EE 341-AV Electromagnetics
Spring 2020
Jan. 13-Apr. 24 (last day of class)

When: M/W 11-12:15PM
Where: 267 BEC
Instructor: Murat M. Tanik, PhD
Wallace R. Bunn Endowed Chair Professor
email: mtanik@uab.edu
Office: 261C BEC, *Phone:* 934-8442

Text: Matthew N. O. Sadiku
Elements of Electromagnetics, 5th Edition
Oxford University Press, 2010
Supplementary materials: as distributed in class.

Grading: 20% First exam **(Monday, Feb. 17)**
20% Homework, quizzes & participation – Weekly
20% Second exam **(Due March 9)**
Spring Break (March 16-22)
40% Final Project presentations due **(April 20&22)**
Progress and problem solving – **Weekly (Wednesday)**
Last day of class for us **(April 22)**

Preq: EE 316, PH 221. Grade C or better in EE 316 and PH 221

Coverage: We will follow the textbook including supplementary materials very closely. You need buy the 5th edition of the textbook and bring to class. Contents of Section 1 will be the first exam. Contents of Section 2 will be the second exam.

Section 1: Vector Algebra, Coordinate systems, and Vector Calculus
- Cartesian, Cylindrical and Spherical coordinates
- Del operator, Divergence, Curl

Section 2: General Electromagnetic Principles: Electrostatics and Magnetostatics
- Coulomb's law, Gauss's Law, Maxwell's equation
- Poisson's and Laplace equations
- Midterm Exam

Section 3: Waves and Applications
- Faraday's law, Maxwell's equations in final forms, Time-Varying potentials,
- Wave Propagation, Transmission lines.
- Final Exam

This is a fast pace course therefore, students is expected to study the assigned text material BEFORE the class session that discusses that material. Students will be expected to complete homework problems and be able to present those problems to the class at the next class meeting after the problems are assigned. I will follow the following rules traditionally established in this course:

Class Attendance: Each student is expected to attend each class meeting and is, therefore, responsible for everything covered in each meeting of the class as well as for all out-of-class assignments. Students will bring all handouts and the textbook to every class. Please note that each student is expected to be in his/her seat at the beginning of class. The Instructor has been known to lock the door to the classroom for courses having students that continually arrive late for class.

Examinations and the Project: No makeup examination will be given for scheduled examinations unless the student has made arrangements with the Instructor **prior to** the examination. Consent for a makeup examination **will not** be granted unless "good cause" is demonstrated to the satisfaction of the Instructor **prior to** the examination. Students missing a scheduled examination without "good cause" will receive an automatic grade of zero. **No makeup examination will be given for an unannounced examination. Students absent on the day of an unannounced examination will receive an automatic grade of zero.** Students will do a comprehensive project to reflect some level of professionalism.

Homework: 30% of odd numbered problems (spread out) at the end of each chapter are assigned as homework problems, which are provided for the benefit of the student, and will be graded in the course folder to be submitted at the end of the semester. It is in the "best interest" of each student to work all assigned homework problems before coming to a Problem Session. Students can improve their understanding of the assigned problems by working together in groups of three or four at set times each week in order that all homework problems might be completed in a timely manner.

Out-of-Class Assignments: In addition the final class project, each student will be required to 1) research the Internet and the library for (a) An application of electromagnetic theory with a global and societal context and (b) work environment issues related to professionalism and ethics and 2) write two (2-page typed, double-spaced) reports summarizing the information gained during the research with emphasis on the topics addressed in EE 341 that have application to the engineer's work environment and ethics. The reports will be graded on technical content as well as English grammar, punctuation, spelling, and correct word usage. Students will present their final project results to class in a Power Point presentation at the end of the semester. In addition, students will provide weekly progress reports during the semester.

Assignment of Final Grades: Final grades will be assigned as follows.
90 points to 100 points = A; 80 points to 89 points = B; 70 points to 79 points = C;
60 points to 69 points = D; below 60 points = F.

Academic Misconduct: Academic misconduct (i.e. plagiarism or cheating) on examinations and computer problem assignments will not be tolerated. Any student involved in academic misconduct will be prosecuted to the full extent allowed under university policy. This penalty will include an automatic grade of "F" in the course without the opportunity for withdrawal. If the offense is the second offense at UAB, permanent dismissal from UAB will result.

EE 341 Course Objectives as Related to Undergraduate Program Outcomes:
During the semester an EE341 course objectives will be distributed and explained. The purpose of these objectives is to make sure that we, as department, develop certain objectives and actually follow these objectives as related to undergraduate program outcomes. This facilitates the ABET process to produce quality engineers. An assignment associated with ABET requirements will be distributed and explained early in the semester.

"Neither acquiescence in skepticism nor acquiescence in dogma is what education should produce. What it should produce is a belief that knowledge is attainable in a measure, though with difficulty; that much of what passes for knowledge at any given time is likely to be more or less mistaken, but that the mistakes can be rectified by care and industry..."

Bertrand Russell in "On Education" (1926, p. 415)