

BIM2030 Workflow and Collaboration II

Virtual design and construction (VDC) provides an opportunity to identify and resolve coordination issues that may impact project schedule and costs. Students identify touch points, pain points and milestones within the evolving nature of how business is conducted as VDC and BIM become a greater part of the equation. They gain hands-on experience leading collaboration activities, execution planning sessions, and documentation of workflows and procedures that support VDC and BIM.

Prerequisite(s): BIM1030
Corerequisite(s): none

BIM2040 Project Definition and Deliverables II

Strategic re-tooling of processes and production techniques are required for effective use of BIM to achieve production efficiencies and improvements. Students determine the model requirements, how to manage the variables that exist during the process and how the information will be shared or delivered to the various parties. Students work collaboratively through various hands-on and class activities with a focus on construction through to the operations lifecycle phases.

Prerequisite(s): BIM1040
Corerequisite(s): none

BIM2051 Standards and Guidelines II

Standardized information delivery and management are critical to achieving productivity improvements from BIM use. The role and effectiveness of existing standards and guideline documentation for improved practice are examined. Students test out existing standards and proven practices and identify where potential for improved guidance would benefit industry. Through hands-on activities, students identify the steps they can apply in the real-world to leverage or expand on these efforts within their own office or project needs.

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

BIM2060 Blitz Project: Construction to Operations for the Manager

The ability to function effectively as a BIM professional requires experience in the dynamic and interdisciplinary BIM environment. Students explore leadership and time-management skills in BIM planning, collaboration, management and operations methods. Through a hands-on, real-time group project, students gain experience in real-life uses of BIM. Focus for this course is placed on the construction through to the operations lifecycle phases.

Prerequisite(s): BIM2011 and BIM2020 and BIM2030 and BIM2040 and BIM2051
Corerequisite(s): none