

Math 70200: Functions of a Real Variable, Spring 2024

Lectures: Tuesdays and Thursdays, 9:30am–11:00am, in room 6417

Professor: Tobias Johnson (tobias.johnson@csi.cuny.edu)

Office: 4214.07

Text: *Real Analysis: Modern Techniques and Their Applications* by Folland.

Course Website: <http://www.math.csi.cuny.edu/~tobiasljohnson/70200/>

This website will contain all of my announcements. It also has a calendar for the class, which I update as the class goes.

Class overview: In short: we'll cover chapters 1, 2, 3, and 6 of Folland.

We start by building up measure theory and the Lebesgue integral. This theory was developed in the early 20th century to put analysis on a solid foundation. The idea of *measure* (i.e., area or volume) is intuitive and fundamental, but it's not possible to give a consistent notion of measure on all Euclidean subsets (look up the Banach-Tarski paradox). Measure theory solves this problem. And the Lebesgue integral turns the set of integrable functions into a complete metric space, letting us apply tools like functional analysis. This material is foundational and is used by nearly all working mathematicians in one way or another.

There will be homework due approximately weekly. We'll have a midterm and a final.

Office Hours: After class on Thursday, or by appointment.

Grading: Here is how I will weight each graded component of the class:

Category	Date	Percentage
Homework	see website	40%
Midterm	March 19th	20%
Final	tba	40%

Policy on illnesses and other excused absences:

If unavoidable circumstances cause you to miss the midterm, please let me know as soon as you can so we can discuss the situation. I will drop your lowest homework score to try to give you some flexibility if necessary.

How to succeed in this class:

Put lots of time and effort into the homework. Work together with other students but write up your homework on your own.

The Unexpected: Unexpected things happen to everyone, and the policies in this syllabus might not treat your particular circumstances fairly. If that's the case, please don't be afraid to bring it up with me, and I'll do my best to accommodate them.