

# AMFT10 PROBABILITY AND STATISTICS

## UNIT-1 PROBABILITY AND RANDOM VARIABLES

- 1.1 Probability- The axioms of probability- Conditional probability
- 1.2 Baye's theorem- Discrete and continuous random variables
- 1.3 Moments- Moment generating functions
- 1.4 Binomial, Poisson, Geometric, Uniform,
- 1.5 Exponential and Normal distributions.

## UNIT-2 TWO- DIMENSIONAL RANDOM VARIABLES

- 2.1 Joint distributions- Marginal and conditional distributions
- 2.2 Covariance- Correlation and linear regression
- 2.3 Transformation of random variables
- 2.4 Central limit theorem (for independent and identically distributed random variables).

## UNIT-3 TESTING OF HYPOTHESIS

- 3.1 Sampling distributions- Estimation of parameters- Statistical hypothesis
- 3.2 Large sample tests based on Normal distribution for single mean and difference of means
- 3.3 Tests based on t, Chisquare and F distributions for mean,
- 3.4 Variance and proportion- Contingency table (test for independent)- Goodness of fit.

## UNIT-4 DESIGN OF EXPERIMENTS

- 4.1 One way and Two way classifications
- 4.2 Completely randomized design
- 4.3 Randomized block design
- 4.4 Latin square design- 2 2 factorial design.

## UNIT-5 STATISTICAL QUALITY CONTROL

- 5.1 Control charts for measurements (X and R charts)
- 5.2 Control charts for attributes (p, c and np charts)
- 5.3 Tolerance limits
- 5.4 Acceptance sampling

## References Books

- 1 Devore. J.L., "Probability and Statistics for Engineering and the Sciences", Cengage Learning, New Delhi, 8th Edition, 2014.
- 2 Papoulis, A. and Unnikrishnapillai, S., "Probability, Random Variables and Stochastic Processes", McGraw Hill Education India, 4th Edition, New Delhi, 2010.