

Math 421/510 (Section 201)

Real Analysis II

2018W T2

INSTRUCTOR INFORMATION

- Instructor: Brian Marcus
- Email: marcus@math.ubc.ca
- Meeting time/location: MWF 11:00-11:50, MATH 126 (NOT in the Ponderosa classroom listed on the UBC course schedule)

MATH 126 is accessed through the card-controlled MATH 125. On the first day of class, Math dept. staff will be on hand to let you in to the room.

- Office: Math 218
- Office Hours: MWF 1:30-2:30, and by appointment.

COURSE INFORMATION

- Textbook: Gerald B. Folland, Real Analysis, 2nd edition.
- Course Outline: 5.1: Banach spaces, including L^p spaces: 5.2: Linear functionals on Banach spaces; Hahn-Banach theorem and corollaries: any Banach space has lots of continuous linear functionals. 5.5: Hilbert spaces -- has many properties of finite dimensional spaces. 5.3: Open mapping theorem, closed graph theorem and uniform boundedness principle 5.4: Topological vector spaces, weak topologies on Banach spaces, Banach-Alaoglu theorem, weak convergence of Borel probability measures. Riesz representation Theorems: characterization of dual spaces (spaces of cts. linear functionals) of certain Banach spaces (three different versions (Theorems 5.25, 6.15,

7.17 of Folland)). As time permits: Convexity and Krein-Milman Theorem, Ergodic theory

- Evaluation: 50% bi-weekly homework (due on Fridays) and 50% Final Exam
- Pre-requisites: Measure Theory (Math 420/507) A solid undergrad course in real analysis in metric spaces (convergence, continuity, open, closed, compact, Cauchy, complete) like Math 320-321, Linear algebra (vector spaces, linear independence, basis, dimension, linear transformations), like Math 223. and, ideally, a bit of general topology (chapter 4 of Folland); but we will introduce this as we need it).