Department of Mechanical Engineering
Indian Institute of Technology Kharagpur

ME30602: Design of Machine Elements
2016-17 Spring Semester

Instructor:

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Office: Heat Transfer Laboratory, First Floor, Mechanical Engineering

Text Book: Shigley's Mechanical Engineering Design by R. G. Budynas, J. K. Nisbett, 9th/10th Edition (SI Units)

Reference Book: (1) Mechanical Design of Machine Elements and Machines by Collins, Busby and Staab, 2nd Edition

(2) Elements of Machine Design by N. G.Pandya and C. S. Shah

Class Timings: Wednesday: 8 – 10AM, Thursday: 10AM, Tutorial: Monday 10AM
Lecture Hall: NC434

Evaluation:

Tutorials + Teachers assessment:	20
Mid Sem:	30
End Sem:	50

Course Outline

1. Introduction
2. General Principles of Machine Design
3. Engineering Materials
4. Manufacturing Considerations in Design
5. Modes of failure and failure theories
    a. Failure under static loading: yield criteria
    b. Failure by instability: buckling
    c. Fatigue failure: Stress-Life, Strain Life, SN diagram, Endurance Limit, Modification factors, Modified Goodman, Fluctuating loads and combined loading.
6. Design of Machine Components
    a. Fasteners
    b. Welded joints
    c. Helical and leaf springs
    d. Rolling element bearings
    e. Shafts, Keys
    f. Couplings
    g. Clutches
    h. Brakes