NPTEL Video Course - Management - NOC:Introduction to Stochastic Processes

Subject Co-ordinator - Prof. Manjesh Hanawal

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Sample Space and events
Lecture 2 - Axioms of Probability
Lecture 3 - Independence of events and Conditional Probability
Lecture 4 - Bayeâ s Theorem and Introduction to Random Variables
Lecture 5 - CDF and itâ s properties
Lecture 6 - Continuity of Probability
Lecture 7 - Discrete and Continuous random variables
Lecture 8 - Expectation of random variables and its properties
Lecture 9 - Variance and some inequalities of random variables
Lecture 10 - Discrete Probability Distributions
Lecture 11 - Continuous Probability Distributions
Lecture 12 - Jointly distributed random variables and conditional distributions
Lecture 13 - Correlation and Covariance
Lecture 14 - Transformation of random vectors
Lecture 15 - Gaussian random vector and joint Gaussian distribution
Lecture 16 - Random Processes
Lecture 17 - Properties of random Process
Lecture 18 - Poisson Process
Lecture 19 - Properties of Poisson Process - Part 1
Lecture 20 - Properties of Poisson Process - Part 2
Lecture 21 - Convergence of sequence of random variables - Part 1
Lecture 22 - Convergence of sequence of random variables - Part 2
Lecture 23 - Relation between different notions of convergence
Lecture 24 - Cauchyâ s criteria of convergence
Lecture 25 - Convergence in expectation
Lecture 26 - Law of Large Numbers
Lecture 27 - Central limit theorem
Lecture 28 - Chernoff bound
Lecture 29 - Introduction to Markov property

Lecture 30 - Transition Probability Matrix
Lecture 31 - Finite dimensional distribution of Markov chains
Lecture 32 - Strong Markov Property
Lecture 33 - Stopping Time
Lecture 34 - Hitting Times and Recurrence
Lecture 35 - Mean Number of returns to a state
Lecture 36 - Communicating classes and class properties
Lecture 37 - Class Properties (Continued...)
Lecture 38 - Positive Recurrence and The Invariant Probability Vector
Lecture 39 - Properties of Invariant Probability Vector
Lecture 40 - Condition For Transience
Lecture 41 - Example of Queue
Lecture 42 - Queue Continued and Example of Page Rank
Lecture 43 - Introduction to renewal Theory
Lecture 44 - The Elementary Renewal Theorem
Lecture 45 - Application to DTMC
Lecture 46 - Renewal Reward Theorem
Lecture 47 - Introduction to Continuous Time Markov Chains
Lecture 48 - Properties of states in CTMC
Lecture 49 - Embedded markov chain