(For R25 Batch) *With effect from the Academic Year 2026-27*

MUFFAKHAM JAH COLLEGE OF ENGINEERING & TECHNOLOGY
(SULTAN-UL-ULOOM EDUCATION SOCIETY)
ACCREDITED BY NBA and NAAC WITH 'A+' GRADE
(An Autonomous Institution)
COMPUTER SCIENCE AND ENGINEERING DEPARTMENT
PROBABILITY AND STATISTICS
SYLLABUS FOR B.E. IV-SEMESTER

L:T:P (Hrs./week):3:0:0	SEE Marks : 60	Course Code : 25BS211MT
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

Course Objectives: To learn	**Course Outcomes**: After learning the contents of this course, the student must be able to
1. Understand fundamental concepts of probability theory and random variables.	1. Solve problems involving probability axioms, conditional probability and Bayes' theorem
2. Apply discrete and continuous probability distributions in engineering problems.	2. Evaluate statistical parameters of discrete probability distribution.
3. Analyze statistical data using sampling distributions and estimation techniques.	3. Evaluate statistical parameters of continuous probability distribution.
4. Perform hypothesis testing for means, proportions and variances.	4. Perform regression analysis to compute the coefficient of correlation to interpret data.
5. Apply correlation, regression and basic statistical tools in real-life engineering applications.	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.

CO-PO Mapping: 3-High Mapping, 2-Moderate Mapping, 1-Low Mapping, - -Not Mapping

CO/PO &PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1:	3	3	–	2	–	–	–	–	–	–	–	3	2	–
CO2:	3	3	–	2	1	–	–	–	–	–	–	3	2	–
CO3:	3	3	–	2	1	–	–	–	–	–	–	3	2	–
CO4:	3	3	2	3	2	–	–	–	–	1	–	3	3	1
CO5:	3	3	2	3	2	–	–	–	–	1	–	3	3	1

Unit-I: **Probability**: Introduction, Conditional Probability, Baye's Theorem (Without proof), Random variable, Discrete Probability Distribution, Continuous Probability Distribution, Probability Mass Function, Probability Density Function, Expectation, Variance.

Unit-II: **Discrete Probability Distributions**: Binomial Distribution and Poisson Distributions- Evaluation of Statistical Parameters for these Distributions- Mean, Variance and Moment Generating Function.

Unit-III: **Continuous Probability Distributions**: Uniform Distribution, Exponential Distribution and Normal Distribution- Evaluation of Statistical Parameters for these Distributions-Mean, Variance and Moment Generating Function.

Unit-IV: Curve Fitting by the Method of Least Squares-Fitting of Straight Line, Fitting of Parabola, Fitting of other Curves ($y = ae^{bx}, y = ax^{b}, y = ab^{x}$), Coefficient of Correlation, Regression Coefficient, Lines of Regression, Rank Correlation Coefficient.

Unit-V: **Test of Significance** -Large samples- Test for single mean, difference of means, single proportion, difference of proportions -Test of significance for small samples- chi-square test for goodness of fit and independence of attributes, student's t-test, F -test for ratio of variances,

Suggested Reading:

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

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