

Course Number: 28574
Course Name: Nonlinear Vibrations

Course Type: Theory
Prerequisite: Advanced Mathematics 1
Level: Graduate
Group: Applied Mechanics

Type & Max Unit: Constant 3
Corequisite: Nothing
First Presentation:
Last Edition: 2017-1

Objectives:

The main objective of this course is to obtain the analytical solutions for various nonlinear oscillatory systems by perturbation methods. It covers the mentioned objective for the following topics.

Topics:

- 1- Introduction
- 2- Conservative Single Degree of Freedom Systems
- 3- Non-conservative Single Degree of Freedom Systems
- 4- Forced Oscillations of Systems Having a Single Degree of Freedom
- 5- Parametrically Excited Systems
- 6- Systems Having Finite Degrees of Freedom
- 7- Continuous Systems
- 8- Traveling Waves

References:

- *Nonlinear Oscillations*, A.H. Nayfeh, D.T. Mook, Wiley, 1995.
- *Introduction to Perturbation Techniques*, A.H. Nayfeh, Wiley, 1993.