Introduction to Real Analysis Part 2 (Spring 2020)

1. Practical Information

1.1. Instructor.
- Name: Lam Pham
- Office: Goldsmith 312
- e-mail address: lampham@brandeis.edu
- Office hours: By appointment
- Course assistant: TBA

1.2. Lectures.
- Location: TBA
- Time: Mondays, Wednesdays, Thursdays 11:00-11:50am.

2. Course description

2.1. Aims. Math 110b is a follow-up to Math110a. It may be viewed as a precursor to Math 140a/b (Geometric analysis) & Math 141a (Real analysis); this is essentially a first course in differential geometry. The main goal of Math 110b is to develop a solid foundation of analysis and calculus in Banach and Hilbert spaces. Time permitting, we will also cover differentiable manifolds.

2.2. Topics and text. The main text for the class is (Loomis and Sternberg 2014). I will try to follow it but I will occasionally draw material from other references. The material for the exam is what is covered in class and the homeworks, plus reading. I aim to cover Chapters 3, 5, and 7–11; I will also introduce measure theory (Folland 1999, Chapters 1 & 2). A selection of references and their relevance to the course is provided below.

2.3. Reference texts and description. Comparable texts for the course are:
- Browder (1996, Chapters 8–14);
- Folland (1999, Chapters 1–2) for the measure theory;
- Munkres (1991);
- Spivak (1965);
- Boothby (1986, Chapters 1–6).

2.4. Prerequisites. The course assumes a working knowledge of linear algebra, e.g., at the level of (Loomis and Sternberg 2014, Chapters 1–2) and real analysis of functions of a single real variable. This includes metric space topology, sequences and series, different modes of convergence, continuity, differentiation, and the Riemann integral in \( \mathbb{R} \). For instance, background as in (Rudin 1976, Chapter 1 to 8) or (Browder 1996, Chapter 1 to 5) will be assumed.

2.5. Grading scheme. The grade will consist of the following:
- Homeworks: 10 %;
- Quizzes: 20 %
- Midterm: 20 %
- Final exam: 50 %.

2.6. Exam schedule.
- Midterm: Time and location TBA
- Final exam: determined by registrar.
References


