## **PVP23**

## PRASAD V. POTLURI SIDDHARTHA INSTITUTE OF TECHNOLOGY

(Autonomous)

Kanuru, Vijayawada-520007

**DEPARTMENT OF CSE (AI&ML)** 

II B.Tech – II Semester CSE (AI&ML)

**Probability and Statistics** 

## Syllabus

Course Code	23BS1402	Year	Ш	Semester	П
Course Category	Basic Science	Branch	CSE (AI&ML)	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	Basic Concepts of Probability
Continuous Internal Evaluation	30	Semester End Evaluation	70	Total Marks	100

	Course Outcomes					
Upon suc	Upon successful completion of the course, Student will be able to					
CO1	Understand the basic concepts of Probability and Statistics .	L2				
CO2	Calculate the measures of central tendencies, Correlation and Regression to the given data and apply appropriate Probability Distributions to the given problem.	L3				
CO3	Apply the Concepts of Testing Hypothesis for large and small samples .	L3				
CO4	Analyze the Concepts of Probability, Correlation and Regression to real life problems.	L4				
CO5	Analyze the given data and identify appropriate test statistics to test given hypothesis for statistical decision.	L4				

	Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:High, 2: Medium, 1:Low)								of					
СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2													
CO2	3													
CO3	3													
CO4		3												
CO5		3												

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Unit No.	Syllabus Contents	Mapped CO
Ι	Measures of Central Tendency and Probability:Measures of Central Tendency: Mean, Median, Mode.Probability: Probability Axioms, Addition Law and Multiplication Law OfProbability, Conditional Probability, Baye's Theorem (Without Proof).	CO1, CO2, CO4
II	Random Variables and Probability Distributions: Random Variables (Discrete and Continuos), Probability Density Function. Probability Distribution: Binomial, Poisson and Normal Distributions, Their Properties (Without Proof), Mathematical Expectation and Variance.	CO1, CO2, CO4
III	<b>Correlation and Regression:</b> Correlation, Correlation Coefficient, Rank Correlation, Regression, Lines Of Regression, Regression Coefficients, Principle Of Least Squares and Curve Fitting(Straight Line, Parabola and Exponential Curves).	CO1, CO2, CO4
IV	<ul> <li>Testing of Hypothesis and Large Sample Tests:</li> <li>Formulation of Null Hypothesis, The Critical Region, Two Types of Errors,</li> <li>Level of Significance.</li> <li>Large Sample Tests: Test for Single Proportion, Difference of Proportions, Test</li> <li>for Single Mean and Difference of Means. Confidence Interval for Parameters in One</li> <li>Sample and Two Sample Problems.</li> </ul>	CO1, CO3, CO5
v	<b>Small Sample Tests:</b> Student t-distribution (Test for Single Mean, Two Means and All Paired t-test), Testing of Equality of Variances (F-Test), $\chi^2$ – test for goodness fit, $\chi^2$ – test for Independence of Attributes.	CO1, CO3, CO5

Learning Resources
Text Books
1. Fundamentals of Mathematical Statistics, S.C.Gupta and V.K.Kapoor, 11 <sup>th</sup> Edition, Sultan Chand
& Sons Publications, 2012.
2. Probability and Statistics for Engineers, Miller and Freunds, 7 <sup>th</sup> Edition, Pearson, 2008.
References
1. A First Course in Probability, S.Ross, Pearson Education India, 2002.
2. Probability and Statistics, Dr.T.K.V.Iyengar, Dr.B.Krishna Gandhi, S.Ranganatham, Dr.M.V.S.S.N.
Prasad, S.Chand Publications, 4 <sup>th</sup> Revised Edition, 2012.
e-Resources and other Digital Material
1. <u>https://nptel.ac.in/courses/111/106/111106150/</u>

2. <u>http://nptel.ac.in/courses/111105035</u>

3. <u>https://onlinecourses.nptel.ac.in/noc22\_mg31/preview</u>