

ME 355 - Theory of Machines

Hour: Lecture: 2 Hrs.

Tutorial: 2 Hrs.

Credit: 3.

Coordinator: Mohamed Elsayed

Text Book:

- R.S. Khurmi & J.K. Gupta, “Theory of machines” , Eurasia Publication house Ltd., Ram Nagar, New Delhi, Latest Edition

Reference Books:

- Shigly, “Theory of Machines”, McGraw – Hill, Latest Edition
- Hamilton H. Mabie & Charles F. Reinholtz, “Mechanisms and Dynamics of machinery”, John Wiley & Sons, Latest Edition.

Specific course information

- a. Types of motion – Velocity analysis – Acceleration analysis – Dynamic force analysis – Balancing of rotating masses – Balancing of reciprocating masses – Kinetic energy storage and flywheel – Gear geometry – Gear trains – Gyroscopic couples
- b. Prerequisite: BA 142
- c. Designation: Required

Specific goals for the course:

- Design and conduct experiments, and collect, analyze and interpret data.
- An ability to function on multidisciplinary teams.
- Understand global effects of practices, products, and events, and the impact of engineering solutions on society
- Recognize the need for and demonstrate ability to engage in lifelong learning.
- Use techniques, skills and modern engineering tools necessary for engineering practice.

Course instruction outcomes:

- The students will be able To provide a fair understanding of the performance of various mechanisms and principal machine elements as regards their Kinematics and dynamics & Forming a base for studies in Robotics applications

Student outcomes:

B, D, H, I, K

Topics Covered:

- Introduction -Types of motion
- Velocity analysis of machine components – instantaneous center method
- Acceleration analysis
- Dynamic force analysis – Dynamic bearing reactions

- Balancing of rotating masses
- Balancing of reciprocating masses
- Cams
- Kinetic energy storage and flywheel
- Gear geometry and fundamental law of gearing
- Gear trains (conventional and epicyclic)
- Gyroscopic couples

Course / credit hours	Math & Basic Sciences	Engineering Topics	General Education
Theory of Machines(ME355)/3		2	1