

Minnesota State College Southeast

MACH 2642: CNC Precision Machining Application

A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 1

Lab Hours/Week: 6

OJT Hours/Week: *.*

Prerequisites: None

Corequisites: None

MnTC Goals: None

This course will focus on CNC machining using all computer numerical control machines available in the shop, including electrical discharge machines, mills, and lathes. Presentation & lecture time will discuss jig & fixture theory, and methods of writing CNC programs. The student will be responsible for the programming, set-up and safe operation of all machines. Projects will be assigned by the instructor for each type of machining. (Prerequisites: MACH1601, MACH1605, MACH1610, MACH1615, MACH1625, MACH1630, MACH1641, MACH1650, MACH1661 or equivalent) (4 Credits: 1 lecture/3 lab)

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

C. OUTLINE OF MAJOR CONTENT AREAS

1. Safety considerations in CNC set-up & operations
2. Learning G & M code programming language
3. Fixture design for CNC mill application
4. 3-D surface machining in a CNC mill
5. Math calculations related to feed & speed selection for tooling
6. Develop 5-S program skills

D. LEARNING OUTCOMES (General)

1. Identify safety rules
2. Wear proper eye protection
3. Wear proper safety attire
4. Presentation and lecture will discuss jig and fixture theory
5. Use CAD system to design projects
6. Design and build tooling fixtures and drill jigs
7. Demonstrate proper tool set-up and off-set data entry on CNC mill
8. Demonstrate knowledge of insert selection data for mill cutters
9. Demonstrate knowlege of speed and feed selection related to part materials
10. Operate computer aided machine tools safely by performing a block-step program check
11. Use precision measuring tools
12. Use EDM machining where appropriate
13. Run sample part
14. Complete inspection of part
15. Clean all machines (5-S program)
16. Lubricate machine tools (5-S program)

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

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted