Department of Civil Engineering

Course Name:

Random Vibrations

Course Number: 20-156	**Credit:** 3
Program: Graduate	**Course Type:** Technical Selective
Prerequisite: -	**Corequisite:** -

Course Description (Objectives):

The study of random vibrations aims to facilitate the determination of the statistical characteristics of a system's response, derived from the statistical properties of the excitation.

Course Content (outline):

- Chapter 1: Difference between deterministic and random vibration phenomena
- Chapter 2: Probability theory and properties of random functions
- Chapter 3: Study of different probability distributions
- Chapter 4: Random processes
- Chapter 5: Continuous and discrete force spectra
- Chapter 6: Random motion of supports
- Chapter 7: Rayleigh probability distribution and its application
- Chapter 8: Study of strength under random forces
- Chapter 9: Random response of single-degree-of-freedom systems
- Chapter 10: Random response of multi-degree-of-freedom systems
- Chapter 11: Study of nonlinear problems in random vibrations

References:

- Newland, David Edward. An introduction to random vibrations, spectral & wavelet analysis. Courier Dover Publications, 2012.