MATHEMATICS 319 - Section 101

Introduction to Real Analysis

September-December 2022 (2022WT1)

Acknowledgement

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xʷməθkʷəy̓əm (Musqueam) people. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on in their culture, history, and traditions from one generation to the next.

Course information

A rigorous introduction to the ideas and methods of real analysis and their application.

Instructor

- instructor = Andrew Rechnitzer
- email = andrewr@math.ubc.ca - please put "m319" in the topic line of your email.
- office hours = there will be weekly office hours - see the course webpage

Class time and location

- class time = MWF 12pm-12:50pm
- class location = Chem C124
- First day of teaching: Wedneday September 07
- Last day of teaching: Wednesday Decemeber 07
- University closed on

- September 30 (National Day for Truth and Reconciliation)
- October 10 (Thanksgiving Day) and
- November 09-11 (Rememberance Day and midterm break)

Course webpage

- The course webpage is on Canvas

Prerequisites

- a grade of 68% or higher in MATH 220, or
- a grade of 55% or higher in one of MATH 223, MATH 226.

Topics

The course will cover

- Real numbers
- Suprema and sequences
- Continuity and derivates
- Metric spaces

Proofs are an essential part of the course material; correct and clear presentation of proofs will be emphasised throughout the course.

Text

There is no required textbook for this course, but I will post links to resources during the term on the course webpage.

Some recommended texts are:

- Real Analysis with Applications, by Kenneth R. Davidson and Alan Donsig. Full text available online through UBC library.
- Calculus for Cranks, by Nets Katz. Available for free online
- Principles of Mathematical Analysis, third edition, by Walter Rudin.

Assessment

Breakdown of marks

- 15% Homework - one each week
- 25% Midterm - Wednesday October 19th during regular class time.
- 60% Exam - in the December exam period

Homework

- See the course webpage for details
- I expect to give around 10 or 11 homework assignments.
- Homeworks will be posted on Fridays and due on Thursdays at 11pm (ie around 6 days later)
- I will not accept late homework.
- There will be no "make up" homeworks.
- Instead your homework score will be taken from the best 8 homework assignments.
- Note that if you miss a significant number of homework assignments due to valid reasons then part of the weight of the homework will be put onto the exam.

Presentation of homework

- One of the goals of Mathematics 319 is to learn how to present and communicate mathematics precisely and correctly.
- Accordingly handwritten or messy homework will not be accepted.
- **Homework must be typeset and submitted as a PDF through Canvas**.
- I recommend that you use latex to prepare your homework
- I recommend using Overleaf (which you can do free of charge) or (if you feel up to the challenge) installing it on your own computer.

Midterm - October 19th

- See the course webpage for details
- It will be held during regular classtime.
- It will be 45 minutes long.
- It will cover all topics done in class up until that point in the term unless otherwise specified.
- Note - there is no "make up" midterm - if you miss the midterm due to valid reasons, the weight of the midterm is passed onto the exam.

Exam

- See the course webpage for details

- It will cover all topics done in class unless otherwise specified.
- The exam will be held in the usual December exam period.
- As is normal for UBC, the precise time and location of the exam will not be released until around mid-October.

General syllabus information

The Mathematics Department has standard syllabus information. This includes standardised policies for

- academic concessions (ie missed homework + midterm)
- academic integrity (ie cheating)
- registration issues (I have no control over anything to do with registration)
- misc student resources

You can find that information here