

ECE524

Wireless Telecommunications II

(Fall 2010)

INSTRUCTOR Dr. Liuqing Yang
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CLASS WEB SITE TBD

CLASS MEETINGS MW 4:00pm–5:15pm, Location TBD

OFFICE HOURS MW 2:30pm–3:45pm

PREREQUISITES Introduction to Communications Principles (ECE 303 or equivalent)
Linear Systems Analysis (ECE 311/312 or equivalent)

TEXTBOOK

R. L. Peterson, R. E. Ziemer and D. E. Borth, **Introduction to Spread Spectrum Communications**, Prentice Hall, 1995, ISBN: 0024316237

COURSE OBJECTIVES

This course is intended to provide an introduction to spread spectrum fundamentals and a survey of spread spectrum techniques and applications in established cellular systems as well as in emerging scenarios including the Smart Grid. Further investigation and research in this area will be encouraged and facilitated via the course project.

COURSE TOPICS

1. Wireless communications fundamentals - modulation, channel propagation, equalization
2. Spread spectrum techniques - direct sequence, frequency hopping, time hopping, and multi-carrier systems, spreading sequences
3. Code acquisition and tracking loops
4. Multiple access - multi-user interference and multi-user detection
5. Applications - code division multiple access (CDMA), orthogonal frequency division multiple access (OFDMA), multi-carrier CDMA, ultra-wideband (UWB) systems, power line communications (PLC), broadband over power lines (BPL)

GRADING

- 20% Homework, 40% Midterm exam, 40% Course project
- No extra work will be accepted for improving the final grade

COURSE POLICIES

Attendance: Regular attendance is strongly encouraged. Students are responsible for all assignments and announcements made in class, and all material covered in class, whether or not it is in the textbook. Students are personally responsible for all information disseminated during lectures, including homework assignments and due dates, exam dates, course material etc. Please check the class web site, and your colostate email account regularly for announcements and homework assignments.

Homework: Collaboration on homework is permitted unless explicitly prohibited, provided that: 1) collaboration is restricted to students currently in this class; 2) each student must have his/her own contribution and write up his/her homework independently; and 3) on problems involving programming, each student must independently implement every piece of the program(s). Direct copying of another student's solution will be considered plagiarism and a violation of the Student Conduct Code.

Midterm Exam: A midterm exam will be held on November 9, 2010 (tentative). The exam will be closed-book and closed-note. But two (2) single-sided 8.5in×11in handwritten study sheets are allowed. Disputes in exam grading should be addressed in writing to the instructor within one week from the date the exam is returned to the class. Changes in the exam grade are solely at the discretion of the instructor.

Make-Up Policy: If, in the event of extraordinary circumstances, a student has to miss an exam, the student has to seek prior approval of the instructor with a legitimate excuse, accompanied by some documentation from either a medical doctor or an attorney. Notes from family members are not acceptable. Make-up exams will be arranged only for properly authorized absences.

Course Project: Each student is required to submit an initial proposal, a preliminary report and a final report (all in written form) for his/her individual project. Detailed guidelines will be provided.

Integrity and Honesty: Cheating of any kind is extremely serious and may result in an 'E' grade and other consequences. Please refer to the Student Conduct Code at <http://www.conflictresolution.colostate.edu/conduct-code.aspx>, and consult Conflict Resolution web sites <http://www.conflictresolution.colostate.edu/home.aspx> for the Academic Integrity guidelines and various policies.

ADA Statement: Students with disabilities are encouraged to register with the Office for Student Services to determine the appropriate classroom accommodations. Any student with verification of a disability should contact the instructor as soon as possible, and will be accommodated in an appropriate manner.