EE 261 - The Fourier Transform and Its Applications

Summer 2024

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Lectures: Mondays and Wednesdays between 9:45-11:15am at Thornton 110.

Course Textbook: Lectures on the Fourier Transform and its Applications, by Prof. Brad Osgood.

Course Grading: Three main components.

- Homework: 40%
  - Six homeworks, each with 3-4 questions
  - Homeworks are released on Monday and are due Sunday.

- Midterm: 30%
  - Scheduled for week 6
  - Take-home exam scheduled for 90 minutes
  - Open book, open written notes. External sources such as the Internet, other individuals, or AI-chatbots are not allowed.

- Final: 30 %
  - Scheduled for week 8
  - Take-home exam scheduled for 120 minutes
  - Open book, open written notes. External sources such as the Internet, other individuals, or AI-chatbots are not allowed.

Late Day Policy: Homework assignments are expected to be turned in by 11:59 pm (Pacific Time) on Sundays of the matching week– more information is provided in the assignment sheets. Late submissions result in 5% deduction for each day overdue.

Weekly Schedule:

- Week 1 (Jun 24 - Jun 30)
  - Lecture 1: Chapter 1 - Fourier Series
  - Lecture 2: Chapter 1 - Fourier Series
  - Homework 1 out

- Week 2 (Jul 1 - Jul 7)
  - Lecture 1: Chapter 1 - Fourier Series & Fourier Transform
  - Lecture 2: Chapter 2 - Fourier Transform
  - Homework 1 due
  - Homework 2 out

- Week 3 (Jul 8 - Jul 14)

    - Lecture 1: Chapter 2&3 - Fourier Transform & Convolution
    - Lecture 2: Chapter 3 - Convolution
    - Homework 2 due
    - Homework 3 out

- Week 4 (Jul 15 - Jul 21)

    - Lecture 1: Chapter 4 - Distributions and Their Fourier Transforms
    - Lecture 2: Chapter 4 - Distributions and Their Fourier Transforms
    - Homework 3 due
    - Homework 4 out

- Week 5 (Jul 22 - Jul 28)

    - Lecture 1: Chapter 5 - δ at Hard Work
    - Lecture 2: Chapter 6 - Sampling and Interpolation
    - Homework 4 due
    - Homework 5 out

- Week 6 (Jul 29 - Aug 4)

    - Lecture 1: Chapter 7 - Discrete Fourier Transform
    - Lecture 2: Chapter 7 - Discrete Fourier Transform
    - Midterm Exam

- Week 7 (Aug 5 - Aug 11)

    - Lecture 1: Chapter 8 - Linear Time-Invariant Systems
    - Lecture 2: Chapter 8 - Linear Time-Invariant Systems
    - Homework 5 due
    - Homework 6 out

- Week 8 (Aug 12 - Aug 18)

    - Lecture 1: Chapter 9 - n-Dimensional Fourier Transform
    - Lecture 2: Chapter 9 - n-Dimensional Fourier Transform
    - Final Exam
    - Homework 6 due