

PHYS2326 – Electromagnetism and Waves

1. Course Information

Course Number / Section: 2326.003

Course Title: Electromagnetism and Waves

Term: Fall 2022

Lecture days and times: Tu and Th 04:00pm – 05:15pm

Location: SCI 1.220

2. Instructor Contact Information

Instructor: Dr. Fabiano Rodrigues

Office's phone number: (972) 883 4526

E-mail address: fabiano@utdallas.edu

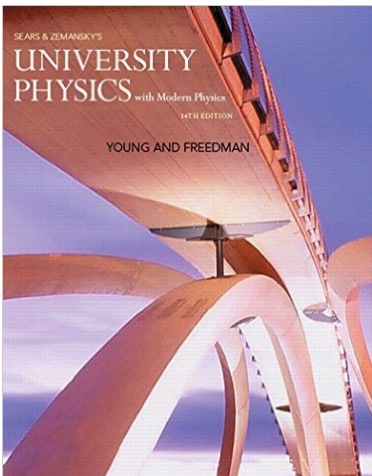
Instructor's office hours and location: TBD

Teaching Assistant (TA) office hours and location: TBD

3. Course Pre-requisites, Co-requisites, and/or Other Restrictions

Prerequisites: PHYS 2325 (Mechanics) and MATH 2419 (Calculus II) or MATH 2414 (Integral Calculus) or equivalent. Students must register for Physics Lab II (PHYS 2126). Familiarity with basic mathematics (including algebra, geometry, trigonometry and basic integral and differential calculus) is required and assumed.

4. Textbook and Materials



- **Book:** University Physics with Modern Physics (14th edition) by Young and Freedman, publisher Pearson. Earlier or newer versions would have nearly the same material.
- **MasteringPhysics:** If you are purchasing the book, make sure that it includes the student access kit in order to do the online homework assignments. If you already have the book and are not already registered, you will need to register at: <https://mlm.pearson.com/northamerica/masteringphysics/> so that you can access the homework assignments for this class. When registering, you will be asked for the MasteringPhysics course ID for this class, which is **rodrigues60594**.
- You will also need a **scientific calculator**. Calculators with graphing and/or memory capability will not be allowed during any type of assessment, including exams. Bring your calculator to lectures as well to double-check any calculations we make.

5. Student Learning Objectives/Outcomes

The primary objectives of the course are (a) to gain an understanding of electromagnetism and its relevance to the real world and (b) to develop the problem-solving skills needed for a successful career in sciences and engineering.

As a result of the course, the student is expected to demonstrate an understanding of the key concepts of electricity and magnetism - the laws, theories and relevant findings - and to be able to apply this knowledge to solving problems.

Topics include:

- Ch. 21 - Electric Charge, Electric Field, and Coulomb's Law
- Ch. 22 - Gauss's Law
- Ch. 23 - Electric Potential Energy and Electric Potential
- Ch. 24 - Capacitance and Dielectrics
- Ch. 25 - Electric Current, Resistance, and Electromotive Force (EMF)
- Ch. 26 - Direct Current (DC) Circuits
- Ch. 27 - Magnetic Field and Magnetic Force
- Ch. 28 - Sources of Magnetic Field
- Ch. 29 - Electromagnetic Induction, Faraday's Law and Lenz's Law
- Ch. 30 - Inductance
- Ch. 31 - Alternating current (if time allows)
- Ch. 32 - Maxwell's Equations and Electromagnetic waves

6. Assessments

Final course grades will be determined from a combination of the items below.

	Exam 1*	Exam 2*	Exam 3*	Homework*	Total
Weight	33.33%	33.33%	33.33%	33.33%	100%
Date	Sep. 22	Oct. 27	Dec. 8	Weekly	

*The lowest score will be dropped.

Important: The final exam date (during finals week) to be set by the university will be used for make-up exams. Make-up exams are only allowed for documented reasons (representing UTD in sports, illness, death in the family, etc.). Be aware that, unlike exams 1-3, make-up exams are cumulative. The documented reason must be presented within 2 weeks of the date of missing exam.

7. Course grading

A (≥ 93.0), A- (90.0 – 93.0), B+ (87.0 – 89.9), B (83.0 – 86.9), B- (80.0 – 82.9), C+ (77.0 - 79.9), C (73.0 - 76.9), C- (70.0 – 72.9), D+ (67.0 – 69.9), D (63.0 – 66.9), D- (60.0 – 62.9), **F (< 60)**

8. UT Dallas Syllabus Policies and Procedures

Information in the link below constitutes the University's policies and procedures including those related to COVID-19 and classroom safety:

<http://go.utdallas.edu/syllabus-policies>

9. Attendance, Homework, and Exams

- Attendance is not mandatory but **students missing class without documented reason automatically waive their right to any extra credit work** that might be offered during class.
- Please, be kind to your colleagues (and instructor) and avoid interruptions by **turning off** your cell phones, laptops, and other **electronics** during lectures. **Students failing to turn off their electronics agree to participate in lecture explanations if invited by the instructor.** Also, you are asked to arrive and leave on time.
- Any **announcement** will be made, primarily, in class.
- **Homework** will be given through the website <http://www.masteringphysics.com>
 - Go to the website, login as a student and follow the instructions.
 - My course ID for this class is **rodrigues60594**.
 - **Make sure the name you give to the website matches your name of record at UTD.**
 - No handwritten homework will be accepted.
 - HW assignments are released on Fridays at 11:59pm and are due at 11:59pm on the Sunday of the following week. Therefore, you have about 9 days to finish each HW.
 - Late HW submissions will not be accepted.
 - I strongly recommend you to print out your homework problems and do the work on your printouts. It is a convenient way to keep everything together. Successful students have done this in the past.
 - You will be allowed to 20 (!) attempts per question.
 - You are welcome to work together on homework but everyone must do their own problems. You will notice everyone has different numbers.
- **Exams** will be in class and written.
 - **Valid picture ID (Comet card or driver's license)** must be on your desk during exams. These will be checked.
 - You must bring a scientific calculator to exams. **Graphing calculators and programmable calculators will not be allowed.**
 - You must show all work for exams. There will be no credit for just numbers (relevant equations are required). You will not receive full credit for correct answers without work.
 - All exams will be closed book. Formulas will be provided with the exam. You must know the concepts and vocabulary for the exams. Exams will cover both in-class examples and homework.
 - Answers must be provided in ink. Bring pen and pencil to the exams.
 - You will be responsible for all the reading assignments even if we do not discuss them in class. This includes the power point slides available on eLearning.

- Any question about an exam grade must be presented within a week of the date when the grades were distributed. Grades are final after that date.

- As usual, **academic integrity** is expected from all UT Dallas students. Here is a good resource if you need to understand how academic dishonesty affects you:
<http://www.utdallas.edu/deanofstudents/integrity/>

10. Resources for Student Success

In addition to lectures, the following efforts are made and resources are available to help student success during this course:

- **Instructor office hours:** And feel free to ask questions after class.
- **TA office hours:** Typically, twice a week and not on the same days of instructor's office hours.
- **Lecture slides:** Copies of lecture slides will be made available on eLearning after each lecture.
- **Textbook:** The lectures will follow closely the order, material, and notation used in the textbook.
- **Homework Assignments:** Not only they will help you (a) better understand the material seen in class and (b) prepare you for the exams, but they will also be graded so that you will get credit for doing them.

11. Accommodation

Students with documented disability and requiring accommodation must contact the instructor with the "Office of Student AccessAbility (OSA) Official Letter of Accommodation" within 2 weeks of the first day of classes to allow accommodations to be arranged.

Note that the descriptions and timelines provided in this syllabus are subject to change at the discretion of the instructor.