

MATH 679: Topics in Analysis/Potential Theory: Fourier Analysis

Course Syllabus for the Spring 2019

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Office Hours: TR 2:00 p.m. – 2:30 p.m. and 4:30 p.m. – 5:30 p.m., and by appointment.

Prerequisite: Math 315 or equivalent.

Course Text: Elias M. Stein and Rami Shankarchi, *Fourier Analysis - an Introduction*, Princeton Lectures in Analysis I, Princeton U. Press, Princeton NJ, 2003.

Course Description:

- Genesis of Fourier analysis
- Basic properties, convergence and some applications of Fourier series
- Fourier transform on \mathbf{R} and \mathbf{R}^d
- Basics of sample theory
- Radon transform
- Fourier analysis on $\mathbf{Z}(N)$

Topics: Chapters 1-6, and part of Chapter 7.

Homework: There will be six homework assignments. Each assignment must be typed using some kind of software. LaTeX is preferred but not required.

Exams: There will be a take-home midterm assigned after Spring break and due the following week and a take-home final exam assigned on the last day of classes and due on Dec. 12 at 1:30 p.m. Both exams must be typed.

Note: Homework and exams are not to be intended as group assignments. It is expected that any work you submit is done by you alone, but you will be allowed to use the text and your class notes.

Grading: The homework, the midterm, and the final constitute 60%, 20%, and 20% of the final grade, respectively.