Course Syllabus	**EECS 4380 – Digital Signal Processing**
Credits & Contact Hours	3 credit hours & two 75-minute lecture contact hours per week.
Coordinator	Dr. Ezzatollah Salari
Textbook	Digital Signal Processing by John Proakis & D. G. Manolakis, 4/E. Pearson, 2006.
Course Information	Discrete Fourier Transform (DFT), discrete convolution and correlation, Fast Fourier Transform (FFT) and its applications, design of IIR and FIR digital filters, multi-rate/channel digital systems, decimation and interpolation. Prerequisite: EECS 3210 Elective Course
Specific Goals – Student Learning Objectives	The student will be able to 1. Demonstrate an understanding of basic discrete-time systems, linearity, time-invariance, stability, impulse response and discrete convolution. 2. Implement discrete time systems, recursive and nonrecursive realizations. 3. Perform Z transform and finding the inverse Z transform including its properties. 4. Demonstrate an understanding of frequency analysis of both continuous and discrete signals. 5. Demonstrate an understanding of frequency response of linear time invariant systems. 6. Demonstrate an understanding of discrete Fourier transform, its properties and applications. 7. Design FIR and IIR digital filters. 8. Demonstrate an understanding of multirate signal processing.
Topics	1. Discrete time signals. 2. Discrete Convolution and Correlation. 3. Z-transform. 4. Fourier Series, Fourier Transform. 5. Frequency Response of LTI Systems. 6. Sampling and Reconstruction of Signals. 7. Discrete and Fast Fourier Transform. 8. Design of FIR and IIR Digital Filters. 9. Multirate Signal Processing.