EE 483: Communications Systems I - Fall 2004

SYLLABUS

_Instructor: Stella N. Batalama, Assoc. Professor_
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Office Hours: 2:00 pm - 3:00 pm T - Th
http://www.ee.buffalo.edu/faculty/stella_batalama

**Lecture:**
Time: 12:30 pm - 13:50 pm, T - Th
Room: 214 Norton

**TA Recitation:**
Time: 3.00 pm - 3.50 pm, F
Room: 216 Norton

**Course Description:**
Review of the fundamentals of system theory and probability. Analog communications. Introduction to digital communications

**Lab Description:**
Computer projects using MATLAB. Topics include: 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.

**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*
33% *Computer projects*
15% *Test #1*
15% *Test #2*
24% *Final Exam*

**Important Dates:**

*Oct. 12, 2004:* Test #1
*Nov. 11, 2004:* Test #2