STOCHASTIC MODELING AND THE THEORY OF QUEUES

PROF. KRISHNA JAGANNATHAN

Department of EE

IIT Madras

TYPE OF COURSE : New | Elective | PG

COURSE DURATION : 12 weeks (26 Jul 21 -15 Oct 21)

EXAM DATE : 24 Oct 2021

PRE-REQUISITES :

EE5110:Probability Foundations   for EE
https://nptel.ac.in/courses/108/106/108106083/

INTENDED AUDIENCE : This is a PG/PhD level course on discrete stochastic processes, which will also cover queuing examples and applications.

COURSE OUTLINE :

This is a PG level course on discrete stochastic processes and queuing, aimed at students working in areas such as communication networks, operations research, and machine learning. It covers Poisson processes, renewal processes, renewal reward theory, queuing models and analyses, Markov chains in discrete as well as continuous time (countable state-space only). A graduate level probability background will be assumed.

ABOUT INSTRUCTOR :

Krishna Jagannathan obtained his B. Tech. in Electrical Engineering from IIT Madras in 2004, and the S.M. and Ph.D. degrees in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology (MIT) in 2006 and 2010 respectively.

COURSE PLAN :

Week-1: Poisson Processes

Week-2: Poisson Processes

Week-3: Renewal Processes and Renewal Reward Theory

Week-4: Renewal Processes and Renewal Reward Theory

Week-5: Renewal Processes and Renewal Reward Theory

Week-6: Renewal Processes and Renewal Reward Theory

Week-7: Discrete Time Markov Chains (DTMCs)

Week-8: Discrete Time Markov Chains (DTMCs)

Week-9: Discrete Time Markov Chains (DTMCs)

Week-10: Continuous Time Markov Chains

Week-11: Continuous Time Markov Chains

Week-12: Continuous Time Markov Chains