

YEAR – II	STATISTICAL AND NUMERICAL METHODS	PCA1019S
SEMESTER – IV		HRS/WEEK – 4
CORE		CREDIT – 3

OBJECTIVE:

To expose the analysis of specific systems with repair facilities.

To motivate the students to apply the statistical and numerical methods in their respective major subjects.

UNIT – I

Introduction about Statistics – Elementary statistics – Mean, Median, Standard deviation, Variance and Coefficient of Variation. Correlation – Karl Pearson’s Coefficient of Correlation Coefficient, Spearman’s rank Correlation Coefficient, Simple Regression equations.

UNIT – II

Random variables and distribution functions. Standard distributions – Binomial, Poisson and Geometric distributions – Continuous distributions – Normal and Exponential distributions, moments – Simple problems.

UNIT – III

Queuing Process, General description $M/M/1/\infty$, $M/M/1/N$, $M/M/C/\infty$ and $M/M/C/N$ models.

UNIT – IV

System reliability, MTBF – Series system – Parallel system – (k, n) system – Stand by system.

UNIT –V

Interpolation – Lagrange, Newton Forward and Backwards formulae. Numerical differentiation. Numerical integration – Quadrature formula for equidistant ordinates. Trepzoidal rule, Simpson’s $1/3$ rule, Simpson’s $3/8$ rule and Weddle’s rule and their errors.

Text Books:

1. “Probability and Statistics with Reliability, Queuing and Computer Science Applications” (1994), K. S. Trivedi, Prentice Hall India.
2. “Fundamentals of Mathematical Statistics” (11th edition – 2002), Gupta. S. C. and Kapoor. V. K., Sultan Chand & Sons, New Delhi.
3. “Numerical Methods” (1995), Singaravelu. A., Meenakshi Agency, Chennai.

Reference Books:

1. "Fundamentals of Applied Statistics" (2nd edition – 1978), Gupta. S. C. and Kapoor. V. K., Sultan Chand & Sons, New Delhi.
2. "Optimization and Probability in Systems Engineering" (1970), John G. Rau, Van Nostrand.
3. "Statistical Analysis of Reliability and Life-Testing Models" (1978), Bain. L. J., Marcel Dekker.
4. "Operations Research" (1991), Kanti Swarup, Gupta. P. K. and Man Mohan, Sultan Chand & sons, New Delhi.

QUESTION PATTERN

Time: 3hours

Max.Marks : 75

Structure of the Question Paper:

Section A

Answer All the Questions (10 X 1 = 10 Marks)

Section B

Answer All the Questions - Internal Choice (5X 5 =25 Marks)

Section C

Answer any Four Questions (4X10 =40 Marks)

Out of Six Questions the Students are asked to answer any Four.

Note: Each unit Carry equal weightage.