ELE 475: ANTENNA THEORY AND DESIGN (elective)

Credit: 3 hours.

Catalog Description: Fundamentals of electromagnetic radiation from wire and aperture-type antennas; applications of field equivalence principles to aperture radiation; receiving antennas and noise evaluation of communication systems; antenna test equipment and measurement techniques.

Prerequisites: ELE 370.

Textbooks(s) and/or Other Required Materials: Antenna Theory & Design, 2nd edition, Warren Stutzman and Gary Thiele.

Topics Covered:

1. Maxwell’s Equations
2. Antenna Fundamentals and Definitions
3. Dipoles and Loops
4. Arrays
5. Line Sources
6. Resonant Systems
7. Wideband Antennas and Aperture Concepts

Class/Laboratory Schedule:
Lecture: 2.5 hours/week
Lab: none

Course Objectives and Relationship to Program Outcomes:

1. Addresses advanced electromagnetic concepts as relative to antennas (Outcome A, B, C, E, I, K).
2. Provides in-depth treatment of the methods of wave launching (Outcome A, E).
5. Requests students to develop specific designs that meet specified requirements (Outcome A, B, C, D, E, K).

This course examines operating principles and design of antennas intended for the lowest frequencies through microwaves.

Coverage (and level) of ABET Outcomes: A (3), B (3), C (3), D (3), E (2), G (3), I (3) and K (3).

Contribution of Course to meeting the Professional Component: Engineering Topics: 100%

Date: June 2004.