EE 5501 - Digital Communication
Fall 2009

Course Information

Instructor: Nihar Jindal, 6-119 EE/CS, nihar@umn.edu, 625-6306
Class Time and Location: Tues/Thur, 11:15 AM - 12:30 PM, MechE 102
Office Hours: Tues/Thur, 1:30 - 2:30 PM, 6-119 EE/CS
Class Webpage: http://www.ece.umn.edu/class/ee5501/index.html
Prerequisite: Undergraduate signals & systems (EE 3015), probability (EE 3025), and communications (EE 4501)
Homework: Weekly.
Exams: There will be two midterm exams and a final exam (Saturday, Dec. 19, 4-6 PM).
Grading Policy: 30% homework, 20% each midterm, 30% final.

Course Outline

1. Digital Communication Basics
   Baseband-passband representations, Nyquist pulse shapes, signal space representation, optimal receiver design, error probability computation.

2. Capacity and Channel Coding
   Information theoretic notion of channel capacity, convolutional coding, turbo coding.

3. Channels with Inter-Symbol Interference
   Equalization, orthogonal frequency division multiplexing (OFDM), spread spectrum.

4. Synchronization
   Timing and carrier synchronization, noncoherent communication.