Information on Simulation Courses
Adapted from Bruce Schmeiser’s website.
Updated by Susan Hunter on June 12, 2015.

Below is information about three Industrial Engineering simulation courses:

- IE 580: Systems Simulation
- IE 581: Simulation Design and Analysis
- IE 680: Advanced Simulation Design and Analysis

SCHEDULE

- IE580 has been taught each fall semester (usually by Prof. Hong Wan)
- IE581 is taught some spring semesters (in Sp 2014 & Sp 2015 by Prof. Susan Hunter)
- IE680 is taught occasionally.

COURSE DESCRIPTIONS

- IE 580 is the usual first course for IE students. It emphasizes creating complex models of dynamic discrete-event systems using commercial simulation software.

- IE 581 is another first course. It emphasizes the view of simulation as a statistical experiment, covering classic ideas about random numbers, random variates, input modeling, output analysis, and variance reduction, as well as methods for next-event simulation of dynamic discrete-event systems. Computer assignments are in MSExcel and MATLAB. Commercial simulation software, including animation and visualization, is not discussed.

- IE 680 considers the same topics as IE581, but at an advanced level. Lectures, journal articles, class discussion, presentations, project. In the recent past, the course has emphasized stochastic optimization.

COURSE PREREQUISITES

- IE 581 and IE 580 are both introductions to simulation of stochastic systems on digital computers; neither assumes the other as a prerequisite or co-requisite. Both may be taken for credit. Despite what the numbering system seems to imply, IE 580 is not a prerequisite for IE 680.

- IE580 helps with motivating the topics of IE581, but is not a prerequisite. Most undergraduates taking only one course choose IE580. For students planning to take both IE580 and IE581, most students prefer to take IE580 first.

- All three courses require the equivalent of the undergraduate IE courses in probability, statistics, and computer programming.

- IE581 considers simulation as a way of doing probability analysis by performing statistical experiments, so both probability and statistics are central to the course. Many IE581 lectures contain Greek letters. A solid understanding of IE230, IE330, and IE336 is sufficient, although many students have a deeper background.

- IE581 is an easy course for any student who has taken IE580 and has a good background in probability, statistics, and computer programming. Many students in IE581 begin the semester weak in one of these topics. If weak in more than one topic, then don’t take IE581.

- IE 581 is not recommended for students who are concurrently enrolled in STAT 511.