EECS 644 Introduction to Digital Signal Processing

Class Hours: Tuesday, Thursday, 8:00 - 9:15

Class Web Page: http://www.ittc.ku.edu/~sdblunt/644/EECS644.htm

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Course Notes: EECS 644 course notes.

Office Hours: Tuesday, Thursday, 9:15 - 10:30 or **by appointment**.

Text: *Digital Signal Processing: Principles, Algorithms, and Applications (4th edition)* by Proakis and Manolakis

Grading: Standard plus/minus grading will be used for this course.
Exam #1 - 25%
Exam #2 - 25%
Final Exam - 35%
Homework - 15%

Homework: There will be roughly 6-7 homework assignments. Homework is due by the beginning of the class period in which it is due. No credit will be given for late homework.

Matlab: Some homework problems will require the use of Matlab.

Exams: There will be 2 mid-term exams during the semester and a final (all in-class). Makeup exams will not normally be given.

Course Objectives: The primary objective of this course is to introduce methods for processing discrete-time signals. This includes waveforms that originate as continuous-time signals. Other objectives are:

- to understand the processes of analog-to-digital and digital-to-analog conversion;
- to analyze and evaluate the performance of discrete-time linear systems;
- to acquire familiarity with digital filters in terms of analysis, design and implementation;

- to understand discrete Fourier analysis (DTFT, DFT, DFS, FFT) as it applies to discrete-time signals;
- to present several applications of digital signal processing algorithms.

This course is intended to provide you with the necessary analytical tools for work in digital signal processing. This is not a computer course, nor is it a digital design course. This course is aimed at a higher level - we will try to address the problem of what we can do to process a signal if we have a computer to help us. Therefore, our primary emphasis will be on algorithms for processing waveforms. A strong background in linear systems theory (i.e. Fourier and Laplace transforms, convolution and system impulse response, transfer functions, and poles/zero behavior) will prove essential.

Useful Reading: I suggest everyone look through some of the past issues of the Signal Processing Magazine which can be found on the IEEE Xplore database (available through the KU library system). This will give you a better idea of the numerous research areas in signal processing and possibly help you get started on your own research/career in the field.

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