

COCONINO COMMUNITY COLLEGE
COURSE OUTLINE

Prepared by: Ken Mortenson
Revised By: Joe Costion
Revised by: David Ramos
Status: Dual Enrollment Students Only
Effective: Fall 2014

Sept.5, 2000
Fall 2005
January 31, 2014

A. Identification:

1. Subject Area: Machine Shop (MCH)
2. Course Number: 111
3. Course Title: Machining Level II
4. Credit Hours: 3
5. Course Description: Operation of machine shop tools including: engine lathe operation: set-up, cutting speeds and feed, threading tapers; milling operations: set-up, boring & gear cutting; Computer Numerical Control (CNC) Milling Machine: Programs in CNC & set-ups. *Course is only available to dual enrollment students. May be taken for S/U credit. Prerequisite: MCH 110. Two lecture. Two lab.

B. Course Goals:

Students will utilize basic metallurgical knowledge in machining on Engine Lathes and Milling Machines to produce machine parts in a safe, accurate and timely procedure, meeting the requirements of today's technology.

C. Course Outcomes: Students will:

1. demonstrate safe operation of the lathe, the Milling Machine and the CNC Milling Machine;
2. determine the correct cutting speed and feed rates of the lathe including:
 - a. measure, set -up and cutting tapers;
 - b. set-up a steady rest & follower rest;
 - c. set-up and perform single point threads on an engine lathe (inside & outside);
3. determine the correct cutting speed and feed rates of the Milling Machine including:
 - a. determine and select the correct cutters per machine operation;
 - b. set-up for Boring and Line boring;
 - c. set-up Indexer and Rotary table;
4. determine the correct cutting speed and feed rates of the CNC Milling Machine including:
 - a. write a CNC program for performing a specific operation;
 - b. set-up machine tools and cutters to run program operation;
 - c. and run program.

D. Course Content:

1. Metallurgical applications to machining.
2. Job plan: Layout, Operation sheets, etc.
3. Criteria for proper cutter selection and use of machine tools.
4. Common principles of machining for all machine tools
5. Job planning using CNC to program lab machines; evaluate and perform the operation.