ELECTROMECHANICAL ENGINEERING TECHNOLOGY – BUILDING AUTOMATION PROGRAM (T171)

<table>
<thead>
<tr>
<th>PROGRAM NAME</th>
<th>Electromechanical Engineering Technology – Building Automation</th>
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<tbody>
<tr>
<td>COURSE CODE</td>
<td>T171</td>
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<tr>
<td>SCHOOL</td>
<td>School of Mechanical and Engineering Technologies</td>
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<tr>
<td>CENTRE</td>
<td>Construction Engineering Technology</td>
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<tr>
<td>LOCATION</td>
<td>Casa Loma Campus</td>
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<tr>
<td>DURATION</td>
<td>3 years (6 semesters)</td>
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<tr>
<td>EXPERIENTIAL LEARNING</td>
<td>Available</td>
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<tr>
<td>STARTING MONTH</td>
<td>September, January</td>
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<tr>
<td>CREDENTIAL</td>
<td>Ontario College Advanced Diploma</td>
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<tr>
<td>YEAR OF STUDY</td>
<td>2020-2021</td>
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<tr>
<td>METHOD OF STUDY</td>
<td>FT</td>
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<tr>
<td>APPLY TO</td>
<td>Ontario Colleges¹</td>
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TUITION
$4,094.00 *

ADDITIONAL COST
*Amounts listed are the total of tuition, materials, student service and ancillary fees for the first two semesters of programs starting in Fall 2019. Fees are subject to change for programs starting in Fall 2020 and at later dates.

International students: Visit the International Fees and Related Costs² page for more information.

FINANCIAL ASSISTANCE
This program is approved for OSAP funding, provided the applicant meets OSAP eligibility criteria.

Building automation systems don't just control the basics: they regulate airflow, monitor energy use and are integrated with security, lighting and other building systems to deliver comfort, safety and energy efficiency. Today's buildings are increasingly complex, and they differ in use and size, but also in operating hours, comfort levels and environmental conditions. Offices, residences, hotels, schools and administrative buildings all have different requirements. Optimal building services technology is the result of appropriate systems design and integration during planning, construction, commissioning and operation.

This advanced diploma program in Building Automation provides students the technical skills they need for success in the job market. Students learn to:

- Install, program, adjust and maintain building automation systems
- Program and install sensors, actuators and controllers
- Collect data for use in real-time or for archiving in a central server
- Work with building software platforms that interconnect different systems

Graduates will have a diverse set of skills and abilities that will also prepare them for "green" careers focused on energy efficiency, renewable energy and the environment. This program provides a skill set that is in high demand in both the construction industry and the controls and automation industry.

INDUSTRY SKILLS

- Safety practices in the installation and troubleshooting of HVAC/R systems, including applicable codes and standards of the NEC, ASHRAE, OSHA, EPA and other regulatory bodies.
- Basic HVAC/R processes and the function, layout and operation of commercial HVAC/R systems.
- Functions, operating characteristics and applications of the control loops and control modes in digital, analog and pneumatic commercial control systems.
- Blueprints and manufacturer's technical instructions for installing or servicing a sensor, controller, actuator and related relays and power supplies.
- General-purpose software and specific building automation software that monitors and controls HVAC/R and electrical systems.
- Various BAS controls and systems, including DCS, PLC, PAC and SCADA.
- Functions of network devices and protocols, such as a bridge, router, gateway, hub, firewall, twisted pair, Ethernet, TCP/IP, Zigbee, WiFi, BAS/IP and BacNet.
- Emerging green technologies, such as solar, wind and hydronic, and how they can be integrated into building systems and residential applications.

EXPERIENTIAL LEARNING
Available
PROGRAM STANDARDS AND LEARNING OUTCOMES

The graduate has reliably demonstrated the ability to:

1. Fabricate and build electrical, electronic, and mechanical components and assemblies in accordance with operating standards, job requirements, and specifications.
2. Analyze, interpret, and produce electrical, electronic, and mechanical drawings and other related technical documents and graphics necessary for electromechanical design in compliance with industry standards.
3. Select and use a variety of troubleshooting techniques and equipment to assess, modify, maintain, and repair electromechanical circuits, equipment, processes, systems, and subsystems.
4. Modify, maintain, and repair electrical, electronic, and mechanical components, equipment, and systems to ensure that they function according to specifications and to optimize production.
5. Design and analyze mechanical components, processes, and systems by applying engineering principles and practices.
6. Design, analyze, build, select, commission, integrate, and troubleshoot a variety of industrial motor controls and data acquisition devices and systems, digital circuits, passive AC and DC circuits, active circuits and microprocessor-based systems.
7. Install and troubleshoot computer hardware and programming to support the electromechanical engineering environment.
8. Analyze, program, install, integrate, troubleshoot and diagnose automated systems including robotic systems.
9. Establish and maintain inventory, records, and documentation systems to meet organizational and industry standards and requirements.
10. Select and purchase electromechanical equipment, components, and systems that fulfill job requirements and functional specifications.
11. Specify, coordinate, and apply quality-control and quality-assurance programs and procedures to meet organizational standards and requirements.
12. Work in compliance with relevant industry standards, laws and regulations, codes, policies, and procedures.
13. Develop strategies for ongoing personal and professional development to enhance work performance and to remain current in the field and responsive to emergent technologies and national and international standards.
14. Contribute as an individual and a member of an electromechanical engineering team to the effective completion of tasks and projects.
15. Design and analyze electromechanical systems by interpreting fluid mechanics and the attributes and dynamics of fluid flow used in hydraulic and fluid power systems
16. Contribute to project management through planning, implementation and evaluation of projects, and monitoring of resources, timelines, and expenditures as required.
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<tr>
<th>Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>EMNG3011</td>
<td>Building Management and Commissioning</td>
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<tr>
<td>EMNG3013</td>
<td>Building Sub-Systems and Integration</td>
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<tr>
<td>EMNG3018</td>
<td>Applied Project 2</td>
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<tr>
<td>EMNG3019</td>
<td>Building Operations and Management</td>
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<tr>
<td>EMNG3020</td>
<td>Blueprint Reading for Buildings</td>
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<tr>
<td>EMNG3021</td>
<td>Connected Homes</td>
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**YOUR CAREER**

Areas in the building automation industry where graduates will be able to work include:

- Electronics companies
- General contractors
- Communication and information systems companies
- Lighting suppliers and contractors
- Mechanical and electronic controller manufacturers
- Facilities management companies
- Automotive companies and suppliers
- Robotics and automation companies
- Residential developers

**ADMISSION REQUIREMENTS**

Applicants are selected on the basis of their academic achievement, including the required courses, and any other selection criteria outlined below.

- Ontario Secondary School Diploma or equivalent**
- Grade 12 English (C or U)
- Grade 11 Math (M or U) or Grade 12 (C or U)

**MATURE STUDENT STATUS (19 YEARS OF AGE OR OLDER AND NO OSSD)**

Mature Students may take the Admissions Assessment³ for English and Math, OR may consider upgrading to achieve the credit(s) needed in English⁴ and Math⁵.

Please note that George Brown is committed to ensuring that applicants will succeed in their program of choice and meeting the minimum requirements does not guarantee admission to the program. Applicants may be required to have grades higher than the minimum requirements stated.

**COURSE EXEMPTIONS**

College or university credits may qualify you for course exemptions. Please visit georgebrown.ca/transferguide for more information.

**INTERNATIONAL STUDENTS**

Visit the International Admissions⁶ page for more information.

**APPLY TO**

Domestic students should apply through Ontario Colleges⁷

**CONTACT US**

School of Mechanical Engineering Technologies
Phone: 416-415-5000, ext. 4365