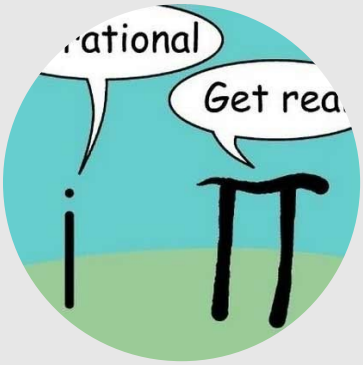

Introduction to Real Analysis

Math 311-H1

Teaching Assistant

Chloe Urbanski Wawrzyniak

Office Hrs: Fri 8-10am
LSH B-102B

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Lecture Info

Prereq: Math 300

Tues & Fri

12:00 - 1:20 pm

LSH B269

Workshop Info

Wed

12:00 - 1:20 pm

LSH B205

Overview

This course is a precise study of limits and related concepts. We will prove many of the theorems given in introductory calculus and study their implications in depth. Students will also work to improve their proof-writing skills and understanding of mathematical reasoning.

Academic Integrity

In this class, you will spend a lot of time working in groups, but you will still receive you own grade for the course, and will therefore need to do your own work. So, how do you know when the group work must stop, and the individual work begins? Follow the "Sauna Rule": If you work out problems with other students, do not copy the answers. Instead, go take a 30-minute sauna, and then write up the answer on your own without the aid of group work. Copying work that is not yours is plagiarism, even if the work was done as part of a discussion of a problem.

Chegg and Stackexchange are not acceptable sources of material. Solutions found to be taken from either of these sources will be reported to the university.

Appointments and Office Hours

If you schedule a meeting with me outside of normal office hours, you are expected to arrive on time. If you cannot make it, you are expected to give me sufficient notice. If you arrive to an appointment more than 10 minutes late, you have missed the meeting and need to reschedule. If you miss 3 meetings without notifying me, I reserve the right to not schedule any further meetings. I want to be flexible and available to provide help, but I ask that you are respectful of my time in return.

Email Policy

I understand that you need timely answers to your questions, and I ask that you understand that I have many commitments vying for my time and cannot answer emails at the drop of a hat. So, if you email me, I will reply to you within two business days. Business days mean Monday to Friday between 9am and 5pm. That means that if you email me late on Friday night, I will reply to you by 5pm on Tuesday. In most cases, I will be able to answer it sooner, but I cannot promise that. I also will not answer any emails sent less than 24 hours before an exam, except in case of an emergency.

I also expect you to act like a professional when writing emails. That means you should always include a subject and sign with your name. You should use complete sentences and punctuation. I also expect your emails to be phrased respectfully. You can disagree with me without attacking me, and I'll be happy to discuss your disagreements.

Quizzes

At the start of each workshop, you will take a short quiz. Each quiz will follow the same format:

- 3 multiple choice or true/false questions
- 1 fill-in-the-blank or short answer question
- 1 find-the-error question

These quizzes will test whether you know the vocabulary, standard examples, names and statements of important theorems, etc.

I don't offer makeup quizzes. If you miss class, then you've missed that quiz. To compensate for this policy, I'll drop the lowest two quiz grades at the end of the semester.

Tardiness to class is a huge pet peeve of mine, so quizzes will start promptly at the start of class and end 15 minutes into class. If you arrive 5 minutes late, then you only have 10 minutes to complete the quiz. If you arrive more than 15 minutes late, then you've missed the quiz.

Workshops

Each week, you will meet with me for one class period to work on problem sets in small groups. These problem sets will consist of a few problems which you will work on in groups during the Wednesday meetings.At the end of the session, I will tell you which *one* of those problems to write up. Your completed work will be turned in the following week. Your workshops will be graded out of 15 points, based on the rubric below. I will also drop the lowest workshop grade at the end of the semester.

Category	5 Points	3 Points	1 Point
Mathematical Accuracy	No computation errors. All relevant theorems were used and cited properly. No logical errors or missing components.	Overall correct with either few major errors or many smaller errors. These errors may be either computational or logical.	Some correct computation with no corresponding explanation. Alternatively, the correct start or main idea of a proof, without completing the proof (either correctly or at all).
Presentation	Written or typed clearly with correct formatting and labels. Important equations are given their own line and referenced as needed.	Written or typed with correct formatting. Equations are not referenced correctly or at all. Some typos.	Little-to-no mathematical formatting (for example, writing the word "theta", instead of the mathematical symbol θ).
Grammar	Proper English grammar. Typed in paragraphs with complete sentences. Proper punctuation and sentences start with a capital letter.	Explanations provided, but without proper capitalization or punctuation. Not always in complete sentences.	Some words to connect the computations, but never in complete sentences.

Late Workshops

In general, I do not accept late workshops. You must submit them at the start of class the week after they are handed out. However, you may turn in up to 3 workshops late. These workshops must be handed in within 24 hours of the original due date. You may either place them in my mailbox on the 3rd floor of Hill Center, give them to me personally, or slide them under my office door. If they are handed in more than 24 hours late, they will not be graded. Once you use this policy three times during the semester, I will not accept any late workshops from you for the remainder of the semester. In an extreme situation, such as hospitalization, when you would be unable to submit the work within 24 hours of the deadline, you may discuss this with me. I will not promise any exceptions will be made. However, I am willing to consider them in extenuating circumstances outside of the student's control.

A Note About LaTeX

You are *not* required to type your workshops, however you are highly encouraged to do so. If you plan to continue in Math, you will eventually need to type your work. Mathematicians use LaTeX to typeset their work. LaTeX is more like coding than typing, and it takes some time to learn it. The only way to get good at it is to practice. I'll provide resources on my website for those who want to learn and practice, and I'm happy to help with questions about LaTeX as well as content.

Frequently Asked Questions

I've heard this class is hard. Is it really?

Yes. This is one of the most difficult courses required of math majors.

If it's so hard, how can I possibly pass/get a good grade?

To be clear: I want every one of you to learn the material well enough to get the grade that you want, as does your instructor. We are providing lots of resources to help you learn the material. We will also discuss lots of strategies for studying during the workshop sessions. You are encouraged to attend office hours to get help, not just with workshops. I can help you with homework questions and with general understanding of the material.

Do you accept late workshops?

Sort of. See Late Workshops above.

I missed class. Can I schedule a makeup quiz?

No. But I do drop the lowest two quizzes at the end of the semester. See Quizzes above for more details.

Who grades my homework?

There is a grader for this class who only grades your homework, but their identity is purposefully hidden from you. If you have concerns about the grading of your homework, you should discuss it with myself or your instructor.

I disagree with the grade on my workshop. How do I fix it?

I'm always happy to discuss your graded workshops with you. If you want to discuss the grading, you must bring it to my attention within one week of receiving the graded paper back. For the sake of fairness, I will not increase your workshop grade unless there has been a mistake in my part. The point of homework and workshops are to practice the material – which often means making mistakes. By grading, I have the opportunity to help you learn from those mistakes. If you don't understand why something was marked incorrect, then you can't possibly learn from your mistakes, so you should absolutely ask about it.

Why do you have so many policies?

At the end of the day, you're here because you want a job, and employers value a university degree. While some of that is for content-specific knowledge (e.g. an accountant needs to learn accounting laws), I believe that you're here to learn so much more. This is an opportunity to learn professional skills such as communication, teamwork, and accountability. All of my policies are designed to (1) keep grading fair for all students, (2) help you most efficiently learn the material, and (3) help you to develop the habits and skills that will help to propel you forward in your career.

What is your research about?

My research is in Complex Analysis. As the name suggests, it's about analysis but with complex numbers rather than real numbers. Surprisingly, many ideas change considerably in complex numbers. I highly encourage you to take a course in the field if you have an opportunity. Obviously I'm biased, but I think it's a really beautiful and interesting field.

I'm majoring in math, but I don't know what I want to do when I graduate.

Great! You've made a great choice. You can do just about anything with a math degree, and employers love candidates who are trained in math. Not only are you "good with numbers", but you have learned how to solve complicated, abstract problems and communicate their ideas effectively. If you want to talk more specifically about what you can do with a math degree, stop by office hours!

The content in this syllabus is subject to change according to the discretion of the instructor and the TA.