Seneca POLYTECHNIC

2024-2025

MECHANICAL TECHNICIAN – CNC PROGRAMMING (MTCP)

About the Program

This two-year diploma program will introduce you to modern manufacturing techniques including programming and Computer Assisted Manufacturing (CAM). You will study both theory and practical aspects of modern metal machining and cutting while focusing on programming, advanced manufacturing techniques and interpreting engineering drawings. Upon completion of this program, you may begin an apprenticeship with an employer as a general machinist, tool and die maker, or mould maker.

Graduates of this program work in a range of employment settings in the manufacturing industries; examples include aerospace and defence, automotive, building products, fabricated metal products, machinery, railway and marine and natural resource industries like energy, forestry and mining.

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

January, 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 theory and practice
- Prototyping
- Production of mechanical components
- Documentation
- Mechanical problem solving
- Computer and information technology

Work Experience

Optional Work Term

This program offers the option to complete a work term, providing valuable hands-on experience in your field of study.

Students who select the work term stream will have the opportunity to participate in a work term(s) if eligibility requirements are maintained. Students will have the flexibility to transfer to the non-work term stream at any time. The work term(s) is similar in length to an academic semester and is typically a full-time position that may be paid or unpaid. The work term job search is student-driven and participation in the work term stream does not guarantee that a work position will be secured. However, students will receive guidance and support through in-class career workshops and one-on-one coaching to help prepare for the work term.

Review eligibility requirements for work-integrated learning (https://www.senecapolytechnic.ca/employers/seneca-works/work-integrated-learning/eligibility.html)

Work-Integrated Learning Model - January Start

Year	September	January	May
Year 1		Semester 1	Semester 2
Year 2	Semester 3	Semester 4	Work Term

Work-Integrated Learning Model - September Start

Year	September	January	May
Year 1	Semester 1	Semester 2	Work Term
Year 2	Semester 3	Semester 4	

Your Career

Graduates of the program can explore the following career options:

- Computer numerical control operator
- CNC programmer
- CNC setup technician
- Quality assurance inspector
- CNC service technician
- Machine maintenance specialist
- Technical sales specialist

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
WTP100	Work Term Preparation *	1
plus: General Education Course (1)		3
Work-Integrated Learning Term		
MTC441	Mechanical Technician - CNC Programming, Work Term *	30
Semester 3		
CAM302	Computer Assisted Machining Lathe	5
CAM355	Computer Assisted Machining Level II	5
CNC301	CNC Manual Programming and Setup	5
MTH301	Technical Mathematics II	4
TEC400	Technical Communications	3
plus: General Education Course (1)		3
Semester 4		
CAM455	Computer Assisted Machining Level III	5
CNC401	Advanced Tool Setup	4
TPJ454	Technical Project	4
plus: General Education Course (1)		3
plus: Professional Option (2)		

Professional Options

Course Code	Course Name	Weekly Hours
AMD500	Additive Manufacturing	4
CAD255	Mechanical Designs and Drawing	4
JFX301	Jig and Fixture Design	4
QLA401	Quality Assurance CMM	3
SWK901	Solid Works Level One	3

* Work-Integrated Learning option only

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 and manufacturing projects.
- Analyze and solve mechanical problems by applying mathematics and fundamentals of mechanics.
- Interpret, prepare and modify mechanical drawings and other related technical documents.
- Perform technical measurements accurately using appropriate instruments and equipment.
- Manufacture, assemble, maintain and repair mechanical components according to required specifications.
- Contribute to the planning, implementation and evaluation of projects.
- Operate and program a variety of CNC machines to produce parts to specifications, meeting the required quality standards.
- Apply CNC specific technical work practices when writing programs for CNC machines.

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.