

EE 314 Digital Communications

Spring 2022 (Feb 28, 2022 - Jun 10, 2022)

This course covers advanced concepts of modern digital communication theory which are implemented in data communication systems such as modems (cable or wireless), cellular phones, basestation, radar, satellite systems etc..

Prerequisite: The class is open to any students who have previously learned Linear Algebra, Fourier Analysis, Probability and Random Variables, Basic Communications Theory, and Computer Programming (such as MATLAB).

Instructor: Dr. Hayrettin Ayar
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Schedule: Tuesday 14:40-16:30 FASS G018 (In-class and online)
Wednesday 16:30-17:30 FENS L063 (In-class and online)
<https://sabanciuniv.zoom.us/j/3053273002>

TAs: Rümeyşa Işıldak (rumeysa.isildak@sabanciuniv.edu) and
İdil Bensus Çılbır (idil.cilbir@sabanciuniv.edu)

Recitation: Wednesday 17:40-19:30 (online)

Office Hours: By appointment with me or your TA

Textbook: “Digital Communications: Fundamentals and Applications,” by B. Sklar, Prentice Hall, 2001 (Second Edition).

Reference Books:

“Modern Digital and Analog Communication Systems,” by B. P. Lathi, 5th Edition, Oxford Press, NY, 2018

“Communication Systems ,” by Simon Haykin, 4th Edition, John Wiley& Sons, 2001.

"Communication Systems Engineering," by John. G. Proakis and Masoud Salehi, 2nd Edition, Prentice Hall, 2002.

Tentative Outline

- Ch1 Signals and Spectra Review
- Ch2 Source Formatting
- Probability Review
- Ch3 Baseband Modulation/Demodulation/Detection
- Ch4 Bandpass Modulation and Demodulation/Detection
- Ch6 Channel Coding
- Ch13 Source Coding
- Selected Advanced Topics, as time permits

Tentative Grading

- Assignments 10%
- Midterm 30%
- Project 20%
- Final 40%