

# CNC MACHINING - TWO YEAR CERTIFICATE OF COMPLETION (CC2)

## Description

The CNC Machining Two Year Certificate of Completion program is a self-directed, outcome-based program designed to prepare students for technician-level employment in manufacturing environments using CNC equipment.

## Learning Outcomes

1. Demonstrate appropriate basic technical knowledge and practical skills necessary for entry-level employment in Computer Numeric Control Machining including but not limited to:
  - a. Safely perform routine workplace tasks in a manufacturing environment on advanced machinery.
  - b. Perform routine service of typical CNC machinery, tooling, equipment, and software applications.
  - c. Demonstrate entry-level technical CNC machining skills consistent with industry/manufacture standards.
  - d. Inspect, evaluate, and document manufactured component within compliance of industry specifications or code by utilization of software applications.
  - e. Acquire workplace human dimension skills, computer aided drafting (CAD), computer aided machining (CAM), and applicable computer software applications.

## Entrance Requirements

### Academic Entrance Requirements

- Recommended:
  - High school diploma or GED.
  - Completion of MTH 060 Beginning Algebra I 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

- Welding personal protective equipment and tools, approximately \$400.

### Enrollment Fees

- Fees on specific MFG courses (\$410 total).

## Course Requirements

Course	Title	Credits
<b>Core Courses</b> <sup>1</sup>		
MFG 100	MFG Orientation	1
MFG 101	Blueprint Reading	3
MFG 103	Welding Technology I	4

MFG 110	Manufacturing Processes I	4
MFG 112	Manufacturing Processes II	3
MFG 114	Manufacturing Processes III	3
MFG 115	Design Processes I	4
MFG 133	Quality Assurance	3
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
<b>Other Required Courses</b>		
Choose one from the following:		3-4
BA 178	Customer Service	
BA 285	Business Human Relations	
COMM 115	Introduction to Intercultural Communication	
COMM 218	Interpersonal Communication	
COMM 219	Small Group Communication	
MTH 102	Applied Technical Mathematics (or choose from the foundational requirements math list)	4
WR 121	Academic Composition	4
Total Credits		60-61

<sup>1</sup> Most manufacturing courses carry a \$25-\$75 fee to cover software or lab materials (see class schedule for individual courses and fees).

## Advising Notes

Nearly all manufacturing technology courses are self-directed, outcome-based curricula. This provides students with a greater degree of flexibility than most other COCC programs. The Manufacturing and Applied Technology Center hours of operation provide students with ample time to complete their coursework during a term.

Upon starting their program, students review their desired certificate or degree outcome with their advisor and a sequence of coursework is identified for them. With the exception of classes in a series (e.g. Manufacturing Processes I, II, III) or those with specific prerequisites (as identified in the catalog) most classes can be taken in any order, provided that instructor permission is obtained.

This certificate is designed for students planning to enter their chosen career upon graduation. Often only selected credits are considered transferable to public or private baccalaureate institutions. Prior to starting any manufacturing technology 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.
- Additional Requirements:
  - None

## Sample Plan

<b>First Term</b>		<b>Credits</b>
MFG 100	MFG Orientation	1
MFG 101	Blueprint Reading	3
MFG 103	Welding Technology I	4
MFG 110	Manufacturing Processes I	4
MTH 102	Applied Technical Mathematics (choose from the foundational requirements math list)	4
Credits		16
<b>Second Term</b>		
MFG 112	Manufacturing Processes II	3
MFG 115	Design Processes I	4
MFG 133	Quality Assurance	3
WR 121	Academic Composition	4
Credits		14
<b>Third Term</b>		
MFG 114	Manufacturing Processes III	3
MFG 256	CNC Mill Programming	4
MFG 257	CNC Mill Setup & Operation	4
Choose one course from the following;		3-4
BA 178	Customer Service	
BA 285	Business Human Relations	
COMM 115	Introduction to Intercultural Communication	
COMM 218	Interpersonal Communication	
COMM 219	Small Group Communication	
Credits		14-15
<b>Fourth Term</b>		
MFG 258	Mastercam Mill	4
MFG 259	CNC Lathe Programming	4
MFG 260	CNC Lathe Setup & Operation	4
MFG 261	Mastercam Lathe	4
Credits		16
Total Credits		60-61