

CSCI 698: Simulation and Modeling in COR

Fall, 2024

TR 11:00-12:20 Jones 113

Instructor: Larry Leemis

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Office hours: Tuesday and Thursday: 3:30 - 4:45 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 Thursday, October 17. The class during Thanksgiving week will be conducted by zoom.

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. It should be prepared in LaTeX. 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. AI-generated content (e.g., via ChatGPT) will be allowed on the last homework writeup and the final project with attribution.

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

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