

MATH 4800-001 Final Report and Presentation Specification

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1 Background

The written final report and the in-class oral presentation together serve as a substitute for the traditional final exam in this semester's MATH 4800. While specific guidelines for style and content must be followed, you have considerable flexibility in choosing your report and presentation topic, provided it falls within the scope of the course and adheres to certain collective restrictions, which are designed to promote originality and diversity of topics across the class.

Collective Work Similar to weekly reports, no two reports or presentations may overlap in content. To minimize the risk of overlap, you are required to declare your topic and main sources early (by October 27), and topics will be assigned on a first-come, first-served basis. This policy emphasizes the importance of originality and timing, mirroring the social dynamics of academic research.

Students are encouraged to communicate openly with each other about their chosen topics to avoid conflicts. As your instructor, I will oversee this process and mediate where necessary, acting similarly

to a journal editor or referee. I will work closely with each of you to ensure that your chosen topic is both distinct and sufficiently complex, so that you can proceed with confidence before investing significant time and effort.

2 What to Submit

Your final report and presentation will be submitted in stages to allow for feedback and refinement. The key submissions are outlined below:

2.1 Declaration of Topic and Primary Source(s)

The first step is to declare your topic and main sources. This submission acts as the foundation for your final report and presentation. It ensures that your topic is both distinct and sufficiently complex. The declaration should be no more than two pages, including references. In this document, you should clearly outline the topic you plan to study, how you plan to approach it, and the primary resources you will use. You may also discuss how this work relates to your weekly reports or any unreported research, if applicable.

This declaration is similar to a research statement or grant application, where you define your research direction and justify its significance and feasibility. It is a crucial step in ensuring that your project is well-focused and appropriately scoped for the final submission.

2.2 Examples of Acceptable Content

The content of your final report and presentation should align with the course scope and demonstrate a deeper level of engagement than

your weekly reports. Below are some examples of what your final project could include:

- Discussions and studies of generalizations of theorems or formulas from the references or class discussions.
- A focused study and discussion of a particular chapter from one of the textbooks.
- A detailed study and discussion of a relevant article.
- An in-depth discussion and solution of a sufficiently complicated problem.
- A comprehensive discussion and calculation of a sufficiently complicated mathematical expression.
- ...

These examples are meant to inspire your project choices. The complexity of the material should be higher than that of a typical weekly report, and your chosen topic must be distinct from those of your peers.

2.3 First Draft for Written Final Report

This draft submission is your opportunity to receive feedback and make any necessary adjustments before the final version. You should aim for the first draft to be as detailed and close to the final version as possible, even if some sections may require revision. This will allow for meaningful feedback on both the content and structure of your report.

2.4 First Draft and Plan for Presentation

While the presentation itself will be graded during the in-class sessions in Week 15, you are required to submit a draft and plan for your presentation ahead of time. This submission should include a rough draft of the content you plan to present, alongside a clear outline of how you intend to structure your presentation. Whether you choose a chalk talk or a Beamer presentation, this draft should include either the slides or key sections of the chalk talk so that detailed feedback on clarity and delivery can be provided.

2.5 Final Submission

The final submission consists of your completed written report, prepared according to the formatting guidelines outlined below. The report should be polished and reflect the feedback you received on your draft. The presentation, as noted, will be graded during the in-class presentation sessions and does not require separate submission.

3 Style, Formatting, and References

Your final report should consist of complete grammatical sentences, interspersed with mathematical expressions. The final report must be prepared using Latex. The report should be between 5 to 10 pages long, not counting the acknowledgements and references, relative to the preamble of the template TEX file available under the Files tab on Canvas:

```
\documentclass[oneside , letterpaper , notitlepage , 12pt]{amsart}
```

```
\usepackage[marginparwidth=1.5in ,  
            top=1in ,  
            bottom=1in ,  
            left=1.25in ,  
            right=1.25in ,  
            headheight=60pt  
            ]{geometry}  
  
\usepackage[T1]{fontenc}  
\usepackage[utf8]{inputenc}  
  
\usepackage{mathtools}  
\usepackage{amscd}  
\usepackage{amsthm}  
\usepackage{amssymb}  
\usepackage{amsmath}
```

All resources must be properly cited, and any collaboration or assistance (including the use of generative tools) must be acknowledged in a separate Acknowledgments section.

Presentation For your oral presentation, you may choose between a **chalk talk** or a digital presentation prepared using **Beamer** in LaTeX.

If you choose to present using Beamer, it is your responsibility to ensure that the necessary technical equipment is working. This includes having a functioning laptop, ensuring compatibility with the projector, and arriving on time to set up your presentation. Any technical issues that delay your presentation may result in a grade penalty.

Your presentation should last 10 minutes, with an additional 6

minutes allocated for questions and discussion. The presentations will take place over two class sessions: December 3 and December 5. The order of the presentations will be determined closer to the presentation dates. Be sure to be prepared to present on either date, as the schedule will be finalized based on the chosen topics and logistical needs.

4 Generative AI and Computer Algebra Systems Regulations

Should you decide to use either a **generative AI tool** or a **computer algebra system** while preparing your report, you must properly acknowledge where and how these tools were used in your report.

5 How to Submit

For each submission, you must upload the required files to the designated assignment on the Canvas page. Each submission stage has specific file requirements, outlined below:

5.1 Declaration of Topic and Primary Source(s)

Submit the following files by the deadline:

1. Your declaration as a PDF file rendered in Latex.
2. All the source files for your PDF, including the .tex file and any supporting files (such as a .bib file for references, or image files if applicable).

5.2 First Draft for Written Final Report

Submit the following files by the deadline:

1. Your first draft as a PDF file rendered in Latex.
2. All the source files for your PDF, including the .tex file and any supporting files (such as a .bib file or image files).

5.3 First Draft and Plan for Presentation

For the presentation draft, you may submit sketches or handwritten plans, even if you plan to use Beamer in your final presentation. This draft should outline the key points and structure of your talk.

If you plan to use Beamer: Submit the following files by the deadline:

1. A PDF file of your planned presentation content (can be a sketch, handwritten notes, or a draft version of your Beamer slides).
2. If applicable, all Latex source files (such as a .tex file for Beamer and any image files or custom styles).

If you plan to give a chalk talk: Submit the following files by the deadline:

1. A PDF file containing scans or photos of your chalk talk plan (handwritten or digitally sketched is acceptable).

5.4 Final Submission

Submit the following files by the deadline:

1. Your final report as a PDF file rendered in Latex.
2. All the source files for your PDF, including the .tex file as well as any supporting files (such as a .bib file or image files).

Canvas will not warn you if you miss submitting one of the files above. Unless all the items above are submitted, your submission will be incomplete and graded accordingly.

6 When to Submit

Below are the key deadlines for each submission stage. All deadlines are at 11:59 PM on the respective dates:

- **Declaration of Topic and Primary Source(s):** October 27 (Sunday of Week 9)
- **First Draft for Written Final Report:** November 17 (Sunday of Week 12)
- **First Draft and Plan for Presentation:** November 24 (Sunday of Week 13)
- **Final Report:** December 8 (Sunday of Week 15)

Late submissions will not be accepted unless you contact the course staff with a valid excuse before the deadline.