Robert Akl, D.Sc.

CSCE 3020 (EENG 3810): Communications Systems

Course Description:

3 hours. Introduction to the concepts of transmission of information via communication channels. Amplitude and angle modulation for the transmission of continuous-time signals. Analog-to-digital conversion and pulse code modulation. Transmission of digital data. Introduction to random signals and noise and their effects on communication. Optimum detection systems in the presence of noise.
http://www.cse.unt.edu/~rakl/class3020/csce3020.html

Instructor:

Dr. Robert Akl, NTDP F229, (940) 565-2804, Robert.Akl@unt.edu

TA:

TBD.

Class Hours:

Mondays and Wednesdays, 3:30 – 4:50 pm, NTDP B192.

Office Hours:

Mondays and Wednesdays, 1:00 – 2:00 pm, or by appointment.

Textbook:

Signals and Systems: Analysis Using Transform Methods and MATLAB, M. J. Roberts, McGraw Hill, 2004.ISBN 0-7-293044-6.
Supplemental text: MATLAB 7 R14 Student Edition

Grading:

Attendance and Participation	10%
Homework	10%
Project	10%
Quizzes	10%
Midterm	20%
Final	40%

Syllabus:

Introduction
(Chapter 1 Lecture), Chapter1.pdf

Types of Signals

HW 1: see handout in class.

Fourier Transform Analysis of Signals and Systems (Chapter 6 Lectures), Chapter6.pdf

Frequency Response

Ideal Filters

Communication Systems

Spectral Analysis

HW 2: P 23(a), 24(b), 34, 36, and 46(a).

Sampling and the Discrete Fourier Transform
(Chapter 7 Lectures), Chapter7.pdf

Sampling Methods

Representing a Continuous-time Signal by Samples

Sampling Discrete-time Signals

HW 3: P 28, 33(a,b), 39, and 41.

Project 1: P 27 and 45. Turn in your code and solutions.

Midterm Exam

Wednesday before spring break.

Correlation, Energy Spectral Density, and Power Spectral Density
(Chapter 8 Lectures), Chapter8.pdf

Correlation and the Correlogram

Autocorrelation

Cross Correlation

Energy Spectral Density

Power Spectral Density

HW 4: P 19a, 21 (x1 and x2), 23(a and c), and 24 (a and b).

Laplace Transform Analysis of Signals and Systems
(Chapter 10 Lectures), Chapter10.pdf

Transfer Functions

System Stability

Pole-Zero Diagrams

Analog Filter Design

HW 5: P 33(a and b), 34(a and b), 44(a and b), 48 (a), and 49(a).

z-Transform Analysis of Signals and Systems
(Chapter12 Lectures), Chapter12.pdf

Transfer Functions

Pole-Zero Diagrams

Digitals Filters

HW 6: 12a, 13a, 24a, 27a, and 33a.

Final Exam

As scheduled by UNT registrar.

The Student Evaluation of Teaching Effectiveness (SETE) is a requirement for all organized classes at UNT. This short survey will be made available to you at the end of the semester, providing you a chance to comment on how this class is taught. I am very interested in the feedback I get from students, as I work to continually improve my teaching. I consider the SETE to be an important part of your participation in this class.

This site is maintained by Robert Akl robert.akl@unt.edu.

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