

Minnesota State College Southeast

MACH 2633: CNC Precision Machining Mill

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 Center operations used to support metal stamping die making & tool manufacturing. Each student will manufacture a feature of a blanking die in this course. The student will be responsible for the proper integrated assembly of their die feature with those of other students, and the finished project must produce an accurate stamped part. (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. Metal stamping die making theory
4. Wire electrical discharge machining as applied to die making
5. Mathematical calculations related to die making
6. Develop 5-S program skills

D. LEARNING OUTCOMES (General)

1. Identify safety rules
2. Wear proper eye protection
3. Wear proper attire
4. Use CAD system to design stamping die features
5. Demonstrate proper tool set-up and off-set data entry on CNC Mill
6. Demonstrate knowledge of insert selection data for mill cutters
7. Demonstrate knowledge of speed and feed selection related to part materials
8. Operate computer aided machine tools safely by performing a block-step program check
9. Use precision measuring tools
10. Manufacture stamping die components using CNC machine tools
11. Use EDM machining where appropriate
12. Assemble punch and die members to industry standards
13. Practice knowledge of metallurgy to heat treat tool steel materials
14. Verify hardness of heat treated materials on Rockwell test
15. Set up die in punch press
16. Run sample part
17. Complete inspection of part
18. Clean all machines (5-S program)
19. 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