

EE 483: Communications Systems I - Fall 2004

SYLLABUS

Instructor: Stella N. Batalama, Assoc. Professor

Office: 133 Bell Hall

E-mail: batalama@eng.buffalo.edu

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:

Simon Haykin, "Communication Systems", *John Wiley*, 4th Edition, 2001

Reference Books:

1. Leon W. Couch II, "Modern Communication Systems", *Prentice Hall*, 1995
2. John Proakis, and Masoud Salehi, "Communication Systems Engineering" *Prentice Hall*, 1994
3. M. Simon, S. Hinedi, and W. Lindsey, "Digital Communication Techniques", *Prentice Hall*, 1995

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