ECE 312: Linear Systems Analysis II, Spring 2023

Time and Location:
TR 2:00 PM -- 3:15 PM, Stadium 1204

Instructor:
Ali Pezeshki
Contact Information: <Ali.Pezeshki@colostate.edu>
Office: Engr. C103F

Pezeshki's Office Hours:
Tuesdays: 11:30 AM -- 12:30 PM, Engr. C103F
Wednesdays: 10:00 AM - 11:00 AM on Zoom

Teaching Assistant (TA):
Sydney Harris: <Sydney.Harris@colostate.edu>
TA's Office Hours: MW 12:00 PM -- 1:30 PM, BC-Infill

Textbook:

Additional Reference (not required):
Exam Calendar:

- Assessment 1 (Exam 1): Feb. 28, 2023, in class; covers LSM1, LSM2, and KI4.
- Assessment 2 (Exam 2): Apr. 20, 2023, in class; covers LSM3, LSM4, and KI5.
- Assessment 3 (Exam 3): May 9, 2023, 2:00 PM -- 4:00 PM; Stadium 1204; covers all LSMs and KIs 4-5.

Grading:

- Homework: 18%
- Knowledge Integration (KI): 8%
- Assessment 1 (Exam 1): 22%
- Assessment 2 (Exam 2): 22%
- Assessment 3 (Exam 3): 30%
- Math Foundation: 2% (Extra Credit)

Note 1: Regular attendance in class is required.

Note 2: Late homework submissions will not receive credit.

Note 3: Please see the KI Canvas course for details about its components.

Note 4: Please see the Math Foundation Canvas course for details about its components.

Course Topics:

- LSM1. Complex-frequency spectrum analysis of continuous-time signals and systems (Laplace-transform)
  - Laplace transform
  - Region of convergence
  - Inverse Laplace transform
  - Properties of Laplace transform
  - Transfer function
  - Causality and stability
- LSM2: Spectrum analysis of discrete-time signals and systems (Z-transform)
  - z-Transform
  - Region of convergence
  - Inverse z-transform
  - Properties of z-transform
  - Transfer function
  - Causality and stability
- LSM3: Filtering and modulation
  - Double Sideband Modulation
  - Butterworth filters
  - Chebyshev filters
  - Bilinear transform

- LSM4: Computing for spectrum analysis
  - Fast Fourier transform
  - Spectrum analysis over a finite time window
  - Spectrum analysis with a finite number of samples

- LSM5: Noise
  - Random processes
  - Autocorrelation and power spectral density
  - Wide-sense stationary processes
  - White noise
  - White noise through LTI systems

Use of Online Homework Helper Sites:

Online “homework helper” sites including, but not limited to Chegg, NoteHall, Quizlet, and Course Hero, Koofers, are meant as study resources to help students better understand basic concepts covered in their courses. They are not intended to do homework/exams from this course for you. The use of such online resources is not permitted for solving homework and exam problems in this course. Your homework and exam submissions must be your independent work. In addition, you are not allowed to post or share homework problems and or exams (in full or in part) from this course to such websites.

Information on COVID-19

For the latest information about the University’s COVID resources and information, please visit the CSU COVID-19 site: https://covid.colostate.edu/.