What will I learn?

Here's what you can look forward to discovering with the McMaster Manufacturing Research Institute.

Advanced Manufacturing and Industry 4.0

Weeks 1 and 2: Introduction to advanced manufacturing and industry 4.0

- The history of manufacturing – where we are now and how we got here
- How "digital transformation is revolutionizing the state of modern manufacturing
- An introduction to automation in manufacturing
- The role of robotics in manufacturing processes
- The big challenges that come with automation
- Smart manufacturing and the Internet of Things
- The role of sensors and digitalization in modern manufacturing

Weeks 3 and 4: Condition-based monitoring

- The state of modern manufacturing, and what it takes to remain competitive
- The huge cost of downtime, and ways we can reduce it
- What is condition-based monitoring
- Considerations for bringing in a condition-based monitoring system
- Emerging trends and the future of condition-based monitoring
- Visit in-person for a live demonstration and activity on MMRI's linear axis testbed (or join online)

Weeks 5 and 6: Data driven decision making and automation

- Data analysis in a manufacturing context
- Key types of data you need when making decisions
- Benefits of data driven decision making and key frameworks for decision making
- Process automation tools
- What you need to think about when automating processes
- Complete a practice data analysis project in-class with the instructor

Project Management

Weeks 1 and 2: Project management

- Introduction to how Project Management works in an industrial setting
- Understanding the Work Breakdown Structure and its relevance and practical applications
- Program Evaluation and Review Technique/Critical Path: managing and quantifying estimates and milestones in a practical and critical way
- Assigning tasks, driving accountability and managing execution

Weeks 3 and 4: Lean in manufacturing

- Introduction to and history of Lean for manufacturing

- The panoply of tools and what really matters to make an impact
- Putting it together with a focus on manufacturing operations

Weeks 5 and 6: Operations management and simulation

- Introduction to operations simulation
- Building blocks in operations design and management
- Fundamental Factory Physics model
- Performance maps for line management