

MATH 2025: Integral Transforms and Their Applications, Fall 2010

INSTRUCTOR & CONTACT INFO : Tadele Mengesha

E-MAIL: mengesha@math.lsu.edu,

OFFICE 337 Lockett Hall,

PHONE: 578-1675

LECTURES: T TH 9:10-10:30AM in 244 Lockett Hall

COURSE WEBSITE: <http://www.math.lsu.edu/~mengesha/Math2025/math2025.html>

OFFICE HOURS: T TH 11:00-12:30pm or By appointment.

PREREQUISITE: MATH 1552 or MATH 1553.

TEXTBOOK:(*Required*) *Wavelets Made Easy (1999)* by Yves Nievergelt.

In addition, we will also use Prof. Olafsson's Fall 2004 lecture notes that I will make it available online. These notes will be used as an introduction to some of the chapters of the textbook.

HOMEWORK/QUIZ: A list of homework problems in the textbook and out side of the textbook will be suggested. A selected of them will be collected on a regular basis. Quizzes will be given regularly as well. I encourage you to discuss homework problems with classmates and contact me when you need help. However, you are expected to individually write up your solutions for the homework you are handing in . Your homework papers must be neat and easy to read. Late homework is not accepted.

GRADING: There will be two in class tests contributing a total of 50% and a comprehensive final exam contributing 35% towards the final grade. Homework/Quizzes cover the remaining 15%.

Exam dates:

Test 1. Thursday, September 30

Test 2. Tuesday, Novemebr 2

Final Exam. Wednesday December 8, (3:00pm- 5:00pm)

Grading scale:

A	B	C	D	F
90-100	80-89	70-79	60-69	<59

COURSE OUTLINE : (Catalog Description:) Introduction to mathematical proofs and structures using selected topics from analysis; series of functions, Fourier series, Fourier integrals, and introduction to wavelets; applications in differential equations and signal processing.

Specifically we will cover the following chapters of the textbook.

- Chapters 1: Haar's Simple Wavelets
- Chapter 2: Multidimensional Wavelets and Applications
- Chapter 3: Algorithms for Daubechies Wavelets (time permitting!)

- Chapter 4: Inner products and orthogonal projections
- Chapter 5: Discrete and Fast Fourier transforms

We will also complement these chapter with Prof. Olafsson's Fall 2004 lecture notes.

Some notes:

Attendance: The Math 2025 attendance policy will follow the University attendance policy.

Retain all graded tests, and homework up to the end of the semester. Your grades will be posted on Moodle. Please contact me when you see any discrepancy.

Please do not use **cell phones** during class in any form (voice, text messaging, calculator).

Information on this syllabus may change by e-mail or verbal announcement made in class.

Students with Disabilities: Any student with a documented disability needing academic adjustments or accommodations is requested to speak with me during the first week of class. All discussions will remain confidential.