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