

# OR / STAT 645: Stochastic Processes

## Course Overview, Fall 2007

Most real-world processes are fundamentally *stochastic* – that is, they have some degree of randomness or uncertainty. 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 prerequisite is OR 542 (Stochastic Models), or STAT 544 (Applied Probability), or permission of the instructor.

Class Hours: Tuesday, 7:20 – 10:00 pm, East Building, room 121  
 Pre-requisites: OR 542, or STAT 544, or permission of instructor  
 Instructor: John Shortle  
 jshortle@gmu.edu  
 703-993-3571  
 Science & Tech II, room 313  
 Office hours: Tue 6:15 – 7:15 pm, Wed 2 – 3 pm.

Textbook: S. Ross, *Introduction to Probability Models*, 9th Ed.

### Student Evaluation Criteria

Homework	10%
Midterm #1	25%
Midterm #2	25%
Final exam	40%

### Schedule for Fall 2007 (Last updated: 8/28/07)

Class	Lecture Topic	Homework
Aug. 28	Review of probability The exponential distribution	
Sep. 4	The Poisson process	Hmwk #1 due
Sep. 11	The Poisson process	Hmwk #2 due
Sep. 18	The Poisson process Markov chains (Discrete / Continuous)	
Sep. 25	Markov chains (Discrete / Continuous)	Hmwk #3 due
Oct. 2	Markov chains (Discrete / Continuous) ** Midterm #1 **	
Oct. 9	** No Class ** (Columbus Day)	
Oct. 16	Markov chains (Discrete / Continuous)	Hmwk #4 due
Oct. 23	Markov chains (Discrete / Continuous)	
Oct. 30	Renewal theory	Hmwk #5 due
Nov. 6	** Midterm #2 **	
Nov. 13	Renewal theory	
Nov. 20	Brownian motion	Hmwk #6 due
Nov. 27	Brownian motion	
Dec. 4	Brownian motion	Hmwk #7 due
Dec. 11	** Final Exam **, 7:30 pm – 10:15 pm	