PRASAD V. POTLURI SIDDHARTHA INSTITUTE OF TECHNOLOGY

(Autonomous)

Kanuru, Vijayawada-520007

DEPARTMENT OF CSE (Data Science)

II B.Tech – I Semester CSE (Data Science)

Probability and Statistics

Syllabus

Course Code	23BS1402	Year	II	Semester	II
Course Category	Basic Science	Branch	CSE (Data Science)	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)													
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												

Unit No.	Syllabus Contents				
I	Measures of Central Tendency and Probability: Measures of Central Tendency: Mean, Median, Mode. Probability: Probability Axioms, Addition Law and Multiplication Law Of Probability, 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	Correlation and Regression: Correlation, Correlation Coefficient, Rank Correlation, Regression, Lines Of Regression, Regression Coeeficients, Principle Of Least Squares and Curve Fitting(Straight Line, Parabola and Exponential Curves).	CO1, CO2, CO4			
IV	Testing of Hypothesis and Large Sample Tests: Formulation of Null Hypothesis, The Critical Region, Two Types of Errors, Level of Significance. Large Sample Tests: Test for Single Proportion, Difference of Proportions, Test for Single Mean and Difference of Means. Confidence Interval for Parameters in One Sample and Two Sample Problems.	CO1, CO3, CO5			
V	Small Sample Tests: Student t-distribution (Test for Single Mean, Two Means and All Paired t-test), Testing of Equality of Variances (F-Test), χ^2 – test for goodness fit, χ^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, 11th Edition, Sultan Chand & Sons Publications, 2012.
- 2. Probability and Statistics for Engineers, Miller and Freunds, 7th 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, 4th Revised Edition, 2012.

e-Resources and other Digital Material

- 1. https://nptel.ac.in/courses/111/106/111106150/
- 2. http://nptel.ac.in/courses/111105035
- 3. https://onlinecourses.nptel.ac.in/noc22_mg31/preview