

ISyE 6644 Project Rubric – Spring 2022

(revised 2/5/22)

The course project is worth **10% of your semester grade**. The project will be graded out of **100 points**. The project will be open on Monday Feb. 7 at 8:00 am, and will be due **Tuesday, April 26 at 11:59 pm**.

Project Admin Duties (20 Points)

- Project and Team Selection = **5 points**. A variety of possible projects are listed in the project announcement document, though one can choose an interesting project of your own that is not mentioned in that document. For each project in the announcement document, we suggest limits on the number of group members. 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, Feb. 18 at 11:59 pm**. We’ll look over your selection and see if it’s reasonable (which it almost surely will be). EVERYONE on the team needs to turn in this “homework,” where you must clearly and unambiguously list EVERYONE on the team. Failure to do so will result in loss of points. Note that only ONE team member needs to complete question #5, which is a task that involves setting up the group on Canvas.
- Project Progress Report = **5 points**. All we’re looking for here are a couple of paragraphs describing what you’ve done so far and what you still need to do. This is due Friday, March 11 at 11:59 pm. Only **one team member** needs to turn in this “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 (**Tuesday, April 26 at 11:59 pm**) = **10 points**. Only **one team member** needs to turn in this “homework”, but you must clearly and unambiguously list EVERYONE on the team. Failure to do so will result in loss of 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).
- **NO PLAGIARISM** – we have seen everything, and we will catch you!