

EE520: Topics in Communications

-- Wireless Communications (3 Credits)

Spring 2008

Instructor:

Sang W. Kim, 3112 Coover, 294-2726, swkim@iastate.edu

Lecture Hours:

T R 2:10 – 3:30pm

Office Hours:

R 4:00-6:00pm

Class Room:

Howe 1344

Course Description:

This course is to provide a strong foundation for graduate study and research in the area of wireless communications. Primary topics for the course are:

- Wireless channel models
- Digital modulation in wireless channels
- Diversity
- Coding for wireless channels
- Capacity of wireless channels
- Multiple antenna and space-time communications
- Cellular systems: CDMA and OFDMA
- Advanced topics such as cooperative communications and network coding as time allows

As part of the course work, students are required to write a term paper on a topic relevant to wireless communications. This paper can be either a thorough literature search on a specific topic, or a study presenting an original research contribution in the field. Papers should demonstrate understanding of the material taught. More information about the project requirements is in a separate handout.

Prerequisites:

An undergraduate course in digital communications (EE422 or equivalent)

Textbook:

- Andrea Goldsmith, *Wireless Communications*, Cambridge University Press, 2005.

References:

- D. Tse and P. Viswanath, *Fundamentals of Wireless Communication*, Cambridge University Press, 2005. You can take a look at <http://www.ifp.uiuc.edu/~pramodv/book.html>
- A.J. Viterbi, *CDMA: Principles of Spread Spectrum Communication*, Addison-Wesley 1995.
- J.G. Proakis, *Digital Communications*, 4th Ed., McGraw-Hill: 2001.

Grading:

Homework and class participation: 20%

Exam: 40%

Project: 40%

Disability Statement:

If you have a documented disability and anticipate needing accommodations in this course, please request that a Disability Resources (DR) staff send a Student Academic Accommodation Request (SAAR) form verifying your disability and specifying the accommodations you will need. DR is located in Room 1076 of the Student Services Building.