

CSCI 780: Modeling and Simulation

Fall, 2000

Instructor: Larry Leemis

Office: Jones 116

Phone: 221-2034

e-mail: leemis@math.wm.edu

Office hours: Tuesday and Thursday: 3:30 - 4:50 PM, or by appointment

Purpose:

A student completing this course should understand general simulation terminology, techniques, and the SIMAN/Arena simulation language. An industrial project approved by the instructor is due on the last day of class. An interim report is due on Tuesday, October 17. Specific topics covered include network, discrete-event, and continuous modeling approaches, along with interfaces between the three modeling approaches. Statistical topics include time-persistent statistics, random number generation, random variate generation, autocorrelated output, batch means, and variance reduction techniques.

Prerequisites:

Students should have a working knowledge of probability, statistics (including univariate and multivariate probability distributions, which is required for input modeling and simulation output analysis), and programming.

Text:

Pegden, C.D., Shannon, R.E., and Sadowski, R.P. (1995), *Introduction to Simulation Using SIMAN, Second Edition*, McGraw-Hill.

Grades:

Course grades will be determined by these weights:

Homework	30%
Project	25%
Midterm exam	20%
Final exam	25%

The grading scale for the course will be:

90 - 100 %	A
80 - 90 %	B
70 - 80 %	C

Plus and minus grades may be assigned within each range.

Homework:

A homework set will be assigned every week. The homework set is typically due at the beginning of the Thursday class period. The "empty hands" applies to collaboration on homework. You may have one 24-hour extension to this deadline per semester. No other late homework assignments will be accepted.

Course outline:

1. Introduction to modeling
2. Beginning the study
3. Basic modeling concepts
4. Model verification and validation
5. Interpreting simulation output
6. Station submodels and entity transfers
7. Animating the simulation
8. Additional discrete modeling concepts
9. Advanced manufacturing features
10. Continuous and combined models
11. Variance reduction techniques
12. Discrete-event models in SIMAN