

Minnesota State College Southeast

MACH 1615: Precision Machining Processes

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: *.*

Lab Hours/Week: 6

OJT Hours/Week: *.*

Prerequisites: None

Corequisites: None

MnTC Goals: None

This course will familiarize the student with what can be done with both manual machine tools and computer aided machine tools used in the manufacturing process. The student will have hands on experience with manual and computer type machines. Topics of study include setup, operation, and troubleshooting on both machine types. Safety, measuring parts to print, proper set up, speeds & feeds, and cutting tool usage, manual programming of CNC machines will also be covered. (Prerequisites: MACH1601 [or taken concurrently]) (3 Credits: 0 lecture/3 lab)

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

C. OUTLINE OF MAJOR CONTENT AREAS

1. Safety considerations
2. Setup and operation of manual machines
3. Calculate machining data
4. Setup CNC machines
5. Operate CNC machines
6. Measure parts and compare to specifications

D. LEARNING OUTCOMES (General)

1. Demonstrate professionalism
2. Practice machine shop safety
3. Wear safety glasses & proper attire
4. Use reference books
5. Identify steel types
6. Use correct tool steel types
7. Saw parts
8. Calculate speeds & feeds
9. Calculate depth of cut
10. Set up tooling for machining
11. Set up proper stops
12. Use proper fixture
13. Use correct carbide tooling
14. Use hand tools
15. Sharpen tools
16. Use correct tools
17. Keep tools clean
18. Maintain work area
19. Machine hole types
20. Machine parts on engine lathe
21. Machine parts on milling machine
22. Machine parts on surface grinder
23. Use correct wheel types
24. Use proper indicator types
25. Set up CNC machine
26. Check CNC set up
27. Check offsets
28. Run CNC machine tools
29. Complete CNC assignments
30. Heat treat part components
31. Use hardness tester
32. Measure parts to print
33. Use comparator
34. Complete all assigned tasks or jobs
35. Clean work area
36. 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