Math 6337: Real Analysis I

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

- Measures:
  Sigma-algebras, measures, outer measures (on abstract measure spaces).
  Borel measures on $\mathbf{R}^n$.

- Integration:
  Measurable functions, integrals, monotone convergence theorem, Fatou's lemma, dominated convergence theorem, Fubini's theorem (on abstract spaces). Lebesgue integral on $\mathbf{R}^n$.

- Decomposition and differentiation of measures:
  Signed measures, Lebesgue-Radon-Nikodym theorem, functions of bounded variation.

Reference:

- Folland: *Real Analysis*