

SYLLABUS
PART I
EDISON COMMUNITY COLLEGE
MFG 114S SURVEY OF MANUFACTURING PROCESSES
4 CREDIT HOURS

COURSE DESCRIPTION

Detailed overview of manufacturing processes including metrology, materials, heat-treating, machine tool operations, metal forming, welding processes and castings. Lab provides practical experience in metrology, machining practices, and welding processes. Lab fee.

COURSE GOALS

The student will:

Bloom's Level		Program Outcomes
3	1. Define and apply basic measurement terms.	1, 4
3	2. Interpret drawing dimensions and accurately apply them to the measurement of parts.	1, 4
2	3. Quantify tolerances and explain their significance in gage selection.	1, 4
1	4. Identify and select the proper inspection instrument for a given application.	4
1	5. Identify common materials used in manufacture and the types of processes commonly performed on those materials.	4
1	6. Describe the importance of heat treatment in the processing of metals.	4
1	7. Identify the basic processes for forming materials.	3
1	8. Describe modern tool geometry's and identify tool geometry's and their uses given information from the tool manufacturer.	3
3	9. Calculate and specify tool speeds, feeds, and depth of cut from standard equations or from manufacturer's data.	3
3	10. Demonstrate appropriate safety procedures and methods used in a manufacturing setting.	3
1	11. Describe common lathe and drilling processes, including their application and cutting parameters.	3
3	12. Produce parts using lathe and drilling processes.	3
1	13. Identify common milling processes, including their application and cutting parameters.	3
3	14. Produce parts using milling processes.	3
3	15. Develop a simple CNC program using the manual, G-code programming technique.	3
1	16. Specify grinding wheel parameters for various metals, removal rates, and required surface finishes.	3
1	17. Specify appropriate welding processes and filler metals.	3
3	18. Demonstrate the techniques necessary to perform the various welding processes.	3
3	19. Apply symbols to drawings, which correctly specify welding processes and parameters.	3
1	20. Tour local manufacturing facilities.	3

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CORE VALUES

The Core Values are a set of principles, which guide in creating educational programs and environments at Edison. They include communication, ethics, critical thinking, human diversity, inquiry/respect for learning, and interpersonal skills/teamwork. The goals, objectives, and activities in this course will introduce/reinforce these Core Values whenever appropriate.

TOPIC OUTLINE

1. Shop safety
2. Measurement terminology and systems
3. Measurement instruments
4. Materials for manufacture
5. Steels and steel designations
6. Heat treatment
7. Casting processes
8. Forming and shaping processes
9. Sheet metal processes
10. General machining practices and parameters
11. Tool materials
12. Turning processes
13. Milling processes
14. CNC Machines and manual CNC programming
15. Grinding processes
16. Welding processes and symbology