



ELEN 311 – Introduction to Electric and Magnetic Fields
Winter Quarter 2009/2010
Tue-Thu 12:00-01:15PM Nethken Hall 105



Instructor: Dr. Sandra Zivanovic Selmic

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Office : Institute for Micromanufacturing (IFM), 911 Hergot Avenue,
second floor, room #219.

Office hours : M, W, F 8am-10am ; Tue-Thu 10am- noon.

Prerequisite: PHYS 202 and cumulative GPA>2.0 for Math 240-244.

Textbook: *Engineering Electromagnetics*, Seventh Edition, William Hayt and John Buck,
McGraw Hill, Boston, MA, 2006.

Reference book: *Introductory Electromagnetics*, Zoya Popovic, Branko Popovic, Prentice Hall,
2000.

Grading:	Homework	15%
	Exam1	27.5%
	Exam2	27.5%
	Final Exam	30%

Course Objectives:

- Introduction to the main electrostatic and magnetostatic laws.
- Calculate electrostatic fields in dielectrics.
- Calculate capacitance using electrostatic laws.
- Analyze steady currents and calculate resistance.
- Calculate magnetostatic fields.

Homework: On average, there will be one homework every week. Each homework is due by the beginning of class on the due date. If you will be out of town, you must make arrangements to get me the homework before the due date. Late assignments will be accepted only under special circumstances and will be graded at 50%. You are allowed to discuss the homework with your classmates. You can choose whether you want to work alone and submit your own homework, or to work in pair and submit one homework signed by you and your team companion. If you decide to work in pair, you cannot change the partner for homework throughout the quarter. However, you can always start submitting homework on your own, instead of in pair. Homework sets are expected to be neat, with logical steps to the final result. If more than one page is required for the homework, the pages must be stapled. Do not expect the teaching assistant (TA) to read illegible writing. Write the formula used symbolically first, then substitute the numbers and solve.

Differentiate between scalars and vectors. Vectors should be written in vector notation. Simplify the final answers. Box final answers. Write your name, course number (ELEN 311), homework assignment number, and due date of homework assignment. Failure to follow the above instructions will result in a reduction of the grade for the homework assignment in question. After an exam or homework has been graded and returned, students must see the instructor within one week if they wish to have their work reevaluated.

Exams: Exams are closed-book, closed-notes. However, you will be allowed to bring one handwritten formula sheet (letter page, single side) to the exam.

Course Policies:

- All students must be thoroughly familiar with all the requirements, regulations, and responsibilities described in the Louisiana Tech University Student Handbook (<http://www.latech.edu/students/judicial-affairs.shtml>). Unless otherwise specified, these provisions will be followed as described in the handbook.
- Students with recognized disabilities will be provided reasonable accommodations, appropriate to the course, upon documentation of the disability with the Office of Disability Services. Students must submit a written request for accommodations to the instructor in writing in the first week of the class. Students who fail to submit a written request will not be considered for accommodations.
- Attendance at every class is expected. Students who miss three classes (without discussing their absence with the instructor) may be dropped.
- Students are responsible for the material presented in class, the material contained in the textbook, and the homework assignments.

Tentative schedule:

Class	Date		Chapter
1	3-Dec	Thu	1 Vector analysis
2	8-Dec	Tue	2 Coulomb's law in vector form and electric field intensity
3	10-Dec	Thu	2 Coulomb's law in vector form and electric field intensity
4	15-Dec	Tue	3 Electric Flux Density, Gauss's Law, and Divergence
5	17-Dec	Thu	3 Electric Flux Density, Gauss's Law, and Divergence/Review
6	5-Jan	Tue	Exam1
7	7-Jan	Thu	4 Energy and Potential
8	12- Jan	Tue	4 Energy and Potential
9	14- Jan	Thu	5 Conductors, Dielectrics, and Capacitance
10	19-Jan	Tue	5 Conductors, Dielectrics, and Capacitance
11	21-Jan	Thu	5 Conductors, Dielectrics, and Capacitance
12	26- Jan	Tue	5 Conductors, Dielectrics, and Capacitance
13	28- Jan	Thu	Review
14	2-Feb	Tue	Exam2
15	4- Feb	Thu	7 Poisson's and Laplace's equations
16	9- Feb	Tue	7 Poisson's and Laplace's equations

17	11- Feb	Thu	9.1 Magnetic Force on a moving Charge 9.2. Force on a Differential Current Element
18	18-Feb	Thu	8 The Steady Magnetic Field- 8.1. Biot-Savart Law
19	23- Feb	Tue	Review
20	25- Feb	Thu	Final exam
21	2-Mar	Tue	Consultations

Computer Account: Each student must have his/her user account on the university computer network (i.e. [userid@coes.latech.edu](mailto:user@coes.latech.edu)). Check e-mail once per week.

Blackboard Account: The students in this class are encouraged to use the course material, syllabus, homework and exam solutions, discussion boards, announcements, etc. available at <http://blackboard.latech.edu>. Grades and scores will be posted on the Blackboard.