EECS 361- Signal and System Analysis

Fall 2024

Test 2

Modified from course syllabus

Course Objectives: Students will be able to:

From Test 1

1. Describe continuous systems in the time and frequency domains.
2. Understand how to classify signals as power or energy signals, classify systems as linear/non-linear, time-invariant/time-varying, causal/non-causal, BIBO stable/unstable.
3. Understand and be able to use the special functions, including impulse, step, and pulse functions.
4. Perform continuous time convolution.
5. Determine the time and frequency characteristics, frequency response function-$H(\omega)$, of continuous systems.
6. Represent of periodic signals using Fourier series and construct spectral plots.
7. Determine the output of linear time-invariant systems with a periodic input.
8. Determine appropriate tools to apply to signals and systems problems.

Test 2

9. Represent aperiodic signals using the Fourier transform.
10. Understand the properties of the Fourier transform.
11. Understand the relationship between the impulse response, $h(t)$ and transfer function $H(\omega)$.
12. Use Parsaval's theorem for periodic and aperiodic signals to determine signal power and energy.
13. Determine the output of LTI systems with a periodic and aperiodic inputs.
14. Understand the concept of bandwidth and the signal duration/bandwidth relationship.
15. Understand the criteria for distortionless transmission.
16. Understand the characteristics of filter types and ideal filters.
17. Understand the Sampling Theorem and its application.
18. Understand and be able to use the discrete time special functions, including impulse, step, $\cos(\Omega n+\varphi)$,
19. Describe discrete signals and systems (ARMA) in the time and frequency domains.
20. Find the discrete time impulse response and perform discrete time convolution.
21. Understand how to apply the z-transform to discrete time signals and systems.
22. Identify causal and stable discrete time systems.
23. Find transfer functions/frequency response for discrete systems
24. Design digital filters.
25. Determine appropriate tools to apply to signals and systems problems.