Seneca POLYTECHNIC

2024-2025

MECHANICAL ENGINEERING TECHNOLOGY – INDUSTRIAL DESIGN (MIT)

About the Program

In this three-year advanced diploma program, you will increase your knowledge of design and engineering principles. You will learn to apply theories of design, production and marketing to gain an understanding of the steps necessary to commercialize a design idea. Your studies will introduce you to machining and production techniques, rapid prototyping, principles of mechanical design, engineering analysis, marketing, basic accounting practices, entrepreneurial skills, ergonomics, basic electricity and electronics, reverse engineering and product and design digitizing.

This program shares a common first and second semester curriculum with the Mechanical Techniques (Tool & Die/Mould Making) (https://www.senecapolytechnic.ca/programs/fulltime/MATT.html) program. It shares a common third and fourth semester as the Mechanical Engineering Technician – Tool Design (https://www.senecapolytechnic.ca/programs/fulltime/MATD.html). This concept of laddering allows flexibility and options to increase levels of education incrementally.

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 Advanced Diploma

Duration

6 Semesters (3 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:

- Product development
- Machining techniques
- MasterCAM
- SolidWorks
- 3D printing and prototyping
- CMM programming/quality assurance and inspection
- Die design
- Jig and fixture design
- Mould design
- Cost estimating
- Reverse engineering
- 3D scanning and model modification
- Prototyping

Your Career

Graduates of the program can explore the following career options:

- Industrial designer
- Tool and die/mould designer
- Mechanical engineering technologist
- Ergonomics designer
- General machinist

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
Semester 5		
ACC501	Management Accounting	2
ADM501	Advanced Modeling Design Techniques	4
ELF501	Electricity	3
IND501	Industrial Design Ergonomics	3
MAN501	Project Management	3
MKM501	Marketing Fundamentals	2
MTH501	Software Mathematics	4
Semester 6		
BMK601	Brand Management	28
EEA601	Engineering Analysis	4
ETR601	Electronics	2
IBL601	Industrial Business Law and the Patent System	2
MKM601	Entrepreneurship	2
PRD602	Prototype Management	4
TEC400	Technical Communications	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:

- Monitor compliance with current legislation, standards, regulations and guidelines.
- Plan, co-ordinate, implement and evaluate quality control and quality assurance procedures to meet organizational standards and requirements.
- Monitor and encourage compliance with current health and safety legislation, as well as organizational practices and procedures.
- Develop and apply sustainability best practices in workplaces.
- Use current and emerging technologies to implement mechanical engineering projects.
- Analyze and solve complex mechanical problems by applying mathematics and fundamentals of mechanical engineering.
- Prepare, analyze, evaluate and modify mechanical engineering drawings and other related technical documents.
- Design and analyze mechanical components, processes and systems by applying fundamentals of mechanical engineering.
- Design, manufacture and maintain mechanical components according to required specifications.
- Establish and verify the specifications of materials, processes and operations for the design and production of mechanical components.
- Plan, implement and evaluate projects by applying project management principles.
- Develop strategies for ongoing personal and professional development to enhance work performance.
- Apply business principles to design and engineering practices.

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.