

MANUFACTURING TECHNOLOGY (AS DEGREE S0918)

Technology and Health Division

The Associate in Science degree in Manufacturing Technology is designed to prepare students for entrance into the manufacturing field in one of the machining occupations such as manual and computer numerical control (CNC) machinists, machinery technicians, or machinist apprentices, computer aided design (CAD) operators, draftsmen, or design engineers, and computer aided manufacturing (CAM) machine programmers. This program provides students with a broad foundation in common manufacturing processes such as injection molding, vacuum forming, sheet metal, casting processes, and laser cutting.

Graduates may enter the manufacturing field in areas dealing with production, research and development, tool and die construction, mold making, or computerized manufacturing. Laboratory practice utilizes industrial types of equipment and precision measuring instruments to provide training in the various machining occupations. This degree covers setup and tooling procedures and part certification upon completion of the metal removing process. It includes instruction on industry-based CAD and CAM methodologies and all types of lathes, mills, grinders, and specialized equipment such as CNC. Supplementary instruction is also provided in mechanical literacy, bench work, layout, inspection process, blueprint reading, metal composition, heat treatment, assembly procedures, jig and fixture design, and construction.

This degree requires the completion of General Education coursework plus the following:

Required Courses

Course Prefix	Course Name	Units
MFG 110	Introduction to CAD	4
MFG 120	CAD for Manufacturing	4
MFG 130	Manufacturing Processes and Materials	3
MFG 140	Print Reading and Shop Practice	3
MFG 150	Manual Machining I	3
MFG 155	Manual Machining II	2
MFG 160	Introduction to Mechanical Principles	3
MFG 210	Advanced CAD	3
MFG 220	Computer Aided Manufacturing II	3
MFG 250	Introduction to CNC Programming	3
MFG 260	CNC Operation	3
Three (3) units of Work Experience		3
EDT 89	Engineering Design Technology Work Experience	
Total Units		37

Manufacturing Website (<http://www.mtsac.edu/manufacturing/>)

Program Learning Outcomes

Upon successful completion of this program, a student will:

- Be technically competent.
- Be employed or seeking employment in their area or a related area.
- Demonstrate ability to create a CAD model, 2D print, or fabricate a part from a 2D print using manual or CNC methods.

Review [Student Learning Outcomes \(SLOs\)](#) for this program.

Looking for guidance? A counselor can help. This Guided Pathways for Success (GPS) is a suggested sequence of coursework needed for program completion. It is not an official educational plan. Schedule an appointment (<https://esars2012.mtsac.edu/appointments/counseling/eSARS.asp?WCI=Init&WCE=Settings>) with a counselor or advisor as soon as possible to create an individualized Mountie Academic Plan (MAP) specific to your goals and needs.

Course	Title	Units
Fall Term 1		
MFG 110	Introduction to CAD ⁴	4
MFG 140	Print Reading and Shop Practice ³	3
AA/S MATH	Meet AA/AS Math Comptcy Req ⁵	5
Units		12
Winter Term 1		
MFG 120	CAD for Manufacturing ⁴	4
MFG 150	Manual Machining I ³	3
Units		7
Spring Term 1		
MFG 130	Manufacturing Processes and Materials ³	3
MFG 210	Advanced CAD ³	3
EDT 89	Engineering Design Technology Work Experience ¹	1-3
ENGL 1A	Freshman Composition ⁴	4
AA/S KINES	Phys Ed (KIN) Activity Course ¹	3
Certificate: CAD Technician E0426 ⁶		
Submit petition to Admissions Records ^{Submit petition to Admissions Records}		
Units		14-16
Summer Term 1		
MFG 160	Introduction to Mechanical Principles ³	3
SPCH 1A	Public Speaking ⁴	4
Certificate: Manufacturing Foundation E0421 ¹		
Submit petition to Admissions Records ^{Submit petition to Admissions Records}		
Units		7
Fall Term 2		
MFG 180	Introduction to MasterCAM ³	3
MFG 250	Introduction to CNC Programming ³	3
EDT 89	Engineering Design Technology Work Experience ¹	1-3
AA/S BEHAV	Area D-2 Elective Course ³	3
AA/S ARTS	Area C-1 Arts Course ³	3
Units		13-15
Winter Term 2		
A/AS SELF	³	3
MFG 155	Manual Machining II ²	2
Units		2
Spring Term 2		
MFG 220	Computer Aided Manufacturing II ³	3
MFG 260	CNC Operation ³	3

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EDT 89	Engineering Design Technology Work Experience ¹	1-3
AA/S HUM	Area C-2 Humanities Course ³	3-4
AA/S SCNCE	Area B-1 or B-2 Science Course ³	3-5
Certificate: Master CAM E0927 ⁷		
Certificate: Manufacturing Technology, T0918 ⁸		
Certificate: CNC Technician E0431 ¹		
Submit petition to Admissions Records <small>Submit petition to Admissions Records</small>		
Units		13-18
Summer Term 2		
AA/S USHIS	Area D-1 Hist/Pol Sc Course ³	3
Manufacturing Technology AS S0918 ⁸		
Submit petitions to Admissions Records <small>Submit petitions to Admissions Records</small>		
Units		3
Total Units		71-80