

# Machine Design Project



ME 423: Machine Design  
Instructor: Ramesh Singh

# Focus and Objectives of Course

- Basics of Engineering Design: Yielding and Fatigue
- Selection of Engineering Materials for Mechanical Design
- Analysis of Machine Elements
- Need Analysis & Concept, Analysis, Synthesis, Design, Modeling, Fabrication and Characterization of a complete system or a product (proposed and executed by self-selected group of 8 students)
- If you do not have a group, the instructors will help form the groups
- Every group will be given a maximum of Rs. 10,000. Frugal designs will get additional points



# Grading Policy

- Assignments+ Quizzes 15%
- Midterm 25%
- Project 35% (15% In-sem in form of reports, presentations, stage-wise prototype if possible) + 20% Evaluation at the semester end for final presentation, report and prototype)
- End semester exam 25%
- Total 100 %



# Abstract Report (21 August)

- A one-page [abstract](#) clearly identifying the need and the objectives of your project will be due on August 21 in moodle
- The need can be a market need or a societal need.
- You have to list the objectives needed to be accomplished for successfully carrying out the project.
- The objectives are the broad tasks to be done in that project.



# Progress Presentation 1 (5 Sep)

- Need (1 slide)
- Product specifications(1 slide)
- Conceptual design with some sketches (1-2 slides)
- Project tasks and timelines (1 slide)



# Progress Presentation 2 (2<sup>nd</sup> November)

- Design specifications ( 1 slide)
- Analysis and/or selection rationale of the machine elements and components ( 2-3 slides)
- Synthesis and integration of components: Solid models of the components and the full assembly (2-3 slides)
- Bill of Materials & Fabrication Progress (1)



# Design Open House, Project Report and Demonstration Video 27<sup>th</sup> November

- Your final prototypes will be displayed to IITB community.
- You need to submit a 5 min video describing and demonstrating the working prototype.
- The report should contain the following items and is due on 27th Nov during the design open house. Limit the final report to less than 15 pages.
  - Introduction and need analysis
  - Design specifications
  - Analysis and/or selection rationale of the machine elements and components
  - Synthesis and integration of components: Solid models of the components and the full assembly
  - Manufacturing drawings, bill of materials, cost analysis
  - Final product specifications and images
  - Summary and highlights of the project
- Statement outlining the contribution of each member of the team (list the tasks and provide an approximate percentage contribution of each team member)

