BAPATLA ENGINEERING COLLEGE:: BAPATLA
(Autonomous)

PROBABILITY AND STATISTICS
II B.Tech. III Semester20ME301/MA03

Lectures	:	2 Hours/Week	Tutorial	:	1 Hour/Week	Practical	:	0
CIE Marks	:	30	SEE Marks	:	70	Credits	:	3

Pre-Requisite: None

Course Objectives: Students will learn how to

➢	Apply the continuous probability densities to various problems in science and engineering.
➢	Estimate the point and interval estimators of the mean, variance and proportion for the given Sample data and apply Z-test, t-testto various real-life problems
➢	Apply various sample tests like F-test and $\chi 2$ -test for decision making regarding the population based on sample data.
➢	Compute the level of correlation, the best fit curve to the given data by the method of least squares andalso perform ANOVA arising in the field of engineering.

Course Outcomes: After studying this course, the students will be able to

CO-1	Apply discrete and continuous probability distributions to various problems arising in Engineering applications.
CO-2	Perform Test of Hypothesis for a population parameter for single sample.
CO-3	Perform Test of Hypothesis for population parameters for multiple samples.
CO-4	Interpret the results of correlation, regression and one way ANOVA for the given data.

Mapping of Course Outcomes with Program Outcomes & Program Specific Outcomes

	PO's												PSO's		
CO	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO-1	3	3	-	-	-	-	-	-	-	-	-	2	2	-	-
CO-2	3	3	2	-	-	-	-	-	-	-	-	2	2	-	-
CO-3	3	3	2	-	-	-	-	-	-	-	-	2	2	-	-
CO-4	3	3	3	-	-	-	-	-	-	-	-	2	3	-	-

UNIT-1 (12 Hours)

Continuous Random Variables, Normal Distribution, Normal Approximation to the Binomial Distribution, Uniform Distribution, Gamma Distribution and its applications, Beta Distribution and its applications, Weibull distribution, Joint Distributions (Discrete), Joint Distributions (Continuous).
(Sections 5.1, 5.2, 5.3, 5.5,5.7, 5.8, 5.9, 5.10)

UNIT-2	(12 Hours)
Populations and Samples, The sampling distribution of the mean (σ known), The sampling distribution of the mean (σ unknown), The sampling distribution of the variance, Point estimation, Interval estimation, Tests of Hypotheses, Null Hypothesis and Tests of hypotheses, Hypothesis concerning one mean. (Sections 6.1, 6.2, 6.3, 6.4, 7.1, 7.2, 7.4, 7.5, 7.6)	
UNIT-3	(12 Hours)
Comparisons-Two independent Large samples, Comparisons-Two independent small samples, matched pairs comparisons, The estimation of variances, Hypotheses concerning one variance, Hypotheses concerning two variances. (Sections 8.2, 8.3, 8.4, 9.1, 9.2, 9.3) .	
UNIT-4	(12 Hours)
Estimation of proportions, Hypotheses concerning one proportion, Hypotheses concerning several proportions. The method of least squares, curvilinear regression, multiple regression, correlation, Completely Randomized Designs. (10.1, 10.2, 10.3, 11.1, 11.3, 11.4, 11.6, 12.1, 12.2)	
Text Books :	Miller & Freund's "Probability and Statistics for Engineers", Richard A. Johnson, 8th Edition, PHI.
References :	1. R.E Walpole, R.H. Myers & S.L. Myers 'Probability & Statistics for Engineers and Scientists', 6th Edition, PHI. 2. Murray R Spiegel, John J.Schiller, R. AluSrinivasa, 'Probability &Satistics', Schaum's outline series.