

EEL 5500 Digital Communications Systems

Credits: 3 credits

Text book, title, author, and year: Digital Communications: Fundamentals and Applications, 2nd Edition, Bernard Sklar, Prentice Hall, 2001

Reference materials: 1. Digital Communications, 3rd Edition, John Proakis, McGraw Hill, 1995. 2. Introduction to Digital Communications, 2nd Edition, Rodger E. Ziemer and Roger L. Peterson, Prentice Hall, 2001.

Specific course information

Catalog description: This course introduces senior undergraduate and graduate students in Computer and Electrical Engineering to the fundamentals of digital transmission and reception in the presence of noise and interference.

Prerequisites: Prerequisites: EEL 4512 – Communication Systems

Specific goals for the course: The goal of the course is to familiarize students with the basic principles involved in the transmission and reception of digital signals in the presence of white Gaussian noise.

Brief list of topics to be covered:

1. Introduction and review of digital signals and noise characteristics (3 hours)
2. Digital Transmission of analog signals (6 hours)
3. Detection of Signals in Noise (6 hours)
4. Intersymbol Interference and Equalization (4 hours)
5. Bandpass Modulation and Demodulation (6 hours)
6. Error Performance for coherent and noncoherent modulations(5 hours)
7. Modulation and Coding Trade-off (5 hours)
8. Bandwidth-Efficient Modulation (4 hours)
9. Error Control Coding (4 hours)
10. Convolutional Coding (4 hours)