CS 8314: Course Project Fall 2025

Project assignment

The project is the most important part of the CS 8314 class. The intention of the project is to demonstrate your mastery of the overall course material. It will consist of the following parts:

- A project proposal: Due on 10/24/25.
- A project presentation:
  - Signup for 12/5/25 (tentative) presentation (FCFS queue).
  - Presentation time is about 20 to 25 mins. Allow 5 mins for Q&A
- A final project report: Due 12/5/25

Acceptable types of projects

Due to the nature of some of the organizations you might be a part of, one of the following projects might not be applicable to you. Therefore, there will be two types of projects to select from:

1. Application project

An application of a specific set of software metrics and/or quality engineering techniques discussed in class and a report of the activities, experience and related findings. For example, you may define/select/collect metrics data from either one of your current or previous company's projects or any favorite projects, perform various analyses, and identify problematic areas for focused quality/productivity improvement. Please note, if you take one of your company's projects; ensure appropriate approval from your superiors is taken in order not to violate any proprietary or secret-based projects or data.

It is highly recommended for you to consider multiple metrics, preferably from different metrics categories such as internal and external metrics. When you measure quality, multiple quality attributes/characteristics are preferable to just one. Therefore, a pure SRE (software reliability engineering) project will not be suitable for this class, although it might be quite alright for CS 8317 Software Reliability and Safety.

2. Replication and variation project

Like the application project, this project will use other people's data. In this case, you might want to replicate the previous study like what is defined above. It is advised to consider published material but not required for the project. In replication, you need to have enough variations, which can be achieved in various ways:

- Additional metrics collected from or calculated from the raw data. Maybe use different models.
- Combined data and models based on multiple projects.
- Hypothesis testing or other empirical analysis can also be performed based on cumulative data from multiple previous works. In this way, it becomes a "mega" study of the original works

CS 8314: Course Project Fall 2025

Project Proposal (and Pre-Proposal) (Assignment 1)

Your project proposal should be around 3-5 double-spaced pages in length that should include the following:

- A proper title (not just project for CS 8314)
- A proper abstract written as an executive summary clearly identifying the problem that you are going to address with some basic background information, the solution strategy you intend to use:
    - What are you going to measure?
    - How are you going to measure?
    - Which analysis/modeling technique are you going to use?
- A rough schedule
- For application-type projects, in addition to the above, you also need to discuss:
    - Measurement implementation
    - Data collection
    - Data analysis of result to be performed
    - Follow up actions

Project presentation

Each presentation will be between 20 and 25 minutes, including Q&A. Please focus more on the important activities and findings and not too much on the background and details.

Project Paper

A project report should be around 15 double-spaced pages in length, clearly and comprehensively describing the background, problem, strategy, metrics, activities, result analysis, lessons learned, follow up actions, and summary/conclusions. A high-level summary or an abstract should also be included at the beginning of your report.

If you'd like to, raw data and detailed modeling/analysis activities should be included in the appendix. Please note: This it is a "report" and not a collection of data and models without description and discussion.