IEMS 415 Computer Simulation for Risk & Operations Analysis

Fall Quarter 2018

Instructor: Dr. Barry L. Nelson
Office Hours: 5:30—6:15 Wednesdays before class
Office Hours Location: Outside the Krebs classroom
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Course Summary

This is a hands-on course on computer simulation for prescriptive 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) and Simio (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. This course is only open to MEM, MSiA and other professional M.S. and McCormick M.S. students.

This course is conceptually easy, but practically difficult because the projects are time consuming, involve programming, and (to some extent) are open-ended. The surest way to do well in the course is to keep up and see the instructor.

Course Materials

- Jeffrey S. Smith, David T. Sturrock, W. David Kelton. 2017. *Simio and Simulation: Modeling, Analysis, Applications*, **4th edition**. Purchase information can be found at http://www.simio.com/publications/SASMAA/. **It is fine to purchase the electronic version of this book to save money. BE SURE TO GET THE 4th EDITION.**

- Course pack: **REQUIRED**. Contains lecture notes and supplementary material. **Available at Quartet Digital Printing, 825 Clark Street, Evanston.**

- Students will download @Risk (for free) and Simio (for roughly $25). Note that both are **Windows** applications, but will run on a Mac with a Windows emulator. If you do not have access to a Windows machine on which you can install software then we will provide you access to the IEMS computer lab in Tech C135.

Preparation

- MEM 407: Decision Tools for Managers or equivalent, and introductory statistics.

Grading

Component	Percent of Grade
Homework & Online Quizzes	25%
Design Projects (3)	75% (25% each)

Class Policies

- **Working together**: You are encouraged to discuss homework problems and projects, but all computing and analysis is to be done *individually*.

- **Projects**: The 3 course projects involve reading a mini-case, developing an appropriate simulation model, running and analyzing a simulation experiment on that model, and making recommendations to a technical manager via a written report. Analysis and interpretation are weighted just as heavily as model correctness in these assignments. One project is a spreadsheet simulation; the other two are systems simulations.

- **On-time attendance in IEMS 415 is expected**. Students may miss one class session without penalty; additional absences will result in a 1/3 letter grade reduction, unless permission is obtained from the instructor by Monday before the missed class. No late homework or projects are accepted. **Class will not meet on Wednesday November 22.**

- **Laptops/phones/tablets/smart watches:** Electronic 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, then please leave class. Life is full of such choices**.**

Academic Integrity

The very highest level of academic integrity is expected in this class. The presumption is that you will abide by the class policies personally, and will not facilitate academic dishonesty by others (e.g., by sharing your work). However, any academic dishonesty will be prosecuted. Don't take shortcuts: seek help from the instructor; he is paid to help, and in the end you not only get a passing grade, you also know something.