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