Course Title	**:**	**Probability and Statistics**
Course Code	**:**	**MAL241**
Number of Credits	**:**	**(3-1-0) 4 Credits**
Prerequisites (Course code, if available)	**:**	
Course Type	**:**	None

Course Objectives

The probabilistic models are employed in countless applications in all areas of science and engineering. A basic understanding of data analysis and statistical concepts is very much required in society in order to be able to think critically about the quantitative information we encounter every day. The course aims at providing necessary mathematical support and confidence to tackle real life problems.

Course Contents

Concept of Probability, Mutually Exclusive , Independent events, Conditional probability, Tree diagram, Algebra of events, Multiplication rule, Baye's rule , Series and Parallel system, product law of reliability and unreliability.

Introduction to discrete and continuous Random variables, probability functions, probability density function, cumulative distribution function and their properties, two dimensional random variables, joint, Several random variables, cumulative marginal and conditional distribution functions, combinatorics, Expected value.

Bernoulli Trials, Binomial Distribution, Poisson and normal Distribution, Geometric and Hypergeometric distribution, Continuous distributions Uniform, Exponential, t, F, and Chi-square distribution, Generating function. Expected value and variance of continuous and discrete random variables, Sum of Random variables, Law of large numbers and central limit theorem. Generating functions, Moment and moment generating functions.

Critical regions and level of significance, error in testing of hypothesis , one and two tailed test, procedure for testing of hypothesis , Null hypothesis , test of significance for large and small numbers, Chi-square test of goodness of fit and independence of attributes.

Texts/References

1. Ross, S., A first course in probability, Pearson Education, Delhi.

2. Papoulis, A., Probability, Random Variables and Stochastic Processes, McGraw Hill.

3. Trivedi, KS, Probability and Statistics with Reliability and Queuing and Computer Science Application,

Prentice Hall of India

4. Veerarajan T., Probability, Statistics and Random. Processes, Tata McGraw Hill.

5. Allen., A.O., Probability, Statistics and Queuing Theory, Academic press.

6. EL Lehmann, JP Romano, Testing Statistical Hypothesis, Springer Text in Statistics

7. MG Bulmer, Principles of Statistics, Dover.