



With more than 20 years of experience in teaching, research and industrial activities, the MMRI at McMaster University is offering a problem-based educational program in the area of advanced manufacturing, using all its resources including facilities, industry scale equipment and experts in the field.

The MMRI Industrial Training Program offers 20+ short courses (micro-credentials) in three core streams in the field of advanced manufacturing, as listed below:

1. Advanced Manufacturing Processes
2. Advanced Manufacturing Materials
3. Advanced Manufacturing Industry 4.0

Advanced Manufacturing Processes Stream

The courses offered in the **Advanced Manufacturing Processes** stream are designed to equip you with the theoretical knowledge and hands-on experiences for different advanced manufacturing processes, including forming and machining, using industry scale instrumentation available at the MMRI.

As experts in the area of machining, we are offering high-level courses on basics of CNC machining and programming, Cutting tool selection, dynamics of machining, and vibration condition monitoring. Fundamentals of design requirements for reliability and manufacturability of products in different processes is also covered.



Advanced Manufacturing Processes

Format

Courses will consist of lectures, combined with hands-on demos and projects. Earn a certificate in one stream by completing 4 required courses, 4 elective courses, and 1 industry relevant project.

Audience

All team members involved in different manufacturing processes such as machining and forming, tool suppliers, designers, planners and programmers.

Project Support

The MMRI will provide some financial support for time with MMRI staff and the use of MMRI instruments and equipment to work on projects.

The MMRI Industrial Training Program: Course List			
Required: R/ Elective: E	Advanced Manufacturing		
	Processes	Materials	Industry 4.0
Metal Cutting I (Introduction)	R	E	E
Metal Cutting II (Intermediate)	R	E	E
Metal Cutting III (Advanced)	R	E	E
Dynamics of Machining Operations I	R	E	E
Dynamics of Machining Operations II	R	E	E
Vibration Condition Monitoring (IOT for Smart Maintenance)	R	E	E
Introduction to Metal Forming Processes: Metals and Polymers	R	E	E
Cutting Tool Selection (Geometry, Material & Coating)	R	E	E
Design for Reliability and Manufacturability	R	E	E
Introduction to Mechanical Properties of Materials	E	R	E
Material Testing and Characterization I (Micro/Nano-Mechanical Testing)	E	R	E
Material Testing and Characterization II (Scratch Testing)	E	R	E
High Resolution Imaging - Atomic Force Microscopy (AFM)	E	R	E
Tribology (Friction and Wear)	E	R	E
Introduction to Finite Element Modeling of Manufacturing Processes	E	E	R
Finite Element Modeling of Machining Processes I (Introduction)	E	E	R
Finite Element Modeling of Machining Processes II (Application)	E	E	R
Finite Element Modeling of Machining Tool Design	E	E	R
Finite Element Modeling of Additive Manufacturing Operations	E	E	R
Lean Manufacturing I (Basics)	E	E	R
Lean Manufacturing II (Toolbox)	E	E	R

Duration: 6-8 hours/course

The courses are conveniently designed to take one day, so that by taking one course per week, participants can earn a certificate in approximately 3 months.

Normal Certificate Cost: \$4,500
 NGen Member Price: \$3,600
 AmpUp Participants Pay: **\$1,800**

Participants will select required and elective courses according to their interests and will earn a McMaster Certificate of Completion.

Prerequisites

A degree, diploma or considerable practical experience in manufacturing processes like machining and forming



**For more Info and
to Apply Today**

