

MATH 7321
Functional Analysis
Spring 2017

- Class:** Tu&Th 1pm-2:30pm, AH 205
- Instructor:** Bernhard Bodmann, *bgb* @math.uh.edu
- Office:** PGH 604; M 1-2pm, W 10:30-11:30am
- Content:** This course is the second part of a two semester sequence covering the main results in functional analysis, including Hilbert spaces, Banach spaces, topological vector spaces such as distributions, and linear operators on these spaces.
Functional analysis combines two fundamental branches of mathematics: analysis and linear algebra. Limiting arguments from analysis become essential in order to resolve questions from linear algebra in infinite-dimensional spaces. In addition, there are close connections between algebraic and topological properties in such spaces that deepen our understanding even in the finite dimensional case.
Topics covered in the second part of the course sequence include: Duality in Banach spaces; Spectral theory (Banach algebras and their representation, commutativity, resolutions of the identity, spectral theorem, eigenvalues of normal operators, positivity); and Distributions (linear functionals on topological vector spaces, working with distributions, localization theorems).
- Prerequisites:** Graduate standing. Linear algebra (Math 4377) and Real Analysis (Math 4331/4332). Knowledge of Lebesgue integration is desirable.
- Text:** Walter Rudin, Functional Analysis, 2nd edition, McGraw Hill, 1991.
- Assignments:** You will be asked take notes and typeset them in LaTeX.
- Final Grade:** Based on the quality of notes.