Phy361: Electricity, Magnetism and Waves I (3) Fall 2015

Instructor: Dr. Paul D. Schmelzenbach	Meeting: 1:30-2:20 MWF (LH01)
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Office Hours: 10:00-12:00 R, 12:30-1:30 MWF	Office Location: RS 207

Materials – *Introduction to Electrodynamics* by David Griffiths, 4rd edition. Published by Prentice Hall, 1999. Access to MATLAB or similar program. Scientific Graphing Calculator.

Description – Almost everything we experience is a result of interactions described by electrodynamics. Amazingly much of electrodynamics boils down to only four equations! But to understand and use these equations we must first build up our understanding of simplified cases that will help us develop conceptual understandings and mathematical expertise.

Learning Outcomes – This course supports the overall learning objectives of the physics and engineering programs to: develop an understanding of the fundamental principles of physics

Within these broader outcomes, in this course you will

1. Translate a physical description of a junior-level E&M problem to a math equation necessary to solve it.
2. explain the physical meaning of the mathematical formulation
3. articulate the big ideas from each section
4. justify and explain your thinking and approach to a problem or physical situation in written or oral form
5. when appropriate for a given problem you should be able to predict your expectations of a problem (such as the direction of a field or dependence on distance) and in all cases evaluate the reasonableness of a solution.
6. be able to sketch the physical parameters of a system (such as the E or B field)
7. apply computational techniques to help in solving E&M problems
8. correctly apply problem solving techniques such as approximations, symmetries, integration and superposition

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Homework – Homework is exceedingly important for developing an understanding of the course material, not to mention building skills in complex physical and mathematical problem solving. They will require considerable time and personal effort this term. Remember that it is not the solution that itself that is the true goal, it is the process to the solution that will develop your skill as a physicist or engineer.

Submission format:

-Work the problem in clear logical steps. Solutions should be clear enough one of your peers could follow your steps if they had not worked the problem before.

-Neatly use pencil.

-Watch the details. For instance, always indicate vectors with a consistent notation: the electric field is $\mathbf{E}$ or $\overrightarrow{E}$ not just E (which indicates you mean just the magnitude).

-Does your answer make sense? Box your final answer.

Collaboration: I expect and encourage collaboration between you and your peers while working on your homework. (Most good ideas come out of discussions with colleagues. This skill is highly valued by employers, and virtually all science and engineering takes place within groups or teams.) That being said, your work should be your *own original solution.*

Allow adequate time to work and think about problems by yourself first before you work together with your peers or ask questions of me. The guideline is that you should have no trouble explaining or repeating work that you turn in.

Preclass questions Each class day there will be three Preclass questions to answer electronically. These will be due by midnight the evening before class. Your responses to Preclass questions are graded on the following scale: 2=demonstrates reading/thinking; 1=room for improvement, 0=unsatisfactory.

Exams – Two examinations will be given during the semester on October 12 and November 23. The written portion of the final examination is scheduled for Wednesday, December 16 at 1:00 pm.

Quizzes – Through the semester there will be several quizzes that will be announced at a minimum of the previous class period.

Final Grades – The grade you earn in this course is based on the scale shown to the right. The points you receive during the course are weighted accordingly:

- Homework: 25%
- Preclass: 5%
- Tests (2): 30%
- Quizzes: 15%
- Final Exam: 25%

A	100 - 91.0
A-	91.0 - 89.5
B+	89.5 - 87.0
B	87.0 - 81.0
B-	81.0 - 79.5
C+	79.5 - 77.0
C	77.0 - 71.0
C-	71.0 - 69.5
D+	69.5 - 67.0
D	67.0 - 61.0
D-	61.0 - 55.0

Academic Integrity – All students are expected to uphold the highest standards of honesty and integrity in their academic work. Cheating or plagiarism may result at a minimum in failure on the assignment and may result in an automatic failure in this course.

Academic Accommodations – While all students are expected to meet the minimum academic standards for completion of this course as established by the instructor, students with disabilities may require academic accommodations. At Point Loma Nazarene University, students requesting academic accommodations must file documentation with the Disability Resource Center (DRC), located in the Bond Academic Center. Once the student files documentation, the Disability Resource Center will contact the student's instructors and provide written recommendations for reasonable and appropriate accommodations to meet the individual learning needs of the student. This policy assists the University in its commitment to full compliance with Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities (ADA) Act of 1990, and ADA Amendments Act of 2008, all of which prohibit discrimination against students with disabilities and guarantees all qualified students equal access to and benefits of PLNU programs and activities.

FERPA Policy As a student at Point Loma, you have a legal right to privacy as outlined in the federal FERPA (Family Educational Rights and Privacy Act) legislation. See Policy Statements for full text.