EE 483: Communications Systems I - Fall 2007

SYLLABUS

Instructor: Stella N. Batalama, Professor
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Office Hours: 2:00 - 3:00 T - Th
http://www.ee.buffalo.edu/Batalama.htm
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Lecture:
Time: 12:30 pm - 13:50 pm, T - Th
Room: 258 Capen

TA Recitation:
Time: 2.00 pm - 2.50 pm, F
Room: 210 Norton

Course Description:
Review of the fundamentals of system theory and probability as well as introduction of new concepts (e.g. random processes). Analog communications. Introduction to digital communications.

Lab Description:
Basic operations in MATLAB; Fourier transforms (FT) of signals, properties of FTs, Fourier series, synthesis of a signal from its Fourier coefficients; ideal bandpass and lowpass filtering; channel equalization; DSB and SSB modulation, AM, FM, angle modulation; histograms of random variables, expectations of random variables, functions of random variables; random processes, target direction and distance estimation in radar systems; noise suppression in bandlimited signals, noise in DSB-SC receivers, noise in SSB receivers.

Course Objectives:
By the end of the course students will be able to demonstrate:
- fundamental knowledge of system theory, probability theory, and random processes,
- programming skills in MATLAB,
- knowledge of communication system design and evaluation,
- effective technical communication skills.

Textbook:

Reference Books:
Prerequisites by topic:
- Fourier series and transforms
- Probability and random variables
- Fundamental matrix theory and vector analysis
- Linear systems theory; impulse response and transfer functions

Topics:
- Introduction to communication systems and historical review (1 lecture)
- Review of representation of signals and systems (5 lectures)
- Continuous waveform modulation systems (6 lectures)
- Review of probability, random variables and stochastic processes (6 lectures)
- Noise effects in continuous waveform modulation systems (6 lectures)
- Introduction to digital communications (2 lectures)

Grading:
13% Homeworks
28% Computer projects
5% Oral examination on projects
15% Test #1
15% Test #2
24% Final Exam

Important Dates:
Oct. 4, 2007: Test #1
Nov. 8, 2006: Test #2