

Course Syllabus: PHYS2326.002.25F (FALL 2025)

Course Information

Course Number/Section	PHYS2326.002.25F
Course Title	ELECTROMAGNETISM AND WAVES
Term	FALL 2025
Classroom	SCIENCES Building SCI 1.220
Meeting Days & Times	August 25, 2024 – December 9, 2024 Tuesdays and Thursdays, 1:00 pm – 2:15 pm

All announcements and materials will be regularly updated on eLearning (<https://elearning.utdallas.edu>). Please check there regularly to stay up to date!

Professor Contact Information

Instructor	Dr. Yves Hon Kwan <i>(My first name is pronounced 'Eve'.)</i>
Email Address	yveshon.kwan@utdallas.edu
Office Location	SCI 4.259 <i>(You will need to use the staircase next to the lecture hall to access the 4th floor.)</i>
Office Hours	Fridays 10am-12pm TBC <i>(Please send me an email before coming to my office hours.)</i>
Teaching Assistants	Hengjian Li (hengjian.li@utdallas.edu) Sina Rezvani (sina.rezvani@utdallas.edu)
TA Consultation Hours	TBA

Course Prerequisites and Corequisites

Prerequisites: PHYS 2325 (Mechanics); MATH 2419 (Calculus II) or MATH 2414 (Integral Calculus) or equivalent.

Corequisites: Students must register for PHYS 2126 (Physics Laboratory II).

As this is a calculus-based course, confidence with deploying mathematical techniques is essential. The course is driven by exploration of new physics concepts, but equally important is being able to use these ideas to obtain quantitative predictions and results. You should be familiar with vectors and vector algebra, geometry, trigonometry, and basic multivariate integral and different calculus.

Course Description

Electricity and magnetism constitute the foundation of many central pillars of modern civilization (think of the power grid, lightbulbs, electronic devices, motors, medical imaging

technology...). Even more fundamentally, they are crucial for the structure of reality that we observe around us. Without electromagnetism, atoms and molecules would cease to exist, and there wouldn't be any light for you to view this syllabus with.

This course builds on the core physics foundation of PHYS 2325. Topics we will cover include electrostatics, electromagnetics, electric fields and potentials, electric currents, magnetic fields, the laws of Coulomb, Ampere, and Faraday, and Maxwell's theory of light.

We will meet twice per week for lectures that combine theory and practical problem-solving.

Student Learning Objectives/Outcomes

Throughout this course, we will learn how a small number of physical concepts and equations can generate and explain a wide variety of electromagnetic phenomena. The latter will not be simply some abstract academic curiosities, but rather phenomena that you will encounter in everyday life, as well as your future studies (whether that includes physics or not).

There are three primary goals of this course. First, you will gain an intuitive understanding of the key physical concepts of electricity, magnetism, and electromagnetic radiation. Second, you will develop a greater appreciation of the relationship between mathematics and the physical world around us. Third, you will further hone your proficiency in quantitative analysis and problem-solving. These learning objectives will also help you in your journey within your chosen career field, which could range from engineering to biomedicine.

Your progress will be primarily assessed through the class exams and homework.

Recommended Textbook and Required Access Code for Homework

We will primarily follow the structure of "University Physics" by Young and Freedman, published by Pearson-Addison Wesley (preferably 15th edition but earlier versions are also okay). It is recommended but not mandatory to obtain this textbook. However, the online platform Mastering Physics is mandatory to do the homework (see below).

If you are purchasing the book, make sure that it includes the student access kit in order to do online homework. You will need to register at www.pearsonmylabandmastering.com so that you can access the homework for this class.

Topics include:

- Chap. 21. Electric Charge and Electric Field
- Chap. 22. Gauss's Law
- Chap. 23. Electric Potential
- Chap. 24. Capacitance and Dielectrics
- Chap. 25. Current, Resistance and Electromotive force
- Chap. 26. Direct Current Circuits
- Chap. 27. Magnetic Field and Magnetic Forces
- Chap. 28. Sources of Magnetic Field
- Chap. 29. Electromagnetic Induction
- Chap. 30. Inductance

Chap. 31. Alternating Current
Chap. 32. Electromagnetic Waves

Mastering Physics is mandatory for this class to do the homework. You can either get this with your textbook, or purchase the access codes online. Homework is graded and assignments will be made online on Mastering Physics.

To register online:

- Go to <https://mlm.pearson.com/enrollment/kwan81373>
- Sign in with your Pearson student account or create your account.
- Select any available access option, if asked.
 - Enter a prepaid access code that came with your textbook or from the bookstore.
 - Buy instant access using a credit card or PayPal.
 - Select Get temporary access without payment for 14 days.
- Select Go to my course.
- Select **PHYS2326.002.25F (FALL 2025, Prof. Yves Kwan)** from My Courses.

If you contact Pearson Support, give them the course ID: **kwan81373**

To sign in later:

1. Go to <https://mlm.pearson.com>.
2. Sign in with the same Pearson account you used before.
3. Select **PHYS2326.002.25F (FALL 2025, Prof. Yves Kwan)** from My Courses.

Note: For the online homework in Mastering Physics, a maximum of 21 tries/attempts is given for fill-in-the-blank problems whereas for multiple choice questions, points are deducted for every incorrect attempt.

Homework deadlines TBD.

Late homework: You can still complete and earn partial credit for late weekly homework. Late homework is deducted 1% for every hour late, and you can still earn a maximum of 50% credit for correct answers for homework that is late by 2 days or more.

Calendar

We will aim to cover one chapter of "University Physics" per week/lecture. Note that one lecture = two sessions (1 hr 15 mins each).

LECTURE	DATE (2024)	CHAPTER	TOPIC
Lecture 1	Aug. 26 & Aug. 28	Chapter 21	Electric Charge and Field
Lecture 2	Sep. 2 & Sep. 4	Chapter 22	Gauss's Law
Lecture 3	Sep. 9 & Sep. 11	Chapter 23	Electric Potential
Lecture 4	Sep. 16 & Sep. 18	Chapter 24	Capacitance & Dielectrics

Lecture 5	Sep. 23 & Sep. 25	Chapter 25	Current, Resistance, & EMF
MIDTERM 1	Sep. 29 week (TBD)	Chapters 21-24 (UTD Testing Center)	
Lecture 6	Oct. 7 & Oct. 9	Chapter 26	DC Circuits
Lecture 7	Oct. 14 & Oct. 16	Chapter 27	Magnetic Field & Forces
Lecture 8	Oct. 21 & Oct. 13	Chapter 28	Sources of Magnetic Field
MIDTERM 2	Oct. 27 week (TBD)	Chapters 25-28 (UTD Testing Center)	
Lecture 9	Nov. 4 & Nov. 6	Chapter 29	Electromagnetic Induction
Lecture 10	Nov. 11 & Nov. 13	Chapter 30	Inductance
Lecture 11	Nov. 18 & Nov. 20	Chapter 31	Alternating Current
FALL BREAK	Nov. 24 – Nov. 30	no classes	
Lecture 12	Dec. 2 & Dec. 4	Chapter 32	Electromagnetic waves
FINAL EXAM	Dec. 8 week (TBD)	Chapters 29-32 (UTD Testing Center)	

* Schedule may vary. We may have optional classes during exam weeks, mostly for review and makeup.

Pre-test and Post-test (PHYS 2326.702.25F on eLearning)

The Physics Department at UTD encourages PHYS 2326 students to take a pre-test (Aug. 25 – Sep. 8) and post-test (Nov. 11 – Nov. 22) for evaluation of student academic outcomes in this course. You will need to reserve a seat in the Testing Center at least 48 hours before the intended exam time. The tests are typically given within a 60-minute duration.

- The quizzes are administered in the (proctored) Testing Center on the first floor of the Synergy Park North 2 building (SPN2) or in the ARC office. If you are taking it at SPN2, you will register for the quizzes at <https://ets.utdallas.edu/testing-center>. (Note that P. Mac Alevey's name will appear instead of mine for the instructor name.)
- Please email Prof. Paul Mac Alevey (paulmac@utdallas.edu), the physics faculty who manages these pre- and post-tests, if you have an OSA accommodation that involves extended time for pre- and post-tests. Alternatively, you can deliver a printed copy of the OSA letter to Prof. Paul Mac Alevey at SCI 3.168.

To encourage you to take these tests, participation in these tests will each grant you 1% towards your grade. Furthermore, a score greater than or equal to 50% on the post-test will grant a further 1% towards your grade.

Grading Policy

Your course grade will be based on three exams (each worth 25% of your grade), and homework (worth 22% of your grade). The exams are not cumulative, in that they will each focus on the topics covered by four chapters of "University Physics". Participation in the pre-

test and post-test will each grant 1%. Obtaining a score greater than or equal to 50% on the post-test will grant a further 1%.

Grade: 97 – 100%	A+	Grading criteria summary: Pre-test and post-test: 3% Homework: 22% Midterm Exam 1: 25% Midterm Exam 2: 25% Final Exam: 25% *Exam scores and grading will be posted on eLearning (BlackBoard) that is available on the UTD home page: https://elearning.utdallas.edu
93 – 96.99	A	
90 – 92.99	A-	
87 – 89.99	B+	
83 – 86.99	B	
80 – 82.99	B-	
77 – 79.99	C+	
73 – 76.99	C	
70 – 72.99	C-	
67 – 69.99	D+	
63 – 66.99	D	
60 – 62.99	D-	
< 59.99	F	

Course & Instructor Policies

If you miss an exam due to extenuating circumstances, please contact me as soon as possible. You may be required to produce a medical note or other supporting documentation.

Class Attendance and Participation

Regular and punctual class attendance is required. Class participation is expected. This includes engaging in group activities and raising/answering questions during class.

Lecture Notes and Materials

I will regularly update eLearning (accessible from the UTD home page <https://elearning.utdallas.edu>) with lecture notes and other miscellaneous materials.

These materials are to be used by registered students only, and may not be reproduced or shared with those not in class, or uploaded to other online environments except to implement an approved AccessAbility Resource Center accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Academic Support Resources

Please visit the [Academic Support Resources](#) page to view the University's academic support resources for all students.

AccessAbility Services

It is the policy and practice of The University of Texas at Dallas to make reasonable accommodations for students with properly documented disabilities. However, written notification from the Accessibility Resource Center (ARC) is required. If you are eligible to receive an accommodation and would like to request it for this course, please discuss it with me and allow one week advance notice. Students who have questions about receiving accommodations, or those who have, or think they may have, a disability (mobility, sensory, health, psychological, learning, etc.) are invited to contact ARC for a confidential discussion. ARC is located in the Student Services Building, SSB 3.200. They can be reached by phone at 972-883-2098, or by email at studentaccess@utdallas.edu.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

“As a Comet, I pledge honesty, integrity, and service in all that I do.”

UT Dallas Syllabus Policies and Procedures

Please visit the [Syllabus Policies](#) page to view the University’s policies and procedures segment of the course syllabus.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.