Faculty of Engineering(**affiliated engineering colleges**), Osmania University

(wef: Academic year 2025-2026)

Common to B.E. (CSE, CSE(DS), CSE(AI), CSE(AI&ML), CME, EEE, EIE, & IT)

Course Code	Course Title						Core/Elective
BS207MT	Probability & Statistics						Core
Prerequisite	Contact hours per week				CIE	SEE	Credits
	L	T	D	P			
-	3	1	-	-	30	70	4

Course Objectives.

1. Understanding basic probability concepts, mastering probability calculations
2. Exploring random variables and probability distributions
3. Exploring regression analysis and correlation and applying statistical methods to real-world problems

Course Outcomes.

After completing this course, the students will be able to:

1. Determine the conditional probability using Baye's theorem and classify the random variable and evaluate corresponding distribution function with its mathematical expectation.
2. Evaluate statistical parameters of discrete probability distribution.
3. Evaluate statistical parameters of continuous probability distribution.
4. Perform regression analysis to compute the coefficient of correlation to interpret data.
5. Testing of hypothesis of few unknown statistical parameters using types of sampling, Sampling distribution of means, Sampling distribution of variance, Estimations of statistical parameters.

Unit-I: Introduction of probability, Conditional Probability, Theorem of Total probability, Baye's Theorem(Without proof) and its applications, Random variable, Types of random variables, Probability mass function and probability density function, Mathematical expectations.

Unit-II: Discrete probability distributions: Binomial and Poisson distributions, mean, variance, moment generating function, and evaluation of statistical parameters for these distributions, Moments, Skewness and Kurtosis.

Unit-III: Continuous probability distributions, Uniform, Exponential and Normal distributions, mean, variance, moment generating function, and evaluation of statistical parameters for these distributions.

Unit-IV: Curve fitting by the method of least squares-Fitting of straight lines, second degree parabolas and more general curves, Correlation, regression, rank correlation. Test of

significance- Large sample test for single proportion, difference of proportions, single mean, difference of means and difference of standard deviations.

Unit-V: Test for single mean, difference of means and correlation coefficients, test for ratio of variances, Chi-square test for goodness of fit and independence of attributes.

References

1. R. K Jain S.R.K Iyengar, Advanced Engineering Mathematics, Narosa Publication. 4Th Edition, 2014.
2. B. S. Grewal, Higher Engineering Mathematics, Khanna Publication 43rd Edition, 2014.
3. S.C Gupta and V.K Kapoor, Fundamental of Mathematical Statistics, Sultand Chand & sons, New Delhi, 2014.

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