II Year – II SEMESTER

|   | T | P | C |
|---|---|---|---|
|   | 3+1 | 0 | 3 |

# PROBABILITY AND STATISTICS
## (Common to CE, CSE, IT, Chemical, PE, PCE, Civil Branches)

### UNIT I Random variables and Distributions:

Introduction- Random variables- Distribution function- Discrete distributions ( Review of Binomial and Poisson distributions)-

Continuous distributions: Normal, Normal approximation to Binomial distribution, Gamma and Weibull distributions

Subject Category
ABET Learning Objectives   a b e k
ABET internal assessments   1 2 6
JNTUK External Evaluation  A B E

### UNIT II Moments and Generating functions:

Introduction-Mathematical expectation and properties - Moment generating function - Moments of standard distributions ( Binomial, Poisson and Normal distributions) – Properties

Subject Category
ABET Learning Objectives   a e
ABET internal assessments   1 2 6
JNTUK External Evaluation  A B E

### UNIT III Sampling Theory:

Introduction - Population and samples- Sampling distribution of mean for large and small samples (with known and unknown variance) - Proportion sums and differences of means -Sampling distribution of variance -Point and interval estimators for means and proportions

Subject Category
ABET Learning Objectives   a e k
ABET internal assessments   1 2 6
JNTUK External Evaluation  A B E

### UNIT IV Tests of Hypothesis:

Introduction - Type I and Type II errors - Maximum error - One tail, two-tail tests- Tests concerning one mean and proportion, two means- Proportions and their differences using Z-test, Student's t-test - F-test  and Chi -square test - ANOVA for one-way and two-way classified data

Subject Category
ABET Learning Objectives   a b d e h k
ABET internal assessments   1 2 6 7 10
JNTUK External Evaluation  A B D E F

### UNIT V Curve fitting and Correlation:

Introduction - Fitting a straight line –Second degree curve-exponential curve-power curve by method of least squares.

Simple Correlation and Regression - Rank correlation - Multiple regression

## UNIT VI Statistical Quality Control Methods:

Introduction - Methods for preparing control charts – Problems using x-bar, p,  R charts and attribute charts

**Books:**
1. Probability and Statistics for Engineers: Miller and John E. Freund, Prentice Hall of India
2. Probability and Statistics for Engineers and Scientists: Ronald E. Walpole, Sharon L. Mayers and Keying Ye: Pearson
3. Probability, Statistics and Random Processes, Murugesan, Anuradha Publishers, Chenai: