

## Math 40a: Introduction to Applied Mathematics

Final Project

Due Friday, Dec 8

### Overview

For the final project, you will make a short video presentation of a paper from one of the topics covered in class. This paper could be one of the main readings from the topics or any other paper from the paper bank. For the presentation, you will explore one of the results in the paper. This could involve explaining the math behind the result, by running a calculation/simulation in Python to support a result or reproduce a figure, or by extending the result in the paper in some way to account for factors (such as new data) the original model did not.

If your project involves reproducing a result or a figure from a paper, ensure it incorporates enough math or coding component. While the level of difficulty in the mathematical or coding aspects is not an important factor for grading the final project, it will be considered towards the evaluation. For example, achieving a high grade may require more than simply plotting a figure based on a given formula from the paper, simulating a straightforward model, or delivering a presentation that reiterates the contents of a paper without incorporating your own contributions.

I highly encourage each group to discuss with me about your final project. This ensures that you are heading in the right direction.

The final product will be a short 3-6 minute Youtube video explaining your results.

### Goals

We want you to Apply and Communicate Mathematics

- “Apply” Your project should be motivated by a real-world question. You should think about how you can mathematically model the real world.
- “Communicate” You should clearly explain the question you are trying to answer and your mathematical approach
- “Mathematics” The scope of your project should involve significant mathematics, and have at least some computation done in Python

### Grading Breakdown

- 50 points: content, focusing on motivation, methods, and conclusions. <sup>1</sup>
- 50 points: presentation, focusing on clearly laying out the question and a concise explanation of the math/code involved.

### Timeline

1. ASAP: decide on a paper and let me know.
2. By Tuesday 11/21, submit a proposal for your presentation (together with Lab 5).
3. By Friday 12/8, submit a video recording of your presentation. The easiest way will be to record a Zoom meeting with your shared screen, but you can also use other methods.

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<sup>1</sup>Motivation should be specific to the question you aim to address, rather than providing a general overview of the paper’s motivation.