

## Mat 570 — Real Analysis I — Fall 2023

<b>Line No.</b>	72632
<b>Time</b>	MW 10:30-11:45 AM
<b>Room</b>	WXLR A311
<b>Instructor</b>	Jack Spielberg
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<b>Phone</b>	Math Graduate Office: 965-3951
<b>Office Hours</b>	TBA, and by appointment.
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<b>Text</b>	Folland, <i>Real Analysis, 2nd edition</i> , Wiley1999

### Course Description

This is the first half of a year-long sequence in real analysis. The first few weeks concern the topology of metric spaces and uniform properties of continuous functions. The key topics are compactness, connectedness, and uniform convergence of continuous functions, including treatments of the Stone-Weierstrass approximation theorem and the Arzela-Ascoli theorem. The remainder of the semester, and the continuation in the spring, are devoted to abstract measure theory and integration. The sequence 570 - 571 is the basis for the graduate qualifier examination in Real Analysis, which is given in May.

The text for the course is Folland's *Real Analysis*, but notes on metric spaces will be provided for the first part of the course.

The course grade will be based on weekly problem sets, a midterm exam, and a final exam. However, students should take the point of view that working (and struggling with) the homework is the most important part of the course.

### Prerequisites

This is a graduate level course, but well-prepared undergraduates are welcome too. The formal prerequisite is Advanced Calculus, but the equivalent of ASU's sequence MAT 472-473 is strongly advised. At the least, some exposure to the topology of  $\mathbb{R}^n$ , and a high tolerance for abstraction, are necessary.

Questions about the course are welcome, and should be addressed to the instructor.