

MACHINE SHOP - GENERAL MACHINING APPRENTICESHIP

Program: GMAP

Credential: Ontario College Certificate

Delivery: Full-time

Work Integrated Learning: Apprentice Placement

Length: 720 hours

Effective: Fall 2023

Location: Barrie

Description

Graduates of the Machine Shop - General Machining Apprenticeship program have demonstrated achievement of vocational learning outcomes during in-school apprenticeship training that include the essential skills, knowledge, and attitudes for entry level positions in specific machining environments.

The 720 hour in-school program focuses primarily on theoretical knowledge and essential skills required to support the performance objectives of the Apprenticeship Training Standards. A General Machinist Apprenticeship includes three levels of in-school curriculum training which includes, but is not limited to, instruction in:

- Applied trade safety practices
- Applied trade calculations, charts, and tables
- Engineering drawings/CAD (computer-aided design) data, layout processes
- Metallurgy (science of metals)
- Metrology (science of measuring and checking)
- Benchworking techniques
- Metal cutting saw technology
- Drilling, turning, milling and grinding technologies
- Computerized Numerically Controlled (CNC) technology

A General Machinist cuts, shapes and finishes metal to make precision machined parts and components used in all areas of manufacturing. General Machinist is a trade regulated by the Ontario College of Trades and Apprenticeship Act, 2009. Qualified individuals may obtain a Certificate of Qualification, which confirms its holder has the skills, knowledge and experience that meet industry standards of practice for the trade.

Career Opportunities

Machinists set up and operate a variety of machine tools to cut or grind metal, plastic or other materials to make or modify parts or products with precise dimensions. Machining and tooling inspectors inspect machined parts and tooling in order to maintain quality control standards. They are employed by machinery, equipment, motor vehicle, automotive parts, aircraft and other metal products manufacturing companies and by machine shops.

Program Learning Outcomes

The graduate has reliably demonstrated the ability to:

1. solve routine technical problems related to shop environments using a variety of systematic approaches;
2. interpret and produce basic graphics and other standard technical documents necessary for the routine installation, maintenance, repair, and manufacture of components;
3. complete all work in compliance with health and safety legislation and prescribed organizational practices and procedures to ensure safety of self and others;
4. perform basic technical measurements using appropriate tools;
5. use shop tools and equipment for basic installation, manufacture, and repair of components to required specifications;
6. work responsibly and effectively within a shop environment in accordance with appropriate practices and procedures;
7. develop and implement a plan for CNC programming;
8. perform procedures for linear and circular machining in manufacturing;
9. perform various machining procedures, such as milling, turning and cutting according to plan.

External Recognition

Upon successful completion of their Level 3 in school training, these apprentices must complete the remainder of the required skills outlined in the Training Standard Log Book to qualify for their Apprenticeship Certificate. Thereafter, they are eligible to write their Certificate of Qualifications exam for this Red Seal Trade.

Admission Requirements

- Ontario Secondary School Diploma (OSSD) or equivalent, mature student status
- Prospective students must register and be a member in good standing with the Ministry of Labour, Training, and Skills Development

Additional Information

An apprenticeship involves practical training provided on-the-job by a skilled worker, or trainer. The skills or competencies to be developed are set out by the trade's Apprenticeship Training Standard and are recognized by the industry as being essential to the practice of the trade.

As these essential skills are developed, the apprentice's sponsor or trainer signs the relevant sections of the training standard to indicate that the apprentice has met the individual training objectives by demonstrating the skills required of a skilled worker, or journeyman, in the trade.

Graduation Requirements

Students must successfully complete all three levels to receive a certificate.

- General Machinist Level 1- Basic (GMAB)
- General Machinist Level 2- Intermediate (GMAI)
- General Machinist Level 3- Advanced (GMAA)

Graduation Eligibility

Students must successfully complete all required courses as noted below. Further details, if applicable, are noted under "Additional Information" above.

Program Tracking

Level 1- Basic (GMAB)

Program Courses	Hours
GMTD 1003 Applied Trade Safety Practices	6
GMTD 1007 Metal Cutting Saw Technology	6
GMTD 1012 Applied Trade Calculations, Charts, and Tables	42
GMTD 1013 Engineering Drawings/CAD Data/Layout Processes	42
GMTD 1014 Metallurgy	12
GMTD 1015 Metrology (Measuring and Checking)	24
GMTD 1016 Benchworking Techniques	12
GMTD 1017 Drilling Technology	12
GMTD 1018 Turning Technology	36
GMTD 1019 Vertical Milling Technology	36
GMTD 1020 Surface Grinding Technology	12
Hours	240
Total Hours	240

Level 2 - Intermediate (GMAI)

Program Courses	Hours
GMAI 1008 App Trade Calcs, Charts, Table	36
GMAI 1009 Eng Drawings/Layout Processes	36
GMAI 1010 Metallurgy	12
GMAI 1011 Metrology (Measuring/Checking)	12
GMAI 1012 Milling Technology	42
GMAI 1013 Cylindrical Grinding Techy	24
GMAI 1014 CNC Turning Technology	36
GMAI 1015 Turning Technology	42
Hours	240
Total Hours	240

Level 3 - Advanced (GMAA)

Program Courses	Hours
GMAA 1001 Complex Eng Drawings/CAD Data	42
GMAA 1002 Metallurgy	6
GMAA 1003 Metrology (Measuring/Checking)	6
GMAA 1004 Complex Turning Technology	42
GMAA 1005 Complex Milling Technology	42
GMAA 1006 Complex Grinding Technology	18
GMAA 1007 Machining Centre CNC Techy	48
GMAA 1012 Applied Trade Calculations	36
Hours	240
Total Hours	240

Disclaimer: *The information in this document is correct at the time of publication. Academic content of programs and courses is revised on an ongoing basis to ensure relevance to changing educational objectives and employment market needs.*

Program outlines may be subject to change in response to emerging situations, in order to facilitate student achievement of the learning outcomes required for graduation. Components such as courses, progression, coop work terms, placements, internships and other requirements may be delivered differently than published.