

ECEn 380. Signals and Systems

Catalog Description:	ECEn 380. Signals and Systems. (5:4:3) F, W, Sp Time and frequency domain analysis of discrete or continuous systems subjected to periodic or nonperiodic input signals.	
Course Type:	Engineering Topics	
Prerequisites:	ECEn 212 Math 334	
Textbooks and/or other required materials	Class Text: Signals and Systems 2 nd Edition, by Oppenheim & Willsky with Nawab Lab Book: Computer Explorations in Signals and Systems Using MATLAB 2 nd Ed. By Buck, Daniel and Singer	
Topics Covered:	<ol style="list-style-type: none"> 1. Introduction, properties of signals and systems, unit impulse, unit step functions and complex exponential functions. 2. Convolution, LTI system properties, singularity functions 3. Continuous-time Fourier series 4. Continuous-time Fourier series 5. Continuous-time Fourier transform & Midterm 1 6. Convolution & multiplication properties of CTFT 7. Discrete-time Fourier transform 8. Magnitude, phase, frequency response 9. Sampling theory & Midterm 2 10. Laplace transforms 11. Z-transforms & Midterm 3 	
Course Competencies:	Application of integral calculus, differential equations, complex variables, to transform analysis of a continuous-time LTI system.	Outcome 1
	Application of integral calculus, differential equations, complex variables, to transform analysis of a discrete-time LTI system.	Outcome 1
	Application of integral calculus to solve continuous-time convolution problems.	Outcome 1
	Application of discrete math to solve discrete-time convolution problems.	Outcome 1
	Ability to use Matlab or similar tools to analyze, model, simulate, and experiment with linear systems.	Outcome 2
	Ability to interpret and synthesize signals and systems in both the time and frequency domains.	Outcome 5
	Ability to recognize the mathematical properties of signals and systems including linearity, time invariance, causality, stability, etc.	Outcome 5
	An understanding of the consequences and principles associated with digitally sampling and reconstructing analog signals.	Outcome 11
Schedule:	Lectures: 10:-11:50 am MTWTh Laboratory: (Sec. 1) 3:00-3:50 MW, (Sec 2) 3:00-3:50 MW TA Recitations: 10:-11:50 am Friday	
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Date:	June 24, 2008	