

# IEMS 317 Discrete-Event System Simulation

## Fall Quarter 2013

Instructor: Dr. Barry L. Nelson

Office Hours: To be announced

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## Course Summary

This is a hands-on course on computer simulation for analytics in business, services and manufacturing applications that are subject to uncertainty or risk. General principles of spreadsheet and systems simulation will be covered, using @Risk ([www.palisade.com](http://www.palisade.com)) and Simio ([www.simio.com](http://www.simio.com)) software for class projects. Upon completion of the course students will be able to develop complex simulation models, design the simulation experiment to be run on the model, and analyze and interpret the results. Management of simulation projects is also addressed.

## IMPORTANT: Required Pretest

IEMS has implemented pretesting in this course to ensure that student prerequisite knowledge is sufficient for success in the course. Data from these pretests will also be used to identify potential areas for improvement in the IEMS curriculum.

**You must score at least 70% on the pretest to pass this course.** However, you may take the pretest as many times as you wish to achieve this score. Feedback will be provided at the end of each attempt pointing out concepts that you should review before a second attempt. Note that informational questions (such as “What is your major?”) do not count towards your score on the pretest.

It is in your best interest to try to achieve a passing score on the pretest by the end of the add/drop period so that you can drop this course if necessary and add a replacement course. If you have been unable to pass the pretest by the last day to withdraw, then you should withdraw from the course.

## Course Materials

- There are two books for the course:
  - W. David Kelton, Jeffrey S. Smith, David T. Sturrock. 2011. *Simio and Simulation: Modeling, Analysis, Applications*, 2<sup>nd</sup> edition, McGraw-Hill Learning Solutions. ISBN-13: 978-0-07-340892-7. Purchase information can be found at <http://www.simio.com/publications/SASMAA/> **You may want to purchase the electronic version of this book to save money. Sharing this book with another classmate is definitely possible.**
  - J. A. Joines and S. D. Roberts. 2012. *Simulation Modeling with SIMIO: A Workbook*, 2<sup>nd</sup> edition. Simio LLC. ISBN-13: 978-1-938207-76-1. Purchase information can be found at <http://www.simio.com/publications/SMSWorkbook/index.html> **It is strongly recommended that you purchase the hard copy of this book as you will need to build models from the book on your computer. Sharing this book with another classmate is definitely possible.**
- Course pack: REQUIRED. Contains lecture notes and supplementary material. **Available at Quartet Copies.**
- Students **may** download @Risk (for free) and Simio (for roughly \$25); however, this is not required and both are available in the IEMS computer lab.

## Preparation

- Computing, particularly use of Excel and basic programming.
- IEMS 202: Particularly the exponential, normal and uniform distributions.
- IEMS 303: Particularly the relationship between probability distribution functions and cumulative distribution functions; and confidence-interval procedures and hypothesis tests based on the normal and  $t$  distributions.
- IEMS 315: Particularly the Poisson arrival process and queueing theory.

## Grading

Component	Percent of Grade
317 Pretest	MUST PASS
Homeworks and Labs	15%
Design Projects (3)	60% (20% each)
Final Exam	25%

## Class Policies

- **On-time Attendance:** Attending and participating in class adds to your knowledge as IEs beyond what can be evaluated on projects and exams. Therefore, the course grade of those students who arrive on time for, and attend all of, **27 or more class sessions** will be raised one-third letter. ***No excuse for arriving late or missing class will be accepted.*** However, any grade in the class can be earned without ever attending class.
- **Laptops/Smart phones/Tablets:** These devices may **not** be open or in use during class. If you have class work, social networking or sports-score browsing that is more important to do than class then please skip class. Life is full of such choices.
- **Working together:** You are encouraged to discuss the design problems, but all programming and analysis is to be done in **a team of one, two or three**. *Notice that 25% of the course grade is determined by the final examination and it is not possible to be successful on the final without understanding what was done on the design projects.*
- **Homework Assignments:** All assignments are due at the *beginning* of class on the designated day. They are to be done *individually*.
- **Projects:** One late design project (3 days) without penalty will be permitted; there is no distinction between 1 hour late and 3 days late. Additional late projects are worth progressively 30% less credit per project, and no credit is given if a project is more than 3 days late.
- **Labs:** Doing the labs during the assigned lab time is strongly recommended, but not required. However, you must turn the lab in **before** the end of your assigned lab time.
- **Regrades:** Regrades of projects, homeworks or labs are obtained by submitting a written explanation via the instructor's mailbox within 48 hours of when the work was returned in class. Regrades will only be discussed *after* submitting the work.
- **Examinations:** The final examination is open book and notes. **The final will be given on the date scheduled by the university**, it will be comprehensive, and will not be optional.
- **Office Hours:** Please respect the office hours of the instructor and TA by planning ahead. Use e-mail to obtain answers during off hours.
- **Design project reports:** To receive full credit, project reports must follow the report format contained in your course notes and written for the defined audience.