



**STEVENS**  
INSTITUTE *of* TECHNOLOGY  
THE INNOVATION UNIVERSITY®

# Course Overview

## *SYS 611: Systems Modeling and Simulation*

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# Course Information

Meetings: Thursdays, 6:30 – 9:00pm ET

Instructor: Paul Grogan  
Babbio Center 517  
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Office Hours: Tuesdays, 5:30 – 7:00pm ET  
Also available by request

Course Site: <https://sit.instructure.com/courses/45173>



# Learning Objectives

1. Understand the **technical underpinning** of modern computer simulation software.
2. Apply appropriate **analytical techniques** to a wide variety of real-world problems and data.
3. Apply **modern software packages** to conduct analysis of real-world data.
4. Summarize and **present analysis results** in a clear and coherent manner.



# Format and Structure

- Lectures: synchronous online, attendance taken
- Participation: 12 weekly discussion questions  
due Wednesdays at 11:59pm ET
- Homework: 9 weekly assignments  
due Wednesdays at 11:59pm ET
- Exams: 2 fundamentals exams (Exam 1, 2)  
Conducted via Canvas Quiz (150 min)
- Project: Apply simulation to a special topic in  
teams of 2 (report due May 17, 2021)



# Grading

Item	Total Points	% Final Grade
Homework (8)*	200	33.3
Exam (2)	150	25.0
Project	200	33.3
Participation (10)**	50	8.3
Total	600	100.0

\* Drop 1 lowest HW score

\*\* Drop 2 lowest DQ scores

Points	Percent	Grade
540 - 600	90.0 - 100.0	A
510 - 539	85.0 - 89.9	A-
480 - 509	80.0 - 84.9	B+
450 - 479	75.0 - 79.9	B
420 - 449	70.0 - 74.9	B-
390 - 419	65.0 - 69.9	C+
360 - 389	60.0 - 64.9	C
< 360	< 60.0	F



# Course Materials

- Course notes:
  - Farr, J.V. (2007). *Simulation of Complex Systems and Enterprises*, Stevens Institute of Technology.
- Other readings will be posted on the course website
- Materials:
  - Python 3.7 or 3.8 ([Anaconda](#) or [Google Colab](#) recomm.)
  - [NetLogo 6.2.0](#) (not needed until week 12)
  - [AnyLogic PLE 8.7.2](#) (not needed until week 13)



# Copyright Notice

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# Academic Integrity

- Violations of the [Stevens Graduate Student Code of Academic integrity](#) will be swiftly and severely handled following recommended sanctions
  - 1st violation on assignment/exam/project: 0 score and referral to Office of Grad Academics
  - 2nd violation: failing grade in the course with a transcript note for academic misconduct
  - Think about the financial and logistical implications of failing this course before acting
  - Countermeasures used on assignments and exams to identify potential violations
- Assignments are intended to be collaborative (list collaborators on cover sheet)
  - You must do your own work: do not copy-and-paste
  - You are **not** permitted to use solutions from prior terms
- Exams are individual assessment mechanisms (no communication with others)
  - Focus on fundamentals, not software competency (all work can be done "by hand")
  - Open book/open note (but these resources may not be helpful)





# Tentative Course Schedule

<b>Week</b>	<b>Topic(s)</b>	<b>HW</b>	<b>Date</b>	<b>Topic(s)</b>	<b>HW</b>
Feb. 4	Overview and Introduction		Apr. 1	Discrete Event Models	HW-6
Feb. 11	Modeling Tools	HW-1	Apr. 8	Exam 2 Review / Practical	HW-7
Feb. 18	Review of Probability	HW-2	Apr. 15	Exam 2 Week	
Feb. 25	Stochastic Simulation	HW-3	Apr. 22	Discrete Event Simulation	HW-8
Mar. 4	Exam 1 Review		Apr. 29	Agent-based Simulation	HW-9
Mar. 11	Exam 1 Week		May 6	Advanced Topics in Systems Simulation	
Mar. 18	Dynamic Simulation	HW-4	May 17	Project Due	
Mar. 25	Dynamic Probability Models	HW-5			



# Distance Learning Expectations

- I prefer webcams on (to the extent possible) – it provides me with important visual feedback.
- Please ask questions at any point (chat, raise hand, or respond directly). Personal engagement is a key component of this course.
- Do not use offensive language. Keep an open mind and be willing to express (and listen to) minority opinions. Think and edit before pressing "Send".
- There are numerous visible and invisible challenges to academics this term. Please communicate with me and I will do everything in my ability to help you succeed.



# How to Succeed in SYS 611

- Background knowledge
  - Allocate additional time for review of probability & statistics
  - Allocate additional time for computational skills (Excel/Python)
- Assignments
  - Start early and form a study group with similar schedules/habits
  - Post questions to Canvas discussion topics and attend office hours
- Exams
  - R-E-L-A-X: the exams are a comparatively small portion of the grade
  - Generous partial credit for right idea but wrong implementation
  - Try practice exam in advance to understand the Canvas interface