SIE 431/531
Simulation Modeling and Analysis
Fall 2021

Class hours: MWF 10:00 – 10:50 a.m.
Instructor: Prof. Wei Lin
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Office hour: by appointment.

Teaching Assistants:

Celeste Williams
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    Tuesdays 3:30-5:00 p.m.
    Thursdays 8:00-9:30a.m.

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Office hour:
    Wednesday: 8:00-9:30 p.m.
    Friday: 4:00-5:30 p.m.

Purpose: This course is designed to develop student's ability to *model* and *analyze* real *systems* using *discrete event simulation*. Through this course, the student will understand the power and characteristics of discrete event simulation modeling. During the course, the student will get experience in: (1) formulating an appropriate simulation model for a system, (2) implementing the model as a computer program, and (3) evaluating the output of the model.

Textbook: *Simulation with Arena*, W. David Kelton, et al, 6th edition, McGraw-Hill, Boston, MA, 2014
Textbook site: Book examples and Arena software can be downloaded from
Arena software: www.arenasimulation.com/academic/students
Book Examples: http://highered.mheducation.com/sites/0073401315/student_view0/book_examples.html

Topics to be covered:
1. Basic concepts of simulation (definitions and types of simulations)
2. Mechanism of discrete event simulation
3. Steady state analysis: rate diagram and non-terminating simulation system
4. Random number generation
5. Input data analysis (input distribution modeling)
6. Simulation modeling using Arena package
7. Review of probability and statistics
8. Simulation output analysis
9. Monte Carlo simulation
10. Verification and validation of simulation models
11. Other simulation approaches (Time driven simulations).

Grading Scheme

Grading (SIE 431 on campus: Section: 001):
1. Homework: 10% (homework policy will be announced on D2L)
2. Midterm Exam 1: 25%
3. Midterm Exam 2: 30%
4. Term project: 25%
5. Quiz: 10% (three quizzes with the lowest scores will be dropped)

Grading (SIE 531 on campus: Section: 001):
1. Homework: 10% (homework policy will be announced on D2L)
2. Midterm Exam 1: 20%
3. Midterm Exam 2: 30%
4. Term project: 30%
5. Quiz: 10% (three quizzes with the lowest scores will be dropped)

Grading (SIE 431/531 online: Sections: 010, 025, 110, 210, 410):
1. Homework: 15% (homework policy will be announced on D2L)
2. Midterm Exam 1: 25%
3. Midterm Exam 2: 25%
4. Term project: 35%