

EEC 133 Radiation and Antennas

Fall 2006 (4 units)

Time: TR 8:00-9:50am
Location: Wellman 202
Instructor: Anh-Vu Pham
3141 Kemper Hall
Phone: 752-7472 and pham@ece.ucdavis.edu

Office Hours: TR 10:00-11:00am or by appointment

Teaching Assistants: Mr. David Stoops
Office Hours: TBD

Class Web page: <http://my.ucdavis.edu>

Required Text Book: J. D. Kraus and R. J. Marhelka, *Antennas for All Applications*, McGraw Hill, 2002.

Grading

Homework (weekly)	5%
Exams (2)	60%
Final Exam	35%

Exam: There will be no make-up exams. Students must notify the instructor a week in advance if he/she will miss an exam. The student must provide legitimate excuses in order to take an **oral** make-up exam to earn a grade.

Expanded Course Description:

- I. Fundamental Concepts
 - A. Review of System Concepts
 - B. Review of Fundamentals of Electromagnetics
 - C. Point Sources
 - D. Power and Radiation
 - E. Radiation Intensity
 - F. Examples
 - G. Directivity
 - H. Gain Examples
 - I. Field Patterns
 - J. Antenna as an Aperture
 - K. Examples
 - L. Friis Transmission Formula

- II. Ideal Linear Antennas
 - A. Short Dipole
- III. Thin Linear Antennas
 - A. Far Field Equations
 - B. Radiation Resistance of Wire Antennas
 - C. Log Periodic Antennas
- IV. Cylindrical Antennas
 - A. Hallens Integral Equation
 - B. Current Distributions
 - C. Output Impedance
- V. Small Loop Antennas
 - A. Fields from a Circular Loop Antenna
 - B. Radiation Resistances of Small Loop Antennas
- VI. Aperture Antennas
 - A. Huygens Principle and Aperture
 - B. Application to Horn Antennas
 - 1. H Plane Sectional Horn
 - 2. E Plane Sectional Horn
 - 3. Pyramidal Horn
- VII. Arrays
- VIII. Antenna Measurements and Analysis
 - A. Dipoles
 - B. Monopoles
 - C. Simple Arrays
 - D. E and H Plane Horns
 - E. Pyramidal Horns