

NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mathematics - Probability Theory and Applications

Subject Co-ordinator - Prof. Prabha Sharma

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

- Lecture 1 - Basic principles of counting
- Lecture 2 - Sample space, events, axioms of probability
- Lecture 3 - Conditional probability, Independence of events
- Lecture 4 - Random variables, cumulative density function, expected value
- Lecture 5 - Discrete random variables and their distributions
- Lecture 6 - Discrete random variables and their distributions
- Lecture 7 - Discrete random variables and their distributions
- Lecture 8 - Continuous random variables and their distributions
- Lecture 9 - Continuous random variables and their distributions
- Lecture 10 - Continuous random variables and their distributions
- Lecture 11 - Function of random variables, Moment generating function
- Lecture 12 - Jointly distributed random variables, Independent r. v. and their sums
- Lecture 13 - Independent r. v. and their sums
- Lecture 14 - Chi square r. v., sums of independent normal r. v., Conditional distr
- Lecture 15 - Conditional distri, Joint distr. of functions of r. v., Order statistics
- Lecture 16 - Order statistics, Covariance and correlation
- Lecture 17 - Covariance, Correlation, Cauchy-Schwarz inequalities, Conditional expectation
- Lecture 18 - Conditional expectation, Best linear predictor
- Lecture 19 - Inequalities and bounds
- Lecture 20 - Convergence and limit theorems
- Lecture 21 - Central limit theorem
- Lecture 22 - Applications of central limit theorem
- Lecture 23 - Strong law of large numbers, Joint mgf
- Lecture 24 - Convolutions
- Lecture 25 - Stochastic processes
- Lecture 26 - Transition and state probabilities
- Lecture 27 - State prob., First passage and First return prob
- Lecture 28 - First passage and First return prob. Classification of states
- Lecture 29 - Random walk, periodic and null states

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- Lecture 30 - Reducible Markov chains
- Lecture 31 - Time reversible Markov chains
- Lecture 32 - Poisson Processes
- Lecture 33 - Inter-arrival times, Properties of Poisson processes
- Lecture 34 - Queuing Models
- Lecture 35 - Analysis of L , L_q , W and W_q , M/M/S model
- Lecture 36 - M/M/S, M/M/I/K models
- Lecture 37 - M/M/I/K and M/M/S/K models
- Lecture 38 - Application to reliability theory failure law
- Lecture 39 - Exponential failure law, Weibull law
- Lecture 40 - Reliability of systems