

# Minnesota State College Southeast

## MACH 1641: Introduction to CNC Precision Machining Technology

### A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: \*.\*

Lab Hours/Week: 8

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: None

MnTC Goals: None

This course will familiarize the student with CNC machining and set up. Students will write programs and run programs on the various machines on the shop floor. Students will use both word address and conversational programming formats. (Prerequisites: MACH1601, MACH1605, MACH1610, MACH1615 with concurrent enrollment in MACH1630) (4 Credits: 0 lecture/4 lab)

**B. COURSE EFFECTIVE DATES:** 01/27/2016 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. Safety considerations
2. Calculate machining data
3. Write programs
4. Setup for CNC machines
5. Operation of CNC machines
6. Measure parts and compare to specifications

#### **D. LEARNING OUTCOMES (General)**

1. Demonstrate professionalism
2. Explain machine shop safety
3. Practice machine shop safety
4. Wear safety glasses & proper attire
5. Use reference books
6. Understand machine shop formulas
7. Calculate speeds & feeds
8. Calculate depth of cut
9. Saw parts
10. Identify steel types
11. Keep tools clean
12. Maintain work area
13. Set up proper stop
14. Use proper fixture
15. Write CNC programs
16. Verify CNC programs
17. Set up CNC machine
18. Select proper tooling
19. Use proper tool holders
20. Use correct carbide tooling
21. Use cutter compensation
22. Check CNC set up
23. Run program on CNC machine tool
24. Set tool offset
25. Set work offset
26. Load correct tool
27. Download program
28. Heat treat part components
29. Machine parts on surface grinder
30. Use correct wheel types
31. Machine work surfaces flat
32. Analyze surface texture
33. Fabricate parts to print
34. Produce proper hole sizes
35. Complete CNC prints
36. Complete work assignments
37. Clean work area
38. Take final exam

#### **E. Minnesota Transfer Curriculum Goal Area(s) and Competencies**

None

**F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

**G. SPECIAL INFORMATION**

None noted