

# MANUFACTURING MACHINING TECHNICIAN - ASSOCIATE OF APPLIED SCIENCE (AAS)

## Program Description

The Manufacturing Machining Technician Associate of Applied Science prepares students to apply basic utilization skills for the identification and resolution of production problems in the manufacture of products. The program includes instruction in machine operations, production line operations, utilization improvements, physical controls, automation, computer-aided manufacturing (CAM), manufacturing planning, quality control, and informational infrastructure.

The degree benefits students who are new to design and machining technology and those who are currently in the field but looking to expand skills and increase career opportunities. Students who have a non-technology career in another field may find this degree optimum for cross training into the CAD/CAM and manufacturing technology discipline.

## Program Learning Outcomes

Upon successful completion of the program, students will be able to:

1. Use fixture design in production environment.
2. Analyze machine operation for optimization opportunities.
3. Develop part-holding options for computer numerical control lathe and mill.
4. Model effective and appropriate communication with manufacturing professionals and clients.

## Entrance Requirements

### Academic Entrance Requirements

Recommended:

- High school diploma or GED
- Completion of MTH 060 Beginning Algebra or minimum placement Math Level 10
- Successful completion of or current enrollment in MFG 100 MFG Orientation
- College-level computer skills

## Additional Program Costs (Beyond Standard Tuition/Fees and Textbooks)

### Material Costs

Required:

- Machining personal protective equipment and tools: approximately \$250:
- Hardcopy of textbook and packet (electronic versions do not have a cost): approximately \$220

Recommended:

- A desktop or laptop computer capable of running the latest version of the Windows operating system and the latest version of Microsoft Office: approximately \$600

## Enrollment Fees

- Fees on specific MFG courses (estimated \$1,100 total)

## Course Requirements

Course	Title	Credits
<b>Core Courses</b>		
MFG 100	MFG Orientation	1
MFG 101	Blueprint Reading	3
MFG 103	Welding Technology I	4
MFG 110	Manufacturing Processes I	4
MFG 119	Manufacturing Design and Drafting Techniques	4
or MFG 119M	Mechanical Drawing Techniques	
MFG 133	Quality Assurance	3
MFG 161	CNC Project I	4
MFG 250	Additive Manufacturing	2
MFG 256	CNC Mill Programming	4
MFG 257	CNC Mill Setup & Operation	4
MFG 258	Mastercam Mill	4
MFG 259	CNC Lathe Programming	4
MFG 260	CNC Lathe Setup & Operation	4
MFG 261	Mastercam Lathe	4
MFG 268	Production CNC Operations Mill	3
MFG 270	CNC Fixture Design Mill	3
MFG 277	Production CNC Operations Lathe	3
MFG 278	CNC Fixture Design Lathe	3
MFG 279	CNC Project II	4
MFG 280	Co-op Work Experience Manufacturing	1-4
MFG Electives		13
<b>Support Courses</b>		
Choose one course from the following:		3-4
COMM 115	Introduction to Intercultural Communication	
COMM 218	Interpersonal Communication	
COMM 219	Small Group Communication	
MTH 102	Applied Technical Mathematics (Or one math course from the foundational requirements math list)	4
WR 121	Academic Composition	4
<b>Total Credits</b>		<b>90-94</b>

## Advising Notes

Nearly all MFG courses are self-directed and outcome based. This provides students with a greater degree of flexibility than many other programs.

Upon starting their program, students review their desired certificate or degree outcome with their advisor, and a sequence of coursework is identified for them. This is particularly important if developmental work is needed.

This AAS is designed for students planning to enter the manufacturing workforce upon graduation. Often only selected credits are considered transferable to public or private baccalaureate institutions. Before starting any manufacturing program, students are advised to contact the institution to which they intend to transfer and identify what credits may be transferable.

## Performance Standards

Academic Requirements:

- Students must have a 2.0 cumulative GPA to earn a COCC certificate or degree.
- All courses in the program must be completed with a grade of C or higher.

## Sample Plan

First Term		Credits
MFG 100	MFG Orientation	1
MFG 101	Blueprint Reading	3
MTH 102	Applied Technical Mathematics (Or one math course from the foundational requirements math list)	4
MFG 110	Manufacturing Processes I	4
MFG 119 or MFG 119M	Manufacturing Design and Drafting Techniques or Mechanical Drawing Techniques	4
<b>Credits</b>		<b>16</b>
Second Term		
MFG 133	Quality Assurance	3
MFG 256	CNC Mill Programming	4
MFG 250	Additive Manufacturing	2
MFG 257	CNC Mill Setup & Operation	4
Choose one course from the following:		3-4
COMM 115	Introduction to Intercultural Communication	
COMM 218	Interpersonal Communication	
COMM 219	Small Group Communication	
<b>Credits</b>		<b>16-17</b>
Third Term		
MFG 161	CNC Project I	4
MFG 259	CNC Lathe Programming	4
MFG 260	CNC Lathe Setup & Operation	4
WR 121	Academic Composition	4
<b>Credits</b>		<b>16</b>
Fourth Term		
MFG 103	Welding Technology I	4
MFG 258	Mastercam Mill	4
MFG 268	Production CNC Operations Mill	3
MFG 270	CNC Fixture Design Mill	3
<b>Credits</b>		<b>14</b>
Fifth Term		
MFG 261	Mastercam Lathe	4
MFG 277	Production CNC Operations Lathe	3
MFG 278	CNC Fixture Design Lathe	3

MFG elective		4
<b>Credits</b>		<b>14</b>
Sixth Term		
MFG 280	Co-op Work Experience Manufacturing	1-4
MFG 279	CNC Project II	4
MFG elective		4
MFG elective		5
<b>Credits</b>		<b>14-17</b>
<b>Total Credits</b>		<b>90-94</b>