EE 313 (16110), Linear Systems and Signals
Spring 2013

Lecture: TTH 12:30-2:00pm
Instructor: Prof. Alex Dimakis, ENS 426, 471-3068, dimakis@austin.utexas.edu
Office Hours: Tu 5.00-6.00pm, Friday 3.30-5.30pm
TA Office Hours: To Be Announced

This course will build a mathematical foundation for analyzing linear signal processing, communication, and control systems.

Representation of signals and systems; system properties; sampling; Laplace and z-transforms; transfer functions and frequency response; convolution; stability; Fourier transform; feedback; and control applications. Computer analysis using MATLAB.

Prerequisite: Electrical Engineering 411, 331, or Biomedical Engineering 311 with a grade of at least C-; Mathematics 427K with a grade of at least C-; and credit with a grade of at least C- or registration for Mathematics 340L

Required Text
Oppenheim and Willsky, Signals and Systems (2nd Edition), Prentice Hall; 2 edition (August 1996) ISBN 0138147574.

Additional Optional Reading
B. P. Lathi, Linear Systems and Signals, Oxford Univ. Press, 2nd ed., ISBN 019515833-4, July 2004.

Grading
20% Homework, 20% Quiz #1, 20% Quiz #2, 40% Final Exam

Discussion of homework questions is encouraged. Please be absolutely sure to submit your own independent homework solution. Late homework assignments will not be accepted.

University Honor Code
“The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the University is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community.”

College of Engineering Drop/Add Policy
The Dean must approve adding or dropping courses after the fourth class day of the semester.

Students with Disabilities
UT provides upon request appropriate academic accommodations for qualified students with disabilities. Please contact Office of Dean of Students at 471-6259 or ssd@uts.cc.utexas.edu.

Lecture Topics
Introduction
Continuous-Time System Properties
System State and Differential Equations
Continuous-Time Convolution
Stability
Discrete-Time Signals and Systems

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Discrete-Time Convolution
Difference Equations
Difference Equations and Stability
Laplace Transform
Inverse Laplace Transform
Transfer Functions
System Realization
Z-transforms
Difference Equations
Frequency Response of Discrete-Time Systems
Z and Laplace Transforms
Fourier Series
Fourier Analysis
Fourier Transform Properties
LTI System Analysis
Signal Energy
Sampling Theorem