ECE 380 Syllabus

Rose-Hulman Institute of Technology

Day	*Date*	*Reading*	*Topics*	*Mini Project*	*Homework*	*Demo*
1	10-Mar		Introductions, Intro to discrete-time systems			
2			Concept Inventory Exam			
3		*7.0-7.3*	Review Continuous Convolution with Impulses, Ideal Sampling			
4			Continuous to Discrete Demo			con2dis
5	17	12.3.1-12.3.4	Pulse Sampling, Pulse Reconstruction		Hw 01	
6		4.1,4.2,4.4	Sample and Hold, Aliasing	Minuet in G		
7		5.1-5.4	FIR Filtering Introduction			
8		5-3.2	Linearity & Time-Invariance			DLTI Demo
9	24	5.5	causality, stability and other discrete properties		Hw 02	
10		5.6	Discrete Convolution			
11				DconvDemo		dconvdemo
12			Work HW, review for exam			
13	31-Mar	6.1-6.3	Frequency Response of FIR Filter, L10		Hw 03	Intro to FIR
14		6.4-6.6	FIR L-point, General FIR, Filtered Speech Demo, L10, L11			
15		6.7	General FIR, L11	Tone Removal		
16		6.8	Digital Filtering of Analog Signals, L12			
17	7-Apr	7.1, 7.2, *10*	HW		Hw 04	Z to Freq
18		7.3-7.5	Z transforms, IIR Filters, L13	Note Detect		
19			HW Review, L14			3 Domains -FIR
20		7.6, 8.1, 8.2	IIR Filters, Difference Equations, L22			
21	14	8.3-8.5	IIR Filters, Pez demo, L22		Hw 05	3 Domains - IIR
22		8.6-8.8	IIR Filters, Z-plane, L23			Lab 11 - Pez
23			Review			
24			*Exam 2*			
25	28	8.9,8.10,8.11	Bilinear Transformation, IIR Filter Design			
26		Notes	Bilinear Transformation	Song Decoding		Lab 17-19
27		13.1-13.2	Finite Fourier Sum, Too Many Transforms?			
28		13.3-13.4	Analysis of a Sum of Sinusoids			
29	5-May	13.5	Discrete Time Fourier Transform		Hw 06	
30		13.6-13.7	More DFT			
31		13.9	DFT			
32			*Exam 3*			
33	12		Review Exam, Computing the Spectrum		Hw 07	
34		13.3-13.4	Time Windowing			
35		13.8	The Spectrogram			
36			Circular Convolution			
37	19				Hw 08	
38						
39			Review			
40			Review			

Special Problems – There will be three or four special problems on signal processing which will require MATLAB or some other computer tool to perform numerical processing.

Text – *SP First* by McClellan, Schafer, and Yoder, Prentice Hall, 2003, and *Signals & Systems*, Oppenhem and Willsky, Prentice Hall, 1997. *Italic* above are chapters in Oppenhem and Willsky.

Reading – The reading matter for a given day is to be read *before* coming to class, and the classwork may assume that you have done so.

Instructor – Mark A. Yoder, Room D209, 877-8291, Home 812-443-0200.

Homework – Homework will be posted out once a week and is due in the format specified in *Homework Format* at the beginning of the period (http://www.rose-hulman.edu/Class/ee/HTML/Documents/ECEWritingStandards11-27-00.PDF). It is due on Monday.

Grades – The grading policy for this course is stated in *EC 380 General Information*.