Seneca POLYTECHNIC

2024-2025

# MECHANICAL ENGINEERING TECHNICIAN (TOOL DESIGN) (MATD)

## About the Program

In this two-year diploma program, you will learn to use the latest computer software to assist in the manufacturing of production tools. You will learn and gain valuable skills in conventional manufacturing technologies, computer production and design along with prototyping techniques and quality control. You will have the opportunity to experience the practical production considerations of tool design as you gain experience in a fully equipped machining lab.

This program shares a common first semester with Mechanical Techniques (Tool & Die/Mould Making) (https://www.senecapolytechnic.ca/programs/fulltime/MATT.html).

### Computer Requirements

- operating system: Windows 10, 64 bit
- processor: 3.3 GHz (or faster)
- memory: 16 GB (or larger)
- solid-state drive: 128 GB (or larger)
- second display screen (recommended)

### Credential Awarded

Ontario College Diploma

### Duration

4 Semesters (2 Years)

### Starts

September

## Program and Course Delivery

This program is offered in Seneca's hybrid delivery format with some courses available in Seneca's flexible delivery format. Some coursework is online and some must be completed in person. Students will need to come on campus to complete in-person learning requirements. For courses offered in the flexible delivery format, professors use innovative learning spaces and technology to teach students in a classroom or lab and broadcast in real time to students attending remotely. In flexible courses, students have the choice of coming on campus or learning online.

## Skills

Throughout this program you will develop the following skills:

- Machining techniques
- Mastercam
- SOLIDWORKS
- 3D printing and prototyping
- Co-ordinate measuring machine programming
- Quality assurance and inspection
- Die design
- Jig and fixture design
- Mould design

## Your Career

Graduates of the program can explore the following career options:

- Mechanical engineering technician
- Production tools designer
- General machinist
- Tool designer
- SolidWorks designer
- Programmable logic controller programmer

Program of Study

| Course Code | Course Name | Weekly Hours |
|---|---|---|
| **Semester 1** | | |
| BPR101 | Blueprint Reading | 2 |
| CNC101 | Computer Numerical Control | 2 |
| COM101 | Communicating Across Contexts | 3 |
| or COM111 | Communicating Across Contexts (Enriched) | |
| MAT111 | Mathematics | 3 |
| SHP101 | Shop | 10 |
| THY101 | Machining Theory | 3 |
| **Semester 2** | | |
| CAM201 | Computer Assisted Machining | 2 |
| MTH201 | Technical Mathematics I | 2 |
| SHP201 | Shop | 10 |
| THY201 | Machining Theory | 3 |
| TLD201 | Tool Design | 2 |
| plus: General Education Course (1) | | 3 |
| **Semester 3** | | |
| HPN301 | Hydraulics and Pneumatics | 3 |
| JFX301 | Jig and Fixture Design | 4 |
| MAN301 | Manufacturing Processes I | 4 |
| MDD301 | Mould Design | 4 |
| MTH301 | Technical Mathematics II | 4 |
| PLC301 | PLC Electrical Control Systems | 3 |
| plus: General Education Course (1) | | 3 |
| **Semester 4** | | |
| DIE401 | Die Design | 4 |
| EST401 | Estimating | 3 |
| MAN401 | Manufacturing Processes II | 4 |
| MCD401 | Machine Design | 4 |
| QLA401 | Quality Assurance CMM | 3 |
| SHP401 | Machine Shop | 3 |
| plus: General Education Course (1) | | 3 |

## Program Learning Outcomes

This Seneca program has been validated by the Credential Validation Service as an Ontario College Credential as required by the Ministry of Colleges and Universities.

As a graduate, you will be prepared to reliably demonstrate the ability to:

- Complete all work in compliance with current legislation, standards, regulations and guidelines.
- Apply quality control and quality assurance procedures to meet organizational standards and requirements.
- Comply with current health and safety legislation, as well as organizational practices and procedures.
- Apply sustainability best practices in workplaces.
- Use current and emerging technologies to support the implementation of mechanical engineering projects.
- Analyze and solve mechanical problems by applying mathematics and fundamentals of mechanical engineering.
- Interpret, prepare and modify mechanical engineering drawings and other related technical documents.
- Contribute to the design and the analysis of mechanical components, processes and systems applying fundamentals of mechanical engineering.
- Manufacture, assemble, maintain and repair mechanical components according to required specifications.
- Verify the specifications of materials, processes and operations to support the design and production of mechanical components.
- Contribute to the planning, implementation and evaluation of projects.
- Develop strategies for ongoing personal and professional development to enhance work performance.

# Admission Requirements

- Ontario Secondary School Diploma (OSSD), or equivalent, or a mature applicant (https://www.senecapolytechnic.ca/registrar/canadian-applicants/admission-requirements/mature-applicants.html)
- English: Grade 12 C or U, or equivalent course
- Mathematics: Grade 12 C or U, or Grade 11 Functions (MCR3U), or equivalent course

Canadian citizens and permanent residents may satisfy the English and/or mathematics requirements for this program through successful Seneca pre-admission testing. (https://www.senecapolytechnic.ca/registrar/canadian-applicants/admission-requirements/mature-applicants.html)

Recommended upgrading for applicants who do not meet academic subject requirements (https://www.senecapolytechnic.ca/registrar/canadian-applicants/admission-requirements/upgrading-options.html).

# International Student Information

International admissions requirements vary by program and in addition to English requirements (https://www.senecapolytechnic.ca/international/apply/how-to-apply/admission-requirements/english-requirements.html), programs may require credits in mathematics, biology, and chemistry at a level equivalent to Ontario's curriculum, or a postsecondary degree or diploma, equivalent to an Ontario university or college. Program-specific pre-requisite courses and credentials are listed with the admission requirements on each program page. To review the academic requirements please visit: Academic Requirements - Seneca, Toronto, Canada (senecapolytechnic.ca) (https://www.senecapolytechnic.ca/international/apply/how-to-apply/admission-requirements/academic-requirements.html).

# Pathways

As a leader in academic pathways, we offer a range of options that will allow you to take your credential further in another Seneca program or a program at a partner institution.

To learn more about your eligibility, visit the Academic Pathways (https://www.senecapolytechnic.ca/pathways.html) web page.

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