ELEN 6904 in Fall 2013: Antenna Design

Antennas are ubiquitous and are used in daily life in TV applications, cellular telephony, WiFi, astronomy, weather forecasting … the list is endless. Based on the application and the frequency of operation, the design of antenna can vary from a compact design that fits in your handheld phone to antenna arrays that span kilometers and probe the outer reaches of space for evidence of extra-terrestrial life. This course is aimed at providing the student will the skills and tools to theoretically analyze and practically design a wide variety of antennas.

Syllabus:
• Basics of antennas: types, patterns, directivity, gain, efficiency, antenna impedance
• Antennas in systems: matching, transmit- and receive-, radar
• Polarization
• Analysis techniques: potential functions, far-field approximating, duality, reciprocity, image theory
• Wire antennas: dipoles, loops
• Antenna arrays
• Traveling-Wave Antennas
• Yagi-Uda Antennas
• Log-periodic Antennas
• Aperture Antennas
• Horn Antennas

Pre-requisites: Undergraduate electromagnetics (ELEN 3401 or equivalent)

Textbook: Antenna Theory: Analysis and Design by Constantine Balanis

Hours: Tuesdays and Thursdays from 2:40pm-3:55pm

Grading Scheme: HWs (25%), Midterm (35%), Final (40%)

Instructor: Prof. Harish Krishnaswamy