

## Math 6338: Real Analysis II

The following topics are representative of those covered in this course.

- Basics of measure theory.
- $L^p$  spaces:  
Completeness, Riesz representation and the dual of  $L^p$ , Hölder's, Jensen's, and Minkowski's inequalities.

Topological spaces, normed vector spaces, compact spaces and the Tychonoff theorem. Linear functionals, Banach and Hilbert spaces, orthonormal bases and orthogonal projections in Hilbert spaces.

Basic theorems of functional analysis, including the Hahn-Banach, Baire Category, and open mapping theorems and the uniform boundedness principle.

### Reference:

Folland: *Real Analysis*