

EEL 4512 Communication Systems

Credits: 3

Text book, title, author, and year: Communication Systems, S. Haykin and M. Moher, Prentice Hall. **Supplemental materials:**

1. Modern Digital and Analog Communication Systems, B. P. Lathi, Oxford University, 3rd Edition, 1998.
2. Introduction to Communication Systems, F. G. Stremler, Addison-Wesley, 3rd Edition, 1990.

Specific course information

Catalog description: Transmission of signals, amplitude modulation, frequency modulation, pulse modulation.

- a. **Prerequisites or Co-requisites:** EEL 4656 Analysis of Linear Systems
- b. **Required, elective, or selected elective:** selective elective

Specific goals for the course

- a. **Specific outcomes of instruction:** By the end of the course students will be able to: (i) know how to classify signals and systems (ii) know how to determine the bandwidth of a signal (iii) know how to determine PSD of a given power signal (iv) know how to calculate noise figures of a communication link (v) know how to perform power budget for a communication link (vi) know the differences between AM and FM radio (vii) understand the causes and remedy for image stations (viii) know to how to design a wideband FM system using Armstrong's method (ix) know to design filter pre-emphasis and de-emphasis filters to improve FM reception.

Brief list of topics to be covered:

- Introduction to Communications
- Signal and System Representation
- Signal Transmission and Measures of Bandwidth
- Amplitude Modulation and Demodulation
- Angle Modulation and Demodulation
- Random Processes and autocorrelations
- Noise in Communication Systems
- Transition to Digital Communication