EE3610   Signals and Systems

Instructor	Dr. Mort Naraghi-**Pour**
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Office hours	Mon. 2:30-5:00, Wed. 9-11:30
Prerequisite	EE2130

Catalog description: 3610, Signals and Systems (3), *Prereq: EE 2130.* Methods of analysis of continuous time signals and systems.

Textbook: Oppenheim and Wilsky, *Signals and Systems*, 2/e, Prentice hall, 1997 ISBN 0-13-814757-4

Goals/Instructional Objectives:
This course must provide the students with mathematical tools for the analysis of signals and linear systems.

Prerequisites by Topics:

1. Complex algebra

2. Linear algebra

3. Calculus and differential equations

4. Modeling of basic linear circuits

Grading:

Homeworks	25%	
Exam I	20%	Friday, Sept. 28
Exam II	20%	Wed., Nov. 7
Final Exam	35%	Friday, Dec. 14, 3-5 P.M.

Note: Only medical excuses with a note from the doctor will be accepted for missed exams. Otherwise the grade for a missed exam would be zero.

Letter grading will be as follows.

A	85-100
B	70-84
C	55-69
D	40-54
F	0-39

Homeworks: There will be about 8 homeworks. You are free to discuss the problems with each other or get hints from the Instructor or TA. However, you

MUST write the solutions individually. Homeworks MUST not to be copied from any source.

There will be some Matlab assignments and two or three lab assignments as part of the homeworks.

The solutions to the homeworks will be posted on the course web page.

http://www.ee.lsu.edu/mort/courses/ee3610/ee3610.html

Course outline: Chapters 1-4, 6-7 and part of 8 of the textbook will be covered. However, this course will be limited to continuous time signals and systems and there will not be any significant coverage of discrete time signals and/or systems.

Topics:

1. Signals and Systems in the Time Domain (12 classes)
   (a) Modeling and manipulation of signals
   (b) DC and RMS values, power and energy, auto- and cross-correlation.
   (c) Input/output description of systems, classification of systems.
   (d) Impulse response, system properties in terms of impulse response.
   (e) The convolution representation for linear, time invariant systems.

2. Fourier Series and Fourier Transforms (12 classes)
   (a) Definition and examples.
   (b) Properties of Fourier series and Fourier transforms.
   (c) Amplitude and phase spectra.
   (d) Generalized Fourier series.
   (e) Spectrum and power spectral density

3. Signals and Systems in the Frequency Domain (15 classes)
   (a) Frequency selective behavior - filtering.
   (b) Applications to communication.
   (c) Analog to digital conversion.