

## ISyE 6644 Mini-Project #1 Rubric – Summer 2021

(revised 6/8/21)

The course project is worth **5% of your semester grade**. The project will be graded out of **100 points**. The project will be open on Monday, May 31 at 8:00 am, and will be due Monday, June 21 at 11:59 pm.

### Project Admin Duties (20 Points)

- Project and Team Selection = **10 points**. You can have up to 3 members on your team (4 with permission). You get 5 points merely for telling us your project and your team members. You will be given a “homework” to do so. This will be due **Friday, June 4 at 11:59 pm**. We’ll look over your selection over the weekend and see if it’s reasonable (which it almost surely will be). Only **one team member** needs to turn in that “homework”, but you must clearly and unambiguously list EVERYONE on the team. Failure to do so will result in loss of points.
- Your project turned in on time (**Monday, June 21 at 11:59 pm**) = **10 points**

### Project Content (80 Points)

Of course, not all projects are the same. In fact, we’re allowing for a wide variety of projects ranging from applications to programming to theory. Nevertheless, all projects will have certain general commonalities.

- Title and group member names = **5 points**
- Abstract: A short synopsis (at most 200 words) of what problem you’re working on, including major findings = **5 points**
- Background and Description of Problem: Some detail of the problem under (maybe even a literature review, **if appropriate**), along with a description of the organization of what’s coming up in the remainder of the write-up = **5 points**
- **Main Findings (see below) = 40 points**
- Conclusions: What did you find/learn from the project? Any ideas for future work, if appropriate = **5 points**
- Appendix with miscellaneous tables, figures, code not absolutely required for the main text.
- General English and Presentation. Is the paper written clearly, succinctly, and professionally? Is it free of typographical errors? = **20 points**

### Main Findings (40 Points)

The main findings of a project will clearly depend on what type of project you're doing, how many people are in the group, etc. Here are some *guidelines* (suggested, not mandatory) related to the broad categories from the original project list document:

- Applications-Oriented “Real-World” Problems. These projects will typically involve simulation using a simulation language like Arena (though you may have to use something like Python for, e.g., simulation of pandemic flu spread). Here are our expectations:
  - Describe in detail the applications area (e.g., all the potential ways that you can play with an inventory policy, why it's important, etc.).
  - Collect some data from someplace – e.g., an actual company, get it yourself, find it online, or (in an emergency) make it up, but with justification.
  - Do an elementary data analysis, maybe some curve fitting, if appropriate.
  - Simulate your model (e.g., in Arena), hopefully using the data analysis you undertook.
  - Analyze the output, make improvements/conclusions
- Language- and Modeling-Oriented Problems. These projects usually involve learning a new simulation language or modeling paradigm. We'd like you to:
  - Explain how the language works (at least at a basic level).
  - Provide a tutorial / user guide with examples.
  - Outline good points and not-so-good points.
  - If you have time, make a very quick comparison with Arena.
- Programming-Oriented Problems. These problems are often concerned with Monte Carlo analysis of a game or preparing an easy-to-use library for some simulation functionality for us.
  - Describe the problem at hand, and maybe provide a small literature review.
  - Develop and document your code.
  - Show how to run your program(s).
  - Give illustrations of what you can learn from your code (e.g., whether or not a PRN generator is any good, or whether or not a certain strategy will work better than others in blackjack). Make sure to be statistically rigorous if you're carrying out MC experiments.
- Theory-Oriented Problems
  - Describe the problem at hand, and maybe provide a small literature review.
  - What are the techniques used to derive the main findings?
  - Describe some of the fundamental results (e.g., this paper gives an explicit expression for an estimator's expected value in terms of the covariance function).
  - Formulate (but you don't have to solve) a couple of research problems that might be derived from this work.
- Something Else – which needs to be approved by us

And, finally, here are some hints/expectations about exposition:

- The idea is to **have fun and learn something** about a topic that interests you.
- Then convey that interest to your readers. So...
- Write in a style that is clear, interesting, and well-thought-out; get a friend or two to proofread – no typos allowed in 6644! 😊
- Bigger groups should generally tend to write more verbiage (but that is not mandated). Try **to limit your report to 5 pages** per person. (There is no need for tedious lists of data/tables or tons of code, unless that's the point of your report.)
- I'm guessing you can bat this off in <15 hours of work per group member (just a guideline).