

EE5212/CSE5617 - DIGITAL SIGNAL PROCESSING

General Information:

Lecturer	Maryam Mahsal Khan
Credit Hours	3 Units
Semester	Spring 2008
Prerequisite(s)	Signals and Systems
Course Delivery	Lecture: 3 hours/wk
Yahoo Group	MSc_dsp@yahoogroups.com

Objectives:

This course comprises of topics related to the spectral analysis of discrete-time systems. It also encompasses the design and implementation of digital systems such as digital filters. The use of various transforms is also incorporated in this course. Most of the concepts studied in the Signals & Systems and DSP First courses are used. Students will be evaluated based on their understanding of Digital Signal Processing Theory and from their assignments and quizzes.

Contact Details:

Lecturer	Email	Room
Maryam Mahsal Khan	enr_maryam_khan@yahoo.com	DCSE Faculty Office II

Grading:

- Final Examination : 50%
- MidTerm : 25%
- Assignments : 10%
- Quizzes : 15%

Textbook :

- *Discrete – Time Signal Processing*, 2nd Edition, Alan V. Oppenheim , Ronald W. Schafer with John R. Buck.
- *Digital Signal Processing: Principles, Algorithms and Applications*, 3rd Edition, John G. Proakis, Dimitris G. Manolakis.

- *Digital Signal Processing: A Computer Based Approach*, 3rd Edition, Sanjit K. Mitra, McGraw-Hill

Other References :

- *Analog & Digital Signal Processing*, 2nd Edition, Ashok Ambardar, Brook / Cole
- *DSP First: A Multimedia Approach*, J.H. McClellan, R.W. Schafer and M. A. Yoder
- *Continuous and Discrete Signals and Systems* , Samir S. Soliman

- **Course Planner**

Wk #	Topic	Activities
1	Introduction Course Overview	
2	Discrete Time Signals and Systems: Review Discrete-time signals & systems and its properties	
3	Discrete Time Signals and Systems: Review Frequency domain representation of Discrete-time signals & systems and its properties	Assignment 1
4	Z-Transform Computing z-transform, Properties of Region of Convergence for z-transform	
5	Z-Transform Computing inverse z-transforms, Properties of z-transform	Assignment 2
6	Transform Analysis of Linear Time-Invariant Systems Frequency response of LTI Systems, Steady state & Transient Response, Rational System Functions, State Function of LCCD System	
7	Transform Analysis of Linear Time-Invariant Systems Minimum Phase systems, Linear Systems with Generalized linear Phase	Assignment 3
8	Sampling of Continuous Time Signals Periodic Sampling, Frequency domain representation of sampling	
9	MID SEMESTER BREAK	
10	Sampling of Continuous Time Signals Multirate signal processing, A/D Conversion	Assignment 4

11	Structures for Discrete Time Systems Block Diagrams, Basic structures for FIR systems, Basic structures for IIR systems	
12	Structures for Discrete Time Systems Effect of Quantization	Assignment 5
13	Filter Design Techniques FIR Filter Design Linear phase filter design by windowing, Kaiser window Method	
14	Filter Design Techniques IIR Filter Design Filter design by impulse invariance, bilinear transformation.	Assignment 6
15	Discrete Fourier Transform Discrete Fourier series, Properties of DFT	
16	Discrete Fourier Transform Linear Convolution Using DFT, Discrete Cosine Transform	
17	Discrete Hilbert Transform, Wavelet Transform	
18	Final Exams	