1. **Class Hour:** MW 12:45pm-2:00pm, Chandler-Ullmann Hall 315

2. **Office Hour:** MW 2:05pm-4:00pm, Packard Lab 406B; or by appointment.

3. **Class Plan:** Two midterms, one final, a class project and a term paper. Homework will be assigned each week and due the next week before class. Late homework will not be accepted.

4. **Grading Policy:** Class participation: 5%, Homework: 15%, Midterm 1: 15%, Midterm 2: 15%, Final: 30%, Project and Term Paper: 20%


6. **Course outline:** A first course in communications, either at a senior level or at a first-year graduate level, this course provides an introduction to the basic principles in the design and analysis of modern communication systems. We intend to cover both analog communication systems and digital communication systems, with emphasis on the latter. The topics include: signal analysis and transmission, analog communication systems (analog modulation), and digital communication systems (A/D conversion, source encoding, channel encoding, digital modulation, detection and estimation).

7. **Important dates:** Tentative dates for midterms are Sept. 29 and Nov. 2. Final tbd. Students are expected to give a 10 minute presentation on their class projects on Nov. 28 and Nov. 30. An electronic version of the project report (term paper) and its presentation (e.g. powerpoint/latex slides) must be emailed to jingli@ece.lehigh.edu by Dec. 2. Email a one-page outline of your project or survey by Oct. 17.

8. **Project and Term Paper:** The class project can be a research project, a simulation/analytical study or a survey of a topic related to the class. The term paper (typed, professional looking, double spaced) should be 15 to 25 pages in length (excluding figures) and should contain technical details including things like equations, block diagrams of systems, performance curves, simulation or measured performance result. The report should include a set of references from books, journals (IEEE Transaction on Communications, Networking, Vehicular Technology, Journal on Selected Areas of Communications, IEEE Communications Letters) and magazines (IEEE Communication Magazine, Networks, Personal Communications).

9. **Project Topics:** The instructor will be happy to suggest topics. The topic must address the technical aspects of a particular communication topic. Example topics:
- Describe the modulation and signaling used for ADSL or for cable modems.
- Describe the transmission formats of HDTV and describe a typical receiver.
- Investigate ATM and/or ISDN.
- Investigate the proposed digital AM/FM radio transmission formats.
- Investigate particular wireless communication systems, for example 802.11b, WiMax, bluetooth.
- Simulate a communication system and report on a performance study of some issue (for example, report on the impact of bluetooth interference on 802.11b).
- Propose new approaches to improve the performance of a communication system or solve a particular technical problem.

10. **Exams:** Exams are CLOSED BOOK with one 8 1/2 by 11 sheet of paper. You MUST present for all exams. In the event of an emergency which would prevent you from taking an exam, I must be notified in advance. If you can not get in contact with me, call the ECE department (610-758-4070) and leave a message. Failure to notify me will result in an F grade for the test. The form of any make-up exam is at the discretion of the instructor (if may be an oral exam). ANYONE CHEATING ON A TEST WILL RECEIVE AN F FOR THE TERM GRADE.