

CSCI 688: Computational Probability
Summer, 2011
MTWRF 10:10–11:40 Jones 302

Instructor: Larry Leemis

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Office hours: Tuesday and Thursday: 9:00 - 10:00 AM, or by appointment

Purpose:

A student completing this course should understand how computing can be used to solve intractable problems in probability and statistics. A research project chosen by the student and approved by the instructor is due on the last day of class.

Prerequisites:

Calculus-based probability and some exposure to statistics.

Text:

Drew, J.H., Evans, D.L., Glen, A.G., Leemis, L.M., *Computational Probability: Algorithms and Applications in the Mathematical Sciences*, 2008, Springer.

Grades:

Course grades will be determined by these weights:

Homework 25%

Project 25%

Midterm exam 20%

Final exam 30%

The grading scale is (plus and minus grades may be assigned within each range)

90 - 100 % A

80 - 90 % B

70 - 80 % C

Homework:

Homework sets are typically due at the beginning of the Monday, Wednesday and Friday class period. No late homework assignments will be accepted.

Course outline:

1. Computational Probability
2. Maple for APPL
3. Data Structures and Simple Algorithms
4. Transformations of Random Variables
5. Products of Random Variables
6. Data Structures and Simple Algorithms
7. Sums of Independent Random Variables
8. Order Statistics
9. Reliability and Survival Analysis
10. Stochastic Simulation
11. Other Applications