

Course Code : ME 751

Course Title : Vibration & noise control

Credit Hours : 3

Course Description

Introduction, Response of nonharmonic excitation, Continuous systems, Multidegree of freedom systems, Vibration control, Vibration measurements, Typical vibration problems, Acoustic concepts, Noise control, Machinery noise, Design of mufflers and barriers.

Course Objectives

Present comprehensive coverage of the fundamental principles of vibration theory, with emphasis on the application of these principles to practical engineering problems. Help the students understand how the vibrations are of great importance to various engineering systems and gain experience in their design and development. Facilitate comparison of theoretical and experimental results and to help carrying out further studies to control noise and vibrations.

Course Topics

Week no. 1: Introduction.

Week no. 2: Response of nonharmonic excitation.

Week no. 3: Response of nonharmonic excitation.

Week no. 4: Continuous systems.

Week no. 5: Multidegree of freedom systems.

Week no. 6: Multidegree of freedom systems.

Week no. 7: Multidegree of freedom systems. / 7th week evaluation.

Week no. 8: Vibration control.

Week no. 9: Vibration measurements.

Week no. 10: Typical vibration problems.

Week no. 11: Acoustic concepts.

Week no. 12: Acoustic concepts. / 12th week evaluation

Week no. 13: Noise control

Week no. 14: Machinery noise

Week no. 15: Design of mufflers and barriers / Presentation on selected topics.

Week no. 16: Final exam.

References

Singiresu S. Rao, "Mechanical Vibrations", Addison Wesley, 1995.

M.L. JAMES, G.M. SMITH, J.C. WOLFORD and P.W. WHALEY, "Vibration of Mechanical and Structural Systems", Harper and Row, Publishers, New York, 1989.

- William T. Thomson, "Theory of Vibration with Applications", Prentice Hall, 1993.