CIS*3130 F21 System Modeling and Simulation
Course Description

Lecturer: Prof. Mark Wineberg

Office Hours: After class, at the end of the scheduled Zoom lecture

Email: mwineber@ uoguelph.ca

Lectures: Zoom sessions – Tues, Thurs 10:00 am to 11:20 am

Labs: Zoom sessions – Mon 2:30 pm up to 4:20 pm

Course Calendar Description

This course examines discrete simulation based on event queues and random number generation. The topics covered include discrete-event simulation models, random number generators, generating random variates and processes, input modeling, model verification and validation. Application areas such as manufacturing, services, and computing are highlighted.

Prerequisites: CIS*2500, STAT*2040

Course Topics

See the Course Calendar Description.

Textbooks

recommended *Discrete-Event System Simulation* (*5th Ed*)
Banks, J.S. Carson II, B.L. Nelson and D.M. Nicol
Pearson Prentice Hall, 2009

recommended *Simulation Modeling and Analysis* (*5th Ed*)
Averill Law
McGraw-Hill, 2014

Course Website

Course material, news, announcements, and grades will be regularly posted to the CIS*3130 Courselink Website, accessible from the uoguelph.ca front page. You are responsible for checking the site regularly.

- *Lecture Information*: The formal class notes and/or recorded Zoom sessions will be posted on the course website as soon as the instructor has time to make them available.
- *Labs*: Selected tutorial and lab materials and/or recorded Zoom sessions will be posted on the course website as soon as the instructor has time to make them available.
- *Assignments*: Instructions will be distributed through the course website. All assignments will be submitted via the course website.

Grading

[60%] Assignments

There will be 6 assignments, approximately evenly spaced throughout the semester, with some variation due to assignment difficulty.

The assignments weight towards the final grade will be based on a combination of importance and difficulty.

[40%] Tests

[15%]	MT	Midterm	(take home test)
[25%]	F	Final	(take home test)

Your final grade is the weighted sum of all assessments shown above.

To pass the course you need *an overall grade of* 50% *or above.*

Submission

Assignments

- Assignments are submitted through a Courselink dropbox link Mondays by 9:00am

Tests:

- Tests (both the midterm and the final) are written through the Courselink quiz tool
- Tests are released on the Monday of the week (9:00am) and closed on the Friday by midnight
- You can take a test anytime during the week
- Once started:
  - you have 36 hours to complete the test
  - you may enter and exit the test at any time before your 36 hours are over,
    (*unless Friday at midnight has passed, in which case you will not be allowed back in*)
  - this does not affect the time remaining for completion
    (*36 hours from the time you started*)

Class Delivery

Lectures

- All class lectures will be held through Zoom sessions during class times, where lecture material are presented by the lecturer, and where the class will have the opportunity to ask questions live
- All zoom sessions will be recorded and distributed through Courselink to be able to re-watch for clarification etc. or for those who live in areas with unstable Internet capabilities and thus who are not able to attend live

Labs

- Lab time will be a mixture of practical tutorials (e.g. how to code in R and Julia; how to apply proper statistical analysis to simulation results; etc.), reviewing answers to assignments, and question/answer sessions.
- As with lectures, all zoom sessions will be recorded and distributed through Courselink.
- For the practical tutorials, it is encouraged that you follow along
  using the interactive R/Julia REPL (read-eval-print loop),
  which are available on all desktop/laptop platforms (Linux, Windows, MacOS)

  Tip: You may want to Zoom in using your mobile device, to be able to watch the tutorial, while being able to access and interact with the REPL on your desktop/laptop at the same time
  (or use a second monitor for the Zoom session, if you have one)

  Note: If you are connecting via a mobile device and do not have access to a desktop or laptop, you will be able to follow the tutorial without a problem.
  You can then practice on a REPL using a desktop or laptop later, at your convenience.