

EE 5505 - Wireless Communication
Spring 2006

Course Information

Instructor: Nihar Jindal, 6-119 EE/CS, nihar@umn.edu, 625-6306

Class Time and Location: Tu/Th, 2:30 - 3:45 PM, EE/CS 3-111

Office Hours: Tu 4:00 - 5:00 PM, Th 10:30 AM - 12:00 PM, 6-119 EE/CS

TA: Hakim Alhussien, 6-158 EE/CS, hakimh@umn.edu, 626-7178

TA Office Hours: Mon/Wed, 11-12, 6-158 EE/CS

Class Webpage: <http://www.ece.umn.edu/class/ee5505/>

Required Textbook: *Wireless Communication*, A. Goldsmith, Cambridge University Press, 2005.

Prerequisite: EE 4501 or an equivalent undergraduate communications course is required, EE 5501 (Digital Communication) is recommended .

Homework: Weekly.

Exams: Two midterm exams (Feb. 23 and April. 13, in class) and a final exam (Thursday, May 11, 8-10 AM)

Project: A research project is a required portion of this course. The project can either be a literature survey of a few wireless communication papers, or an original research idea. The project will be due towards the end of the semester.

Grading Policy: Final grade will be 15% project, 15% homework, 20% each midterm, and 30% final.

Tentative Course Outline

1. **Wireless Channel Models** (3 weeks)
Path Loss, Shadowing, Statistical Models for Narrowband and Wideband Fading
2. **Cellular Systems** (1 week)
Frequency Reuse, Sectorization
3. **Narrowband Fading** (5 weeks)
Digital Modulation over Fading Channels, Diversity, Channel Capacity, Channel Coding, Adaptive Modulation & Coding
4. **Wideband Fading/Multi-User Systems** (4 weeks)
Equalization, Multi-Carrier, Spread Spectrum
5. **Multiple Antenna Communication** (2 weeks)