Math 444 - 201, 2017WT2, Jan-Apr 2018

Mathematical Research and Writing

Announcements

Announcements will be posted from time to time. Please check regularly.

1. All submissions will be typeset in *12 pt font* - and from Week 4 onwards in LaTeX.
2. Links to Overleaf, Detexify and a free online LaTeX manual. The links to Overleaf, Detexify and the online LaTeX manual are at the bottom of the page under handouts too.

Course details

Lecture details

Lecturer: S. van Willigenburg, office: Math 208, tel: 822-2630, email: steph at math splotch ubc splotch ca
Location: TuTh 9.30-11.00 MATH 102
Web page: http://www.math.ubc.ca/~steph/444/444.html
Office hours: Mon 10-11am, Thur 4-5pm, 15 mins just after class, and by appointment (not Wednesday). You can also email me anytime.

Course description

This is for students who would like an introduction to mathematical research, and are interested in exploring mathematics constructively. It is suitable for students who would like to further develop their critical thinking skills independently. In addition presentation skills and ability to professionally typeset mathematics will be developed.

Grading

Your grade will be based on

- Class participation and peer feedback (5%)
- Homework (10%)
- Research journal (10%)
- Presentations (30%)
- Project (45%).

Due to the intense workload of the course no extensions will be given, and late submissions will be subject to a 50% per day penalty.

Working together and academic integrity

Homework: We have no objection to collaboration on the homework, provided that it is done in a way that maximizes the benefit of the homework to all people involved. It is our experience that you get

- maximum benefit from a homework problem if you work hard on it alone before combining your ideas with someone else's,
- no benefit from one person just telling another how to do a problem.

Regardless of whether you arrive at solutions in collaboration with others or alone, the paper that you turn in with your name on it should represent your own solutions, written in your own words.

In particular, you may not simply copy someone else's homework and turn it in as your own. Similarly, copying solutions that you might find on the web or from some other source is illegal.

These will all be treated as a violation of UBC's **Academic Integrity Code.** We take academic integrity very seriously and will follow university procedures in all cases of suspected cheating - disciplinary measures can result in expulsion.

Class etiquette

Use of cell phones (in any manner), laptops, smartphones, tablets and other electronic devices during class is highly inappropriate, as it is distracting and disrespectful to fellow students and the instructor. Chatting with neighbours, even when whispered, is equally inappropriate. If you have a question then please ask the instructor so the whole class may benefit too.

Arriving late and leaving early is also discouraged. If it happens then please enter/leave the room silently and do not disrupt the other students or instructor. Thank you.

Online resources

Homework (due Thursday at start of class)

There will be weekly homework assignments due on Thursdays, which will augment the techniques learned in class or give an opportunity to explore mathematical research further.

Homework solutions should be typed up using good English, complete sentences, and adequate detail. Questions should be answered in order, and pages should be fastened with a staple with your name and student number on at least the front page.

Homework 1, due Thursday January 11th.
Homework 2, due Thursday January 18th.

Solutions will be handed out when the homework is returned, if appropriate.

Research Journal (due Friday 11.59am electronically)

You will email a weekly 1-2 page written account of your research to steph@math.ubc.ca.

Label the file **preferredname_surnameinitial_Journalx.pdf.**

This document will have 3 sections with the following headings.

1. What you did.
2. Why you did it.
3. What obstacles you encountered, and your research plan for the following week.

Project Presentations

You will update the class on your progress throughout the term. More details are here.

1. **Week starting February 26** *Project introduction* (10 marks): You will motivate your project and explain what you will be investigating. Plus teach the class definitions illustrated by examples, which are necessary for your research.
2. **Week starting March 12** *Project presentation* (20 marks): You will give a lecture covering the points below.
    - Briefly recall some motivation for your project.
    - Give relevant definitions and examples so that you can do the following.
    - State and prove at least one theorem from your project.

Project

Information sheet and list of potential projects.

Other handouts

Here are some more study materials I found to help, or might be interesting.

Resources on learning

- Notes on how to take notes can be found here and here.
- A paper by a learning psychology expert How to succeed in college: learn how to learn.
- Practical advice on learning effectively.

Resources on writing

- A web page about proofs can be found here.
- University of Victoria's "Pyramid of writing concerns".
- University of Victoria's list of transitional words and phrases.

Resources on Latex

- Overleaf.
- Detexify.
- A free online LaTeX manual.

Other useful links

- Math department home page
