

Department of Electrical & Computer Engineering  
**Communications Engineering**

Course No: 14:332:421

Fall 2007

**Class Hours:** Mon & Thu 10:20-11:40 AM @ SEC-216

**DESCRIPTION :** Fundamental aspects of digital communications will be examined. Emphasis is on Modulation/Demodulation, Equalization and Multiple Access Techniques.

**INSTRUCTOR:** Narayan Mandayam (WINLAB Room C-108)  
email: narayan@winlab.rutgers.edu

**Office Hours :** Immediately after class

**TEXT :** *Communication Systems* by S. Haykin, Wiley, 4th Ed

**Prerequisites:** *Principles of Communications Systems* (332:322) and *Probability and Random Processes* (330:349/332:321)

**Topical Course Outline:**

- Introduction & Overview of Digital Communications
- Review of basic concepts from systems theory and stochastic processes
- Noise in Linear Systems
- Baseband Pulse transmission and Equalization
- Digital Passband Transmission, Signal Representation & Receiver performance
- Statistical Hypothesis Testing
- Modulation schemes and Probability of error calculation
- Spread Spectrum Modulation
- Multiple Access with CDMA

**Course Requirements:**

- Quiz 1 (25%) on October 18, 2007
- Quiz 2 (25%) on November 20, 2007
- Special Assignment (15%)
- Final Project (35%)

Homework Assignments will be assigned periodically. These grades will be used to determine the final grade in borderline cases.