

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State
DEPARTMENT OF MATHEMATICS
Probability and Statistics for Engineers
Open Elective – B.E. VI Semester – CBCS w.e.f: 2018-19
Name of the Faculty: Prof. P. Hemagiri Rao

Instruction:	2 hrs Per week	Semester End Exam Marks :	60	Subject Reference Code :	OE650MA
Credits:	2	Sessional Marks :	40	Duration of Semester End Exam :	3 hours

Course Outcomes:

At the end of the course the students will learn:

1. The concept of Two Dimensional Random Variables. These concepts are useful in Estimation Theory, Regression Analysis and Random Process
2. The concept of Co-variance and Correlation Conditional Expected Values of two dimensional random variables. These concepts are useful in Regression Analysis and Markov process.
3. The concept of Sampling Distribution of Estimator. These concepts are useful in Regression analysis and Statistical inferences.
4. The concept of linear Regression, Curve Linear Regression. These concepts are useful in Big Data Analytics.

Unit – I: 7 hrs

Two Dimensional Random Variables: Probability Function, Joint Probability Density Function, Cumulative Distribution Function, Marginal Probability Density Function, Conditional Probability, Independent Random Variables

Unit – II: 7 hrs

Statistical Averages: Expected Value of a two dimensional Random Variable, Co-variance and a correlation, Conditional Expected Values, Characteristics function and Moment generating Function

Unit – III: 7 hrs

Sampling Distributions: Population and Samples, Sampling Distribution of Estimators, Maximum Likelihood Function and method of moments

Unit – IV: 7 hrs

Regression Analysis: Linear Regression, Curve Regression, Multiple Regression

Text Books:

1. Probability Statistics for Engineers, Richard A. Johnson, Eight Edition, PHI.
2. Probability Statistics and Random Process, T. Veerarajan, Second Edition, Tata McGraw Hill.

Reference Books:

1. Fundamentals of Mathematical Statistics, S.C.Gupta & V.K. Kapur, Sultan Chand & Sons.

Relevance of the Course:

1. Regression techniques are commonly used for addressing complicated predictions and classification problems in **Civil Engineering**. For a given data set, the linear regression from the input space to output variable can be achieved by using the least square error approach, which minimizes the difference between the predicted and actual outputs.
2. Linear Regression is useful for **Mechanical students** for studying engine performance from test data in automobiles.
3. The concept of Linear Regression, Curve Regression, Multi Regression are useful in Machine Learning, Artificial Intelligence and Data Mining, which are relevant to **CSE & IT** branches.
4. The concept of Two Dimensional Random variables, Covariance is useful in signal processing and digital communications, which are relevant to **ECE, EEE & IT** branches.