

## Term Project

**Proposal due 4:30 pm, Wednesday,, November 4**

**Hard Copy of Presentation due at the beginning of your presentation**

**Project Report due 4:30 pm, Wednesday, December 9**

First of all, let me remind you that the Term Project weights 35% of the overall grade. The term project will be graded as follows:

- Proposal 5%
- Presentation 40%
- Final Project Report 55%
  - Motivations & simulated problem description
  - Input data analysis & model assumptions
  - Simulation model/codes
  - Output statistical analysis (including # of replications and simulation accuracy)
  - Discussions and optimization

### ***POSSIBLE TOPICS:***

Generally speaking, you can do any simulation related subjects; it is not strictly necessary to include computer work.

1. Apply simulation to your research or anything related with your current work (***strongly preferred***).
2. Application of OCBA (Optimal Computing Budget Allocation) technique to the simulation-based decision problem of your interest.
3. Comparison of simulation packages, such as Arena, Extend, with general languages or any other simulation tool. Emphasize on the execution speed for different models and different settings.
4. Cook up an example (at least 5 nodes) and apply simulation approaches to your example.
5. Any other simulation related topics with permission of instructor.

While you have flexibility to select the topic you want to work, you are strongly encouraged to work on some problems related to your research, your work, or your life. Try to imagine that you are hired to conduct some simulation studies on a system. At the end of the project study, you have to give a recommendation about how to improve the system or how to redesign the system. Suppose you are paid \$1M for your study. You are requested to use simulation as the primary tool to come up with your recommendation and to justify your reward of \$1M.

***SIMULATION EXAMPLES IN PREVIOUS YEARS:***

Bank, elevators, airports, restaurants, manufacturing plants, offices, warehouse, traffic intersection, computer lab, Computer Net, air traffic network, railroad stations, inventory control, barber shop, baseball game, and party.

***COLLABORATION:*** Team work is encouraged, the ideal size is 2~3 students in a team.

***PROPOSAL:***

In your proposal, please illustrate what you plan to do and what results you anticipate to obtain when you finish. Proposal is no longer than two pages. As your project proceeds, you can always change the topics or do something which is not described in your proposal. The main purpose of the proposal is to force you to think about your project seriously and to find your partners. In specific, each team has to submit a proposal which must include the following items:

1. Title of the project
2. Names/email addresses of each team member
3. Indicate your preference on the presentation date as explained below.
4. Project description

Page limit: 1~2 pages.

***PRESENTATION:***

The project presentations will be scheduled in classes on 12/2 and 12/9. **In the proposal, please indicate your preference on your presentation date. If you don't do so, I'll assume you can do your presentation on either date.**

Please prepare a power point presentation and turn in a hard copy of your project presentation before you do your presentation. For the hard copy, 2 or 6 slides on one page is fine.

***FINAL PROJECT Report:***

Please turn in a final project report, which includes the following items:

- Motivations & simulated problem description
- Input data analysis & model assumptions
- Simulation model/codes
- Output statistical analysis
- Discussions and optimization

Page limit: 30 pages (not including appendix).

It is a good idea to give good description about your simulation model and your contributions in the report so that the project can be appreciated. Please also turn in your simulation models in a CD-ROM.

***Special Topic:***

OCBA (Optimal Computing Budget Allocation) is an effective technique to determine the most efficient way to conduct simulation for an optimization problem. We want to develop a web site to show how OCBA works and demonstrate its effectiveness. We will select a demonstration problem. The user will be able change the problem setting and run the simulations with or without OCBA. You must be proficient with JAVA programming and web page design. For more information about OCBA, please google OCBA or wiki OCBA.