ME 356 - Machine Design (1)

Hour: Lecture: 2 Hrs. Tutorial: 2 Hrs. Credit: 3.
Coordinator: Mostafa Rostom

Text Book:

- Shigley & Mischke, "Mechanical Engineering Design", latest Edition, McGraw – Hill Book.

Reference Books:

- Paul H. Black, "Machine Design", Latest edition, McGraw – Hill co.
- A.D. Deutschman, "Machine Design", latest Edition, Macmillan Publishing Co., Inc

Specific course information

a. Stresses in machine parts – Material selection and factor of safety – Application to design of machine elements – Fatigue in metals – Stress concentration and design of members subjected to fatigue loading – Power screws types and applications – Bolted joints and pressure vessels – Welded and adhesive joints – Springs – Miscellaneous design problems
b. Prerequisite: ME 252 and ME 276
c. Designation: Required

Specific goals for the course:

- Design a system, process, or component to meet desired needs subject to given constraints. Analyze and evaluate alternative solutions.
- Identify, formulate, and solve engineering problems. Make appropriate and necessary assumptions. Suggest and evaluate new approaches.
- Use oral, written, and audio-visual techniques effectively for successful communication.
- To carry out feasibility analyses and optimization procedures in mechanical engineering projects.
- Ability to apply several mechanical engineer standards to project design

Course instruction outcomes:

- The students will be able To impart an appreciation of basic design considerations
- The students will be able To give the students an awareness of the factors effecting design in relation to problems in the mechanical engineering applications

Student outcomes:

C, E, G

Topics Covered:

- Introduction

- Stresses in Machine Parts
- Stresses, Material selection, and Factor of Safety
- Application to design of machine elements
- Introduction to fatigue in metals
- Stress concentration and design of members subjected to fatigue loading
- Power screws types and applications
- Bolted joints, brackets, and pressure vessels
- Welded and adhesive joints
- Welded joint applications
- Spring types and applications – Helical compression springs
- Design of differential types of springs
- Miscellaneous design problems

Course / credit hours	Math & Basic Sciences	Engineering Topics	General Education
Machine Design (1) (ME356)/3		3	