

MANUFACTURING TECHNOLOGY CERTIFICATE

32 Semester Credit Hours; Curriculum: 0271

This certificate offers a general multi-purpose curriculum which covers a broad area of manufacturing technology.

Code	Title	Hours
Courses for a Certificate		
CAD 116 or MFG 102	Basic AutoCAD Industrial Drafting and Design	3
MFG 110	Introduction to Machining	3
MAT 114	Applied Mathematics I	4
MFG 135	Hydraulics, Pneumatics and Controls	3
MFG 140	Introduction to Robotics and Vision Systems	4
MFG 165	Mastercam Computer Aided Manufacturing	4
MFG 240 or MFG 245	Programmable Logic Controllers (PLC) Programmable Automation Controllers (PAC)	4
MFG 141	CNC Machine Operation - NIMS Test Preparation	4
Select one of the following: 3		
ELT 101	Introduction to Electronics	
MFG 111	Introduction to Computer Integrated Manufacturing (CIM)	
MFG 144	Introduction to CNC Programming	
MFG 250	Advanced Automation Applications (PLC/PAC/HMI)	
Total Hours		32

Program Learning Outcomes

1. Create and prove "G" code programs to machine parts on a CNC turning center and a CNC milling center that meet the part specification,
2. Design, build, and troubleshoot hydraulic or pneumatic powered machine, based on basic physics principals that apply to fluid power.
3. Rate an industrial process to decide if it qualifies as an automation or robotic work cell based on principles of Computer Integrated Manufacturing,
4. Compose state diagrams based on machine mechanisms and operating sequences, flow charts, and PLC ladder programs that meet OSHA safety requirements,
5. Choose an industrial machine operation or manufacturing process instruction manual for operators and maintenance personnel.
6. Prepare basic CAD schematics and drawings for electrical control, fluid power, PLC and I/O wiring, and mechanical systems.

Manufacturing Technology Certificate Pathway

The following Pathway is recommended for students pursuing the Manufacturing Technology Certificate.

Course	Title	Hours
First Year		
Semester One		
MAT 114	Applied Mathematics I	4
MFG 110	Introduction to Machining	3
MFG 140	Introduction to Robotics and Vision Systems	4

CAD 116 or MFG 102	Basic AutoCAD or Industrial Drafting and Design	3
MFG 240 or MFG 245	Programmable Logic Controllers (PLC) or Programmable Automation Controllers (PAC)	4
Hours		18
Semester Two		
MFG 135	Hydraulics, Pneumatics and Controls	3
MFG 141	CNC Machine Operation - NIMS Test Preparation	4
MFG 165	Mastercam Computer Aided Manufacturing	4
Select one of the following:		3-5
ELT 101	Introduction to Electronics	
MFG 111	Introduction to Computer Integrated Manufacturing (CIM)	
MFG 144	Introduction to CNC Programming	
MFG 250	Advanced Automation Applications (PLC/PAC/HMI)	
Hours		14
Total Hours		32

Note: Pathway is a recommended sequence of courses. Part-time students should contact the department chair or program coordinator to discuss a part-time pathway as well as course prerequisites and recommendations.