Report and Presentation: Topics and Guidelines

Topology MTH 441 Fall 2020

Report Due Date: May 13th **Presentations: May 11th**

The report and presentation counts for 20% of your grade. Points will be awarded on your understanding of the material, your ability to write and explain your topic in your own words, and your presentation.

- **Topic :** Please choose a topic latest by **Friday April 24th** and notify me by email. A list of topics is given on the next page. Every student will have a different topic, and will be chosen on first come first serve basis. Topics on next page.
- **Report :** Here are the guidelines for the report:
  1. Should be typed;
  2. Should be at least 3 pages and no more than 5 pages;
  3. Should include explanations/proofs in your own words;
  4. Feel free to include picutres (moderately sized).
  5. You are encouraged to refer to other sources in addition to the books listed on next page.
  6. You are strongly encouraged to discuss your topic with me.
- **Presentation :** Here are the guidelines for the presentation:
  1. should be around 10 minutes long.
  2. make slides either usin beamer (latex) or powerpoint or google slides.
  3. should be based on your report.
  4. feel free to include picutres (moderately sized).

- Book 1 (B1) - *A First Course in Topology* by John McCleary
- Book 2 (B2) - *Introduction to Topology: Pure and Applied* by Colin Adams and Robert Franzosa.

Topics

From Book 1:

1. Space filling curves (pages 38-42 from B1)
2. Tietze's Extention Theorem (pages 48-50 B1)
3. Compact-Open topology (pg 91 - 93 from B1)

From Book 2:

4. Metrics & Information (Section 5.2)
5. Configuration Spaces (Section 3.5)
6. Digital Topology (Section 11.3)
7. Graphs and applications in chemistry (Sections 13.1, 13.2)
8. Geographic Information Systems (Section 2.4).
9. Kinematics (Section 4.3).
10. Automated Guided Vehicles (Section 6.5).
11. Geometry of the Universe (Sections 14.4, 14.5 & more references).
12. Dynamics and Chaos (Chapter 8, select topics).