



**PRAIRIE VIEW A&M UNIVERSITY
DEPARTMENT OF PHYSICS**

**PHYS-3123-P01: ELECTRICITY AND MAGNETISM
CRN 11920
COURSE SYLLABUS, FALL 2012**

Professor: Kevin Storr, Ph. D.

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Lecture Sessions: MWF, 1:00 – 1:50 PM, Room NSCI-Conference Room

Office Hours: MWF 12:00 – 1:00 PM

Text Book: **Introduction to Electrodynamics**
by David Griffiths
ISBN: 978-0-077-35479-4 (Prentice-hall)

COURSE DESCRIPTION:

This semester we will delve into electrostatics and magnetostatics and incorporate their applications using the works of Coulomb, Gauss, Ampère and Faraday. We will learn the use of special functions to solve boundary value electromagnetic problems.

COURSE OUTCOMES: Upon completion of this course, students should be able to demonstrate:

- Familiarity with solving boundary value problems.
- Familiarity with vector calculus and its application in magnetostatics and electrostatics.
- Ability to apply Coulomb's Law, Gauss' Law, Ampere's law and Faraday's Law

PERFORMANCE EVALUATION and GRADING:

- This course uses the lecture format. Selected materials in each chapter will be covered in lecture. You should read the entire assigned chapter & work some of the problems before class. The lecture will not replace reading the materials but to amplify and explain the materials in the textbook.
- It is expected that you will need to spend at least two hours studying outside the class for each hour spent in class. This means you should plan to devote a minimum of nine hours per week for this class.
- **Lectures:** Attendance of lectures is required, and students are expected to arrive on time, stay for the entire class period, and actively participate. (See the University attendance policy below.) The lecture does not replace reading the materials. The lecture is intended to expand, explain, and offer a different perspective on the material in the textbook.
- **Homework:** Homework problems will be assigned for each chapter covered. Homework will incorporate the use of Mathematica for acquiring solutions. It is the responsibility of the student, individually or within a group, to complete each homework assignment by the due date. Solutions should be individual (though you may work together) and should not simply be copies of others' work. The instructor is available during office hours to assist students, and other professors may be consulted for assistance. It is essential that the student understand the solution to problems if he/she is to succeed in this course; failure to understand homework problems will likely result in a disastrous outcome on exams.
- **Exams:** Four unit exams, a multi-part oral exam, and a final exam are scheduled. Examinations will consist of solving quantitative and qualitative physics problems. All examinations are closed book and the Final may be comprehensive. Only calculators and no other electronic equipment are permitted during the exams. Phones are to be turned off.
- **Grading:** The homework contributes 30%, the oral exam contributes 10%, the unit exams contribute 40%, and the final exam contributes 20% toward the final numerical grade. A cumulative performance of 60% is required for a "D", 70.0% for a "C", 80.0% for a "B", and 90% for an "A" as the final grade in the course.
- **Late Homework or Missed Tests:** Late homework will not be accepted unless the student demonstrates exceptional circumstances. A unit exam may be excused or made-up at the instructor's discretion and only in the case that the student has a valid excuse. Inform the instructor in advance of an exam if there is a valid schedule conflict to schedule an acceptable time. In the event that an emergency occurs that causes an exam to be missed, it is expected that the student provide written evidence and schedule a make-up exam for as soon as possible following the emergency. There may be no opportunity to take the final exam after the scheduled time.

GRADING SCHEME

Assignment	Percent	Grade	Scale (%)
Exams	40	A	$\geq 90\%$
Final	20	B	80.0% – 89.9%
Homework	30	C	70.0% – 79.9%
Oral Exam	10	D	60.0% – 69.9%
		F	$< 60\%$
Total	100 points		

GRADE OF “I”:

A grade of “I” may be given in cases of documented emergencies or tragedies that prohibit a student from completing a course. In order to receive a grade of “I”, approval must be granted by the Department Head and College Dean prior to the final examination time.

Supplementary Material and Help:

Reading list

1. D.J. Griffiths, Introduction to Electrodynamics (third edition, 1999). This is the principal required textbook for the course.
2. G.L. Pollack and D.R. Stump, Electromagnetism (2002);
1. R.K. Wangsness, Electromagnetic Fields (second edition, 1986). Very similar in approach, content and style to Griffiths' book; these books should be your next recourse. They are also very well written and have good examples. They also use MKS units.
2. M.H. Nayfeh and M.K. Brussel, Electricity and Magnetism (1985). Their discussions of the principles are very brief and dry, compared to those in Griffiths, but they include a very large number of examples on every topic, including many not found in those other books. Also uses MKS units.
6. R.P. Feynman, R.B. Leighton, and M. Sands, The Feynman Lectures On Physics, volumes 1 and 2 (1963). © 2002, University of Rochester 7 All rights reserved
7. scientists in history (Nobel Prize in Physics, 1965, for the invention of much of quantum
8. J.D. Jackson, Classical Electrodynamics (second edition, 1975; third edition, 1999).

CLASS SCHEDULE

(Schedule Subject to Change)

<u>Week</u>	<u>Topic</u>	<u>Note</u>
1 (Aug 27 – Aug 31)	Vector Analysis	Late Registration & Drop/Add Ends on Aug 31 for Undergrad. & on Sep 1 for Graduate Students
2 (Sep 3 – 7)	Vector Analysis Electrostatics 2.1 - 2.2	Sep 5: General Student Assembly
3 (Sep 10 – 14)	Electrostatics 2.1 - 2.3	Sep 11: - Last day to withdraw from course without academic record - Deadline to apply for Fall 2012 graduation
4 (Sep 17 – 21)	Electrostatics 2.4 - 2.5	
5 (Sep 24 – 28)	Special Techniques 3.1 – 3.2	Exam #1 (on Ch. 1 – Ch. 2)
6 (Oct 1 – 5)	Special Techniques 3.3 – 3.4	
7 (Oct 8 – 12)	Special Techniques 3.4 Electrostatic Fields in Matter 4.1 - 4.3	MidTerm Exams
8 (Oct 15 – 19)	Electrostatic Fields in Matter 4.4	Oct 20–22: Mid-Term Examination Period
9 (Oct 22 – 26)	Magnetostatics 5.1	Exam #2 (on Ch. 3 – Ch. 4)
10 (Oct 29 – Nov 2)	Magnetostatics 5.2 - 5.3	Nov 1: Deadline to apply for Spring 2012 graduation Exam #3 (on Ch. 27 - 28)
11 (Nov 5 – 9)	Magnetostatics 5.4, Magnetic Fields in Matter 6.1	Nov 7: Last day to withdraw from course with “W”
12 (Nov 12 – 16)	Magnetic Fields in Matter 6.2 - 6.3	Exam #3 (on Ch. 5 – Ch. 6)
13 (Nov 19 – 23)	Magnetic Fields in Matter 6.4, Electrodynamics 7.1	Nov 24-25: Thanksgiving, No Classes
14 (Nov 26 – Nov 30)	Electrodynamics 7.2-7.3	Exam #4 (on Ch. 7)
15 (Dec 3 – 4)	MT – Review Days; WR – Study Days	Note: Graduating seniors must schedule an early exam to be taken this week. Final Exams Start Friday, Dec 9
16 (Dec 5– 11)	Final Exam: TBD	Final Exams Continued

University Rules and Procedures

Disability statement (See Student Handbook):

Students with disabilities, including learning disabilities, who wish to request accommodations in class, should register with the Services for Students with Disabilities (SSD) at (936) 857-2693/2694 early in the semester so that appropriate arrangements may be made. In accordance with federal laws, a student requesting special accommodations must provide documentation of their disability to the SSD coordinator.

Academic misconduct (See Student Handbook):

You are expected to practice academic honesty in every aspect of this course and all other courses. Make sure you are familiar with your Student Handbook, especially the section on academic misconduct. Students who engage in academic misconduct are subject to university disciplinary procedures.

Forms of academic dishonesty:

1. Cheating: deception in which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered; giving or receiving aid unauthorized by the instructor on assignments or examinations.
2. Academic misconduct: tampering with grades or taking part in obtaining or distributing any part of a scheduled test.
3. Fabrication: use of invented information or falsified research.
4. Plagiarism: unacknowledged quotation and/or paraphrase of someone else's words, ideas, or data as one's own in work submitted for credit. Failure to identify information or essays from the Internet and submitting them as one's own work also constitutes plagiarism.

Nonacademic misconduct (See Student Handbook)

The university respects the rights of instructors to teach and students to learn. Maintenance of these rights requires campus conditions that do not impede their exercise. Campus behavior that interferes with either (1) the instructor's ability to conduct the class, (2) the inability of other students to profit from the instructional program, or (3) campus behavior that interferes with the rights of others will not be tolerated. An individual engaging in such disruptive behavior may be subject to disciplinary action. Such incidents will be adjudicated by the Dean of Students under nonacademic procedures.

Sexual misconduct (See Student Handbook):

Sexual harassment of students and employers at Prairie View A&M University is unacceptable and will not be tolerated. Any member of the university community violating this policy will be subject to disciplinary action.

Attendance Policy:

Prairie View A&M University requires regular class attendance. Excessive absences will result in lowered grades. Excessive absenteeism, whether excused or unexcused, may result in a student's course grade being reduced or in assignment of a grade of "F". Absences are accumulated beginning with the first day of class.

Student Academic Appeals Process

Authority and responsibility for assigning grades to students rests with the faculty. However, in those instances where students believe that miscommunication, errors, or unfairness of any kind may have adversely affected the instructor's assessment of their academic performance, the student has a right to appeal by the procedure listed in the Undergraduate Catalog and by doing so within thirty days of receiving the grade or experiencing any other problematic academic event that prompted the complaint.