

ECE 481-102: Communication System I

Course Syllabus – Spring 2007

Time & Place: Wed. and Fri. 11:30am -- 1:05pm, Kupfrian Hall 203

Instructor: Dr. Hongya Ge, Room ECE-333
Office Hours: 2:30-4:00pm Wed. and Fri.
Phone/Fax: (973) 642-4990/5680. Email: ge@njit.edu

Prerequisites: ECE321 and EE333

Text Book:

- B. P. Lathi, *Modern Digital and Analog Communication Systems*, the third edition, Oxford, 1998.
- J. G. Proakis, M. Salehi, and G. Bauch, *Contemporary Communication Systems using MATLAB and SIMULINK*, the second edition, Thomson-Brooks/Cole, 2004.

Reference:

- J. Proakis, and Salehi, *Communication System Engineering*, Prentice Hall, 1994.
- L. W. Couch II, *Modern Communication Systems: Principles and Application*, Prentice Hall, 1994.
- Additional material posted on the course web-page

Grading: Homework (10%), Quiz (20%) Midtem (30%), Final (40%)

Topics:

- Introduction on Communication Systems
- Brief Review on Signals, Spectra, and Linear Systems
- Analog Communication Systems:
 1. AM (DSB, SSB, VSB) Systems
 2. FM, and PM Systems
- Brief Review on Noise and Random Variables
- Effect of Random Noise on the Performance of Communication Systems
- Digital Data Communication Systems:
 1. Sampling Theorem and Digital Signaling
 2. Pulse Modulation Systems (PAM, PWM, PPM, PCM), Digital Signaling Techniques
 3. Data Rates and Bandwidth Calculation in Digital Data Communication Systems
 4. Carrier Systems: ASK, FSK, PSK and DPSK
- Probability of Error and BER Calculation and Performance Comparison
- Spread Spectrum and Cellular Systems
- Multiplexing Technologies (TDMA, FDMA, CDMA)