

EEE 455 Syllabus

Prof. Dan Bliss

Goal

Understand basics of wireless communications (for example, cellular phones and WiFi)

Prerequisites

ECEE, CIDSE, SBHSE, SEMTE or SSEBE student and EEE 350 or equivalent.

Textbook

- Heavy reliance on my notes.
- Supplement: Proakis and Salehi, “Communication Systems Engineering,” 2002

Topics

- Introduction to communications
- Review of Fourier theory, random signals
- Noise
- Analysis of up/down conversion and complex baseband representation
- Signal spaces in band-limited complex channels and digital modulations
- Source coding and channel capacity
- Orthogonal frequency division multiplexing (OFDM) and spread-spectrum
- Receiver design (acquisition, synchronization, and demodulation)
- Block forward-error-correction codes
- Multipath propagation and inter symbol interference channels
- Channel access
- Examples of current standards (e.g. 802.11g and 802.11a, LTE)

Grading

Homework: 10% Exam #1: 20% Exam #2: 20% Final: 35% Lab: 15%

Comments

- All students (including graduate students) must take the lab.
- I use a mix of chalkboard and slides, and I typically post the slides before each lecture.

- Homework will be assigned and due roughly biweekly.
- Labs and some homework will involve use of MATLAB.
- Late homework will not be accepted once handed to grader.
- Please notify me early, if there needs to be any special considerations for exams.
- Medical considerations for exams must be accompanied by note from a doctor.
- I will occasionally replace or supplement classes with online lectures.