Instructor information

- Office location: Engineering Building II W302
- Office hours: by appointment
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Course description and objectives

The past decade has seen many advances in physical-layer wireless communication theory and their implementation in wireless systems. This course takes a unified view of the fundamentals of wireless communication and explains the web of concepts underpinning these advances at a level accessible to graduate students with a basic background in probability and digital communication. Topics covered include MIMO (multiple input multiple output) communication, space-time coding, OFDM, and CDMA. The concepts are illustrated using many examples from wireless systems such as GSM, IS-95 (CDMA), IS-856 (1x EV-DO), and Flash OFDM. Particular emphasis is placed on the interplay between concepts and their implementation in systems. Two of major topics will be information theory and coding theory.

Required textbook:
Required: Andrea Goldsmith, Wireless Communications, Cambridge University Press, 2005

Recommended software: MATLAB

Recommended textbooks:
- Digital Communications: J. Proakis, Digital Communications
- Estimation and Detection: H.V. Poor, An introduction to Signal Detection and Estimation
- Information Theory: T. M. Cover and J. A. Thomas, Elements of Information Theory
- Error Correct Coding: P. Sweeney, Error Control Coding
- Computer Networks: A. S. Tanenbaum, Computer Networks

Course content and calendar
1. Overview
2. Part 1: Wireless Channel
3. Part 2: Source coding and Channel Capacity

Project and homework
- Two Exams and One team project
- Homework 3-4 sets
- Participation: 15%
- Quiz: 2-3 times during class
- Vote for the percentage of homework, project, and exam at the last exam

Policy on assignment due dates
- Same day at class or same day in my mailbox
- 50% off with a plausible delay reason. 0% with more than 2 week delay

Statement for academic dishonesty
Any violation of academic integrity will receive academic and possibly disciplinary sanctions, including the possible awarding of an XF grade which is recorded on the transcript and states that failure of the course was due to an act of academic dishonesty. All acts of academic dishonesty are recorded so repeat offenders can be sanctioned accordingly.
- CHEATING
- COPYING ON A TEST
- PLAGIARISM
- ACTS OF AIDING OR ABETTING
- UNAUTHORIZED POSSESSION
- SUBMITTING PREVIOUS WORK
- TAMPERING WITH WORK
- GHOSTING or MISREPRESENTATION
- ALTERING EXAMS
- COMPUTER THEFT