

PMath 451/651 Measure Theory

Professor: Kenneth Davidson

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Office hours Starting Jan. 14th on Zoom.

- Mondays at 2:00 PM Waterloo time.
- Thursdays at 10:00 AM Waterloo time.

Textbook: G.B. Folland, *Real Analysis, modern techniques and their applications*, 2nd. ed.

Course notes: *Measure Theory, Notes for Pure Math 451* by Kenneth R. Davidson

Outline:

- (1) Measures
- (2) Measurable Functions
- (3) Integration
- (4) Differentiation and signed measures
- (5) L^p spaces
- (6) Some point set topology (time permitting)
- (7) Linear functionals on $C_0(X)$
- (8) A taste of probability (time permitting)

Grading

- Assignments are worth 65%.
- Final overall assessment, a timed open book assignment on Crowdmark, worth 35%.

How the course will run. The course will be entirely online. All materials will be available on Learn. There will be an introductory video to introduce me and explain things on Learn, and also on my webpage until Jan. 15.

My course notes will cover almost exactly what I will cover in the course. However Folland's book is great, and I highly recommend it.

Each Sunday night, I will post new video lectures for the upcoming week.

There will be regular assignments. They will be a mix of True/False, short answer and longer exercises. They must be submitted on Crowdmark before the due date.

Solutions to the assignments will be posted on Learn after the due date.

Piazza is an online forum for posting questions and answers. Use this to post questions that you have about the course and assignments. Also use it to answer questions of your classmates. I will 'approve' good answers and good questions, and add comments.

There will be two office hours each week. They will be run live on Zoom.

The final exam will be a wrap-up open book assignment. It will be a timed assessment on Crowdmark with a flexible start time on a date provided by the registrar. It will be a 2.5 hour exam, but you will have 3 hours to allow time to upload your answers.

Academic integrity: I am teaching the course assuming that you are taking it because you want to learn the material. This is a central course that is important for any subsequent analysis courses that you may want to take. It is in your interest and mine that you strive to learn the material yourself. That means not asking for or receiving too much assistance from classmates or from google. I hope that you enjoy the course and find it challenging, and respect the right of your classmates to do the same.