

ME 423: Machine Design

Course Instructor : **Prof. Ramesh Singh**
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Office Hours : Fridays 4:00 pm -5:00 pm
Website : <http://www.me.iitb.ac.in/~ramesh/ME423/>

Teaching Assistant : **Mr. Suraj Kumar**
Office : Machine Tools Lab
: 214100013@iitb.ac.in
: Thursdays 3:00 pm – 5:00 pm

Class Timing : Slot 10: Tuesday: 02:00 PM - 03:25 PM
Friday: 02:00 PM - 03:25 PM

Course Objectives:

- Basics of Engineering Design
- Selection of Engineering Materials for Mechanical Design
- Analysis of Machine Elements
- Synthesis, Design, Modeling, Fabrication, and Characterization of a complete system or a product (proposed and executed by each group of 10 students)

Scheme of assessment

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

Please note:

1. Lecture notes and home works will be posted on the course website
2. Homework will be individual and will be **due in class on the day of submission. No late homework accepted.**
3. Any form of uncanny similarity or copying on the homework **will be severely penalized.**
4. Group project is an important part (35%) and it will be self-selected group of 10.
5. Surprise quizzes will be an in-class test for 15-20 minutes.
6. **No cellphones on the desk. Cell phones should be either in your bag or pocket.**

Text Book:

- *Shigley's Mechanical Engineering Design, R.G. Budynas., J.K. Nisbett; Tata Mcgraw-Hill Publishing Co. Ltd., 2012*
- *Machine Design: An integrated approach, R.L. Norton; Pearson Education Inc. (India), 2nd edition, 2000*

References:

- *Materials Selection in Mechanical Design*, M.F. Ashby; Elsevier, 2010
- *Engineering Design: A project based approach*
- *Fundamentals of Machine Component Design*, R.C. Juvinall, K.M. Marshek, John Wiley & Sons, 3rd edition, 2000

Schedule of Lectures, Assignments, and quizzes

Lecture No.	Date	Schedule of Assignments & quizzes	Lecture No.	Date	Schedule of Assignments & quizzes
1.	01.08.23 Tue	Design Intro I	19.	10.10.23 Tue	Actuators I
2.	04.08.23 Fri	Mechanics Review 1	20.	13.10.23 Fri	Actuators II
3.	08.08.23 Tue	Mechanics Review II	21.	17.10.23 Tue	Actuators II
4.	11.08.23 Fri	Mechanics Review III (HW 1)	22.	20.10.23 Fri	Gears I
5.	18.08.23 Fri	Materials Selection I	23.	27.10.23 Fri	Gears II (HW 4)
6.	22.08.23 Tue	Materials Selection II	24.	31.10.23 Tue	Miscellaneous
7.	25.08.23 Fri	Materials Selection III	25.	03.11.23 Fri	Miscellaneous
8.	29.08.23 Tue	Fatigue 1	26.	07.11.23 Tue	Quiz II
9.	01.09.23 Fri	Fatigue II	27.	10.11.23 Fri	Project Presentations
10.	05.09.23 Tue	Shafts (HW 2)	28.	14.11.23 Tue	Project Presentations
11.	08.09.23 Fri	Quiz 1		(16-26). 11.23	End-Sem Exam
12.	12.09.23 Tue	Welding and Fastening I			
13.	15.09.23 Fri	Welding and Fastening II			
	(16-24).09.23	Mid-Sem Exam			
15.	26.09.23 Tue	Lubrication and Bearings I			
16.	29.09.23 Fri	Lubrication and Bearings II			
17.	03.10.23 Tue	Lubrication (HW3)			
18.	06.10.23 Fri	Flexible Mechanical Elements			