

Wright State University

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Spring 2010

### CS 470/670: Systems Simulation

Thomas C. Hartrum

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## CS470/670 Systems Simulation

Spring Quarter 2010

Wright State University

### Course Description

Introduction to simulation and comparison with other techniques. Discrete simulation models. Introduction to queuing theory and stochastic processes. Comparison of simulation languages. Simulation methodology and selected applications.

### Professor

Dr. Thomas C. Hartrum  
Office: 337 Russ Engineering Center  
Office Hours: M, T, W, F 3:00-4:00.  
Office Phone: 775-5015  
Email: [thomas.hartrum@wright.edu](mailto:thomas.hartrum@wright.edu)  
Web: [www.cs.wright.edu/~thartrum](http://www.cs.wright.edu/~thartrum)  
Class Hours: M W 6:05 P.M. – 7:20 P.M., Oelman Room 132.

### Text

A. M. Law, *Simulation Modeling and Analysis (4th Edition)*, McGraw-Hill, 2007.

### Prerequisites

CS 400 or CS 600

### Grading

Grading will be as follows:

Simulation exercises (2 @ 15%)	30
Simulation Project	30
Midterm Exam	20
Final Exam	20

Course grades will be based on the total score as follows. A: 90-100, B: 80-89, C: 70-79, D: 60-69, F: below 60. Grades may be further curved if appropriate.

- You may work with others on homework assignments, but you must turn in your own individual work. Homework that has obviously been copied will result in a grade of zero for both parties and will be reported to the Office of Judicial Affairs, as will any other form of cheating.
- Ten percent will be deducted for unexcused late work.
- The project will be worked in teams. You may pick your partner(s) or I will pick them. More detail on the project will be handed out later.

## Tentative Schedule

<b>Week</b>	<b>Topic</b>	<b>Law</b>
1	Basic Simulation Concepts Simulation Methodologies	1.1-1.4, 1.7-1.9 2.1-2.4, 2.8
2	Introduction to Python and SimPy	Handouts
3	Building Valid Simulations	Ch 5
4	Probabilistic Aspects of Simulation Review of Probability Random Number Generators Random Variates	Ch 4 Ch 7 8.1, 8.2, 8.3.1-8, 8.3.15-16, 8.4, 8.6
5	Statistical Aspects of Simulation Selecting Input Distributions Analysis of Output	Ch 6 9.1-9.5
6	Midterm (5/3/10), Comparing Alternate Configurations	Ch 10
7	Variance reduction Techniques	Ch 11
8	Experimental Design	12.1-12.3
9	Simulation languages	Ch 3
10	Project Demos	
F	Wednesday (6/09/10) 8:00 PM to 10:00 PM	Final Exam

NOTE: There will be *no* early final exam – plan your travel accordingly. In case of a legitimate conflict, a makeup final can be arranged.