

640:491/645:580 Final Exam

Monday, May 9, 2022

Introduction. The final exam will consist of two parts: (I) A paper on one of the following three subjects: (a) Math and Music. (b) Isoperimetric inequalities. (c) Central limit theorem and its application. (II) A 20-30 minute presentation based on your paper. The paper will count as 70 % of your final grade and the presentation will count as 30 %.

You must submit your paper by midnight, Sunday, May 8, via the course Canvas site. Presentations will start at 2:45 pm on Monday, May 9. You will be asked to sign up for the time of your presentation.

General requirement for the paper. Your paper must be 10-15 pages in length, typeset with LaTeX. It should contain the following:

1. Title, your name, affiliation, and email address (2 points).
2. An abstract that summarize the content of your paper (3 points).
3. An introduction section that describes the motivation, goal, and importance of the subject (5 points).
4. A concluding section that summarizes the results and findings of your paper and suggests topics for further study (5 points).
5. References in correct formats (5 points).

Additionally, writing and LaTeX styles will each count as 5 points. Content of the paper will count as 40 points.

Content of the paper. Your paper should contain a summary of the material that you have learned from this class on the subject of your choice. However, you have the freedom to choose what topics to emphasize and expand upon. You should assume that the reader of your paper is a math senior or a first-year graduate student who have not taken this class. Content of the paper will be judged by whether it is self-contained, well-organized, and mathematically rigorous. Your paper will also be judged by its originality.

Presentation. Your presentation should be given using PowerPoint or LaTeX beamer. Again, you should assume that the audience of your presentation are math seniors or first-year graduate students who have not taken this class. Your presentation should include introductory and concluding remarks. It will be judged by the professor (80 %) and the student audience (20 %) based on the following criteria: (1) The speaker is well prepared and presented the material in an organized manner. (2) The speaker has good rapports with the audience and generates interest in the material. (3) The audience learn a good amount from the speaker. (4) The overall quality of the presentation is excellent.