JAMES WORTH BAGLEY COLLEGE OF ENGINEERING
MISSISSIPPI STATE UNIVERSITY
INDUSTRIAL & SYSTEMS ENGINEERING

IE 8723 - 01 Operation Research II – Stochastic Process with Application
03:30pm - 04:45pm, Spring, 2009, Simrall 106

Instructor: Dr. Mingzhou Jin **Email**: mjin@ie.msstate.edu
Office: McCain Hall 260H **Tel.** : 53923
Office hour: TTh 2:00-3:00 PM or arranged hour by appointment
Online Material: mycourses.msstate.edu

Description of the Course:

Prerequisite: Probability, Calculus, linear algebra.
Three hours lecture. Stochastic process models and algorithms with the application in inventory, reliability, replacement, queuing system, decision making, communications, and system design

We hope to help you understand the basic models and algorithms in stochastic process. We plan to talk about renewal theory with application, Markov Chain, Queuing theory. Both theoretical analysis and application of stochastic process will be presented.

Textbook:

"A First Course in Stochastic Models" by Henk C. Tijms, 2003, John Wiley & Sons, ISBN: 0471498807

Reference books:

"Stochastic Processes" second edition by Sheldon M. Ross, 1996, John Wiley & Sons

"Operations Research – Applications and Algorithms", 4th edition, 2003, by Wayne L. Winston. Duxbury Press: Belmont, CA, ISBN: 0534380581.

Grading System

Homework	30%
Mid-term Test	20%
Final Exam	20%
Project	20%
Quizzes	10%

- Weekly homework will be given and will be due in one week. The answer will be posted on the web some days later.
- The mid-term test will take about 1.5 hours. (open books and open notes)
- The final exam will be take-home and comprehensive.
- Quizzes are given randomly.
- You are encouraged to be active in the class.

Tentative Schedule for this Course

Class Date	Class Content
Week 1	Review of Probability and Other Knowledge
Week 2-3	Poisson Process
Week 3-5	Renewal-Reward Theory
Week 6-7	Renewal Theory and Its Application in Inventory, Reliability, Replacement, and others
Week 8-9	Discrete-time Markov Chain Theory and Application (Mid-term exam)
Week 9-10	Continuous-time Markov Chain Theory and Application
Week 11-13	Markovian Decision Processes and their Application
Week 14-16	Queuing Theory and Application

DISCLAIMER: This schedule serves as a rough guide for the pacing of materials covered in the course, and will be subject to change as necessary.

Honor Code

Mississippi State University has an approved Honor Code that applies to all students. The code is as follows:

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."