MECHANICAL TECHNICIAN - CNC AND PRECISION MACHINING (T173)

PROGRAM NAME
Mechanical Technician – CNC and Precision Machining
COURSE CODE
T173
SCHOOL
School of Mechanical and Engineering Technologies
CENTRE
Construction Engineering Technology
LOCATION
Casa Loma Campus
DURATION
2 years (4 semesters)
FIELD EDUCATION
16-week Co-op available in Year 2
STARTING MONTH
September, January
CREDENTIAL
Ontario College Diploma
YEAR OF STUDY
2019-2020
METHOD OF STUDY
FT
APPLY TO
Ontario Colleges

Graduates from this program benefit from a combination of advanced machine-tool technology principles (CAD/CAM/CNC) and extensive hands-on manufacturing practices that better prepare them for the technical challenges they may face in the workplace.

Advanced CNC and Precision Machining students have the opportunity to strengthen their skills by engaging in specialized industry partnerships that include precision machining/welding workshops and formula race-car\(^3\) and rocketry manufacturing with University of Toronto Engineering and Aeronautics undergraduate students.

In their final year, students engage in applied projects to design and fabricate prototypes using digital manufacturing technology (lasers, 3D printer, multi-axis CNC machine tools).

All students will augment their technical training with courses in mathematics, communications and general education.

FIELD EDUCATION OPTIONS
Some students will have the opportunity to complete a 16-week Co-op term in Year 2. Co-op participants will be selected based on their academic performance, including a minimum GPA of 3.0 and an interview component.

THE INDUSTRY
The tooling industry will continue to be the backbone for production, manufacturing, and prototyping in industrial sectors such as:

- Aerospace/aeronautics
- Medical
- Military
- Pharmaceutical
- Transportation/automotive
- Agricultural, mining, nuclear as well as emerging energy industries (solar, wind).

Precision Machining, CAD/CAM, Welding, Digital Manufacturing and CNC technology covers the spectrum from traditional manufacturing to sophisticated high-speed, high-precision manufacturing that is required in the design and production of highly specialized equipment and machinery. In addition, these technologies play a vital role in research and development of new and existing products.

The future of the tooling industry will depend on highly educated and highly skilled technicians, and our program provides graduates with a solid foundation and an advantage to succeed in this rapidly evolving industry.

PROGRAM STANDARDS AND LEARNING OUTCOMES
The graduate has reliably demonstrated the ability to:

1. Complete all work in compliance with current legislation, standards, regulations and guidelines.
2. Apply quality control and quality assurance procedures to meet organizational standards and requirements.
3. Comply with current health and safety legislation, as well as organizational practices and procedures.
4. Apply sustainability best practices in workplaces.
5. Use current and emerging technologies to support the implementation of mechanical and manufacturing projects.
6. Analyze and solve mechanical problems by applying mathematics and fundamentals of mechanics.
7. Interpret, prepare and modify mechanical drawings and other related technical documents.
8. Perform technical measurements accurately using appropriate instruments and equipment.
9. Manufacture, assemble, maintain and repair mechanical components according to required specifications.
10. Contribute to the planning, implementation and evaluation of projects.

**REQUIRED COURSES**

**SEMESTER 1**

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>EMNG1001</td>
<td>Circuit Analysis</td>
</tr>
<tr>
<td>EMNG1004</td>
<td>Metrology</td>
</tr>
<tr>
<td>MENG1002</td>
<td>Engineering Drawing</td>
</tr>
<tr>
<td>MENG1027</td>
<td>Introduction to Machining</td>
</tr>
<tr>
<td>GSSC1027</td>
<td>Personal Finance</td>
</tr>
<tr>
<td>MATH1160</td>
<td>Mathematics for Engineering Technology 1</td>
</tr>
<tr>
<td>COMM1007</td>
<td>College English**</td>
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</tbody>
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**SEMESTER 2**

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<tr>
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<th>Course Name</th>
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<tbody>
<tr>
<td>CADE1004</td>
<td>Introduction to CNC</td>
</tr>
<tr>
<td>EMNG1003</td>
<td>Engineering Mechanics</td>
</tr>
<tr>
<td>MENG1004</td>
<td>Intermediate Machining</td>
</tr>
<tr>
<td>MENG1026</td>
<td>Introduction to Mechanical CAD</td>
</tr>
<tr>
<td>MENG2008</td>
<td>Pneumatic Systems</td>
</tr>
<tr>
<td>GSSC1100</td>
<td>Small Business Plan and Operation</td>
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<tr>
<td>MATH1171</td>
<td>Mathematics for Engineering Technology 2</td>
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**SEMESTER 3**

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<th>Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>CADE2029</td>
<td>Computer Aided Manufacturing</td>
</tr>
<tr>
<td>CADE2030</td>
<td>Intermediate CNC</td>
</tr>
<tr>
<td>DRFT1014</td>
<td>Jig and Fixture Design</td>
</tr>
<tr>
<td>MENG2002</td>
<td>Advanced Precision Machining</td>
</tr>
<tr>
<td>MENG1040</td>
<td>Welding Practices</td>
</tr>
<tr>
<td>MENG2060</td>
<td>Technical Report Writing and Workplace Preparedness</td>
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<tr>
<td>GNED</td>
<td>General Education Elective</td>
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**SEMESTER 4**

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<th>Code</th>
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<tbody>
<tr>
<td>CADE2013</td>
<td>Advanced Computer Aided Manufacturing</td>
</tr>
<tr>
<td>CADE2031</td>
<td>Advanced CNC</td>
</tr>
<tr>
<td>DRFT2007</td>
<td>Applied Industrial Project Design</td>
</tr>
<tr>
<td>MENG2043</td>
<td>Precision Tool Fabrication</td>
</tr>
<tr>
<td>MENG2047</td>
<td>Geometric Dimensioning and Tolerancing for Mechanical Design</td>
</tr>
<tr>
<td>GNED</td>
<td>General Education Elective</td>
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**CO-OP SEMESTER**

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<th>Code</th>
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<tr>
<td>TCOP1005</td>
<td>Work Term</td>
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**Based on the results of your placement test, you may be required to take COMM1003 (English Skills) or CESL1003 (English Skills – ESL) before progressing to COMM1007. COMM1003/CESL1003 does not count as a course required for graduation, and you will be charged for this extra course. Please visit georgebrown.ca/assessment for more information.**

**YOUR CAREER**

Graduates may find employment in areas such as:

- Aerospace
- Nuclear
- Transit and OEM automotive parts companies
- Health care
- Construction and building industries
- Electrical and electronics industries
- Mould-making
- Tool & Die Making
- General machining
- CNC precision machining and tool-making industries
- Research, prototyping and development of new and existing products

**FUTURE STUDY OPTIONS**

Graduates of this program can enter directly into semester 3 of the Mechanical Engineering Technology – Design program (T121).

**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 Assessment for English and Math, OR may consider upgrading to achieve the credit(s) needed in English and Math.

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 Admissions page for more information.
Since graduating from the Mechanical Technician program in 2000, Andrew Lindsay went on to become the inventor of a patented engine controller for Blutip Power that helps mining companies conserve fuel and improve the environment. With customers on four continents at six of the world’s largest mining companies, the controller works on massive diesel-powered engines to save fuel burn rates by about five percent, reduce greenhouse gas emissions and improve operations through digital data collected by the device. For many years, Lindsay and his brother produced Lindsay Lights, a computerized, music-synchronized holiday light show that raised over $70,000 for local charities, won international awards and was featured on the TV show Ellen.

Andrew Lindsay, Graduate 2000

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