CIS 445/545
Modeling and Simulation

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http://www.cs.uoregon.edu/Classes/13W/cis445/
https://piazza.com/uoregon/winter2013/cis445/home

General Information

Term: Fall 2012
CRN: 27077/27079
Course: Modeling and Simulation
Credits: 04
Instructor: Juan J. Flores
Phone: (541) 346 1398
Email: juan@cs.uoregon.edu
Time: MWF, 9:00am - 9:50am
Place: Volcanology 307
Office Hours: Thursdays 10:00 - 11:45, or by appointment
General Information

Course Virtual Discussions:
https://piazza.com/uoregon/winter2013/cis445/home

Slides posted on Web Page & Piazza

Please, complete the survey at:
http://www.surveymonkey.com/s/MBBJK8H

Course Description

This course provides the foundations of systems modeling and simulation techniques, with emphasis on discrete event system simulation. You can find applications of system modeling and simulation in fields as diverse as physics, chemistry, biology, economics, medicine, computer science, and engineering. This course will emphasize computer science applications. This course introduces fundamental principles and concepts in the general area, including probability, queueing and input models, as well as a practical component, dealing with developing software capable of modeling and simulating a discrete system, and analyzing its results.
Grading – Textbook

- **Grading:**
  - Homeworks and Programming Assignments – 50%
  - Midterm Exam - 25%
  - Final Exam - 25%

- **Textbook:**
Policies

• **Late Assignments:**
  All assignments are due at the beginning of the class on the date due. Since we will discuss the assignments at that time, late assignments will not be accepted. If you think you have a legitimate reason to argue for an exception from this rule, make sure that you communicate it prior to the due date.

Policies

• **Cheating and Plagiarism:**
  Assignments are personal, unless otherwise specified. Any traces of plagiarism, i.e. copying someone else's work, will be dealt with according to the University regulations. Discussions and exchange of ideas are encouraged, as long as the work you turn in is personal.
Course Topics

- General principles
- Emphasis on discrete-event simulation
- Not video games ... not differential equations
- Models
  - Statistical
  - Queueing
  - Input
- Random numbers and variates
- Modeling and simulation
- Model validation and verification

Course Goals

- Learn what every CIS graduate should know about M&S
- M&S – what it its ... how can it be implemented
- Develop M&S framework (java)
- Understanding capabilities of M&S software packages
- Sharpen your analytical skills
- Offer (you) more than Databases, Networking, Programming, SysAdmin
M&S Framework

- To be developed in java
- Start working on support libraries
  - Random number generation
  - Linked lists
  - FIFO, Queues
  - Priority Queues
  - Graphical displays in Java (squares, circles, lines, text)
- A parser for advanced students (extra credit)

Programming

- Java language preferred
- Introductory simulation package/library to be developed
- Better grasp of concepts
- XL as a foundation for understanding concepts
- Grad students expected to lead teams
Slides

- Slides borrowed (and complemented) from DISCRETE-EVENT SYSTEM SIMULATION, FIFTH EDITION by Jerry Banks, John S. Carson II, Barry L. Nelson, and David M. Nicol.