

CS-558 Computer Simulation

Course Syllabus

Spring 2019

Course Description

Methodology of simulation for discrete and continuous dynamic systems. State-of-the-art programming techniques and languages. Statistical aspects of simulation. Students will design, program, execute, and document a simulation of their choice.

Prerequisites

Computer Science 310 and Statistics 550.

Instructor

Dr. Raymond Madachy, rmadachy@sdsu.edu

Office: GMCS 536

Office hours: Tuesdays and Thursdays 4:30–5:30 PM

Teaching Assistant

TBD

Meetings

Tuesdays and Thursdays 5:30–6:45 PM, GMCS-333

Textbook

R. Madachy and D. Houston, *What Every Engineer Should Know About Modeling and Simulation*, CRC Press, 2017

Schedule

This is a tentative schedule that may be revised at the discretion of the Professor. Not shown are supplemental readings to be provided.

Week	Date	Topics	Readings
1	1/24/2019	Course Overview and Introduction	
2	1/29/2019	M & S Introduction	Ch. 1, Appendix A
	1/31/2019	M & S Introduction	
3	2/5/2019	Modeling Process	Ch. 2
	2/7/2019	Modeling Process	
4	2/12/2019	Continuous Systems Modeling	Ch. 3.1
	2/14/2019	Continuous Systems Modeling	
5	2/19/2019	Continuous Systems Modeling	
	2/21/2019	Exam 1	
6	2/26/2019	Discrete Event Modeling	Ch. 3.2
	2/28/2019	Discrete Event Modeling	

7	3/5/2019	Discrete Event Modeling	
	3/7/2019	Discrete Event Modeling	
8	3/12/2019	Agent-based Modeling	Ch. 3.3
	3/14/2019	Agent-based Modeling	
9	3/19/2019	Exam 2	
	3/21/2019	Randomness	Ch. 4.1 – 4.2
10	3/26/2019	Randomness	
	3/28/2019	Monte Carlo Analysis	Ch. 4.4
11	4/2/2019	Input Analysis	Ch. 5.1 – 5.3
	4/4/2019	Estimating Parameters	Ch. 5.4
12	4/9/2019	Exam 3	
	4/11/2019	Model Execution	Ch. 6.1 – 6.4
13	4/16/2019	Output Analysis	Ch. 6.5
	4/18/2019	Output Analysis	
14	4/23/2019	Case Study	Ch. 7
	4/25/2019	Student Presentations	
15	4/30/2019	Student Presentations	
	5/2/2019	Exam 4	

Grading

Homework 40%

Exams 40%

Final Project 20%

Syllabus Version

Updated January 23, 2019