



Discrete Stochastic Processes

ECE 7103

Credit Hours:

3.00 - 3.00

Course Levels:

Graduate (5000-8000 level)

Course Components:

Recitation
Lecture

Course Description:

Stochastic processes in discrete time or space for electrical engineering. Renewal theory, Markov chains and processes, dynamic programming, basic large deviations theory and martingales.

Prerequisites and Co-requisites:

Prereq: 6001 (804).

Course Goals / Objectives:

- Develop the understanding and intuition necessary to apply stochastic process models to problems in engineering, science and operations research
 - Build the ability to construct simple examples to build insight about the structure of stochastic processes and about the generic effect of these phenomena in real systems
 - Learn the tools and the methods, imperative to do fundamental research in the broad area of communication and networking
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Course Topics:

- Review of probability
 - Renewal processes and renewal theory
 - Finite-state Markov chains
 - Markov decision processes and dynamic programming
 - Markov chains with countably-infinite state spaces
 - Large deviations and martingales
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Designation:

Elective