OR 647: Queueing Theory
Spring 2006
Course Overview

We are all familiar with waiting in lines (or queues) – at the grocery store, at the airport, in traffic, on the telephone, and so forth. A fundamental issue for any service-provider is whether or not to spend more money on resources in order to reduce waiting times for the customers. Queueing theory is the analytical study of these stochastic processes, and it provides the decision-maker a way to allocate resources based on rigorous, quantitative analysis. This course provides a survey of queueing models. The focus is both on mathematical analyses of such models as well as practical issues using such models to represent real problems. This course assumes prior knowledge of calculus-based probability and continuous-time Markov chains. The pre-requisite is OR 542 (Stochastic Models), or STAT 544 (Applied Probability), or permission of the instructor.

Class Hours: Tuesday, 7:20 pm – 10:00 pm, Science & Technology, rm 112
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 (or by appointment):
                        Tue 4:30 pm – 5:30 pm
                        Thu 1:00 pm – 2:00 pm
Textbook: Gross, D., Harris, C. 1998. *Fundamentals of Queueing Theory*, 3rd ed.

Student Evaluation Criteria

Homework	15%
Midterm	35%
Final exam	50%

Class	Lecture Topic	Homework
Jan. 24	Introduction to queueing theory	
Jan. 31	Operational analysis of queues	Hmwk #1 due
Feb. 7	Simple Markovian queues	Hmwk #2 due
Feb. 14	Simple Markovian queues	
Feb. 21	Advanced Markovian queues	Hmwk #3 due
Feb. 28	Advanced Markovian queues	
Mar. 7	** Midterm **	
Mar. 14	Spring Break	Hmwk #4 due
Mar. 21	Queueing networks	
Mar. 28	Queueing networks	
Apr. 4	Queueing networks	Hmwk #5 due
Apr. 11	Models with general distributions	
Apr. 18	Models with general distributions	Hmwk #6 due
Apr. 25	Advanced topics: Overflow models	
May 2	Advanced topics: Matrix methods	Hmwk #7 due
May 9	** Final Exam **, 7:30 pm – 10:15 pm	