

# ECE 380 Syllabus – Winter 2003-2004

## Rose-Hulman Institute of Technology

Day	Date	Reading	Topics	Mini Project	Homework	Demo
1	1-Dec		Introductions, Intro to discrete-time systems			
2	2003		Concept Inventory Exam			
3		<b>7.0-7.3</b>	Review Continuous Convolution with Impulses, Ideal Sampling			
4			Continuous to Discrete Demo			con2dis
5	8	12.3.1-12.3.4	Pulse Sampling, Pulse Reconstruction		Hw 01	
6		4.1,4.2,4.4	Sample and Hold, Aliasing	Jingle Bells		
7		5.1-5.4	FIR Filtering Introduction, L9			
8		5-3.2	Linearity & Time-Invariance, L9			DLTI Demo
9	15	5.5	causality, stability and other properties, L10		Hw 02	
10		5.6	Discrete Convolution			
11			Work HW, review for exam	DconvDemo		dconvdemo
12			<i>Exam 1</i>			
13	5-Jan	6.1-6.3	Frequency Response of FIR Filter, L11			Intro to FIR
14	2004	6.4-6.6	FIR L-point, General FIR, Filtered Speech Demo, L11			
15		6.7	General FIR, L11	Tone Removal		
16		6.8	Digital Filtering of Analog Signals, L12			
17	12-Jan	7.1, 7.2, <b>10</b>	HW		Hw 03	Z to Freq
18		7.3-7.5	Z transforms, IIR Filters, L13			
19			HW Review, L14			3 Domains -FIR
20		7.6, 8.1, 8.2	IIR Filters, Difference Equations, L22			
21	19	8.3-8.5	IIR Filters, Pez demo, L22		Hw 04	3 Domains - IIR
22		8.6-8.8	IIR Filters, Z-plane, L23	Lab 11 - Pez		
23			Review			
24			<i>Exam 2</i>			
25	26	8.9,8.10,8.11	Review exam and HW. Bilinear Transformation		Hw 05	
26		Notes	Bilinear Transformation, IIR Filter Design	Note Detection		Lab 17-19
27			“			
28			“			
29	2-Feb		“	Simple	Hw 06	
30		13.1-13.2	Finite Fourier Sum, Too Many Transforms?	Song Detection		
31		13.3-13.4	Analysis of a Sum of Sinusoids			
32		13.5	Discrete Time Fourier Transform			
33	9	13.6-13.7	DFT		Hw 07	
34			Review Exam, Computing the Spectrum	FSK Generation		
35		13.9	Time Windowing			
36			<i>Exam 3</i>			
37	16	13.3-13.4	The Spectrogram		Hw 08	
38		13.8	Circular Convolution	FSK Detection		
39			Review			
40			Review			

**Mini Projects** – There will be 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*, Oppenheim and Willsky, Prentice Hall, 1997. ***Bold/Italic*** above are chapters in Oppenheim 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.

**Instructors** – Mark A. Yoder, Room D209, 877-8291, Home 812-443-0200, Keith Hoover, Room D210, 877-8290.

**Homework** – Homework will be posted 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/yoder/ece380/Handouts/Homework%20Format.pdf>) It is due on Monday.

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