

Physics 3201 Section 001, Class # 6060 -- Electricity and Magnetism 1 Spring 2026

Instructor: **A.T. Le, Ph.D.**

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Lecture: **Tuesday & Thursday, 2:00 pm - 3:15 pm; Room: ROWE 132**

Office hours: Thursday 3:30 pm - 4:30 pm, or by appointment

Enrollment Requirements: PHYS 1230 or 1402Q or 1502Q or 1530 or 1602Q or instructor's consent; MATH 2110Q and 2410Q, or MATH 2130Q and 2420Q.

I hope you all do well in this course. Feel free to contact me with any questions or concerns about lectures, homework problems, or exams. As long as you work hard to succeed in solving the problems that we will cover, I'm sure we will have a successful class this semester.

Course Objectives

The primary purpose of this course is to introduce the basic physics and applications of electrostatics, magnetostatics, potentials, and electromagnetic fields in matter.

The course will cover the following topics:

- Vector calculus, gradient, divergence, curl, Laplacian.
- Electrostatics: Coulomb's law, electric fields, potentials.
- Boundary value problems, method of images, separation of variables, multipoles.
- Electric fields in matter: conductors and dielectrics.
- Magnetostatics: magnetic fields, Lorentz force, Biot-Savart law, Ampere's law, vector potential.
- Magnetic Fields in Matter: magnetization, bound currents, the auxiliary field.

General Course Information

Announcements, syllabus, lecture notes, grades, exam schedules, and other relevant course information will be posted on HuskyCT, found at <https://lms.uconn.edu> which should be visited on a regular basis.

Main Textbook:

Most of the course materials and homework problems will be taken from the following required textbook:

David J. Griffiths, "Introduction to Electrodynamics", 4th or 5th edition.

Supplementary textbook:

Edward M. Purcell & David J. Morin "Electricity and Magnetism", 3rd edition

Course Grade:

Final grade will be based on a scale of 1,000 points from homework, exams, and participation.

Grading:

Homework:	40%
Participation:	10%
Midterm Exam:	20%
Final Exam:	30%
Total:	100%

Homework:

Homework assignments will be given approximately once a week (Thursday, to be posted on HuskyCT) and are due after one week (to be submitted on HuskyCT by Thursday at 1pm). **Late assignments will not be accepted.** There will be about 11 homework assignments, each will be worth 40 points. The lowest score will be dropped so a total of 400 points may be earned from the homework.

General guidelines for homework:

- Discussions among the students are strongly encouraged. I suggest that you form study groups, i.e., get together with your classmates to do weekly homework assignments and/or study for exams.
- Students should document the intermediate steps so that partial credit can be given.
- Try to always check your final answer to see if it makes sense.
- Each student should write his/her own homework. Homework will **not** be accepted after the due date.

Participation:

The lecture presentation will involve class discussions. All students are expected to participate in these discussions, since they will help elucidate the course material. Participation also reflects class attendance and the occasional quiz. The instructor is only the guide – ***students are expected to actively do the learning!***

Students who anticipate being away from a class for a legitimate reason should inform the instructor ***by e-mail*** ahead of class and give the reason for absence.

Midterm exam:

The midterm will cover course material from the first half of the course.

Midterm date: March 12 (tentative).

Final exam:

The final exam will cover all the course material, but with an emphasis on the second half of the course. **Final exam date: TBA**

Make-up policy: There is no make-up for homework assignments, exams, or final projects.

Grading Scale:

Grade	Letter Grade	GPA
93-100	A	4.0
90-92	A-	3.7
87-89	B+	3.3
83-86	B	3.0
80-82	B-	2.7
77-79	C+	2.3
73-76	C	2.0
70-72	C-	1.7
67-69	D+	1.3
63-66	D	1.0
60-62	D-	0.7
<60	F	0.0

Topics to be covered & tentative schedule (chapters refer to the main textbook):

1. **Chapter 1 Vectors (4 lectures, Jan 20-22-27-29):** Review of vector algebra, Differential Calculus, Integral Calculus, Curvilinear Coordinates, The Dirac Delta Function.
2. **Chapter 2 Electrostatics (5 lectures, Feb 03-05-10-12-17):** Electric Field & Coulomb's law, Gauss's law & its applications, Electric Potential, Poisson's Equation and Laplace's Equation; Work and Energy.
3. **Chapter 3: Special Techniques (4 lectures, Feb 19-24-26 & March 03):** Laplace's Equation, the Method of Images, Separation of Variables in Cartesian and spherical coordinates, Multipole Expansion, Dipole & its electric field.
4. **Chapter 4: Electric Fields in Matter (4 lectures, March 05-10, Midterm on March 12, March 24-26):** Induced Dipoles & Polarization, Bound Charges, the Field Inside a Dielectric, Gauss's Law in the Presence of Dielectrics.
5. **Chapter 5: Magnetostatics (5 lectures, March 31, Apr 02-07-09-14):** Magnetic Fields, The Lorentz Force, The Biot-Savart Law, Ampere's Law, The Vector Potential.
6. **Chapter 6: Magnetic Fields in Matter (4 lectures, Apr 16-21-23-28):** Magnetization, Bound Currents & The Magnetic Field Inside Matter, Ampere's Law in Magnetized Materials.
7. **Review for final exam: Apr 30**

Policy Against Discrimination, Harassment and Related Interpersonal Violence

Please see <https://policy.uconn.edu/2015/12/29/policy-against-discrimination-harassment-and-related-interpersonal-violence/>

The University is committed to maintaining an environment free of discrimination or discriminatory harassment directed toward any person or group within its community – students,

employees, or visitors. Academic and professional excellence can flourish only when each member of our community is assured an atmosphere of mutual respect. All members of the University community are responsible for the maintenance of an academic and work environment in which people are free to learn and work without fear of discrimination or discriminatory harassment. In addition, inappropriate amorous relationships can undermine the University's mission when those in positions of authority abuse or appear to abuse their authority. To that end, and in accordance with federal and state law, the University prohibits discrimination and discriminatory harassment, as well as inappropriate amorous relationships, and such behavior will be met with appropriate disciplinary action, up to and including dismissal from the University. Additionally, to protect the campus community, all non-confidential University employees (including faculty) are required to report sexual assaults, intimate partner violence, and/or stalking involving a student that they witness or are told about to the Office of Institutional Equity. The University takes all reports with the utmost seriousness. Please be aware that while the information you provide will remain private, it will not be confidential and will be shared with University officials who can help.

Academic Integrity Statement

This course expects all students to act in accordance with the Guidelines for Academic Integrity at the University of Connecticut. Because questions of intellectual property are important to the field of this course, we will discuss academic honesty as a topic and not just a policy. If you have questions about academic integrity or intellectual property, you should consult with your instructor. Additionally, consult UConn's guidelines for academic integrity in Undergraduate Education and Research: <http://community.uconn.edu/the-student-code-appendix-a/>

Students with Disabilities

The Center for Students with Disabilities (CSD) at UConn provides accommodations and services for qualified students with disabilities. If you have a documented disability for which you wish to request academic accommodations and have not contacted the CSD, please do so as soon as possible. The CSD is located in Wilbur Cross, Room 204 and can be reached at (860) 486-2020 or at csd@uconn.edu. Detailed information regarding the accommodations process is also available on their website at www.csd.uconn.edu