6.300: Signal Processing

Retrospective

Final Exam

- on Friday, May 15
- from 9:00 a.m. to 12:00 p.m.
- in Walker Memorial (50-340)
- `https://sigproc.mit.edu/spring26/q3_info`

Please fill out a **subject evaluation** for this class at https://registrar.mit.edu/classes-grades-evaluations/subject-evaluation by Friday, May 15 at 9:00 a.m.

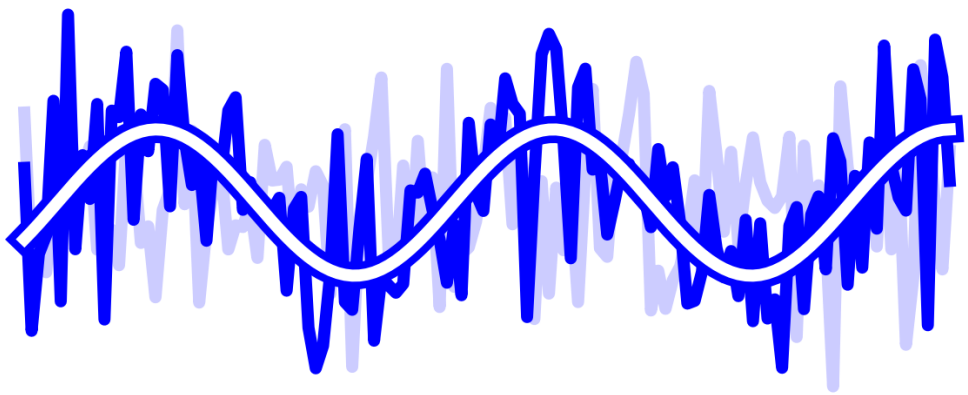
May 12, 2026

Retrospective

Signals convey **information**.

- audio: acoustic pressure as a function of time t
- images: intensity as a function of space x, y

Signal processing lets us distill and modify information.



By now, we hope that you're better able to . . .

- Make and analyze models of signals and systems.
- Apply mathematics and computation to solve problems.
- Understand real-world applications of signal processing.
- ~~Do "matching problems."~~

Lecture and Recitation Retrospective

Fourier series: Frequency representations for periodic signals

- **02/03:** Fourier series for continuous-time signals
- **02/05:** Using symmetry to simplify Fourier series calculations
- **02/10:** Fourier series — now with complex exponentials!
- **02/12:** Sampling and aliasing (i.e., discretizing time)
- **02/17:** Presidents' Day
- **02/19:** Fourier series for discrete-time signals

Fourier transforms: Frequency representations for all signals[1]

- **02/24:** Blizzard of 2026
- **02/26:** Fourier transform for continuous-time signals
- **03/03:** Quiz #1
- **03/05:** Fourier transform for discrete-time signals

Systems: Analyzing and designing systems for processing signals

- **03/10:** Systems (e.g., linearity, time-invariance, diff. equations)
- **03/12:** Unit sample/impulse response and convolution
- **03/17:** Frequency response and filtering
- **03/19:** Communication systems (e.g., Fourier transform duality)

[1] Not all, but a lot.

Lecture and Recitation Retrospective

Discrete Fourier transform: Good for numerical computation

- **03/31:** Relations among discrete-time Fourier representations
- **04/02:** Frequency resolution, circular convolution, impulse trains
- **04/07:** Fast Fourier transform (FFT) algorithms
- **04/09:** Short-time Fourier transform (i.e., sequence of transforms)
- **04/14:** Speech processing (e.g., source-filter model of speech)
- **04/16:** Quiz #2
- **04/21:** Quiz #2 retrospective

Multidimensional signal processing

- **04/23:** Two-dimensional Fourier transforms
- **04/28:** Two-dimensional Fourier transforms and convolution
- **04/30:** Image processing with the discrete Fourier transform
- **05/05:** Data compression with the discrete cosine transform
- **05/07:** Fourier transforms and magnetic resonance imaging
- **05/12:** Synthetic aperture optics (i.e., Fourier optics)
- **05/15:** Final examination

"**Fourier transforms** make the world go round."

Subjects to Consider Next

6.3010	Signals, Systems, and Inference
6.7000	Discrete-Time Signal Processing
18.085	Computational Science and Engineering
18.103	Fourier Analysis

Circuits and Electronics

6.2000	Electrical Circuits: Modeling and Design

Dynamical Systems and Control

2.004	Dynamics and Control II
6.3100/3102	Dynamical System Modeling and Control Design

Communications

6.7410/7411	Principles of Digital Communication
16.36/363	Communication Systems and Networks

Waves, Antennas, and Sensing

2.065/066	Acoustics and Sensing
6.2300/6300	Electromagnetics
6.7020	Adaptive Array Processing
8.03	Physics III

Subjects to Consider Next

Audio Processing

6.8620	Spoken Language Processing
21M.387/587	Fundamentals of Music Processing
21M.389/589	Studies in Music Technology and Computation

Imaging and Image Processing

2.71/710	Optics
6.4800	Biomedical Imaging with MRI
6.7010	Digital Image Processing
6.8370/8371	Digital and Computational Photography
6.8800/8801	Biomedical Signal and Image Processing
6.8810	Data Acquisition and Image Reconstruction in MRI
6.C27/C67	Computational Imaging: Physics and Algorithms

Probability, Statistics, Inference, and Machine Learning

6.3900	Introduction to Machine Learning
6.7800	Inference and Information
6.S899	Learning Time Series with Interventions
6.S955	Machine Learning for Signal Processing
18.065	Matrix Methods in Data Analysis, Signal Processing, and Machine Learning

Subject Evaluation and Survey

We want to present course material in a way that encourages a deep **technical understanding** while also being **fun and engaging**. We need your help and your feedback in order to make that happen.

Please use the next **10 minutes** to fill out a subject evaluation and our end-of-semester survey.

Subject evaluation: Go to https://registrar.mit.edu/classes-grades-evaluations/subject-evaluation.

Survey: https://sigproc.mit.edu/spring26/survey/

Remember to **submit** your responses!

After you have finished, we will have an open discussion.