Edison State Community College

Syllabus for

Survey of Manufacturing Processes (MFG 114S)

PREREQUISITE: None

ACADEMIC CREDIT: 4 Semester hours

COURSE DESCRIPTION: Nomenclature, functions and capabilities of the machine shop and manufacturing processes. Students will complete projects utilizing common pieces of machine shop equipment including drill presses, lathes, milling machines and surface grinders.

REQUIRED SUPPLIES: None

TEXTBOOK: Hoffman, Peter J. and Eric S. Hopewell, *Precision Machining Technology,* 3rd edition, (Cengage Learning, 2018).

Additional projects and study materials will be provided by the instructor.

GRADING POLICIES: Your grade will be determined by your accumulated performance on:

- Midterm exam and final exam (50%)
- Quizzes (20%)
- Graded projects (30%)

The grade of each assignment will be reduced by 10% for each class period that it is late.

Final letter grades will be assigned as follows:

A = 90% to 100%
B = 80% to 89%
C = 70% to 79%
D = 60% to 69%

ATTENDANCE POLICY: Attendance is a critical component to your success in this course. Being absent could result in missed lab time that is difficult to make up. Because of this, the following attendance policy applies:

**** Students who miss 3 or more classes will not pass this class****

If you do miss a class, contact your instructor for advice on catching up on missed material. At the option of the instructor, graded assignments may be submitted within one week without penalty.

If you should miss an exam, you are responsible for arranging to make it up! No credit can be given if you do not take a missed exam within one week of your absence.

Course Outline

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Week	Topic	Textbook Reference	Due
1	Introductions; Shop tour; Shop safety; Reading a decimal chart and conversions.	Intro to Machining; pgs. 1-14. Shop Safety; pgs. 39-47. Fractions/Decimals/Conversions; pgs. 58-67. Understanding Drawings; pgs. 202-217.	Student Information Sheet
2	Reading a steel rule; Semi-precision layout; Steel rule Worksheet; Begin layout project 1.	Semi-precision measurment/Steel rules; pgs. 79-92. Semi-precision layout; pgs. 234-243.	Steel rule worksheet
3	Finish layout project 1; Drilling Machines; Counterbores, Reamers, and Countersinks; Drill Press Demo; Begin drilling project 1.	Drilling, threading, tapping, & reaming; pgs. 296-314. Introduction to the drill press; pgs. 317-322. Drill press tools and workholding; pgs. 324-338. Drill Press Operations; pgs. 340-356.	Steel rule quiz, Drill press worksheet
4	Finish drilling project 1; Sawing machines; Micrometers & Dial	Saws and Cutoff machines; pgs. 269-277. Micrometers; pgs. 113-119. Dial calipers; pgs. 126-128.	Drill press quiz

	Calipers Use and Care; Saw project 1.		
5	Finish project 1; Introduction to the lathe; Cutting tools for the lathe.	Introduction to the lathe; pgs. 359-367. Cutting tools for the lathe; pgs. 384-391.	Project 1
6	Turning machines; Lathe toolholding; Lathe machine controls; Lathe operations; Lathe Demo; Begin lathe practice part.	Lathe Spindle Workholding devices; pgs. 369-379. Lathe safety/operation; pgs. 402-406. Lathe Machining Operations; pgs. 406-429.	Lathe operations worksheet
7	Review for Midterm Exam; Lathe Demo; Finish practice part; Begin project 2	Midterm Study Guide.	Lathe operations quiz
8	Midterm Exam; Work on project 2.		Midterm Exam

9	Discuss Midterm Exam; Sixty degree thread cutting; Threading demonstration; Work on project 2.	Manual lathe threading; pgs. 432-445.	
10	Finish project 2; Introduction to vertical milling machines	Introduction to the vertical milling machine; pgs. 469-481. Tools, toolholding, and workholding for vertical milling machine; pgs. 483-501.	Project 2
11	Milling machine demo; Climb milling/conventional milling; Begin project 3.	Vertical milling machine operations; pgs. 504-519.	Vertical milling worksheet
12	Surface grinding; Work on project 3.	Introduction to precision grinding machines; pgs. 560-565. Grinding wheels; pgs. 567-571.	Vertical milling quiz
13	Surface grinding demo; Grind project 3.	Surface grinding operations; pgs. 573-583.	
14	Selecting the right material; Heat treating; Finish project 3	Metal composition & classification; pgs. 158-173. Heat treating; pgs. 175- 188.	Project 3
15	Review for final exam; Careers in machining	Careers in machining; pgs. 16-23	
16	Final Exam		Final exam.