

SYLLABUS
PART I
EDISON COMMUNITY COLLEGE
MET 225S MACHINE DESIGN
3 CREDIT HOURS

COURSE DESCRIPTION

Develops an analytical ability to design simple mechanisms involving such elements as shafts, couplings, springs, belts, brakes, clutches, gears, and cams. Draws on knowledge from mathematics, engineering mechanics, and materials technology. Prerequisite: Grade of “C” or better in MET 211S, MET 212S, MFG 120S.

COURSE GOALS

The student will:

Bloom's Level		Program Outcomes
2	1. Describe the nature and composition of machines, including the basic elements and their relationships to each other.	2,6,7
3	2. Classify the basic aspects of design and the fundamentals of the design process.	2,6,7
3	3. Apply design references to locate necessary information, read tables, graphs, charts and other types of design information.	2,6
3	4. Determine the applicability of design equations to a problem and use these tools effectively.	2,6
4	5. Analyze the motion of machine elements and the forces exerted on those elements.	2,6
4	6. Select appropriate materials for machine elements based on loads, environment, and other service considerations.	2,4,6
4	7. Size elements to withstand the loads to which they are subjected.	2,4,6
5	8. Design suitable combinations of basic elements and assemble them into simple mechanisms to accomplish a specified function.	2,6,7
3	9. Apply standards such as ASME and SAE in certain design situations.	2,6

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. Introduction to Machine Design
2. Failure Analysis and Dimensional Determination
3. Journal Bearings, Thrust Bearings, and Lubrication
4. Anti-friction Bearings
5. Shafts and Couplings
6. Analysis and Applications of Cams
7. Fundamentals of Gears
8. Gear Drive Systems

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9. Belts and Chains
10. Clutches and Brakes
11. Mechanical Fasteners and Power Screws
12. Spring Design
13. Dynamic Loads on Machine Members and Dynamic Balancing of Shafts