



# BAPATLA ENGINEERING COLLEGE:: BAPATLA

(Autonomous)

<b>PROBABILITY AND STATISTICS</b> <b>Common to all branches</b> <b>II B. Tech. III Semester</b> <b>24CB301/24CE301/24CS301/24CM301/24DS301/24EC301/24EE301/24IT301/24ME301</b>																
Lectures	:	2 Hours/Week	Tutorial	:	1 Hour/Week	Practical	:	0								
CIE Marks	:	40	SEE Marks	:	60	Credits	:	3								
<b>Pre-Requisite:</b> None																
<b>Course Objectives:</b> Students will learn how to																
➤	Apply the discrete and 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-test to 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 and also perform ANOVA arising in the field of engineering.															
<b>Course Outcomes:</b> 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.															
<b>Mapping of Course Outcomes with Program Outcomes &amp; Program Specific Outcomes</b>																
	<b>PO's</b>												<b>PSO's</b>			
<b>CO</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>CO-1</b>	3	3	-	-	-	-	-	-	-	-	-	2	-	-	-	-
<b>CO-2</b>	3	3	2	-	-	-	-	-	-	-	-	2	-	-	-	-
<b>CO-3</b>	3	3	2	-	-	-	-	-	-	-	-	2	-	-	-	-
<b>CO-4</b>	3	3	3	-	-	-	-	-	-	-	-	2	-	-	-	-
<b>UNIT-1</b>															(12 Hours)	
<b>Descriptive measures, Random variables and Probability distributions:</b>																
Arithmetic mean, median and mode, Random variables, Binomial distribution, The mean and variance of a probability distribution, Poisson approximation to the Binomial distribution, Continuous Random Variables, Normal Distribution, Normal Approximation to the Binomial Distribution, Uniform Distribution, Weibull distribution.																
(Sections 2.5, 4.1, 4.2, 4.4, 4.6, 5.1, 5.2, 5.3, 5.5, 5.9.)																



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<b>UNIT-2</b>	(12 Hours)
<b>Sampling distributions and Inferences concerning one mean:</b> Populations and Samples, The sampling distribution of the mean ( $\sigma$ known), The sampling distribution of the mean ( $\sigma$ 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)	
<b>UNIT-3</b>	(12 Hours)
<b>Comparing two treatments and Inferences concerning variances:</b> 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)	
<b>UNIT-4</b>	(12 Hours)
<b>Inferences concerning proportions, Regression Analysis and Analysis of variance:</b> Estimation of proportions, Hypotheses concerning one proportion, Hypotheses concerning two proportions, the method of least squares, curvilinear regression, multiple regression, correlation, some general principles, Completely Randomized Designs (One way ANOVA). (10.1, 10.2, 10.3, 11.1, 11.3, 11.4, 11.6, 12.1, 12.2)	
<b>Text Books :</b>	Miller & Freund's "Probability and Statistics for Engineers", Richard A. Johnson, 8 <sup>th</sup> Edition, PHI, 2011.
<b>References :</b>	1. R.E Walpole, R.H. Myers & S.L. Myers 'Probability & Statistics for Engineers and Scientists', 6 <sup>th</sup> Edition, PHI. 2. Murray R Spiegel, John J. Schiller, R. AluSrinivasa, 'Probability & Statistics', Schaum's outline series.