

MATH 4573: COURSE PROJECT DESCRIPTION AND RUBRIC

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Project details. The purpose of the class project is to explore an uncommon or advanced mathematics topic that is connected to this class. In working on this project, you'll also sharpen your mathematical writing skills, as well as your ability to typeset using LaTeX.

Project specifications. This project must be written using LaTeX. This is a software used to typeset documents. It's often used by scientists and mathematicians to write professional documents and notes.

You'll use *12pt font with 3cm margins* for your project. There is a LaTeX project template on Carmen that has these specifications already set up – feel free to use it.

While LaTeX is a free software that can be installed and used on your computer, there is also a free online version called Overleaf. The online version has the option to add collaborators to a project. Here is an overview on how to use Overleaf. Using Overleaf has the added benefit of automatically backing up your LaTeX files on the cloud, as well as keeping track of editing history.

Project submission. **This project is due April 19, 2024.** You will submit your project PDF through Gradescope, and at the same time, email your LaTeX project file(s) to me (make sure to email me *all* project files, including e.g. pngs). If you are working with someone else on the project, one person should submit the project PDF through Gradescope, and the other should email me the project files.

Before the deadline, you can ask me for brief project feedback during office hours. However, I will also have an **optional project draft deadline of April 5, 2024.** You can submit your draft through Gradescope, and I will take a look through it and give you some feedback. The optional deadline is not for a grade.

Project details. Here are some “do’s” to keep in mind when writing your project:

- **Make a well-written introduction**, which explains and motivates the project’s focus.
 - Context and motivation for the main result(s) of the paper should be given (e.g. where does this result come from, why is it interesting, etc).
 - The introduction should also outline the paper (i.e., the order in which the main result(s) will be studied or proven).
- **Correct and relevant mathematics.** Make sure to write down what’s relevant to the project – this doesn’t necessarily mean everything will be applied towards “one big theorem”, but it should be clear why you’re proving or including something in your paper. Also, all of your proofs and claims should be correct! So make sure to only include proofs that you understand.

- **Topics should be presented in a logical order, and the paper should be clearly written.** This point is more about writing a good paper; it should be easy to follow for the reader.
 - To this end, write your paper in paragraph form, with correct grammar, spelling and sentence construction.
- **The level of mathematical sophistication of your paper should be at the level of a student in the class, or slightly above it.** What this means is that a student in MATH 4573 who’s been keeping up with the class material should be able to read your paper and understand most (if not all) of it. Of course, you’re allowed to define new things and prove new results – just make sure your results aren’t too difficult for this class!

Here are some “don’t’s” to keep in mind:

- Don’t be needlessly verbose! Conciseness is important in a paper.
- Don’t include proofs that you do not understand.
- Try to avoid using AI to write this! AI is often needlessly verbose, repetitive and adds useless fluff when explaining something (all of which you can lose points for). I’d rather hear your voice in this project.

Here are some additional things you might keep in mind:

- There is technically no page minimum or maximum for these projects; however, your project shouldn’t be “too short” nor “too long” – just make sure you’ve included enough details! I’m expecting projects to be between 4 to 7 pages.
- You can check out the sample project on Carmen to see what your final draft might look like, structurally. Note that this sample is from a reading project of a previous student of mine, and uses more advanced math than is covered in this class.
- You can use pictures, illustrations and diagrams in your project, if it makes sense to do so.
- If your project topic has a computational aspect to it, and you have programming experience, then I highly encourage you to incorporate code and calculations into your project if it makes sense to do so!
- When citing a result (from a book, website, etc.), you should follow the “usual” math references format. Examples of such citations are in the sample project (and also on the project description PDF).
- See a mathematical symbol in a paper or book that you don’t know the LaTeX command for? You can use “Detexify” to determine which command it corresponds to.

Goals & outcomes	Exceeds expectations (4)	Above expectations (3)	Meets expectations (2)	Below expectations (0)-(1)	Outcome scores
Well-written introduction (/4)					
Paper is well-organized and easy to follow (/4)					
Mathematics is correct and relevant (/4)					
The level of math is appropriate for MATH 4573 (/4)					
Grammar and spelling is correct (/4)					
Citations are properly attributed (/2)					
Font size and margins are correct (/2)					
Pizzazz! (extra credit) (/0)					
Total score (/24)					