

# Math 253: Project 1

Spring 2020

## OVERVIEW

In these first few weeks of the course, we have studied several tools for understanding systems of linear equations and their solutions. This type of mathematics is widely used in many real-world applications across several areas of interest. For this project, you will write a short essay describing a particular use of linear systems in an application of your choice and apply the tools from class to describe this setting.

## TOPIC

Describe a problem in another field (not mathematics) and explain how systems of linear equations can be used to model and understand this setting. This should include an overview of the problem and its motivation, a description of how linear systems are used in this application, and a discussion on the meaning of solutions to this system. For example, you should indicate how many solutions this system has and what significance this has for the problem.

Many of you are interested in majors other than mathematics - you may find it useful to ask your professors in other departments for thoughts on how linear algebra appears in the discipline of your choice. Keep in mind that, while we frequently discuss applications in science, you are certainly not restricted to such topics.

You are also encouraged to explore the topics described in Section 1.6 of the textbook for inspiration, although your project should include information beyond this single source.

## STRUCTURE

As a first step, you will hand in a **topic proposal** which consists of a paragraph or two on your choice of topic and what you plan to explore in your report. You will then later hand in the **individual report**, a 2-3 page essay on the topic described above. Both parts of the project should be typed in single-spaced 12-point font with one-inch margins. **Your drafts, both the rough draft and the final draft, will be submitted via email in PDF form.**

Your report should be written for an audience of your peers. In particular, any specialized knowledge needed for your chosen application should be discussed in terms which are understandable to your classmates.

Between the deadlines for the topic proposal and the individual report, you will submit a draft of your report for review on April 3rd. I will give feedback on your draft and return it to you by Monday, April 6th.

## GRADING

The grading for Project 1 is broken down as follows:

Topic Proposal	10%	(You've already done this)
Rough Draft	10%	(Due April 3rd)
Individual Report	80%	(Due April 10th)

Your work will be graded on several factors, including essay structure, mathematical accuracy, clarity of exposition, use of tools from class, and appropriate citations. As usual, your work should adhere to the usual academic honesty standards. In particular, you are encouraged to research using any available sources, but your submitted work must be your original writing. It is not acceptable to simply rewrite from the textbooks or any other sources. Therefore, it is also required that you cite any sources used in your project in a bibliography.

## IMPORTANT DATES

- (1) Friday, February 28th: Project assigned.
- (2) Friday, March 6th: Topic proposal due.
- (3) Friday, April 3rd: Rough draft due (to be submitted via email by midnight in your respective time zone)
- (4) Friday, April 17th: Finished project due (to be submitted by midnight in your respective time zone).