MATH 4301 - Honours Seminar
2018-2019

COORDINATOR: Greg Lee

- **Office:** RB 2005 ⋆ **Phone:** 346-7867 ⋆ **Email:** glee@lakeheadu.ca
- **Classroom:** RB 2044, MWF 10:30-11:30 (but see below)
- **Office Hours:** In the Fall, Tuesday and Thursday, 10:30-11:20. In the Winter, TBA

Working under the guidance of an approved faculty advisor, students will independently study an area of mathematics. Students will write a paper (approximately 20-25 pages) and will give a presentation (20 minutes long) describing the research conducted.

Notes on class time. Unlike the majority of your classes, most of your work will be done outside of the regular class time. During the first semester, we will meet about once a week in order to monitor your progress and discuss some topics related to LaTeX and presentations. As the academic year progresses, we will meet less often. I will email you ahead of time to let you know when we are meeting. However, please keep the above times free every week. Presentations will normally take place in this time slot. You will also arrange to meet with your faculty advisor on a regular basis.

Notes on faculty advisor. Each student will work with a faculty member of the Department of Mathematical Sciences. Students are asked to contact faculty members individually to determine if the faculty member would be willing to act as a supervisor. Your advisor and I will determine your grade for the course. (If I happen to be your advisor, another faculty member will be assigned as a "second reader".)

Notes on topic. As part of the Honours Seminar, you will pick an area of mathematics that interests you. We are not expecting you to produce original mathematics. Instead, we want you to learn how to pick a new topic in mathematics and identify some of the key problems and results in a particular area. Your topic for independent study will be based upon a variety of sources (e.g. books, journal articles). The only restriction on your choice of topic is that you pick an area of mathematics not directly covered in any course you took at Lakehead University.

Faculty members will propose some possible topics. You can use one of those, or suggest another topic that appeals to you.

Use of LaTeX and Beamer: Nearly all mathematical papers are typeset using LaTeX. As part of your project, you are required to learn how to use LaTeX. All proposals and drafts, as well as your final project, must be written using LaTeX. You can submit your documents by email in pdf format.

For your presentations (the mini-talk, practice presentation and final presentation), you are expected to use Beamer. Beamer is a LaTeX document class that produces nice slides for your presentation.

Although the page is not yet up and running, information to get you started on LaTeX and Beamer, as well as some general information about mathematical writing, will soon be found on the department website:

https://www.lakeheadu.ca/academics/departments/math/undergraduate-program/honours-program

Marking Scheme. Your grade will be based upon the following rubric. A description of each item is found below.

Task	**Points**
Topic proposal	5
Draft outline	5
Submit draft	5
Present a 5-10 minute talk	5
Submit second draft	5
Practice presentation	5
Final report	40
Final presentation	30
Total	100

Here are some further details on the above list.

1. Topic proposal. Each student will write a one-page paper that contains the following information: 1) name, 2) faculty advisor, 3) title of project, 4) book(s) or other resources to be used in the project, and 5) a one-to-two paragraph summary of what you want to learn and why. The topic of your proposal should be an area of mathematics not directly covered in any course you took at Lakehead University, and needs to be approved by your

advisor. The proposal will be submitted to both the coordinator and the advisor.

2. Draft outline. You will provide your advisor and the coordinator with an outline of your project. It should include a bibliography.

3. Submit first draft. You will provide your advisor and the coordinator with the first draft of your project. This should include about 60% of the material of the final version. It will be due at the end of first semester. The coordinator and advisor will provide feedback.

4. 5-10 minute mini-talk. At the beginning of the second semester, you will present a short 5 to 10 minute talk on your topic. For example, you could talk about your problem, or an interesting result. You will also discuss your future goals for the project.

5. Submit second draft. You will provide your advisor and the coordinator with a second version of your project. This version will incorporate the feedback received on the first draft, and will be a close approximation of the final version.

6. Practice presentation. You will give a practice version of your talk for the coordinator, and your advisor.

7. Final project. Using all feedback accumulated, you will provide the coordinator and the advisor with a copy of your final project.

8. Final presentation. You will give a 20 minute presentation on your project.

Further notes:

- The onus is on the student to arrange meetings with the advisor. It is recommended that you meet with your advisor at least once a week.
- You are required to attend the final presentations given by students in this course and the graduate seminar (Math 5301). Failure to attend a talk will result in 5 points being deducted from your mark.
- Deadlines are important. You will lose 1 point for every day (weekends counting as one) that you are late.
- As mentioned above, all written submissions must be typed up using LaTeX, and all presentations must use Beamer.

- All students will be expected to attend any Department Colloquia that are held, provided they have no other conflict.

Tentative Schedule. We will use the following schedule, which is subject to change. Changes to this schedule will be announced via email.

Oct. 3, 2018	**Proposal of topic due**
Oct. 31, 2018	**Draft outline due**
Dec. 3, 2018	**First draft due**
Jan. 21-25, 2019	**Mini-talks**
Feb. 15, 2019	**Second draft due**
March 4-8, 2019	**Practice presentations**
March 25-29, 2019	**Final presentations**
April 5, 2019	**Final project due**

Note: Lakehead University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities and/or medical conditions to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability and think you may need accommodations, you are strongly encouraged to contact Student Accessibility Services (SAS) and register as early as possible. For more information, please contact Student Accessibility Services
http://studentaccessibility.lakeheadu.ca
(SC0003, 343-8047 or sas@lakeheadu.ca)