

MIEG 2051 & ESTR2360

Fourier Analysis with Engineering Applications

Introduction

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September 2025

Lectures

The course will be given by **Prof. Chandra NAIR**.

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Class Timings

- **Tuesdays** from 8:30 am to 10:15 am, in WHY 504
- **Thursdays** from 9:30 am to 11:15 am, in MMW 704

Office hours

- **Chandra NAIR**: Wed: 3:30-4:30, SHB 811
- **Zhaobang ZHU**: TBA, SHB 805

Course material

Lecture slides

- available on *Piazza* and *Blackboard*

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Course outline

- Overview of Signals and Systems
- Linear Time-Invariant systems
- Fourier Analysis
- Continuous-time Fourier transform
- Discrete time Fourier transform
- Z-transform
- Laplace transform

How to clear your doubts

Office hours (will replace tutorials)

- Instead of delivering another copy of lectures as tutorials; please make use of the office hours.
- Advantages:
 - You can ask your questions; things that are not clear to you
- Disadvantages:
 - You need to be proactive

Course tutors for this class

- **Zhaobang ZHU**, zz024@ie.cuhk.edu.hk

Office hours for the tutor: TBA

- These are *important* hours
- Meant for one-on-one discussions to clarify your understanding

Online course software

PIAZZA (www.piazza.com)

- A software with mobile phone access
- Please enroll: <https://piazza.com/cuhk.edu.hk/fall2025/mieg2051estr2360>
- Main discussion forums will be hosted there

BLACKBOARD <http://elearn.cuhk.edu.hk/>

- Login using your CUHK Computing ID and CWEM password

Main communication channels between teachers, tutors, and students

- General information/announcements: **Announcements**
- Class related discussion: [PIAZZA](#)

Organization

- Homeworks will be assigned *regularly* (roughly 7-9 in the semester)
- **Best 5** homeworks will be counted to the final grade

Grading

- 1 A weighted numerical score
 - Homeworks (and Quiz(?)) 15%
 - Class and Online forum participation 5%
 - Two midterm examinations $(2 \times 20\%) = 40\%$
 - Final examination 40%
- 2 A threshold score for each component (and/or midterms)
 - Homework: 8/15
 - Class and forum participation: 2/5
 - Midterms: 2/20 (each)
 - Final: 5/40

Example

Student A: Homework 10/15, Class and forum participation 2/5, Midterms 23/40, Final 2/40 (Score: 37/100) (**FAIL**)

Student B: Homework 8/15, Class and forum participation 4/5, Midterms 15/40, Final 8/40 (Score: 35/100) (**PASS**)

Exceptions to the threshold will be made only under extreme circumstances

Midterm and final examinations

Examination details

- Midterm 1: 25 September 2024 (18:30-20:00) SHB 801
- Midterm 2: 30 October 2025 (18:30-20:00) SHB 801
- Each midterm covers roughly one-month lecture material
- The final examination covers the three-month lecture material
- *Closed-book* and *closed-notes*; necessary non-standard formulas will be provided
- Students are expected to be able to *apply* concepts/methods, replicate them, not to memorize complicated formulas
- **IMPORTANT:** The exam questions will test *concepts* taught in lectures; some of these concepts will be reinforced using homeworks; however, the exam questions will not be similar to those in homeworks

ELITE Students (ESTR 2360)

Information

- This class will be open to elite students
 - Potentially no grading penalty (explained below)
 - Extra exercises for elite students
 - Starred (*) questions in midterm examinations would be compulsory for elite students (extra time)
 - Grade will be based on answers to non-starred questions
 - If you are not performing up to par in the Elite work, I will inform you and you can change to regular stream before deadline (1st March)
- Benefit: You will learn more (beneficial for higher studies)
- Your knowledge will be more complete
- Encourage every eligible student to participate

Policy regarding use of AI tools and or collaboration

Use only with explicit acknowledgement

- In this course, collaboration with your classmates to solve homework problems is encouraged. However, you must hand in the solutions in your hand-writing.
- Use of AI tools is also allowed. But you have to acknowledge their use explicitly.

Extra material

- **Math background:** www.khanacademy.org

- **Book**

Oppenheim, Willsky, and Nawab,
Signals and Systems 2nd edition, Prentice Hall

- **Online** (MIT Open courseware)

<http://ocw.mit.edu/resources/res-6-007-signals-and-systems-spring-2011/video-lectures/s>