

## Final Project/Exam Guidelines

You may complete a final project or take a final exam. Roughly, you should think of the final exam as (moderately) less time-consuming, but (moderately) higher variance. Below are rough guidelines for both.

**Final Exam.** The final exam will be posted to the course website at the start of reading period. You may choose any 48-hour window to complete the exam.

- To begin the exam, send me (smweinberg@princeton.edu) an email with subject line [COS 521 FA 19 Final] stating that you are starting the exam.
- Within 48 hours (by email timestamp) send me a reply on that same email thread containing your completed final exam.
- The exam absolutely must be submitted by 11:59pm on the university's last day to submit take-home final exercises, independently of when you start.
- You aren't expected to spend the full 48 hours on the exam (I hope this is obvious).
- The exam will be cover the entire course. Some questions will be "easy", and others will be "challenging." You do not need to get 100% to do "well."

**Final Project.** To complete a final project, you should have a group of size two or three (larger than three is not permitted, solo projects are strongly discouraged), and let me know by **November 30** that your group plans to complete a project. Below are details on the project.

- The final project report will be due on dean's date.
- We'll have one extra class meeting before the due date (exact date TBD), where each group will give a 15-minute presentation on their project. At least one member of your group must be on campus for the presentation.
- You should aim for  $\approx 10$  pages with your final report, but there is neither a ceiling nor floor. **I would like to post all final reports on the course webpage**, so you should write with high enough quality that you are comfortable having your name attached to the PDF online. I would like to do this (a) to give examples of projects for future iterations and (b) because some of the projects will be useful to others. If necessary, we'll make exceptions (e.g. because your project may turn into a paper and you're not ready to post partial progress online yet).

- Your project should constitute **original work**, but it is not meant to be publishable work. A rough bar to have in mind is that your project should constitute the first few weeks of work towards a conference publication, but you are not expected to produce a conference publication in just a few weeks.
- Between November 30 and December 15, I'll meet with each group to discuss the precise topic (or discuss over email). By **December 15**, you should submit a brief, but concrete description of the project you're planning to pursue (absolute maximum of two pages, one page might be fine).

**How to choose a topic:** There are (roughly) two kinds of projects that can be good for this course.

- Try out a project in theoretical algorithm design. For this kind of project, we should pick a topic together (e.g. you share your rough research interest, and I'll propose a concrete problem). A sample theme might be "here's a conjecture I think is true. For the project, first prove it for a very, very narrow case. Then try for a narrow case." Then, if you enjoy the project, you could continue trying to prove the conjecture.
- Complete a project closer to your own research interests, which uses tools from the course. A sample theme might be "find a dataset which is important to your own research. Use algorithms developed in class (which are not already widespread in your field) to cluster/dimension-reduce/etc. the dataset. Compare it to existing methods." (You can replace "research interests" with "personal interests" as well, or "analyze a dataset" with any other algorithmic problem resolved by tools in this course).
- In both cases, you are **strongly encouraged** to tie the project to your own interests. Ideally, the project itself should be narrow so that you can complete concrete tasks in a short period. However, the project should have potential to expand if you happen to really enjoy it. These are bins that I hope most projects will fall into. But you are also welcome to propose other ideas.