Pandit Deendayal Petroleum University

17BSM401					Probability					
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs./Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	1	-	4	4	25	50	25	---	---	100

COURSE OBJECTIVES

To understand the basic concept of Probability.
To develop understanding of probability theory to real world problems.
To lay the foundation of computational techniques for research and analysis.
To Analyze the concept of probability distribution in real world problem

UNIT I: Introduction to Probability **10 Hrs**

Sample Space and Probability, Probabilistic Models, Conditional Probability. Probability Function, Law of Addition of Probability, Multiplication Law of Probability, Independence, Total Probability, Counting Theorem and Baye's Rule.

UNIT II: Random Variables

Basic Concepts, Distribution Function, Properties of distribution function, Discrete Random Variable, Probability Mass Functions, Discrete Distribution Function, Continuous Random Variable, Probability Density Function, Expectation, Mean, and Variance, Joint Probability Law, Joint PMFs of Multiple Random Variables, Joint Probability distribution function, Marginal distribution function, Joint density function, The conditional distribution function, Transformation of One dimensional and two dimensional Random Variable **10 Hrs.**

UNIT III: Infinite Series & Improper Integrals **10 Hrs.**

Expectations and Generating Functions, Binomial distribution, Bernoulli's, gamma distribution, Poisson distribution, Normal distribution

UNIT IV: Special Distributions

Curve Fitting and Principle of Least Squares, Correlation and Regression, Scatter Diagram, Karl Pearson Coefficient of Correlation, Limits for correlation coefficient, Regression Curves, Regression Coefficients, Properties of Regression Coefficient. Angle Between two lines of Regression **9 Hrs.**

TOTAL **39 Hrs.**

COURSE OUTCOMES

On completion of the course, student will be able to
CO1 – Understand the basic concept of probability theory.
CO2 – Analyze the concept of random variable and its property to real world problems.
CO3 – Analyze / interpret the graphical presentation of data in probability.
CO4 – Apply non - traditional search concepts to various unsolved problems.
CO5 – Evaluate a sufficiently accurate solution of various physical models of science and engineering.
CO6 – Design / create an appropriate hybrid algorithm for various problems of science and engineering.

Texts and References

1. Milton. J. S. and Arnold. J.C., "Introduction to Probability and Statistics", Tata McGraw Hill, 4 th Edition, 2007.
2.Johnson. R.A. and Gupta. C.B., "Miller and Freund"s Probability and Statistics for Engineers", Pearson Education, Asia, 7th Edition, 2007.
3.Papoulis. A and Unnikrishnapillai. S., "Probability, Random Variables and Stochastic Processes " McGraw Hill Education India , 4th Edition, New Delhi , 2010.