
EE 359 - Wireless Communications - Fall 2009

Course Information

Instructor: Professor Andrea Goldsmith, 371 Packard, 725-6932, email: andrea@ee.stanford.edu OHs: MW after class and by appointment.

Class Time and Location: MW, 9:30-10:45 a.m., 60-120

Discussion Section: Tuesday 4:00 – 4:50pm, location 380-380W (basement of Math Dept).

Class Homepage: <http://www.stanford.edu/class/ee359>. The homepage has all class policies, handouts, homework assignments, required and recommended reading, corrections to handouts and homeworks, and any important announcements. A Tentative Syllabus is also present.

Class Mailing List: Registered students are automatically subscribed to the class mailing list ee359-win0809-students. You cannot join this mailing list unless you are an on-campus registered student. Auditors can join the guest mailing list ee359-win0809-guests by emailing the TA. Announcements will be sent to both mailing lists. Sending mail to ee359-win0809-staff@lists.stanford.edu will reach the instructor and TA.

Class TA: Yao Xie, email: yaoxie@stanford.edu, OHs: Tues 7:10 – 8:10pm (Room Packard 107) W 11am-noon (Room Packard 104), Email OHs: W 10-11pm.

Class Administrator: Pat Oshiro, email: poshiro@stanford.edu, 365 Packard, 723-2681.

Homework pickup and dropoff: Thursday at 5pm.

Required and Recommended Texts: The required text is Wireless Communications by Andrea Goldsmith (Cambridge University press, 2005). It is available at the Stanford bookstore and Amazon.com.

Prerequisites: EE 279 or equivalent (i.e. an undergraduate course covering digital communications). This class may not be taken without this prerequisite. If you are not sure if classes from other universities satisfy the prerequisites, speak with the professor.

Grading Policy – Two Options: The course grade is based on HWs and exams and the course option are as follows:

Project Option (4 units): Problem Sets - 20%, Midterm - 25%, Final - 30%, Project – 25%

Non-project Option (3 units): Problem Sets - 30%, Midterm - 30%, Final - 40%

Students who can only take the class for 3 units due to a restriction on the number of units they can enroll for, and are interested in doing a project, can do so with prior approval from the instructor. Details on the project can be found in the Project Handout on the class website. Projects are due on 12/4 (extensions of a few days may be possible.)

Homeworks: Homeworks are posted to the class website on Wednesday, and are due the following Thursday at 5pm. Late homeworks lose 1/4 credit per day late. Your lowest homework grade will be dropped. Up to three students can collaborate on each homework and turn in one write-up. Collaboration requires all collaborators to work out each and every problem. This can be done by working out the problems together, or each student can work out the problems individually and then discuss their work to

arrive at a final solution. It is not permitted on any homework for collaborators to divide up the problems, or for one person to work out a problem or problems and the others "check the work".

Exams: The exams must be taken at their scheduled times. The Midterm will take place on 11/2 tentatively. It will be scheduled outside class time since the duration is 2 hours. The actual date and time will be decided at least several weeks in advance. The Final is scheduled for 12/9 from 8:30-11:30 am. Exceptions to taking the exams at their schedule times for anything other than a documented medical or family emergency will be very rare. Any conflicts with the exam dates must be brought to the attention of the instructor as soon as they arise. In particular, you should not take this class if you know you have an exam conflict, unless you make arrangements with the professor at the beginning of the quarter.

Required and Supplemental Reading: Required reading from the course textbook will be posted on the class website prior to each lecture. The reading will generally be from the class reader. For each lecture, supplemental reading from the recommended/reserve textbooks, journal papers, and/or magazine articles will also be posted to the class website. The following reference texts are on 1 day reserve at the Terman library:

- Wireless communications by Andreas Molisch, Wiley-IEEE Press, 2005.
- Wireless Communications - Principles and Practice by T. S. Rappaport. 2nd Ed. Prentice Hall, 2001.
- Principles of Mobile Communications by G. L. Stuber. 2nd Ed. Kluwer Academic Publishers, 2001.
- Fundamentals of Wireless Communication by D. Tse and P. Viswanath, Cambridge University Press, 2005.
- Microwave Mobile Communications, W. C. Jakes, Wiley: 1974. Also IEEE Press: 1993.
- The Mobile Radio Propagation Channel, J.D. Parsons, Wiley: 1992.
- Digital Communication Techniques: Signal Design and Detection, M. K. Simon, S. M. Hinedi, and W. C. Lindsey, Prentice Hall: 1995.
- Digital Communications, J.G. Proakis, 4th Ed., McGraw-Hill: 2001.
- Digital Communications over Fading Channels, A Unified Approach to Performance Analysis M. K. Simon and M.-S. Alouini, Wiley: 2000.
- Course Notes: EE379A. J.M. Cioffi, Stanford University. Available at stanford.edu/class/ee379a
- Multi-Carrier Digital Communications, Theory and Applications of OFDM, A.R.S. Bahai and B.R. Saltzberg, Kluwer: 1999.
- CDMA: Principles of Spread Spectrum Communication, A.J. Viterbi, Addison-Wesley 1995.
- Spread Spectrum Communications Handbook, M.K. Simon, J.K. Omura, R.A. Scholtz, and B.K. Levitt, McGraw-Hill 1994.
- Multiuser Detection, S. Verdu, Cambridge: 1999.