GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 1

Communication Engineering

Subject Name: **Statistical Signal Analysis**

Sr.No	Course content
1	Review of probability, Sample space, Algebra and random variable, Distribution and densities, Characteristics functions and moment generating functions, Transformation (function) of random variables; Conditional expectation; Sequences of random variables: convergence of sequences of random variables.
2	Statistical Independence, Uncorrelation of Random Variables, Joint and Marginal Densities Function of random variables, Stochastic processes: wide sense stationary processes, orthogonal increment processes, Wiener process, Ergodicity.
3	Mean square continuity, Stochastic Calculus: mean square derivative and mean square integral of stochastic processes.
4	Stochastic systems: response of linear dynamic systems to stochastic inputs correlation function; power spectral density function; introduction to linear least square estimation.
5	Least square and mean square error.

Reference Books:

1. Alberto leon Gracia, Probability and Random Processes for Electrical Engineer, 2nd Ed PE India
2. A.Papoulis, Probability Random Variables and stochastic Processes, 2nd Ed Mc Graw Hill
3. A. Larson and B.O. Schubert, Stochastic Processes, Vol.I and II, Holden-Day
4. W.Gardener, Stochastic Processes, McGraw Hill.
5. S. Haykin, Adaptive filter theory, prentice Hall.
6. B.P.Lathi, Modern Analogue and Digital communication, Oxford uni. Press.