



EM/SYS 611 SIMULATION AND MODELING SYLLABUS

TEXT: Course notes will be used in lieu of a textbook. Crystal Ball is also used in this course.

COURSE DESCRIPTION: This course emphasizes the development of modeling and simulation concepts and analysis skills necessary to design, program, implement, and use computers to solve complex systems/products analysis problems. The key emphasis is on problem formulation, model building, data analysis, solution techniques, and evaluation of alternative designs/processes in complex systems/products. Overview of modeling techniques and methods used in decision analysis, including Monte Carlo simulation and systems dynamics modeling are presented.

COURSE OBJECTIVES: To provide the students with the following capabilities:

- Objective 1:** To apply modern software packages to conduct analysis of real world data.
- Objective 2:** To understand the technical underpinning of modern computer simulation software.
- Objective 3:** The ability to apply the appropriate analytical technique to a wide variety of real world problems and data sets.
- Objective 4:** To summarize and present the analysis results in a clear and coherent manner.

STUDENT PERFORMANCE ASSESSMENT:

Graded Events	Quantity	Points Each	Total Points	% of Course
Homework	4	40	160	23
Exam	1	200	200	33
Course Project	1	200	200	33
Class Discussions	8	5	40	17
Course Total			600	100 %

Project and Homeworks

Project and homeworks are scheduled for submission on the dates shown on the "Lesson Schedule." Prior approval must be received for late submissions.

Regrading

If you would like to submit a homework assignment, exam, or project for regrading, please do not write anything on your paper before you resubmit it. Instead, simply attach a sheet of paper listing the problem numbers you would like to be regraded and what your issues are with the grading. **You must submit your concerns in writing in order for a problem or project to be regraded.**



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GRADING AND CRITERIA FOR PASSING:

- (1) Turn in all written material (see Lesson Schedule).
- (2) Final grades will be awarded in accordance with the following scale:

Grade	Percentage
A	90 - 100
B	80 - 89
C	70 - 79
F	<70

ADDITIONAL INSTRUCTION (AI):

If you feel you need a tutor or are having trouble with the course, please get in touch with me. In addition, feel free to come and talk with me about any problems you might have with this course.

EM/SYS 611 LESSON SCHEDULE

<u>Week</u>	<u>LESSON TITLE</u>
0	Orientation Week
1	Course Overview
2	Queuing Theory
3	Simulation in Practice
4	Probability and Statistics in Simulation I
5	Simulation Using Spreadsheets Introduction to Crystal Ball
6	Probability and Statistics in Simulation II
7	Mid Term Exam Technical Writing/Design Requirements
8	Building Systems Simulation Models I
9	Building Systems Simulation Models II
10	Design, Output Analysis, and Other
11	Modeling and Simulation for Systems Thinking I
12	Modeling and Simulation for Systems Thinking II
13	Case Studies Course Summary and Course Evaluations CORESim