MATH 421/510, Section 101, Spring 2013

Real Analysis II/ Functional Analysis

Time and place: T/Th 11:00-12:30, MATX 1102

Web page: http://www.math.ubc.ca/∼gustaf/M421

Text: G. Folland, *Real Analysis: Modern Techniques and Their Applications*, Wiley-Interscience, 2nd. ed., 1999.

General description: This cross-listed 1st-year graduate/4th.-year undergraduate course gives an introduction to functional analysis, core material which, together with the measure and integration theory covered in Math 420/510, provides the foundation for much of mathematical analysis. It is useful in many areas of pure and applied mathematics, including harmonic analysis, differential equations, probability theory, information theory, differential geometry, and mathematical physics.

Topics: roughly, Chapter 5, and parts of Chapters 6 and 9 of Folland. In brief,

- Banach spaces
- strong, weak and weak* topologies
- Hahn-Banach, open mapping and closed graph theorems
- Hilbert spaces
- spectral theory of bounded operators
- theory of distributions

Pre-requisites: UBC Math 420/507 or equivalent.

Grading:

- bi-weekly (approximately) homework assignments: 50 %
- midterm test: 50 %

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