

Electromagnetism – Spring 2004

PHYS-350

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Class meeting times: Wednesday, 2:10-4:50PM

Office hours: Homework session – Monday, TBA

General – Tuesday, 9:30-11AM, Thursday 1-3 PM, Friday 9:30-11 AM, or by appointment

Course description and goals:

Classical electromagnetism was the greatest success of 19th century physics and mathematics and is still held up as a model of a successful theory. In four equations, Maxwell presented a unified description of electricity, magnetism, and light that pointed the way to relativity and has been successfully incorporated with little change into quantum mechanics. Indeed, combining electromagnetism and the atomic theory describes, predicts, and/or explain almost all of the properties of matter and structures in nature, except those at the very small scale where the nuclear forces dominate and at the large scale where gravity dominates.

The topics covered will be traditional: electrostatics, magnetostatics, and electrodynamics, culminating in Maxwell's equations. Following that will be a brief survey of possible extensions.

The course presupposes a solid mathematical background through MATH-223. Completion of a differential equations class, such as MATH-321, would be helpful but is not required.

Course Materials:

Text: *Introduction to Electrodynamics*, 3rd Edition, David J. Griffiths, Prentice Hall, ISBN 0-13-805326-X

Calculator: Scientific calculator.

Matlab: We will be using the computer program Matlab in class and on some homework assignments. No prior knowledge of Matlab is expected; you will develop the skills as we go along. Matlab will be available to you in the departmental computer lab.

Communication: This course will use the Blackboard system of American University for distribution of information outside of class time.

Email: You must have an American University email account to use this system; if you use an email provider other than American, forward your American mail to that account. On-line quizzes will be taken through Blackboard, on-line discussion sessions will be managed through Blackboard, and solutions to homework and tests will be posted on Blackboard. Check your email and the class website of Blackboard frequently to stay up-to-date. I usually respond fairly promptly to email and it is my preferred method of communication outside of class and office hours.

Discussion Boards: Please make use of the discussion boards to ask questions, vent frustrations, share neat ideas or websites, etc.

Privacy: For the record, I can track Blackboard viewing, i.e. count the hits on each page and see who accessed it. However, you can post on the discussion board anonymously, and I really can't see you said it.

Etiquette: Express yourself freely in this class, in email and on Blackboard. However, be respectful and polite to your fellow students.

Course requirements and grading: Your final grade will be based on the following:

Homework	40%
Class Participation	20%
Midterm	20%
Final	20%

Grading scale: The course will be graded on a 4 point scale. For example, every homework assignment will be given a letter grade which corresponds to a number between 0 and 4 in the usual way.

Homework: Twelve times during the semester, assigned homework will be required to be turned in. The homework assignments will be posted on Blackboard at least one week before the due date. Roughly half of each homework assignment will be problems about the topic that will be covered that day, half will be on topics covered previously. You may work with others to complete these assignments, but you must turn in your own work. You may not copy the homework from someone else, as that is a violation of the AIC. You are encouraged to attempt all the homework on your own before seeking assistance, but you are also strongly encouraged to form study groups and come to office hours. Once a week (on Monday, I expect) I will hold a special homework session. This is optional, but it will be very helpful. The homework will be due at the beginning of class with no extensions possible except for excused absences (see below).

Class Participation: To receive the full 20% for class participation, you must attend every class and participate. Each day you will grade your own participation with a letter grade. Occasionally you will be required to turn in the results of class activities for grades from me.

Exams and Final: There will be one in-class exams and a final during the final exam period. They will be open-notes and open-book. The final is cumulative. Test results and answer keys will be posted on Blackboard.

Succeeding in this class and getting help: To succeed in this class, it is imperative that you interact with the material every day. Physics is like a foreign language, you cannot learn it just from attending class. Make sure you do the readings before class, do all the quizzes and homework, solve the sample test questions, come to office hours. This is a three-hour class, so you should spend *at least* six hours a week outside of class time thinking about and practicing physics.

On-line discussions: On Blackboard there will be on-line discussion groups. You can you this to ask me questions publicly, discuss homework with your peers and voice concerns and opinions about the material and the class.

Office hours: You are super-welcome to come to office hours. We have a good time there. If you can't make any of the times listed above, call or email me; we can work something out.

Special homework session: Make sure you come to this if you are struggling with the homework.

Students with disabilities: Please contact me if you have any special needs.

Academic Integrity Code: Read it and follow it. It is your responsibility to know it and abide by it. Follow all instruction given here or given on a specific assignment or the full due process of the AIC will come down on you.

Excused absences and extensions: Severe illness, religious observance, University business, and family emergency are acceptable reasons for missing class or needing an extension on an assignment. I have the right to request reasonable documentation, in accordance with University policy. Do not notify me of an absence, such as missing an exam or needing an extension, at the last minute. Use email and notify as far in advance as possible.