ISE 435 Discrete Systems Simulation   Kurt Palmer
Spring Semester 2023   Office: GER 205
Lecture: TuTh 11:00 am - 12:20 pm, CPA 203   Hours: W 1:00 - 2:30 pm
Lab: Th 5:00 - 5:50 pm, SAL 127   E-mail: kpalmer@usc.edu
Web Site: blackboard.usc.edu

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: Kelton, Zupick, and Ivey, Simulation with Arena, 7th edition (denoted KZI)
        Khoshnevis and Palmer, Discrete Systems Simulation (denoted KP, sections on Blackboard)

Course Material: Text sections called out on Reading Assignments, plus topics discussed in lecture
                  by the instructor

Grading Policies:
        Points Breakdown -
                Quizzes   40
                Homework   120
                Project   110
                Exam #1   115
                Exam #2   115 .
                        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.

QUIZZES will be posted on Blackboard to check your familiarity with important topics from other courses. References to text sections will be given or supplementary documents will be posted for you to review. Each quiz may be taken as many as three times. The maxium score of the three attempts will be used.

HOMEWORK assignments will be due on the following Thursdays:
                January 19, 26; February 2, 23; March 2, 9, 23, 30
Late homework will be accepted until 5:00 pm 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 5:00 pm on the Friday after the assignment is returned to the class.

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

Thursday, February 9 and Thursday, April 6

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 on the following date:

Tuesday, April 25

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

The FINAL EXAM is scheduled for **Tuesday, May 9 at 11:00-1:00**. 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	KZI: 1.1 – 1.4, KP: 2.1 – 2.2,
	Queuing Systems Terms & Definitions	Handout
2	Simulation Overview	KZI: 2.1, 2.2, 2.6-2.8 KP: 3.4
3	Introduction to Arena	KZI: 3.1-3.8
4	Modeling Basic Operations	KZI: 4.1-4.5
5	Exam	
6	Input Analysis	KZI: 4.6 KP: 4.1 – 4.3
7	Modeling Detailed Operations	KZI: 5.1-5.4
8	Intro to Simulation Output Analysis	Handout
9	Modeling Detailed Operations (cont.)	KZI: 5.5-5.6
10	Output Analysis for Terminating Simulations	KZI: 6.1-6.4
11	Output Analysis for Steady-State Simulations	KZI: 7.2

Reading Assignments (continued):

Week	Topic	Text Sections
12	Random Numbers and Random Variates Nonstationary Poisson Process Exam	KZI: 12.1-12.3
13	Common Random Numbers	KZI: 12-4
14	Inventory Systems Terms & Definitions Simulation Experiments	KZI: 5.7 and 12.6, Handout
15	Conducting Simulation Studies	KZI: 13.1-13.9

COVID-19 Statement:
In keeping with University policy, all students are required to engage in appropriate behavior to protect the health and safety of our community. If you feel ill or are unable to come to class or complete class assignments due to issues related to COVID-19, including but not limited to: testing positive yourself, feeling ill, caring for a family member with COVID-19, or having unexpected child-care obligations, contact the instructor immediately.

Intellectual property policies:
This is a clarification that any misuse, inappropriate dissemination, or attempted sale of class materials, as well the appropriation of intellectual property is not acceptable. It is a student's responsibility to abide by the appropriate use and handling of these materials under existing campus policies regarding class notes (https://policy.usc.edu/scampus-part-c/). Students are not permitted to create their own class recordings without the instructor's permission. Violations of these policies will be met with the appropriate disciplinary sanction.

Academic Conduct:
Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Part B, Section 11, "Behavior Violating University Standards" https://policy.usc.edu/scampus-part-b/.   Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct.

Support Systems:
The Office of Student Accessibility Services
Provides certification for students with disabilities and helps arrange relevant accommodations.
http://osas.usc.edu

Student Counseling Services (SCS) - (213) 740-7711 – 24/7 on call
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. https://engemannshc.usc.edu/counseling/

National Suicide Prevention Lifeline - 1-800-273-8255

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. http://www.suicidepreventionlifeline.org

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-4900 - 24/7 on call
Free and confidential therapy services, workshops, and training for situations related to gender-based harm.
https://engemannshc.usc.edu/rsvp/

Sexual Assault Resource Center
For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: http://sarc.usc.edu/

Office of Equity and Diversity (OED)/Title IX Compliance – (213) 740-5086
Works with faculty, staff, visitors, applicants, and students around issues of protected class.
https://equity.usc.edu/

Bias Assessment Response and Support
Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. https://studentaffairs.usc.edu/bias-assessment-response-support/

Student Support and Advocacy – (213) 821-4710
Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. https://studentaffairs.usc.edu/ssa/

Diversity at USC
Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. https://diversity.usc.edu/

USC Emergency Information
Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible, http://emergency.usc.edu

USC Department of Public Safety – 213-740-4321 (UPC) and 323-442-1000 (HSC) for 24-hour emergency assistance or to report a crime.
Provides overall safety to USC community. http://dps.usc.edu