Syllabus for Ma 417
Applied Probability Optimization  Modeling and Simulations
Spring 2015

Lecture:
T Th 12:00 – 1:15  CB 343

Instructor Information:
Instructor: Dr. Shaw
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Course website: www.ms.uky.edu/~mshaw

Office hours: MWF 1:00 – 2:00, POT 707, TBA Mathskeller CB 63
Other hours are available any time by appointment.

Textbook: No text is required. However the course is loosely based on the text Applied Probability Models with Optimization Applications by Sheldon M. Ross. This book is on reserve in the Science Library along with the book Mathematical Statistics with Applications by Mendenhall, Scheaffer, and Wackerly and may be used as reference. Other texts and articles will be references.

Grading: There will be one midterm and one final exam. The exams will count as 70% of your grade. In addition, approximately 10 quizzes, projects, or other assignments will be given and count as 30% of your grade.

Software: No specific programming is required. However it is highly recommended to have knowledge in a language such as R, Python, MatLab, Maple, Java, or Perl. Some of the assignments will require numeric results. It will be possible to do the assignments using a spread sheet. R will be the language used for examples. R and its development GUI RStudio is open source and easy to install.

Topics:
- Review of probability, random variables and stochastic process
- Introduction to simulations with R
- Poisson process
- Renewal theory
- Markov chains
- Inventory theory
- Optimization problems
- Additional topics in mathematical finance such as the Markovitz minimal variance portfolio

Accommodations due to disability: If you have a documented disability that requires academic accommodations, please contact me as soon as possible. In order to receive accommodations in this course, you need to provide me with a Letter of Accommodation for the Disability Resource Center, Room 2, Alumni Gym, 257-2754.

Attendance: Attendance is required and you are responsible for all lecture material and announcements made in class. Quizzes missed due to absence will not be allowed to be made up.

Academic integrity: Violations of academic integrity will be taken seriously and dealt with according to university regulations. Instances of cheating on exams include (but are not limited to) copying from or communicating with another student, bringing any kind of notes into the exam, and the use of an electronic aid. You are encouraged to work together on homework.