

Modelling of Computer Systems		CIS2460
Classes	MWF 10:30–11:20 in MacKinnon 029	
Instructor	Wlodek Dobosiewicz (Reynolds 215), ext. 53216 dobo@cis.uoguelph.ca with CIS2460 in the subject line	
Office Hours	MWF 12:30am–1:20pm	
Prerequisites	CIS2500 or CIS2650, CIS2910 STAT2040	
Textbook	J. Banks, J.S. Carson, B.L. Nelson and D.M. Nicol <i>Discrete-Event System Simulation</i> (Pearson PH) any edition, 5 th is the latest.	
Class notes	www.cis.uoguelph.ca/~dobo/2460/	
Dishonesty	results in an “F” (not negotiable)	

Check the calendar for special accommodations and the definition of academic misconduct.

Calendar description

CIS*2460 Modelling of Computer Systems F(3-1). [0.50]

Discrete simulation based on event queues. Random number generation. How to generate input data, measure and evaluate results using standard statistical tests. Model calibration and validation. Algebraic, probabilistic and simple queuing models of software and hardware operations.

Precondition

Students taking CIS2460 are expected to be competent programmers and to have some grasp of Statistics.

Postconditions

Students who complete successfully CIS2460 will be able to design and implement simulators that model simple systems. They will also be able to design simple formal models of client-server systems.

Topics

- Basics: Systems and models. Stochastic effects.
- Building a model.
- When to simulate and what is the value of simulation results.
- The simulator engine: the three basic blocks.
- Match and Fit, i.e. the input part: food for the engine.
- Event-driven simulation.
- Trust, i.e. processing the output: to what extent are the results trustworthy?
- Elements of Queuing Theory.
- Other types of simulation.

Grading

Assignments and exams		
Programming assignment 1	Wednesday, September 30	10%
Programming assignment 2	Wednesday, October 21	10%
Midterm	Wednesday, October 28 (in class)	20%
Last day to withdraw	Thursday, November 5	
Programming assignment 3	Wednesday, November 25	20%
Final	?	40%

All the assignments and projects involve programming. Assignments and examinations are individual.

Reading materials

- A.M. Law, *Simulation Modeling and Analysis* McGraw-Hill 2007 (4th edition).
- [Simulation according to Wikipedia](#).
- [Industrial simulation](#).
- [Vehicle simulation](#).
- [Yes, I want to settle on Mars](#).
- Many other books and web postings are readily available (wikipedia or google are good starting points for a search).

Syllabus revised September 14, 2009 by W. Dobosiewicz