



E6951 Wireless and Mobile Networking

Course Requirements

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Course Information



- Web page
 - <http://www.columbia.edu/itc/ee/e6950/>
- Email List
 - wireless@comet.columbia.edu
- Lecture
 - Thursday, 10:30 AM-12.20 PM
- Office hours
 - Tuesday 4-6 PM
 - Meet groups each week

Course Information

- Grading
 - 30% Homework assignments
 - 20% Midterm
 - 40% Project
 - 10% Online quiz
- TA Contact Details
 - Sanghyo Kim
 - shkim2@comet.columbia.edu
 - <http://comet.columbia.edu/~shkim2/>
 - Office hours: Monday 4-6 PM
 - Room: Morris A. Schapiro Bldg.

Course Outline

- Introduction
- Fundamentals
 - Radio Channel Model
 - Modulation
 - Fading Mitigation
 - Intersymbol Interference Mitigation
 - Error Control
- Medium Access Control Protocols
 - Centralized Systems
 - CDMA, FDMA, TDMA, Polling
 - Distributed Systems
 - Aloha and Reservation Aloha
 - PRMA, CSMA, RTS-CTS
 - Standards: IEEE 802.11 and ESTI HIPERLAN

Course Outline

- Cellular Networks
 - 2G and 2.5G Systems
 - GSM and GPRS
 - 3G Systems
 - IMT-2000
 - 3G++ Systems
 - 3GIP, 3GPP
- Wireless Internet
 - Mobile IP
 - Wireless TCP
 - Wireless QOS Issues

Course Outline

- 4G Systems: IP-based Mobile Telecommunications
 - Advances in Mobile IP (AAA, etc.)
 - Micro-mobility Protocols
 - Cellular IP (Columbia/Ericsson)
 - Hawaii (Lucent)
 - Services
 - ICEBERG (UCB)
- Pervasive Networking
 - Personal Area Networks
 - Bluetooth and Home RF
 - Ad Hoc Networks
 - Routing: DRS, AODV, PAR (Columbia)
 - QOS: INSIGNIA (Columbia)
 - Sensor Networks

Homework Assignments

- Software programming assignments
 - Network Simulator
 - iLab for internal students
 - <http://wormhole.ee.columbia.edu/>
 - Setup PC accounts online
 - iLab Access: Name, SN and email
 - external accounts for CVN people
 - TA will setup remote accounts atomically and will email you
- Progressive in nature
 - Tutorial
 - Channel model assignment
 - MAC Protocol assignment (IEEE 802.11)
 - Wireless TCP snoop assignment
- Midterm
 - Mobile IP

Project

- Putting it all together
 - Channel model assignment
 - MAC Protocol assignment (IEEE 802.11)
 - Wireless TCP snoop assignment
 - Mobile IP
- Project
 - Teams of two
 - Common project
 - Subject
 - Cellular IP
 - Deliverables
 - demonstrate working code
 - project paper

Web Quiz

- Final Event
- Online Quiz
- 10 multi-choice questions
- Instant grade