

**SIE 431/531**  
**Simulation Modeling and Analysis**  
**Spring 2016**

**Class hours:** MWF 10:00 – 10:50 a.m.

**Office hours:** MW 11 – 12 or by appointment

**Instructor:** Dr. Wei Lin

227 Engineering Building, Tel: 520-621-6553, Email: whlin@email.arizona.edu

**Teaching Assistant:** Ms. Pei-Shan Hsieh, Email: phsieh@email.arizona.edu

Office hour: M TH 12:30-2:00pm. Location: 260 Engineering Building.

**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.

**Text:** *Simulation with Arena*, W. David Kelton, et al, 6<sup>th</sup> edition, McGraw-Hill, Boston, MA, 2014

**Topics to be covered:**

1. Basic concepts of simulation (definitions and types of simulations)
2. Mechanism of discrete event simulation
3. Random number generation
4. Input data analysis (input distribution modeling)
5. Simulation modeling using Arena package
6. Review of probability and statistics
7. Simulation output analysis
8. Monte Carlo simulation
9. Verification and validation of simulation models
10. Other simulation approaches (Time driven simulations).

**Grading (SIE 431 Sec. 001):**

1. Homework: 15% (homework policy will be announced on D2L)
2. Midterm Exam1: 25%
3. Midterm Exam2: 30%
4. Final project: 20%
5. Participation in in-class group activities: 10%

**Grading (SIE 531 Sec. 001):**

1. Homework: 15% (homework policy will be announced on D2L)
2. Midterm Exam1: 20%
3. Midterm Exam2: 25%
4. Final project: 30%
5. Participation in in-class group activities: 10%

**Grading (SIE 531 Sec. 910 or 925):**

1. Homework: 15% (homework policy will be announced on D2L)
2. Midterm Exam1: 20%
3. Midterm Exam2: 25%
4. Final project: 40%