

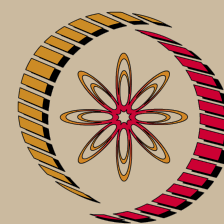
NOC:Probability Methods in Civil Engineering - Video course

COURSE OUTLINE

Concept of probability and statistics is very important to solve various civil engineering problems. In this course, basic probability concept and different probabilistic models will be discussed. Concept and definition of random variables and different functions of random variables will be covered in the initial part of the course. Afterwards, focus is given to commonly used probability distribution functions in civil engineering. Discussions on statistics and sampling are presented towards the last part of the course. In this part, goodness of fit tests, regression and correlation analyses, estimation of distribution parameters from statistics, hypothesis testing and their significance will be discussed. A brief introduction to copulas is also included in this course. Each topic is discussed with reference to different application problems and their solutions in different fields of civil engineering, such as Structural Engineering, Transportation Engineering, Water Resources and Environmental Engineering, Geotechnical Engineering etc.

COURSE DETAIL

WeekNo.	Topics
1.	Introduction
2.	Random Events, Assignment/Quiz
3.	Random Variables – Discrete and Continuous
4.	Probability Distribution Functions, Cumulative Distribution Functions, Assignment/Quiz
5.	Functions of Random Variables, Assignment/Quiz
6.	Expectation and Moments
7.	Joint and Marginal Probability Distribution
8.	Conditional Probability
9.	Functions of Multiple Random Variables, Introduction to Copulas, Assignment/Quiz



NP-TEL

NPTEL

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**Civil
Engineering**

Pre-requisites:

Basic Knowledge of Probability and Statistics

Coordinators:

Dr. Rajib Maity
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10.	Common Probability Models, Assignment/Quiz
11.	Probability and Statistics, Assignment/Quiz

References:

1. Ang A H-S. and W. H. Tang (1975), Probability Concepts in Engineering Planning and Design: Volume I Basic principles, John Wiley & Sons, Inc., USA
2. Kottegoda N T. and R Rosso (2008), Applied Statistics for Civil and Environmental Engineers, 2nd Edition, Wiley-Blackwell, United Kingdom
3. Papoulis, A, and S. U. Pillai (2002), Probability, Random Variables and Stochastic Processes, McGraw-Hill, USA
4. Jonson R.A. and C. B. Gupta (2005), Miller and Freund,s Probability and Statistics for Engineers, Pearson Education, Inc., USA