

## ECE 421 Telecommunication (Fall 2019)

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**INSTRUCTOR**        Dr. Liuqing Yang  
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**CLASS MEETINGS**    T, Th 11:00 am–12:15 pm, Engineering B105

**OFFICE HOURS**        T, Th 10:00–11:00 am, Engineering B112

**TEACHING ASSISTANT**  
                          Shijian Gao (shijian.gao@colostate.edu)  
                          Office Hours: M 2:00–4:00pm, Engineering C9

**PREREQUISITES**     ECE303/STAT303, ECE312

### TEXTBOOK

B. P. Lathi and Zhi Ding, **Modern Digital and Analog Communication Systems**, 4th Edition, Oxford University Press, 2009.

### REFERENCE BOOK

Simon Haykin and Michael Moher, **Introduction to Analog & Digital Communications**, 2nd Edition, John Wiley & Sons, 2007.

### COURSE DESCRIPTION

Analog communication (modulation), digital communication (source coding; modulation and detection; channel coding)

### COURSE TOPICS

	Tentative Schedule
Week 1	Introduction
Week 2	Review of Signal and Systems
Week 3	Amplitude Modulation
Week 4	Angle Modulation
Week 5&Week 6	Sampling, Quantization and Pulse Modulation
Week 7&Week 8	Baseband Data Transmission
Week 9	Midterm Exam
Week 10	Digital Baseband and Passband Data Transmission
Week 11&Week 12	Review of Probability and Random Process
Week 13	Noise in Analog Communications
Week 14	Fall Break
Week 15	Noise in Digital Communications
Week 16	Error Probability Calculations

## GRADING

- 40% Homework
- 25% Midterm exam (TBD)
- 35% Final exam (TBD)
- 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.

**Exams:** All exams will be in-class, closed-book and closed-note. But two (2) single-sided 8.5in×11in handwritten study sheets will be allowed in each exam. 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.

**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> as well as <http://tilt.colostate.edu/integrity/> for the Academic Integrity guidelines, resources, and various policies.

Because academic integrity is so central to our mission as students, teachers, scholars, and citizens, we will ask to you sign the CSU Honor Pledge as part of completing all of our major assignments. While you will not be required to sign the honor pledge, we will ask each of you to write and sign the following statement on your papers and exams:

**“I have not given, received, or used any unauthorized assistance.”**

**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.