**Aditya Institute of Technology and Management (Autonomous), Tekkali**

**II Year B.Tech (Electronics and Communication Engineering) I- Sem.**

**II ECE-B 2013-14 SEM-I**

**Probability Theory and Stochastic Processes**

**LESSON PLAN**

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| **Periods** | **Date**  **(Tentative)** | **Topic** | **Unit No** | **Teaching Methodology** | **Remarks** | **Corrective Action Upon Review** |
| 1 | 03/09/13 | Need of probability, Concepts in engineering applications. Set theory introduction. | Unit -I | Black Board |  |  |
| 2 | 04/09/13 | Probability definition based on set theory and fundamental axioms. | Black Board |  |  |
| 3 | 05/09/13 | Probability in terms of relative frequency, Conditional probability, Total probability theorem. | Black Board |  |  |
| 4 | 06/09/13 | Sample space definition. Discrete, Continuous and combined samples spaces with examples. Introduction to Joint and independent events, Problems and solutions. | Black Board |  |  |
| 5 | 09/09/13 | Baye’s theorem derivation, Problems on Baye’s theorem. | Black Board |  |  |
| 6 | 11/09/13 | Bernoulli trails & Problems and solutions | Black Board |  |  |
| 7 | 12/09/13 | Problems and solutions | Black Board |  |  |
| 8 | 13/09/13 | Definition of random variable, Classification and properties of random variables , Conditions for function to be random variable | Unit II | Black Board |  |  |
| 9 | 14/09/13 | Introduction to density and distribution function and its properties. | Black Board |  |  |
| 10 | 16/09/13 | Distribution and density functions of Gaussian and uniform random variables. | Black Board |  |  |
| 11 | 17/09/13 | Binomial & Poisson’s density and distribution functions | Black Board |  |  |
| 12 | 19/09/13 | Exponential, Rayleigh random variable density and distribution functions. | Black Board |  |  |
| 13 | 20/09/13 | Conditional density , distributions functions and its properties | Black Board |  |  |
| 14 | 21-09-13 | Problems and solutions. | Black Board |  |  |
| 15 | 23-09-13 | Problems and solutions. | Black Board |  |  |
| 16 | 25-09-13 | One dimension random variable, Finding expected value of a random variable , problems. | Unit III | Black Board |  |  |
| 17 | 26-09-13 | Operations on one random variable, moments about the origin and moments about the mean. | Black Board |  |  |
| 18 | 28-09-13 | Chebychev’s and Markov’s inequality- explanation | Black Board |  |  |
| 19 | 01-10-13 | Definition of characteristic function & Moment generating function | Black Board |  |  |
| 20 | 02-10-13 | Problems and solutions on finding moments. | Black Board |  |  |
| 21 | 04-10-13 | Monotonic transformations of continuous random variable. | Black Board |  |  |
| 22 | 07-10-13 | Non – monotonic transformations of continuous random variable. | Black Board |  |  |
| 23 | 08-10-13 | Problems & Solutions | Black Board |  |  |
| 24 | 09-10-13 | Problems & Solutions | Black Board |  |  |
| 25 | 10-10-13 | Problems & Solutions | Black Board |  |  |
| 26 | 11-10-13 | Vector random variable. Introduction joint distribution properties. | Unit IV | Black Board |  |  |
| 27 | 12-10-13 | Properties of joint density function &Marginal distribution function. | Black Board |  |  |
| 28 | 15-10-13 | Conditional distribution and density functions. Concept of statistical independence. | Black Board |  |  |
| 29 | 17-10-13 | Sum of two random variables, sum of several random variables. | Black Board |  |  |
| 30 | 18-10-13 | Central limit theorem for equal and unequal distributions. | Black Board |  |  |
| 31 | 25-10-13 | Problems and solutions | Black Board |  |  |
| 32 | 04-11-13 | Expected value of a function of joint random variables, joint moments about the origin | Unit-IV | Black Board |  |  |
| 33 | 05-11-13 | Joint central moments, joint characteristic function explanation. | Black Board |  |  |
| 34 | 06-11-13 | Joint Gaussian random variable introduction, Two random variables case, N random variable case, | Black Board |  |  |
| 35 | 07-11-13 | Properties, transformations of multiple random variables | Black Board |  |  |
| 36 | 08-11-13 | Linear transformations of Gaussian random variables. | Black Board |  |  |
| 37 | 09-11-13 | Problems on multiple random variables | Black Board |  |  |
| 38 | 12-11-13 | Concept of random process, Classification of random process | Unit VI | Black Board |  |  |
| 39 | 13-11-13 | Deterministic and non-deterministic process. | Black Board |  |  |
| 40 | 14-11-13 | Concept of stationarity and statistical independence. | Black Board |  |  |
| 41 | 16-11-13 | First – order, second – order, wide – sense and strict – sense stationarity process. | Black Board |  |  |
| 42 | 18-11-13 | Concept of Time average and Ergodicity and mean – Ergodic Processes | Black Board |  |  |
| 43 | 21-11-13 | Autocorrelation and its properties, Covariance Functions. | Black Board |  |  |
| 44 | 22-11-13 | Covariance functions and its properties | Black Board |  |  |
| 45 | 22-11-13 | Gaussian Random Processes, Poisson Random Process. | Black Board |  |  |
| 46 | 26-11-13 | The power spectrum properties | Unit- VII | Black Board |  |  |
| 47 | 27-11-13 | Relationship between power spectrum and auto correlation function | Black Board |  |  |
| 48 | 2-12-14 | The cross power density spectrum and its properties | Black Board |  |  |
| 49 | 3-12-13 | Relationship between cross power spectrum and cross correlation function. | Black Board |  |  |
| 50 | 04-12-13 | Power density spectrum of response, Cross power density spectrum of input and output. | Unit VIII | Black Board |  |  |
| 51 | 10-11-13 | Concept of convolution- Random signal response of linear Systems | Black Board |  |  |
| 52 | 13-12-13 | Concept of mean & mean squared value of a system response. | Black Board |  |  |
| 53 | 16-12-13 | Auto correlation & Functions of response. | Black Board |  |  |
| 54 | 17-12-13 | Cross correlation & Functions of response. | Black Board |  |  |
| 55 | 18-12-13 | Spectral characteristics of system response (power density) | Black Board |  |  |
| 56 | 21-12-13 | Power density spectrum of response, Cross power density spectrum of input and output. | Black Board |  |  |
| 57 | 23-12-13 | Concept of Band pass, band-limited and narrowband processes. | Black Board |  |  |
| 58 | 24-12-13 | Concept of modeling of noise sources- Resistive (thermal) arbitrary noise sources. | Black Board |  |  |
| 59 | 25-12-13 | Concept of effective noise temperature, average noise figure | Black Board |  |  |
| 60 | 26-12-13 | Concept of average noise figure of cascaded networks. | Black Board |  |  |
| 61 | 27-12-13 | Problems and solutions | Black Board |  |  |
| 62 | 28-12-13 | Problems and solutions | Black Board |  |  |
| 63 | 30-12-13 | Problems and solutions / GATE Questions | Black Board |  |  |
| 64 | 02-01-14 | Problems and solutions/ GATE Questions | Black Board |  |  |

Signature of the faculty Signature of HOD/ECE