

INTEGRATED METALS: MACHINE TOOL TECHNOLOGY - DEGREE

Limited Entry Associate of Applied Science Degree Program | mhcc.edu/
IntegratedMetals (<http://mhcc.edu/IntegratedMetals/>)

Faculty Advisers

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The Machine Tool program prepares students to enter the machine tool workforce. Students will learn to set up and run CNC lathes, milling machines, and other trade equipment. The program also explores CNC (computer numerical control) and CAD/CAM (computer assisted design / computer assisted machining).

Note: Students are required to maintain a minimum grade of "C" in all IMTL and MFG courses. All core courses must be completed within 5 years in order for the degree to be awarded.

Employment Opportunities

Students completing the Machine Tool Technology program are prepared for entry into the manufacturing workforce leading to careers that provide support for industries such as:

- Forest products/paper/lumber
- Medical technologies
- Transportation and aerospace technologies
- Computer hardware technologies
- Heavy industrial manufacturing
- Hydraulic/pneumatic equipment manufacturing
- And many other manufacturing settings

Program Outcomes

At the completion of this program, students should be able to:

- Demonstrate and/or describe safe work habits and environmental issues associated with modern manufacturing settings
- Read, interpret and apply blueprints for the production and inspection of manufactured work pieces
- Demonstrate the correct application and use of precision measuring equipment commonly found in a manufacturing setting
- Plan and produce work pieces on a manual drill press, manual engine lathe, and manual milling machine to required blueprint specifications using common industry methods
- Demonstrate, explain and/or apply CNC/CAD/CAM machine tools and software to produce work pieces to required blueprint specifications

Students interested in transferring to OIT should consult with program advisers early in the first quarter.

For the most part, courses that fulfill general education requirements can be taken in any term.

Admitted students may also log on to Navigate (<https://mhcc.campus.eab.com/home/>) to start the process of building an academic plan based on this major and can notify an adviser for review.

First Quarter

Fall		Credits
IMTL110	Machine Shop I Theory	3
IMTL111	Machine Shop I Lab	3
IMTL114	Blueprint Reading for the Metals Industry	3
IMTL116	Introduction to Precision Measuring	3
IMTL118	Machine Shop Math Applications	2
WR101 or WR121Z	Workplace Communications I ★ or Composition I ★	3-4
Credits		17-18

Second Quarter

Winter		
IMTL130	Machine Shop II Theory	3
IMTL131	Machine Shop II Lab	3
IMTL134	Metallurgy Theory	3
IMTL135	Metallurgy Lab	1
IMTL136	Introduction to CNC (Computer Numerical Control) Machining	3
Human Relations requirement (https://catalog.mhcc.edu/degree-certificate-requirements/aas/#human)		3-4
Credits		16-17

Third Quarter

Spring		
IMTL150	Machine Shop III Theory	3
IMTL151	Machine Shop III Lab	3
IMTL153	CNC (Computer Numerical Control) Machining	4
IMTL155	Industrial Safety	3
MTH095	Intermediate Algebra with Right Triangle Trigonometry ★ (or MTH111Z or higher)	5
Credits		18

Fourth Quarter

Fall		
MFG213	Integrated Machine Shop I Theory	2
MFG214	Integrated Machine Shop I Lab	3
MFG216	CNC/CAM (Computer Numerical Control/Computer Assisted Machining)	4
MFG217	Modern Manufacturing Concepts	3
Credits		12

Fifth Quarter

Winter		
IMTL157	Introduction to Computer-Aided Design for Machinists	2
IMTL215	Inspection and Measurement	1
IMTL236	Quality Control: Statistical Methods	3
MFG232	Integrated Machine Shop II Lab	3
MFG234	Advanced Manufacturing Processes	3
Select one of the following:		3-4

WLD116	General Welding I	
WE280MF_	Cooperative Education Internship	
Credits		15-16
Sixth Quarter		
Spring		
IMTL257	Geometric Dimensioning and Tolerancing	3
MFG212	CAM (Computer-Assisted Machining) Concepts I	4
MFG251	Applied Machine Shop Lab	3
MFG254	Manufacturing Economics and Job Prep	3
Health and Physical Education requirement (https://catalog.mhcc.edu/degree-certificate-requirements/aas/#health)		3
Credits		16
Total Credits		94-97

Exploring **Machine Tool** as your major? Learn more with MHCC's Career Coach (<https://mhcc.lightcastcc.com/programs/integrated-metals-machine-tool-technology-degree/209250/?region=Greater%20Multnomah%20County%20Area&radius=100%20miles>), which covers: skills needed for each career, wages, employment rates, and live job postings in the Greater Multnomah County Area.

Careers related to machine tool:

- Machinists (<https://mhcc.lightcastcc.com/careers/machinist/?region=Greater%20Multnomah%20County%20Area&radius=100%20miles>)
- Computer Numerically Controlled Tool Operators (<https://mhcc.lightcastcc.com/careers/computer-numerically-controlled-tool-operator/?region=Greater%20Multnomah%20County%20Area&radius=100%20miles>)
- Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic (<https://mhcc.lightcastcc.com/careers/multiple-machine-tool-setter-operator-and-tender-metal-and-plastic/?region=Greater%20Multnomah%20County%20Area&radius=100%20miles>)
- Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic (<https://mhcc.lightcastcc.com/careers/lathe-and-turning-machine-tool-setter-operator-or-tender-metal-and-plastic/?region=Greater%20Multnomah%20County%20Area&radius=100%20miles>)
- Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic (<https://mhcc.lightcastcc.com/careers/extruding-and-drawing-machine-setter-operator-and-tender-metal-and-plastic/?region=Greater%20Multnomah%20County%20Area&radius=100%20miles>)
- Forging Machine Setters, Operators, and Tenders, Metal and Plastic (<https://mhcc.lightcastcc.com/careers/forging-machine-setter-operator-and-tender-metal-and-plastic/?region=Greater%20Multnomah%20County%20Area&radius=100%20miles>)
- Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic (<https://mhcc.lightcastcc.com/careers/cutting-punching-and-press-machine-setter-operator-and-tender-metal-and-plastic/?region=Greater%20Multnomah%20County%20Area&radius=100%20miles>)

Admission Information

The Integrated Metals (Welding and Machine Tool Technologies) programs are limited entry programs. Students are admitted on a first-come, first-served basis if they meet the criteria.

1. Read the program information (<https://mhcc.edu/IntegratedMetalsProgramDetails/>)
2. Review the admission process (<https://mhcc.edu/IntegratedMetalsAdmission/>)
3. Apply (https://my.mhcc.edu/ICS/Resources/Limited_and_Restricted_Entry_Programs_Application.jnz)