Iowa State University

Signals & Systems II

ee 324 • 1227 Hoover • M W F 2:10–3 • Spring 2019

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Prerequisite

EE 224 (Signals and Systems I) or knowledge of: continuous-time and discrete-time signals, linear time-invariant (LTI) systems, convolution, Fourier transforms.

Textbook

S. Haykin and B. Van Veen, Signals and Systems, 2nd ed. New York: Wiley, 2003.

Lab

Location: 2061 Coover
Instructor(s): Jasleen Grover, Evan Mandle, Jake Asmus

section	lab time
A	Tue 10:00 AM - 12:50 PM
C	Wed 3:10 PM - 6:00 PM
D	Wed 6:10 PM - 9:00 PM

After each lab session, you will write up a brief lab report (due no later than the start of the next lab session). You are encouraged to discuss ideas with each other, but are expected to complete your own work and write up your report independently. Your lowest two (2) lab scores will be dropped while calculating the final grade. This is meant to safeguard you against unexpected illness, travel, etc. Late lab reports will *not be accepted*.

Homework

Your lowest two (2) homework assignment scores will be dropped while calculating the final grade. Again, this is meant to protect you against unexpected events. Late submissions *will not be accepted*.

Quizzes

Quizzes are evaluated based on participation only (i.e., it is OK if you do not get the correct answer as long as you have made a reasonable attempt). Your lowest quiz score will be dropped for the final grade.

Grading

15% homework assignments
15% quizzes
20% Lab assignments
30% Midterm exams
20% Final exam.

Course Objectives

- Analyze continuous- and discrete-time systems in frequency domain using Laplace and Z transform.
- Design digital filters and feedback control systems.

Outline

1. Review of Signals and Systems I (EE 224)
   - signal representations,
   - LTI systems, convolution,
   - difference equations.
2. Laplace Transform
   - properties,
   - region of convergence,
   - transfer functions,
   - poles/zeros, stability.
3. Z Transform
   - properties,
   - region of convergence,
   - transfer functions,
   - poles/zeros, stability.
4. Filter Design
   - infinite and finite impulse response filters.
5. Feedback Systems
   - sensitivity,
   - stability criteria, root-locus plots,
   - Bode plots.

Collaboration Policy

You are encouraged to collaborate on lab and homework assignments. However, in both cases, you must (a) clearly acknowledge your collaborator, and (b) compose your final write-up in your own words. If two assignments are obviously identical, then both will automatically receive a score of zero (0). Please contact me in case any clarifications are necessary.

Disability

If you have a documented disability and anticipate needing accommodations in this course, please make arrangements to meet with me soon. Please request that a Disability Resources staff send a student academic accommodation request (SAAR) form verifying your disability and specifying the accommodation you will need.