CPE 381 Fundamentals of Signals and Systems for Computer Engineers--Spring 2007

Instructor: Laurie L. Joiner 217B Engineering Building 824-6126

Office Hours: Tuesday and Thursday 2:30-3:30, Monday and Wednesday 3:00-4:00
email: ljoiner@ece.uah.edu

Textbook:

S. Haykin and B. Van Veen, *Signals and Systems, 2nd ed* . John Wiley & Sons, 2005.

References:

H. Hsu, *Schaum's Outlines Signals and Systems*. McGraw-Hill, 1995.
B. Lathi, *Signal Processing & Linear Systems*. Berkeley-Cambridge, 1998.
A. Oppenheim and A. Willsky, *Signals & Systems 2nd ed*. Prentice Hall, 1997.
C. Phillips and J. Parr, *Signals, Systems, and Transforms, 2nd ed*. Prentice Hall, 1995.
R. Ziemer, W. Tranter, and D. Fannin, *Signals and Systems, Continuous and Discrete, 4th ed*. Prentice Hall, 1998.

Grades will be based on:

Homework: 10%
Quizzes: 10%
Two in class exams: 50%
Final exam: 30%

Schedule of topics:

Introduction to Signals and Systems
Linear Time-Invariant Systems
Fourier Series Representations of Periodic Signals
Fourier Transforms
Sampling
Laplace Transform
z-Transform

Course objectives:

- Recognize system properties such as stability, causality, and linearity
- Perform time-domain analysis of linear time-invariant systems; in particular perform convolution in continuous and discrete time
- Analyze LTI systems and their properties through determination and examination of the impulse response
- Use Fourier series to analyze periodic signals and the response of LTI systems to these signals
- Use Fourier transform to analyze general signals

- Use frequency domain techniques to analyze the effects of LTI filters on signals
- Understand the sampling theorem and the impact in both the time domain and the frequency domain of sampling
- Analyze signals and LTI systems using Laplace transforms
- Analyze signals and LTI systems using z-transforms
- Use MATLAB to represent signals and perform linear system analysis

Attendance:

Advance notice will be given for class cancellations when possible. Students may leave after 15 minutes if no one shows up to teach a class. It is the responsibility of each student to make up deficiencies that result from missing classes. If an exam must be missed, the student must see the instructor and make arrangements in advance, unless an emergency makes this impossible. Approval for makeup exams is much more likely if the student is willing to take the exam early. A makeup exam will be different, and generally more difficult than the regular exam.

Prerequisites:

EE 213 Electrical Circuit Analysis I and MA 238 Applied Differential Equations
The College of Engineering requires that a grade of C or better be earned in each course that serves as a prerequisite to any course applied toward completing the BSE degree requirements. If a grade of less than C is received in a course taken at UAH which is a prerequisite course, the course must be repeated and a grade of C or better earned BEFORE the student enrolls in the subsequent course.

Late homework will be accepted a maximum of twice during the semester but with a 10% deduction. Homework will not be accepted after solutions are available.

The Final exam is Thursday, April 26 from 11:30AM-2:00 PM, and will be cumulative.

Class notes, homework assignments and solutions are located on the web at
http://www.ece.uah.edu/~ljoiner/cpe381
Please email me if there are problems with the notes.