

ENEE 720: Wireless Communication Theory (Spring 2012)

Lecture: TuTh 3:30-4:45pm JMP 2202.

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Course web-page: <http://www.ece.umd.edu/~ulukus>

Prerequisite: ENEE620.

Textbooks:

- A. Goldsmith, *Wireless Communications*, Cambridge University Press, 2005.
- D. Tse and P. Viswanath, *Fundamentals of Wireless Communication*, Cambridge University Press, 2005.
- S. Verdu, *Multuser Detection*, Cambridge University Press, 1998.

Course Outline:

1. Wireless communication channel (pathloss, fading, interference)
2. Cellular communications, CDMA, OFDM, TDMA
3. Single-user channel
 - (a) single-user detection
 - (b) single-user capacity
 - (c) power control in fading, opportunistic communication
4. Multi-user channel
 - (a) multi-user detection
 - (b) multi-user capacity
 - (c) power control in fading, opportunistic communication
5. Multiple-antenna (MIMO) communications
 - (a) MIMO capacity
 - (b) space-time coding
6. Diversity-multiplexing trade-off
7. Cooperative communications
8. Power control for interference management

Grading: Homeworks, midterm, final exam.