

609. Analysis II. (Spring 2021)

Instructor: Ryan Hynd (rhynd@math.upenn.edu)

Office Hours: Wednesdays 4:30 - 6:00pm EST

Office zoom room: <https://upenn.zoom.us/j/6821862203> (Links to an external site.)

Grader: Hunter Stufflebeam (hstuff@sas.upenn.edu)

Lectures: Tuesdays and Thursdays 1:30 – 2:50pm EST

Description: This is the second of a two-course graduate sequence in complex, real, and functional analysis. This semester, we will cover topics in real analysis (modes of convergence, product measures, n -dimensional Lebesgue measure, Lebesgue-Nikodym theorem, differentiation of measures, functions of bounded variation) and functional analysis (inner product spaces, normed linear spaces, Hahn-Banach theorem, open mapping and closed graph theorems, weak topologies and dual spaces, topological vector spaces, L^p spaces).

Zoom: This course will be completely online. The zoom link we'll use for all of our class meetings is

<https://upenn.zoom.us/j/92002522502?pwd=S3hmb24vT2hwSm9pYVVlUzJZdIZaQT09> (Links to an external site.)

and the passcode is 236229. I will also record each class session to the cloud.

Piazza: We will use Piazza as a forum to discuss topics outside of class. You should have received an email about this; in case you did not, you can access the course Piazza discussion here piazza.com/upenn/spring2021/math609 (Links to an external site.). Please direct all math related questions via this link (of course you can also ask questions in office hours).

Prerequisites: Math 608.

Required Textbooks: Real Analysis: Modern Techniques and Their Applications by Gerald Folland, and A Course in Functional Analysis by John Conway.

Grading: 54% Homework, 15% first exam, 15% second exam, 15% third exam, 1% participation.

Homework: 10 HW assignments consisting of problems from the textbooks. Your HW percentage grade will be "curved" by multiplying it 60/54 and taking the minimum of that number with 1; in a sense, this simulates dropping your lowest grade while not giving preference to any particular assignment.

HW policy: HW will be due on Thursdays and each assignment must be typed or very neatly handwritten and submitted online to the grader. Please do not make a habit of turning in HW late. You may collaborate on HW, but you must write your own solutions.

Exams: There will be three exams. See the list of important dates below and please mark your calendars. There will be no makeup exams. If you miss one of the first two exams for an appropriate reason, your other two exams will be weighted accordingly. If you miss two exams or the third exam, you will receive an incomplete.

Important dates:

January 21 first day of class

February 25 exam 1

March 8-12 Spring Break holiday

March 30 university holiday

April 1 exam 2

April 29 exam 3 (and last day of class)