

IOE 515 Stochastic Processes Fall 2004

Basic Course Information

Instructor

Instructor: Mark E. Lewis
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You are welcome to ask questions in the classroom and directly after class.
Appointments may be arranged by phone or email.

GSI

GSI: Damon P. Williams
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Office Hours: MW 8 – 10 am in 2717 IOE (tentative)
Friday 4-5pm in 1680 IOE (recitation session)

Course Content

This is a basic course in stochastic processes with emphasis on model building and probabilistic reasoning. The approach will be non-measure theoretic but otherwise rigorous. Topics to be covered include:

- Review of elementary probability with particular attention to conditional expectation
- Poisson processes
- Renewal theory
- Discrete-time Markov chains
- Some continuous state models including Brownian motion

Applications will be considered in queueing, reliability, and inventory theory.

Course Objectives

- Develop a deep understanding of probability
- Be able to apply probability concepts to situations involving uncertainty
- Understand why the Poisson process is so prevalent in stochastic models

- Be able to apply Poisson process results to stochastic models
- Understand why renewal theory is fundamental to the study of stochastic processes
- Be able to apply renewal theory results to stochastic models
- Understand the basic theory of discrete-time Markov chains
- Be able to compute performance measures for discrete-time Markov chains
- Be able to state and prove theorems about stochastic processes (primarily for those students intending to do research in areas involving stochastic models).

Links

- [Homework and Solutions](#)
- [Summary of the course material](#)
- [Syllabus](#)