

Lei Zhang

Department of Mathematics

College of Liberal Arts and Sciences

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# Course 2 (Spring 2025 ) MAP 4413 Fourier Series and Transformations

Course Number: 12615 Section: 7521

Time and Location

MWF 3, Little Hall 235 9:35am-10:25am

Office Hour: Thursday 11:00am-12:00pm.

**Credit: 3**

**Prerequisites: Calculus, Linear Algebra and Elementary Differential Equations**

## Description and Goals

This course covers the basic theory of Fourier Analysis assuming little mathematical maturity of students. I will present basic properties of Fourier series followed by the discussion of convergence, transform on  $\mathbb{R}$  and  $\mathbb{R}^d$  ( $d$  is the dimension of the space). Finally I will explain the Finite Fourier Analysis and applications of Fourier Series in medical sciences.

## Homework/Textbook

Homework will be regularly assigned.

The textbook we shall use is Fourier Analysis: An Introduction (Princeton Lectures in Analysis, Volume 1)

by Elias M. Stein and Rami Shakarchi

**Final Grades:** There will be three mid-term exams ( 20% each) and a comprehensive final exam (30%), all based on suggested homework problems. All the homework grades will be factored as 10% of the total grade.

The tentative arrangement for the four exams is

Exam 1 February 3 (Monday)

Exam 2 March 3 (Monday).

Exam 3 April 7 (Monday)

Final exam: May 2 (Friday) 10:00am-12:00pm Little 235

### A weekly schedule of topics and assignments:

Weeks 1 Chapter 1. week 2-5 Chapter 2, Week 6-8 Chapter 3, Week 8-11 Chapter 4, Week 12: Chapter 5, Week 13-16 Chapter 7.

### Grading Scale:

Grades will then be assigned based upon the following scale: A 88% – 100% B+ 83% – 87% B 77% – 82% C+ 72% – 76% C 67% – 71% D 55% – 66% E 0% – 54%

### Attendance and Late Policy

Attendance of lectures is voluntary. Make-up exams can be allowed if the student can provide documents to verify the EXTREMELY urgent nature of his/her absence.

ABSOLUTELY NO MAKEUPS WITHOUT MEDICAL DOCUMENTATION.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at :

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

### Students that need accommodation

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

### Information on current UF grading policies for assigning grade points:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

### Information on course evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://gatorevals.ua.ufl.edu/> Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

### Requirements on class attendance, make-up exams and other things:

Students are strongly encouraged to attend all the lectures. Make-up exams can only be given under extremely rare situations and the students must provide convincing documents to show the extremely urgent nature of absence. Look at the following link

for guidance:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

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