EE-3220 Digital Signal Processing : Course Outline

Week	Day	Chapter	Section	Topic	Lab
1	1	1	1-4	DSP Overview, MATLAB intro	
	2	2	1	Discrete-time signals	MATLAB introduction
	3		2	Discrete-time systems	
2	1		3	Convolution	
	2		4	Difference Equations	MATLAB: Discrete audio waveforms
	3			(No Class - Rockwell Collins Tour)	
3	1	3	1	The Discrete-time Fourier Transform (DTFT)	MATLAB: Difference Equations, Impulse Response Functions, and Discrete Time Filters
	2		2	The Properties of the DTFT	
	3		3	The Frequency Domain Representation of LTI Systems	
				Break	
4	1		4	Sampling and Reconstruction of Analog Signals	MATLAB: 2-D Convolution and Image Processing
	2	4	1	The Bilateral z-transform	
	3		2	Important properties of the z-transform	
5	1		3-4	System representation in the z-Domain & inversion of z-transform	MATLAB: Filter Design and Filter Response
	2			…sinusoid example	
	3			…z-plane view	
6	1			…notch filter design	MATLAB: Poles and Zeros – Impact on the Transfer Function and Transient Response
	2	5	1,3	Discrete Fourier Series / Discrete Fourier Transform	
	3			MATLAB examples of the DFT	
7	1		4	DFT Properties: symmetries and circular shift; density vs. resolution	MATLAB: Notch Filters and Interference Removal
	2		5	Linear Convolution using the DFT	
	3		6.1-.3	The Fast Fourier Transform	
8	1	7	1-2	Preliminaries / Properties of Linear-phase FIR filters	MATLAB: DFT Windowing and Resolution (Text §7.3 for more information)
	2			…Symmetric odd-length examples / symmetric structures	
	3	9	1-3	Sampling rate conversion (Interpolation/Oversampling, Decimation)	
9	1	8	1-2	IIR Design Preliminaries / Some special filter types	Real-time DSP: 2-week lab
	2			(Continued)	
	3		3.1-3.4	Characteristics of prototype analog filters	
10	1			(Continued)	
	2		4.0,4.3-.4	Analog-to-digital filter transformations / Lowpass filter design (MATLAB)	
	3	6;10	5-7;1	Analysis of A/D Quantization Noise	

Saved 2/7/2014