

Elements of Theory of Machine & Machine Design: Outline

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ME 201

Syllabus

Elements of Theory of Machine and Machine Design [3.0 Cr.]

- ➊ Friction: Limiting Friction & coefficient of friction. Screw friction, efficiency of screw jack. Friction in Journal bearing. Friction clutches, rolling resistances.
- ➋ Mechanism: Links, kinematic pairs. Crank-Connecting rod mechanism. Quick return motion mechanism.
- ➌ Transmission of motion & power: Belts, ropes, chains, gears, gear trains.
- ➍ Conversion of motion: Shedding tappets & Cams, Shearing force & bending moment, impact of forces, momentum, torque, torsion, moment of forces and its application in textile machines. Methods of finding radius of gyration of revolving or oscillating bodies.
- ➎ Machine Design: Tolerances and allowances, variable loads and stress concentration. Design of screw joints, riveted joints; Spring; Columns; key and couplings; Journal, ball and roller bearings; pressure vessels.

Schedule of Classes

Spring 2016 Tentative Course Plan ¹

Topic	Lectures ²
Links & kinematic pairs.	3
Crank-Connecting rod mechanism & QRM	5
Belts, ropes & chains	6
Columns	2
Journal, ball & roller bearings	2
Total	20

Marks Distribution

- ➊ Final Examination 70%
- ➋ Quiz 20%
- ➌ Class Performance 10%

¹ Rest will be covered by Mr. Arif Mahmud Shuklo Shoshe [1.5 Cr.]

² Each lecture is approximately 50 min.

References

- ➊ **Theory of Machines** - R.S. Khurmi & J.K. Gupta, S Chand & Co Ltd.
- ➋ **Mechanics of Machines: Elementary Theory and Examples** - J. Hannah & R.C. Stephens, Viva Books Private Ltd.
- ➌ **Vector Mechanics for Engineers** - F.P. Beer, E.R. Johnston, Jr., D.F. Mazurek, P.J. Cornwell & E.R. Eisenberg, McGraw-Hill
- ➍ **Shigley's Mechanical Engineering Design** - Richard Budynas & Keith Nisbett, McGraw-Hill