EEL 4461 Introduction to Antenna Theory

Credits: 3

Text book, title, author, and year: Antenna Theory Analysis and Design by Constantine A. Balanis, Third Edition, John Wiley
Supplemental materials: Handouts, notes and Antenna for All Applications by John D. Kraus and Ron Marhefka, Third Edition, McGraw-Hill

Specific course information
   a. **Brief description of the content of the course:** Antenna parameters, wire antennas, loop antennas, array, matching techniques, broadband antennas, traveling wave antennas and antenna measurements.
   b. **Prerequisites:** EEL 3470
   c. **Required, elective, or selected elective:** Elective

Specific goals for the course
Specific outcomes of instruction:
   The student will learn the antenna mechanisms and fundamental parameters.
   The student will be able to calculate antenna gain, input impedance of simple dipole and loop antennas and plot antenna patterns.
   The student will understand the concepts of uniform amplitude and spacing array and a few broadband antennas.
   The student will be able to design and construct/built a broadband antenna.
   The student will have experience of antenna pattern measurements from their design antenna.
   The student will be able to effectively communicate in writing answers to qualitative questions on tests.

Brief list of topics to be covered

Chapter 1	Introduction to antennas and Radiation mechanism
Chapter 2	Antenna parameters: Beamwidth, pattern, gain
Chapter 4	Wire antennas and ground effects
Chapter 5	Loop antennas
Chapter 6	Linear arrays: Directivity, Design procedure of uniform amplitude and spacing
Chapter 9	Broadband dipoles and Matching techniques
Chapter 17	Antenna Measurements