

Course Syllabus

School: SET		Batch : 2023- 2027
Program: B.Tech.		Current Academic Year: 2024-25
Branch: CSE		Semester: III
1	Course Code	MTH 145
2	Course Title	Probability and Statistics
3	Credits	4
4	Contact Hours (L-T-P)	3-1-0
	Course Status	Compulsory
5	Course Objective	The objective of this course is to familiarize the students with statistical techniques. It aims to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling various problems in the discipline.
6	Course Outcomes	CO1: Explain the concept of probability and Random Variable. (K2,K3, K4) CO2: Explain the concept of distribution functions, densities and probability distributions; illustrate discrete and continuous probability distributions. (K1, K2, K3, K4) CO3: Describe the concept of moments, skewness and Kurtosis; evaluate correlation and regression – Rank correlation; discuss bivariate distributions and their properties . (K1, K2, K5) CO4: Discuss the basic of Curve fitting by the method of least squares; evaluate straight lines, second degree parabolas and more general curves. (K1, K2, K5) CO5: Describe and use the concepts test of significance: Large sample test for single proportion, difference of proportions; calculate single mean, difference of means, and difference of standard deviations. (K1,K2,K3) CO6: Explain the basic concepts of tests of small samples- Student's T test, Chi-square test for goodness of fit, and evaluate the result. (K2, K4, K5)
7	Course Description	This course is an introduction to the fundamental of Mathematics. The primary objective of the course is to develop the basic understanding of statistics including measures of central tendency, correlation and

		regression, statistical methods of data sampling, probability and random variables and various discrete and continuous probability distributions and their properties.			
8	Outline syllabus :Probability and Statistics				CO Mapping
	Unit 1	Basic Probability			
	A	Probability spaces, conditional probability, Bayes' rule.			CO1
	B	Discrete random variables, Independent random variables			CO1
	C	Expectation of Discrete Random Variables, Chebyshev's Inequality			CO1
	Unit 2	Discrete and Continuous Probability Distributions			
	A	Discrete Probability distributions: Binomial, Poisson.			CO2
	B	Continuous random variables and their properties, distribution functions and densities.			CO2
	C	Normal, exponential and gamma distribution.			CO2
	Unit 3	Statistics			
	A	Moments, skewness and Kurtosis.			CO3
	B	Correlation and regression – Rank correlation.			CO3
	C	Bivariate distributions and their properties.			CO3
	Unit 4	Applied Statistics			
	A	Curve fitting by the method of least squares- fitting of straight lines, second degree parabolas and more general curves.			CO4, CO5
	B	Test of significance: Large sample test for single proportion,			CO4, CO5
	C	Difference of proportions, single mean, difference of means, and difference of standard deviations.			CO4, CO5
	Unit 5	Testing Hypothesis			
	A	Test for single mean, difference of means			CO6
	B	test for ratio of variances			CO6
	C	Chi-square test for goodness of fit and independence of attributes			CO6
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		25%	25%	50%	
	Text book/s*	1. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.			

		2. P. G. Hoel, S. C. Port and C. J. Stone, Introduction to Probability Theory, Universal Book Stall, 2003 (Reprint). 3. S. Ross, A First Course in Probability, 6th Ed., Pearson Education India, 2002.	
	Other References	1. W. Feller, An Introduction to Probability Theory and its Applications, Vol. 1, 3rd Ed., Wiley, 1968. 2. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 35th Edition, 2000. Veerarajan T., Engineering Mathematics (for semester III), Tata McGraw-Hill, New Delhi, 2010.	