

# OR / STAT 645: Stochastic Processes

Fall 2006

## Course Overview

Most real-world processes are fundamentally *stochastic* – that is, they have a random component. This course provides an in-depth survey of models that can be used to analyze a wide variety of stochastic processes. The focus is both on quantitative analysis of such models and practical issues using such models to represent real problems. This course assumes some prior knowledge of probability and basic stochastic models (like Markov chains). The pre-requisite is OR 542 (Stochastic Models), or STAT 544 (Applied Probability), or permission of the instructor.

Class Hours: Thursday, 4:30 pm – 7:10 pm, Krug Hall 253

Pre-requisites: OR 542, or STAT 544, or permission of instructor

Instructor: John Shortle  
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Science & Tech II, room 313  
Office hours: Thu 3:15 pm – 4:15 pm

Textbook: S. Ross, *Introduction to Probability Models*, 8th Ed.

### Student Evaluation Criteria

Homework	10%
Midterm	40%
Final exam	50%

### Tentative Schedule for Fall 2005

Class	Lecture Topic	Homework
Aug. 31	Review of probability Exponential distribution	
Sep. 7	The Poisson process	Hmwk #1 due
Sep. 14	The Poisson process	Hmwk #2 due
Sep. 21	Markov chains (Discrete / Continuous)	
Sep. 28	Markov chains (Discrete / Continuous)	Hmwk #3 due
Oct. 5	Markov chains (Discrete / Continuous)	
Oct. 12	Markov chains (Discrete / Continuous)	Hmwk #4 due
Oct. 19	** Midterm **	
Oct. 26	Renewal theory	
Nov. 2	Renewal theory	Hmwk #5 due
Nov. 9	Renewal theory	
Nov. 16	Brownian motion	Hmwk #6 due
Nov. 23	** Thanksgiving **	
Nov. 30	Brownian motion	
Dec. 7	Brownian motion	Hmwk #7 due
Dec. 14	** Final Exam **, 4:30 pm – 7:15 pm	