

# Project 2: Application of Discrete Event Simulation

CSCI 570: Computer Simulations  
Spring 2017

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## 1 Introduction

This project is aimed at achieving the following objectives.

- Students can apply Discrete Event Simulations to identify and solve problems with justified societal relevancy.
- Students can consider more than two “physical processes” in their simulations and use a multi-stream random number generators for the simulations.
- Students can provide *assurance* for their simulations with evidence, such as, consistency checks and test cases.
- Students can justify assumptions of the model, and provide analysis of the results.
- Students are able to write a concise project report with proper styling as specified in the provided template effectively and with proper citation and bibliography.
- Students can coordinate among group members and make substantial contributions to the group for the common goal.

## 2 Requirement and Submission

This is an *open-ended* project. Students are required to follow the process below and submit the required work.

1. Propose a topic of your own interest, write a one-page proposal, and make an oral presentation where you describe the following items as succinctly as you can,
  - the topic and the application of your own interest,
  - the essential questions to answer regarding the application,
  - why people care about this application and seek answers to the questions,
  - the Discrete-Event Simulation model that you learned or you find from the textbook or the literature and that you can base your own simulations on,

- and the time and action plan to complete the project in a Gantt Chart and in a brief description of tasks in the Gantt Chart.

You must complete and submit the work including the project proposal and the presentation slides by 5PM, Wednesday, April 12, 2017. In the class on Wednesday, April 12 2017, you are to make an oral presentation on your proposal.

2. Complete a project progress report in a 15-minute oral presentation. In the presentation, describe the following items,
  - the items in the proposal,
  - the conceptual model of your Discrete-Event simulation,
  - the specification model of your Discrete-Event simulation,
  - the computational model of your Discrete-Event simulation, and
  - the experimental design to address the questions you plan to answer.

You are to make an oral presentation about the progress in class on Monday, April 24, 2017. You must submit the presentation slides before the class.

3. Complete a final project report and a 15-minute final oral presentation. In the presentation, describe the following items,
  - selected items in your progress report,
  - experimental results and analysis, and
  - conclusion and future work.

You are to make the final oral presentation in class on Monday, May 1, 2017. You must submit the presentation slides before the class, and the final report by the final exam time (5PM, May 3, 2017).

### 3 Resources

- For Gantt Chart, see [2].
- For example projects, see problems after each section in the textbook [1].
- You must use the IEEE Transactions template at <https://goo.gl/4vd3va> in your final report.

### References

- [1] Lawrence M Leemis and Stephen Keith Park. *Discrete-event simulation: A first course*. Pearson Prentice Hall Upper Saddle River, NJ, 2006.
- [2] Microsoft Inc. Share schedule and task details with a visio gantt chart. <https://support.office.com/en-us/article/Share-schedule-and-task-details-with-a-Visio-Gantt-chart-3b85674a-9b85-40cf-b5a8-b6413c1ebb3a>, retrieved on April 5, 2017.