

MA 262 S23: Final Project Instructions

Goal:

- 1) Gain understanding in how vector calculus is used in mathematics or science or the role it has played in mathematical history and culture.
- 2) Gain experience reading a mathematics paper, extracting as much understanding from it as you can
- 3) Gain experience presenting mathematical ideas in both written and oral form.

The task:

- 1) Read the paper you were assigned and work with your group to understand as much of it as you can.
- 2) Write a 2-3 page paper with your group, summarizing the content of the paper with a particular focus on the role of concepts from our course.
- 3) Give a 6 minute presentation to the class on the paper: explaining the main topic of the paper and summarizing its connection to vector calculus.

Deadlines:

- 1) You will be randomly assigned to give your presentation on either Monday 5/1 or Wednesday 5/3. The slides for your presentation are due in PDF form by **7 PM the night before your talk**.
- 2) The paper is due the last day of class, in class.

Details: Your paper should be aimed at an audience of vector calc students who have not read the paper. It should be organized with an introduction, body, and conclusion. It can be handwritten as long as it is very readable. You may also type it in LaTeX or in SageMath; but not in Word or Pages, etc. since the mathematical typesetting in those applications is so bad. **The paper must include a short acknowledgements section describing each group member's contributions to the project.**

Your paper must focus on explaining the aim of the paper and its overall structure, with a detailed focus on how concepts from our course are relevant to the paper. If you use other sources (including artificial intelligence) you must cite them both in the body of your paper (where you use them) and with a "Works Cited" section at the end. Any additional help that you receive must be credited in the acknowledgements section. You are *discouraged* from using sources other than the paper and our textbook. If you feel you do need additional sources to understand

advanced material in the paper, please just ask Scott for suggestions, rather than wasting time online looking for the perfect source.

The presentation is aimed at your classmates and should clearly say what paper you are using, should give an overview of the paper and should summarize what concepts from our course are relevant to the paper and (briefly) how they are used. Do not try to cram too much into your talk; you will be penalized if you go over time. The audience should come away from your talk having a better understanding of the uses or relevance of vector calculus.

You are encouraged to prepare slides for your talk. They must be **emailed as a PDF** to Scott by 7 PM the night before your talk. Do not send a link to a Google Doc. Send a PDF as an email attachment.

It is good form to use the slides for pictures and equations, as well as theorem statements, etc. Do not put too much text on the slide though. The slides are an aid to your talk, not the talk itself. Any image, other than one you create, must be credited on the slide where you use it (for instance by including a URL in small type at the bottom of the slide.)

Grading Rubric:

75% paper:

- Were the directions followed? Did all group members contribute roughly equally?
- How clearly did you explain the point of the paper?
- How thoroughly and clearly did you explain the role of vector calculus in the paper?
- Does the paper have a clearly discernible structure?
- Is that paper understandable by the intended audience?
- Do the mechanics (grammar, punctuation, spelling) help the paper be easy to read?

25% talk:

- Were the directions followed? Were the slides submitted on time?
- Was the aim of the paper clearly explained?
- Was the relevance of vector calc clearly explained?
- Was there sufficient content to the talk? Was too much crammed in?
- Is the talk understandable by the intended audience?