

ME 458 - Mechanical Vibration

Hour: Lecture: 2 Hrs.

Tutorial: 2 Hrs.

Credit: 3.

Coordinator: Mohamed Elsayed

Text Book:

- Singiresu. S.Rao, “Mechanical vibrations “, Addison – Wesley Publishing company, latest Edition.

Reference Books:

- William Thomson, “Theory of vibrations and applications “, prentice Hall.
- Victor Wowk, “machinery vibrations measurements and analysis”, McGraw Hill, Inc.
- Daniel J. Inman, “Engineering vibration “, Prentice Hall International, Inc.

Specific course information

- a. Harmonic and periodic motions – Free vibrations – Forced vibrations – Transmissibility and isolation – Vibration measurements – Vibration under general forcing conditions – Two degree of freedom systems – Multi-degree of freedom systems – Eigen value and eigen vector problems.
- b. Prerequisite: ME 355
- c. Designation: Required

Specific goals for the course:

- Design and conduct experiments, and collect, analyze and interpret data.
- Identify, formulate, and solve engineering problems. Make appropriate and necessary assumptions. Suggest and evaluate new approaches.
- Use oral, written, and audio-visual techniques effectively for successful communication.
- Understand global effects of practices, products, and events, and the impact of engineering solutions on society
- Use techniques, skills and modern engineering tools necessary for engineering practice.

Course instruction outcomes:

- The students will be able to build up students capabilities to formulate and analyze problems of vibrations

Student outcomes:

B, E, G, H, K

Topics Covered:

- Introduction & Harmonic and periodic motions
- Equivalent systems
- Free vibrations of single degree of freedom systems
- Forced vibrations of single degree of freedom systems
- Transmissibility
- Vibration measurements
- Vibration under general forcing conditions
- Two degree of freedom systems
- Multi-degree of freedom systems (Eigen value and Eigen vector problems)

Course / credit hours	Math & Basic Sciences	Engineering Topics	General Education
Mechanical Vibrations(ME458)/3		2	1