Weber State University
Fall 2025

ECE 3210: Signals and Systems

Lecture 1: Introduction

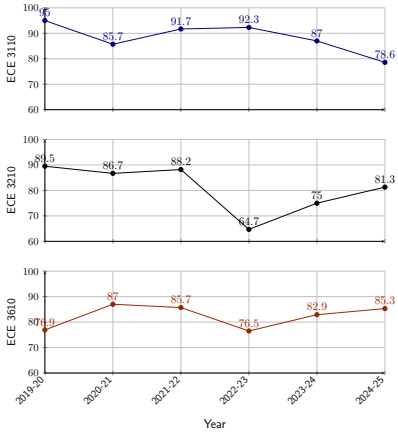
August 24, 2025

Who am I?

- Instructor:
  - Eric Gibbons
  - ericgibbons@weber.edu
- Office:
  - NB 245-J (the one with the big ski trail sign)
  - Official office hours are posted on Canvas and webpage
  - `faculty.weber.edu/gibbons`

Is this the hardest class ever?!?!?

- No.
- The pass rates are in line with other courses in the junior year.
- This course is challenging, but it is taught at the national standard.
- Make sure you are up-to-date with the following:
  - Python (no C programming!)
  - Differential equations
  - Complex numbers (trigonometry)
  - Circuit analysis



Are the meanest person in the university?!?

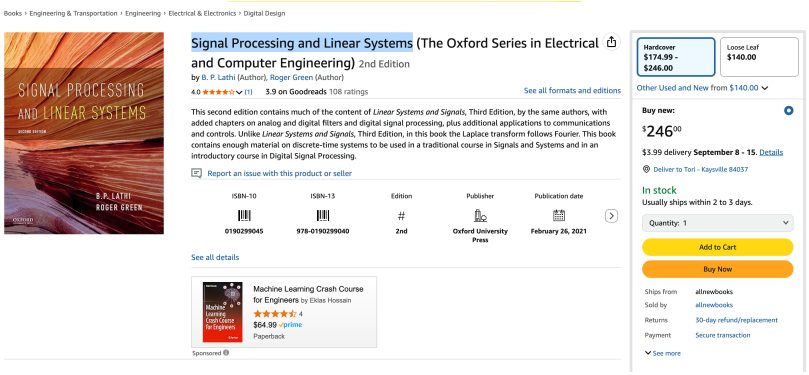
- No.
- I have told I have an uninviting vibe.
- I *hate* arbitrating policy exceptions, so I avoid it by sticking to the rules laid out in the syllabus.
- This keeps things fair for everyone.
- I am always open to feedback and willing to improve.

What's with the scar?

- Because you might speculate where the inverted "U" on the side of my head came from...
- I got it from a waterskiing accident when I was 17 years old.
- The scar is from a craniotomy (skull reconstruction) surgery.

Textbook

- We will use the text book *Signal Processing and Linear Systems* by B.P. Lathi, 2nd edition.
- This book is very expensive!
- Homework is *not* from the book, so you are welcome to use previous editions if you can find them.



Assignments

- Weekly assignments.
- Assignments are distributed via GitHub as Jupyter Notebooks (i.e., Python).
  - Jupyter allows you to visualize your work.
  - Builds a bit of programming experience.
- Problems are largely old exam questions.
- Graded on correctness.
- NO LATE SUBMISSIONS.
- Occasional pop quizzes if attendance slacks.

Labs

- We will have weekly labs.
- You will work in groups of two (NOT three).
- Most labs will be hardware-based (you will get a lot of practice building op-amp filters).
- There will be occasional extra credit lab assignments.
- You can find the lab exercises in the "Lab Manual."

Lab reports and LaTeX

- All lab reports must adhere to a standard LaTeX format.
- LaTeX is a typesetting language that is widely used in academia, particularly in the fields of science and engineering where there is a lot of math involved.
- It is not a word processor like Microsoft Word or Google Docs, you edit a plain text file and then compile it to produce a formatted PDF.
- There are a lot of resources to get up to speed with LaTeX, but the easiest way to start is to download the template zip file, and upload it to Overleaf.
- Overleaf is a cloud-based LaTeX editor that makes it as easy to write LaTeX as it is to write in Word. (And it is free!)
  - `https://www.overleaf.com/`

Late Work

- No late work accepted.
- If you miss an assignment or lab, you get a zero.

Exams

- There will be two midterms and one final.
- Exams will be closed book.
  - For the first exam you can take one page of notes.
  - For the second exam you can take two pages of notes.
  - For the final exam you can take three pages of notes.
- Exams will be in the testing center.
- You may use a graphing calculator.

Grading

- Homework: 15%
- Labs: 20%
- Midterms (each): 20%
- Final: 25%

Note: Each homework is associated with a particular exam (see schedule). If your score on that exam exceeds the homework average for the homeworks associated with the exam, the exam grade will replace the homework grade. The opposite is not true. If you score below the homework average on the exam, the homework grade will be used. *Note:* Canvas can't handle this kind of grading scheme, so I will do it manually

at the end of the semester. The formula is simple, so please compute it yourself to check to see where you are in the semester.

Office Hours

- If you have questions, please come to office hours.
- I will be likely be working on something else, so if it takes me a second to switch gears, don't take it personally.
- I am here to help you, so please don't hesitate to ask for assistance in office hours, before or after class, or during lab.
- I will not do your homework for you, but I will help you understand how to do it.
- I will also hold recitations for during office hours (likely in the conference room) at Mondays at 3PM and Tuesdays at 8AM

Schedule

Week	Material	HW	Lab
exam coverage: mt01			
8/25	1. Introduction to signals (1.1-1.6) 2. Systems, zero input response (1.6-1.8, 2.1-2.2)	hw01	lab01: Lab basics
9/1	1. Labor Day—no class 2. Impulse response, zero state response, convolution (2.3-2.4)	hw02	
9/8	1. Graphical convolution, system stability, and behavior (2.4-2.6) 2. Orthogonal signals and correlation (3.1-3.3)	hw03	lab02: Impulse response
9/15	1. Fourier series (3.4-3.7) 2. Fourier transform (4.1-4.2)	hw04	lab03: Convolution
9/22	1. Fourier transform properties (4.3) 2. Signal transmission through a system (4.4-4.6)	hw05	lab04: Fourier series and THD
exam coverage: mt02			
9/29	1. Review for Exam 1 2. Windowing and sampling (4.9, 5.1-5.2)	hw06	lab05: LTI response to periodic signal
10/6	1. DFT (5.5) 2. FFT (5.6) **mt01**	hw07	lab06: DSB-SC
10/13	1. Laplace transform (6.1) 2. Laplace transform properties (6.2)	hw08	lab07: Sampling
10/20	1. Solving electric circuits with Laplace (6.3-6.4) 2. Block diagrams (6.5)	hw09	lab08: Shazam
exam coverage: final			
10/27	1. Realization with op-amps (6.6) 2. Review for Exam 2	hw10	lab09: Cardiac signal processing
11/3	1. System response and Bode plots (7.1-7.2) 2. Butterworth and Chebyshev (7.5-7.7) **mt02**	hw11	
11/10	1. Discrete-time signals (8.2-8.4) 2. Discrete-time systems, zero-input (9.1-9.4)	hw12	lab10: System realization and frequency response
11/17	1. Discrete-time systems, zero-state (9.5-9.6) 2. DT signal processing with the DTFT (10.1-10.4, 10.6)	hw13	lab11: Filter design
11/24	1. Z-transform (10.7, 11.1-11.2) 2. No lecture—Thanksgiving	hw14	
12/1	1. Z-transform solution (11.3-11.4) 2. Final review	hw14	

Course Documents

- All course documents will be distributed via GitHub
  - `https://github.com/wsu-ece3210/course_documents`
- Please check the repository regularly for updates.
- You can directly download each of the documents, or you can clone the repository to your computer.