Spring 2020 EE3221
Learning Objectives - Final Exam
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The EE3221 Final Exam is cumulative. Therefore, in addition to the Learning Objectives pertaining to the Midterm Exam, you should also be able to ...

1. Determine the transfer function of a discrete-time system, calculate poles and zeros of the system, and assess the system stability.
2. Determine the frequency response of a discrete-time system.
3. Utilize the DTFS equations to transform between discrete-time sequences and their frequency-domain representations.
4. Utilize the DTFT equations to transform between discrete-time sequences and their frequency-domain representations.
5. Utilize tables of DTFT pairs and properties to transform between discrete-time sequences and their frequency-domain representations.
6. Plot the magnitude and phase spectrum of discrete-time sequences.
7. Utilize the DTFT in the analysis of discrete-time signals and systems.
8. Relate the DTFT to the Z-transform.
9. Relate the DFT to the DTFT.
10. Utilize the DFT equations to transform between discrete-time sequences and their frequency-domain representations.
11. Calculate the DFT using the radix-2 FFT algorithm.
12. Explain the impact of zero-padding in a DFT calculation.
13. Calculate the resolution of a DFT calculation, and explain the significance of DFT resolution when calculating the spectrum of a discrete-time signal.
14. Explain the impact of filter length when designing an FIR filter using the Window Design method.
15. Explain the purpose and impacts of using different windows (e.g., Rectangular, Bartlett, Hamming) when designing an FIR filter using the Window Design method.
16. Relate pole/zero locations to system characteristics such as magnitude response, phase response, step response, and impulse response.
17. Design (and/or analyze) a notch filter by utilizing the pole-zero placement method.