

Math 114, Fall 2017

Instructor: H.-T. Yau, Science Center 240, htyau@g.harvard.edu

Office Hours: Tue, Thur 11:30-12:30 in Science Center 240.

Prerequisites: This course requires multivariable calculus and the ability to write rigorous proofs.

Textbook: E. Stein: Measure theory, Integration and Hilbert space.

Grade: Final 40%, Midterm 30%, Homework 30%

Syllabus:

- A. Basic measure theory: Stein's book 1.1-1.4 and 2.1-2.3
- B. L_p Space, e.g., Rudin: Chap 3 of Real and complex analysis.
- C. Differentiation of functions: Lebesgue differentiation theorems. Stein's book 3.1-3.3.
- D. Hilbert space, Stein's Chap 4.
- E. If time permitted, we will cover some Fourier series and Fourier transform from Stein's book on Fourier analysis.