Course Syllabus
ISYE 6739 - SIMULATION – Spring 2027

Professor: Dr. David Goldsman, sman@gatech.edu

Course Description

This course covers modeling of discrete-event dynamic systems and introduces simulation-based methods for using these models to solve engineering design and analysis problems.

Prerequisites

We do not enforce prerequisites for this course, but it is recommended that students have taken integral calculus and probability/statistics.

Course Outcomes

Upon successful completion of this course, students should be able to:

- Develop simulation models and conduct simulation studies.
- Be knowledgeable regarding the organization of simulation languages, including packages having modeling and animation capabilities.
- Understand statistical aspects of simulation including input analysis, random variate generation, output analysis, and variance reduction techniques.

Required Course Materials

- All content and course materials can be accessed online.
- There is no required textbook for this course, though students are encouraged to find copies of the following references:
    - Law, A. M., Simulation Modeling and Analysis, 6th edition, McGraw-Hill Education, New York, 2024. [This textbook is mostly for the "theory" aspects of the course.
    - Kelton, W. D., Zupick, N. B., and Ivey, N., Simulation with Arena, 7th edition, McGraw-Hill, New York, 2024. [This book covers the Arena simulation language.]

Technology/Software Requirements

- Internet connection (DSL, LAN, or cable connection desirable)
- R statistical software (free download; see cran.r-project.org)
- Arena simulation software
    - Arena is free! Get it here (click the "Student" option on the "Job Type" menu)!
    - *Arena requires a Windows operating system* to run on your computer.
    - If you don't have Windows, you can run Arena thru ISyE's Virtual Lab. To get an account, see https://www.isye.gatech.edu/academics/doctoral/current-students/computing#services
- Adobe Acrobat PDF reader (free download; see https://get.adobe.com/reader/)

Grading Policy

Your course grade will be based upon my assessment of your understanding of the material covered throughout the semester. The weights used for grade assignment will be

Homework	10%
Project	10%
Midterm Exam 1	25%
Midterm Exam 2	25%
Final Exam	30%

Thresholds for letter grade assignment are as follows:

A	90% ≤ total grade ≤ 100%
B	80% ≤ total grade < 90%
C	70% ≤ total grade < 80%
D	60% ≤ total grade < 70%
F	0% ≤ total grade < 60%

Homework

There will be a homework assignment every week. Homework is meant to build both basic knowledge of the course material and deeper understanding.

Project

There will be a team project towards the end of the semester. The project is meant to build research, presentation, and collaboration skills.

Tests/Exams

Tests will be given three times during the semester, including a cumulative final exam that will be given during the final exam period for this course.

Extensions, late assignments, and missed exams

These will be not be accepted.

Attendance Policy

- This is a fully online course.
- Login on a regular basis to complete your work, so that you do not have to spend a lot of time reviewing and refreshing yourself regarding the content.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review Georgia Tech's Honor Code at \https://catalog.gatech.edu/policies/honor-code/ and the Student Code of Conduct at https://catalog.gatech.edu/rules/18/. Any student suspected of cheating or plagiarism on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Use of Generative AI

In general, the use of Generative AI and of any previous semester course materials, such as homework, projects, and any other coursework, are prohibited in this course. Using these materials will be considered a direct violation of academic policy and will be dealt with in accordance with the GT Academic Honor Code. When in doubt regarding what constitutes a violation, ask us for clarifications.

Accommodations for Students with Disabilities and Special Circumstances

- If you have an issue requiring special accommodations, please make an appointment with the Office of Disability Services to discuss the appropriate procedures. Their website is http://disabilityservices.gatech.edu (404-894-2563).
- In some cases, religious observances or other events may conflict with scheduled class activities. In such situations students can be given an alternative means of meeting the academic requirement. Students must notify the instructor of any such conflicts, with the specific dates, within the first two weeks of classes.

Student-Faculty Expectations Agreement

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Student-Faculty Expectations at https://www.catalog.gatech.edu/rules/22/ articulate some basic expectations that we can have between us. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, we encourage you to remain committed to the ideals of Georgia Tech while in this class.