The University of Texas at El Paso

Computer Simulation Application
Course Number: IE 5357
Fall 2019

Class Details:

Instructor	: Sreenath Chalil Madathil, Ph.D.
Schedule	: Thursday 6:00 PM – 8:50 PM
Location	: CRBL C204
Office Hours	: Tuesday 3:00 PM – 5:00 PM at Engineering Building A-243
	: By Appointment
Email	: schalil@utep.edu
Course Link	: UTEP Blackboard

Course Objectives:

Discrete event simulation (DES) is a method of simulating the behavior and performance of a real-life process, facility or system. DES models help to depict the behavior of a complex system as a series of well-defined and ordered events and works well in virtually any process where there is variability, constrained or limited resources or complex system interactions. Students will investigate the use of discrete-event simulation to solve mathematically intractable problems in stochastic modeling. The course emphasizes the fundamental concepts of, and proper interpretation of results from discrete-event simulation models.

The primary program objectives pursued in this course are as follows:

- be familiar with commonly used techniques in simulation, such as random number and variate generation, input modeling, events and event types, run-length issues, autocorrelated output, and presentation of simulation results.
- be able to identify problems from their specific domains suitable for simulation, and correctly approach the modeling of those problems, including identification of simulation goals and necessary real-world data.
- be able to implement and execute discrete-event simulation models and correctly interpret and present the results.

Preferred Reference Books:

- Simio and Simulation: Modeling, Analysis, Applications - Fifth Edition by Jeffrey S. Smith, David T. Sturrock and W. David Kelton
- Simulation Modeling with SIMIO: A Workbook - Fourth Edition by Jeffrey A. Joines and Stephen Roberts

Other Reference Books:

- Simulation Modeling and Analysis, Fifth Edition, Averill M. Law, Ph.D. McGraw-Hill, 2015

Class Attendance:

The students are expected to attend all class sessions. It is the responsibility of the student to inform each instructor of extended absences. When, in the judgment of the instructor, a student has been absent to such a degree as to impair his or her status relative to credit for the course, the instructor can drop the student from the class with a grade of W before the course-drop deadline or with a grade of F after the course-drop deadline.

Course Materials and Office Hours:

I will post lectures, links to other relevant reading materials, homework questions, and project details on blackboard. All submissions MUST be submitted through blackboard. Paper submissions will not be accepted. The office hours are on Tuesday between 3:00 PM and 5:00 PM at Engineering Building A-243. However, I can also meet with you using video conferencing services such as Blackboard Collaborate based on a pre-determined meeting time.

Course Projects:

All students are required to do a course project in this class. Projects is team project. The projects should reflect the application of Simulation on healthcare, supply chain and logistics, transportation, manufacturing, inventory control, and other complex system. Prior approval from your instructor is required to conduct the course project.

Exam Make-up Policy:

There will be **NO** make-up policy for exams, homework, and quizzes in this class.

Late-Submission Policy:

All late submissions for homework, poster presentation, and exams are automatically awarded zero points.

Evaluation:

Students will be evaluated according to their performance on two examinations, class projects, homework, and quizzes. Class members are expected to be prepared for each class by reading the assigned material before each session, and by attending each class session.

Grades:

A	90 and above
B	80 to 89
C	70 to 79
D	60 to 69
F	59 and below

The course grade will be aggregated as follows:

Item #	Item	Weight
1	Course Project	50%
2	Poster Presentation	5%
3	Attendance and other miscellaneous	5%
4	Assignments and Quiz	20%
5	Final Exam	20%

Center for Accommodations and Support Services:

If you have a disability and need classroom accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at www.sa.utep.edu/cass. Schedule an appointment with the professor(s) during the first week of classes to clarify any accommodation needs and resolve all questions pertaining to course assignments and the classroom environment. Students should present a Faculty Accommodation Letter for Student Disability Services when they meet with instructors. Accommodations are not retroactive and new Faculty Accommodation Letters must be presented each semester.

Academic Integrity:

The University of Texas at El Paso prides itself on its standards of academic excellence. In all matters of intellectual pursuit, UTEP faculty and students must strive to achieve excellence based on the quality of work produced by the individual. In the classroom and in all other academic activities, students are expected to uphold the highest standards of academic integrity. Any form of scholastic dishonesty is an affront to the pursuit of knowledge and jeopardizes the quality of the degree awarded to all graduates of UTEP. It is imperative, therefore, that the members of this academic community understand the regulations pertaining to academic integrity and that all faculty members insist on adherence to these standards.

Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes is not limited to cheating; plagiarism; collusion; the submission for credit of any work or materials that are attributable in whole or in part to another person; taking an examination for another person; and any act designed to give unfair advantage to a student or the attempt to commit such acts. Proven violations of the detailed regulations, as printed in the Handbook of Operating Procedures (HOP) and available in the Office of Student Life and the homepage of the Office of Student Life at www.utep.edu/dos, can result in sanctions ranging from disciplinary probation, to failing a grade on the work in question, to a failing grade in the course, to suspension or dismissal, among others.

Civility Statement:

Please be respectful of all students' right to learn without disruptions. In line with this statement please make an active effort to keep the talking to a minimum during lectures and presentations. Also make an active effort to either turn cell phones off or turn them to vibrate mode prior to the start of class. Appointments with instructor should be made in advance. In order to receive 10 points as extra credit for reading this syllabus, please type in bienvenido to the course's discussion board before February 8th.

Course Outline (Tentative)

Week	Date	Lecture	Title	Comments
1	01/23/2020		Course overview	Spring classes begin on January 21st,
			Introduction to Simulation	Late Registration Period
2	01/30/2020		Introduction to Discrete event simulation	
3	02/06/2020		Basic process modeling	Spring census day - Feb 5th
4	02/13/2020		Process modeling – 1	
5	02/20/2020		Process modeling - 2	Graduation application deadline
6	02/27/2020		Basic queuing theory	
7	03/05/2020		**Mid-project update**	
8	03/12/2020		Animations	
9	03/19/2020		**No Class**	Spring Break
10	03/26/2020		Data driven models	
11	04/02/2020		Random number generation	
12	04/09/2020		Simulation-based optimization	
13	04/16/2020		Sensitivity Analysis	
14	04/23/2020		Debugging	
15	04/30/2020		**TBD**	
16	05/07/2020		**Final Project Presentation**	Last Day of Classes
17	05/14/2020		**Final Examination**	Fall 2019 Final Exams

PS: I reserve the right to change the course outline based on the course progress.