

Year & Sem:	Course Code: ME3609	Course Name: Random Vibrations	No. of Credits: 4	L 2	T&PS 2	P 0
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Introduction, Fundamentals of probability theory: probability space, random variables, functions of random variables, Stochastic processes and random signals: stationarity, ergodicity, power spectrum, covariance functions, calculus of random processes, Linear single and multi degree of freedom structural systems: input-output relations, time domain and frequency domain analysis, linear and nonlinear systems, the fokker-Planck equation, Computational issues, Level crossing and first passage times, extreme value and peak distributions, Applications: random fatigue, probabilistic crack growth, risk analysis.

References/Text Books:

1. A. Papoulis (1997). Probability, random variables and stochastic processes, McGraw-Hill, NY.
2. Y.K. Lin (1967). Probabilistic theory of structural dynamics. McGraw-Hill, New York.
3. N.C. Nigam (1983). Introduction to random vibrations. MIT Press, Massachusetts.
4. L.D. Lutes, S. Sarkani (2004). Random vibrations: analysis of structural and mechanical systems, Elsevier.

Lecture Plan: Unit-I & -II syllabus for MID-I, Unit-III & -IV syllabus for MID-II and Unit-V & -VI syllabus for MID-III examinations.

Video Lectures (Web Links):

- 1.
- 2.

Study Materials (Web Links):

- 1.
- 2.

Problems & Solutions (Web Links):

- 1.
- 2.

Assignments (Web Links):

- 1.
- 2.