

Math 1570: Fourier Analysis

Spring, 2016

Tu, Th 4:00–5:15, Allen 103
Instructor: Frank Beatrous
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Overview

The idea of splitting an “arbitrary” periodic function, even one which is highly irregular, into a sum of sine waves first appeared in Fourier’s 1822 treatise *Théorie analytique de la chaleur*. A great deal of modern analysis is rooted in this seminal idea. It is the underlying principle that enables the high tech magic of the cell phone, MRI, and digital television. In this course we will put Fourier’s key idea on a firm mathematical foundation, and develop some of its important consequences and applications.

Prerequisites

Real analysis at the level of Math 0420 and linear algebra.

Text

Required text: E. Stein and R. Shakarchi, *Fourier Analysis, an Introduction*, Princeton University Press, Princeton, NJ, 2003.

The course covers Chapters 1–5.

Secondary references

H. Dym and H.P. McKean, *Fourier Series and Integrals*, Academic Press, 1972.

W. Rudin, *Principles of Mathematical Analysis*, third edition, McGraw Hill, 1976.

Class Web Site

<http://courseweb.pitt.edu>

Office Hours

Tu, Th 2:00 - 3:30 or by appointment

Grading

Homework:	1/3
Midterm (February 25):	1/3
Final (April 26, 8:00–9:50 am):	1/3

Homework Policy

Homework is due in class on the scheduled due date. Late homework assignments will not be accepted. You may work with other students on homework and use library resources, but each student must write up his or her solutions independently. Copying solutions from other students will be considered cheating, and handled accordingly.

Academic Integrity

Cheating/plagiarism will not be tolerated. Violations of the School of Arts and Sciences Policy on Academic Integrity will result in a minimum sanction of a zero score for the quiz, exam or paper in question. Additional sanctions may be imposed, depending on the severity of the infraction.

Disability Resource Services

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and the Office of Disability Resources and Services, 140 William Pitt Union (412) 624-7890 as early as possible in the term.