

ISE 435 Discrete Systems Simulation
Fall Semester 2015
Lecture: Tu,Th 11:00 am - 12:20 pm, KAP 145
Lab: Th 1:00-1:50 pm and 5:00-5:50 pm, GER 309
Web Site: blackboard.usc.edu

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Objective: In this course, you will learn how to create computer models of discrete event systems, and how to use these models to make decisions about the design/improvement of the actual physical systems that the models represent. You will learn how to evaluate a business system and identify the input and output variables. You will learn how to evaluate field data to obtain input information and how to evaluate output predictions from the simulation model to select effective operating policies.

Text: Khoshnevis and Palmer, Discrete Systems Simulation, reader

Course Material: Chapters 1-6 of the text, plus topics discussed in lecture by the instructor

Grading Policies:

Points Breakdown -

Homework	105
Project	150
Exam #1	115
Exam #2	<u>130</u>
Subtotal	500
Final Exam	150

Course GRADES will be determined by the distribution of point totals for the class. "Natural groupings" will be used to assign letter grades. The highest scoring group will receive A's, the next group is the B's, and so on. A single point will not be the difference between any two letter grades. A "gap" must exist to create a grade boundary.

HOMEWORK assignments will be due on the following dates:

Thursdays: September 3, 10, 17; October 8, 15, 22

Tuesday: November 17

Late homework will be accepted until noon on the Friday following the original due date. Homework will be graded on an "all or nothing" basis. If a paper shows an answer to each assigned exercise that uses approximately the correct method, the grade for the assignment is 15 points. If any exercise is unacceptable, the paper will be returned with no points awarded. Completions of returned assignments will be accepted for full credit until noon on the Friday after the assignment is returned to the class.

An EXAM will be given on each of the following dates:

Thursday, September 24 and Thursday, November 12

Each exam will cover the material presented up to and including the preceding homework assignment. Points will be assigned to each section of the exam. Partial credit will be awarded according to work shown. No re-takes will be allowed. No make-up exam will be given.

A PROJECT will be due in two parts on the following dates:

Part I – Thursday, October 29

Part II – Tuesday, November 24

The project will involve development and validation of a computer simulation model. For this project, you will work with an assigned partner. The project assignment will be distributed about five weeks in advance of the Part I due date.

Your team's system description and model layout will be due on **Tuesday, October 13**.

A Peer Review of another team's system description will be due on **Tuesday, October 20**.

The FINAL EXAM is scheduled for **Tuesday, December 15 at 8:00-10:00**. It will be comprehensive and will be graded similarly to the other exams. A student may elect to omit the final exam, if both exams and the project have been completed.

Reading Assignments:

Week	Topic	Text Sections
1	Discrete Event Systems Queueing Systems Terms & Definitions	1.1 – 1.3, 2.1 – 2.2, Handout
2	Simulation Models Input Analysis	2.3, 3.1 – 3.5, 4.1 – 4.3
3	Uniform Random Numbers	4.4
4	Random Numbers from Other Distributions	4.5
5	Exam	
6	Computer Simulation Software Introduction to Arena	5.1 – 5.2
7	Work Breakdown Structure (Project Management) Arena (continued)	Arena Reader
8	Model Performance Measures Statistical Inference Review Model Verification and Validation Project Peer Reviews	6.1-6.3, 6.6 – 6.8, 6.11.1 – 6.11.2
9	Output Analysis for Terminating Simulations Output Analysis for Steady-State Simulations	6.4, 6.9, 6.5, 6.10
10	Simulation Experiments Inventory Systems Terms & Definitions	6.11.3 Handout

Reading Assignments (continued):

Week	Topic	Text Sections
11	Two-Factor Simulation Experiments	Handout
12	Exam	
13	Project discussions Capacity Schedules and Failures	Handout
14	Non-Stationary Poisson Processes	Arena Reader
15	Routes, Stations, and 2-D Animation in Arena	Arena Reader

Academic Integrity:

The Department of Industrial and Systems Engineering adheres to the University's policies and procedures governing academic integrity as described in SCampus. Students are expected to be aware of and to observe the academic integrity standards described in SCampus. Students should expect those standards to be enforced in this course.

Accommodations for Disabilities:

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to the instructor as early in the semester as possible. DSP is located in GFS 120 and is open 8:30 am - 5:00 pm, Monday through Friday. The phone number for DSP is (213)740-0776.