

Course discipline/number/title: CAD 1145: Manufacturing Materials and Processes I

A. CATALOG DESCRIPTION

1. Credits: 3
2. Hours/Week: 1 lecture, 4 lab
3. Prerequisites (Course discipline/number): None
4. MnTC Goals (if any): NA

This course will give the student a firm foundation in shop safety, blue print reading, the use and care of measuring instruments and various other hand tools used in the machining field. The student will also learn about the operation of vertical milling machines, engine lathes, cut-off saws, and other machine shop equipment. They will also be introduced to product assembly and fastening technology fundamentals. This will be taught with emphasis placed on the gaining hands on experience.

B. DATE LAST REVISED (Month, year): May, 2017

C. OUTLINE OF MAJOR CONTENT AREAS:

1. Safety in the Machine Shop
2. Systems of Measurement
3. Using and Reading Steel Rules
4. Using Micrometers and Calipers
5. Basic Art of Machining Metal
6. Square a vise in a Milling Machine
7. Manual Milling Machine
8. CNC Milling
9. Manual Lathe
10. CNC Lathe
11. Calculating Speeds and Feeds
12. Drilling and Tapping Operations
13. Mechanical assembly techniques

D. LEARNING OUTCOMES (GENERAL): The student will be able to:

1. Demonstrate how to work safely in the shop.
2. Explain the proper use of many common shop tools.
3. Use micrometers, calipers and measuring instruments with accuracy.
4. Square a vise in the CNC and manual milling machines.
5. Create tolerance parts using a vertical manual mill.
6. Create a tolerance part on the CNC Mill.
7. Create a tolerance part using the manual lathe.
8. Create a tolerance part on the CNC lathe.
9. Program a part using conversational mill programming.
10. Use the correct speeds and feeds for cutting.
11. Drill and Tap metal parts.
12. Inspect parts then produce a report on the accuracy.

E. LEARNING OUTCOMES (MNTC): NA

F. METHODS FOR EVALUATION OF STUDENT LEARNING:

Methods may include but not limited to:

1. Evaluation of Class Projects
2. Skill Proficiency
3. Quizzes and Exams

G. RCTC CORE OUTCOME(S) ADDRESSED:

Personal and Professional Accountability. Students will take responsibility as active learners for achieving their educational and personal goals.



- H. SPECIAL INFORMATION (if any):
  - 1. Safety Glasses are required.