ECE 634: Signals and Systems II

Spring 2023 Syllabus

Instructor: Andrew Kun, andrew.kun@unh.edu
Office hours: TBD

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Office hours: TBD

Meeting Times and Locations
Mondays, Wednesdays, and Fridays, 11:10-12, in Kingsbury S145.

Credits: 3 credits

Catalog Course Description
Transient response analysis of linear systems using Laplace transforms, application to feedback control systems. Introduction to discrete-time linear systems; system response determination using z-transform; elementary design of digital filters and controllers. State variable formulation of dynamical systems. Prerequisite: ECE633. 3 cr.

Course Objectives
Upon completion of this course students will:

- understand how to connect real physical systems to the underlying mathematical descriptions;
- understand how feedback systems function differently than open-loop systems;
- understand the relationships between continuous time signals and systems and discrete-time signals and systems in both time and frequency domains;
- be able to use difference equations and z-transform techniques to analyze and design basic digital filters and discrete-time controllers;
- improve their skills in collaborating with others on technical tasks.

Textbook
Linear Systems and Signals, 3/e, by B. P. Lathi and R. Green, Oxford University Press, New York, 2017, ISBN: 9780190200176.

Technical Requirements and Technical Support
We will use MATLAB. The full MATLAB package is available in the ECE student cluster in Kingsbury N234. Students may also download MATLAB for free on their PCs. Please visit the following web page for more information: https://my.unh.edu/task/durham/download-academic-software-applications.

Keep Yourself and Others Healthy: Stay home if sick, get vaccinated for flu and Covid

If are unwell, please do not come to class. It is our collective responsibility to keep ourselves, and each other, healthy.

If you miss class, please reach out to the instructor for support and accommodations.

Course topics

Topic	Chapter (Lathi)
Review	1
Continuous-time systems with feedback	4
Discrete-time systems	3
z-transform	5
Sampling	8
Fourier analysis (time permitting)	9
State-space analysis	10

Grading
Students will complete homework assignments in teams and individually. They will also complete three exams: two in-class exams and a final exam. These assignments will contribute to the final grade as indicated in the table below. See course website for due dates. **Note: To pass the course, students must pass the final exam with at least 60 points.**

Assignments	%	Requirements
Team homework	40%	Complete assignments as a team or individually.
Exams (3)	60%	Complete exam problems individually.

Teams
The instructor will assign each student to a team. Teams will collaborate on homework assignments throughout the semester.

Team and individual homework
Homework assignments can include problems from the textbook and from other sources. For team assignments students on the same team will create a single solution together. Each student should submit the same solution. For individual assignments each student will create their own submission.

Exams
Students will complete three exams. Two exams will take place during the semester, during class time. One exam will take place during finals in the time slot assigned by the university. Students can use the book and their paper notes during exams. Calculators are allowed. No other electronic devices are allowed (e.g., no phones, laptops, tablets, earbuds, headphones).

All resources are always allowed for both team- and individual homework assignments
Students are encouraged to collaborate on team and individual homework assignments. Students are allowed to use any tool and resource they find helpful.

Contribution statements and attribution are mandatory
Teams must submit a written contribution statement for each team assignment. The statement must list all team members by name, and how each member contributed to the final product.

When working in teams or individually, students must attribute others' work appropriately. If you in any way use material that was created by someone else (m-code, text, a problem solution, a figure, etc.), you must attribute the work to the person or group who created it.

Academic Honesty and Plagiarism
Students are required to abide by the UNH Academic Honesty policy located in the Student Rights, Rules, and Responsibilities Handbook.

As your instructor, I proactively monitor academic integrity through regular use of a diversified assessment approach. Plagiarism of any type may be grounds for receiving an F on an assignment, or an F in the overall course. Plagiarism is defined as "the unattributed use of the ideas, evidence, or words of another person, or the conveying the false impression that the arguments and writing in a paper are your own" (see UNH Academic Honesty Policy, 09.3). Incidents are reported to the school dean and may be grounds for further action. You can contact me at any time on this issue. Additional resources are located below:
http://libraryguides.unh.edu/unhmcitingsources
http://www.library.unh.edu/reference/citation.shtml

Policy on Late Submissions
No late submissions will be accepted. Exceptions will be made in special cases such as sickness, family emergencies, and work-related issues.

University Disability Accommodations
The University is committed to providing students with documented disabilities equal access to all university programs and facilities. If you think you have a disability requiring accommodations, you must register with Disability Services for Students (DSS). Contact DSS at (603) 862-2607 or disability.office@unh.edu. If you have received Accommodation Letters for this course from DSS, please provide me with that information privately so that we can review those accommodations.

Student to Instructor Communication Expectations
My Schedule
Unless otherwise announced, I log in to Canvas daily, Monday through Friday. I will log in once in the morning and once in the afternoon. If you post a question for me in a forum, anticipate a response within 24 hours. On Saturday and Sunday, I may not log in at a regular time. If you post late on Friday or anytime on the weekend, I might not respond until Monday evening.

How to Reach Me
Questions related to assignments or learning should be posted in the respective discussion forums. The use of email is reserved for questions of a private nature, and if you would like to schedule (virtual) office hours. My email is andrew.kun@unh.edu.

Note: This syllabus is subject to change. Students will be promptly notified of any changes.