

# PHYSICS 207, Sections 555-560, Fall 2022

**Instructor:** Dr. Wayne M. Saslow

**Office:** 455 MPH

**Office Hours:** MTW 4-5 pm, or by email appointment. I encourage you to come in groups of up to three.

During the first lecture I will give you time to get names and emails of others in the class.

**Virtual Office Hours:** Arranged by email.

**E-mail:** [wsaslow@tamu.edu](mailto:wsaslow@tamu.edu); office phone 979-307-4203. Please don't contact me using Campus. Use your section number in the Subject line.

**Lecture times and location:** Lecture 12:45 pm – 2:00 pm TR in MPHY 205

Recitation times and locations for each section are found on Howdy and Canvas

All exams will be taken in a set of classrooms yet to be determined (and likely to differ from the lecture room), during the following dates/times listed in Howdy:

Exam 1, Mon Sep. 26<sup>th</sup> 7:30 pm – 9:00 pm

Exam 2, Mon Oct. 24<sup>th</sup> 7:30pm – 9:00pm

Exam 3, Mon Nov. 21<sup>th</sup> 7:30pm – 9:00pm

Comprehensive Exam, Fri Dec. 2<sup>nd</sup> 4:10 pm – 6:10 pm

Exams will be scantron style, with scantron provided with the exam and the equation sheet for that exam.

## Course Description

Electricity & Magnetism for students in science and engineering. This is the second semester of a two-semester sequence in introductory physics. Topics include material covered in chapters 21-32 of the textbook, "University Physics" 15th edition by Young and Freedman (see Text and Required Materials below), including the laws of static electric fields (due to Coulomb and Gauss), the laws governing electric currents (due to Ohm and Kirchhoff,) the laws of how static electric currents produce static magnetic fields – aka electromagnetism – (due to Bio-Savart and Ampere), the laws of how non-static magnetic fields induce electric fields – aka electromagnetic induction (due to Faraday and Lenz), the Lorentz force acting on moving charges, the Maxwell equations and electromagnetic waves, and applications of all these laws.

Knowledge to gain: Understanding of the basic principles and laws of electricity and magnetism, and applications of these principles.

Skills to gain: Mastery of the basic concepts of electromagnetism and their practical consequences; ability to systematically work through complex problems in electromagnetism.

## Learning Objectives

This is a core-curriculum course, and as such it has the following learning objectives:

- **Critical Thinking:** creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.
- **Communication:** effective development, interpretation and expression of ideas through written, oral and visual communication.
- **Empirical & Quantitative Skills:** manipulation and analysis of numerical data or observable facts resulting in informed conclusions.
- **Team Work:** ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

### **Text and Other Required Materials**

-The text is “University Physics”, 15th ed., **Young and Freedman**, Chapter 21-32. See Canvas to register for Pearson’s online homework. Look for bundled access, including a copy of the text, access to the electronic version of the text, and access for homework and pre-lectures. You may purchase the text separately from the web access for homework and pre-lectures, but there is a price break for purchasing the bundle. Even a used text from a different edition will be a very helpful study guide.

-iClickers will be used. See the class webpage at <http://physics207.physics.tamu.edu>.

-A non-programmable scientific calculator that can evaluate arithmetic and trigonometric functions is all that is needed for homework, recitations and exams. Before exam 1 find if a calculator is programmable or not; programmable calculators are not allowed on exams -- use of one will lead to a zero for that exam.

-You are expected to regularly check Canvas both for announcements and to access course materials, and to regularly access MasteringPhysics. Because MasteringPhysics is not designed to work well on phones, you should have regular and frequent access to a computer with an internet connection.

### **Pre-Requisites**

(PHYS 218 or 206) and (MATH 152 or 172).

You are expected to have a working knowledge of high school math (plane geometry, trigonometry, and algebra), as well as derivatives and integrals, and be proficient in using vectors (addition, subtraction, dot and cross products). *The single greatest cause of low grades is a lack of mastery of this basic math.* The first week of recitation will review this material, but you should review it before any homework is due.

### **Pre-Lectures**

PHYS 207 lectures try to follow a “flipped course” model. As part of that we use a pre-lecture system hosted on the Pearson site; see the homework description on Canvas for instructions on accessing our Pearson course. Before the lectures you are required to view the pre-lectures (narrated slides and animations), and to take the associated graded online questions, intended assignments to verify your basic understanding. The in-class lecture focus more on examples and problem-solving.

*The second greatest cause of low grades is a lack of mastery of the basic definitions. Because the textbook gives many more worked out examples than the pre-lectures and lectures, it is an indispensable resource.*

*The examples -- in pre-lecture, lecture, recitation, and text -- are intended to clarify the definitions and to show how to use them. A true understanding of definitions and their use will assure you of a good grade.*

### **Lectures and Clickers**

In-class conceptual testing and polling will be done via iClickers. Grading will be based both on participation and on correct answers (total of 5%). Most of these questions will be designed to determine basic understanding, rather than calculational details. To ensure that you keep up with the textbook material, some questions will cover topics not yet discussed in pre-lecture and lecture.

### **Exams**

There will be 4 common evening exams (3 “midterms” and one “comprehensive”). The midterm exams are on the extra Monday evening sessions listed when you registered for the course; the midterms start at 7:30 pm and, on Friday December 2nd the comprehensive exam will start at 4:10 pm. There will be no regularly scheduled final exam. Each of the 3 midterm exams is scheduled for 90 minutes, and the comprehensive for 120 minutes. Exams generally consist of problems similar in content and difficulty to the homework problems, and as discussed in class and recitation. Formula sheets will be provided for each exam; example formula sheets are available on the PHYS 207 course website for your reference

(<http://physics207.physics.tamu.edu>). You are encouraged to download/print out a copy of the formula sheet for your own use during homework and recitation.

### **Absences**

If you miss an exam due to a university-excused absence as outlined in the University Regulations (see below), if possible contact your instructor prior to the exam; but you must make contact no later than the lecture following the missed exam. With an official excuse, the course policy for an absence is to base your total-exam average on the remaining midterm exams (which increases their weight accordingly). A missed comprehensive exam requires a make-up exam. Note: Few conditions qualify as an excused absence, so you must avoid missing exams except for extremely serious circumstances. See Student Rule 7 for details <https://student-rules.tamu.edu/rule07/>

### **Identification**

You MUST bring your TAMU student ID with you to all exams for identification purposes.

### **Course Grade**

The overall course grade is composed as follows:

- 3 midterm exams 15% each
- Comprehensive exam 30%
- Recitation participation 5%
- Online homework 10%
- Pre-lectures 5%
- iClicker 5%

In addition, if your comprehensive exam score exceeds your worst midterm exam score, the comprehensive score will replace that worst exam score. Exam scores of a zero due to an unexcused absence, use of programmable calculators or other forms of cheating will not be eligible for replacement. There will be no makeup exams for midterm, even with an excused absences; the average of the completed midterms will be weighted for a total of 45% of the overall grade.

### **Grading Scale**

- A: 90-100
- B: 80-89
- C: 65-79
- D: 50-64
- F: <50

### **Recitation**

In addition to the lecture, each of the six lecture sections have a weekly 80-minute recitation, with a different time, place, and instructor for each section. Recitation permits you the opportunity to ask questions about the material being covered, and to prepare you to answer the homework questions. Each recitation session will cover representative problems from the chapter being studied. For recitation you are expected to bring a device capable of accessing pdf files from the internet. These problems are posted on the class website at <http://physics207.physics.tamu.edu/Recitations/rec.html>.

### **Homework assignments**

Homework assignments are hosted (in addition to the Pre-lectures) in MyLab and Mastering in Canvas. You are responsible for completing the assigned HW problems and understanding how to solve similar problems. See instructions on Canvas.

The homework assignments for the chapters covered on an exam are due by 11:59 pm in the several evenings leading up to the exam, for example Ch 21 on Thursday, Ch 22 on Friday and Ch 23 on Saturday for an exam on Monday. You are given significant flexibility to complete these assignments, but do not wait until the day they are due to begin them. Although the HW grade is only 10%, thoroughly working through and understanding the problems is pivotal to success in this course. Late submissions are **not** accepted, except under extenuating circumstances; if you feel that you are in a situation that deserves further scrutiny, contact your instructor. Incorrect solution attempts typically are penalized by 3%, depending on the problem type. More details on the grading policy for individual problems are given on the HW website.

There are three naming conventions in Mastering Physics:

Chapter # Assignment – these give the 10% homework grade.

Prelecture Ch. # -- these give the 5% Pre-lecture grade.

Chapter # Extra Practice – These extra problems are not graded, not even for extra credit.

### Webpages

- Canvas – main course website for your class (will have lecture notes, grades and HW access)
- [physics207.physics.tamu.edu](http://physics207.physics.tamu.edu) – common course website for all sections using the “Physics for Scientist and Engineers” textbook
- <https://mlm.pearson.com/northamerica/masteringphysics/> – Mastering Physics by Pearson for homework submission and pre-lecture materials. Register through the link provided on your Canvas class webpage.

### Course Schedule

The course will proceed in the following order. The material covered on each exam will follow the notation below. Should a situation arise that requires a modification to what is given below, all students will be notified through Canvas and/or email as well as in class (if possible).

- Chapter 21 – Electric Charge and Electric Field
- Chapter 22 – Gauss’s Law
- Chapter 23 – Electric Potential
- **Exam 1 on 9/26 covering Chapters 21-23**
- Chapter 24 – Capacitance and Dielectrics
- Chapter 25 – Current, Resistance, and Electromotive Force
- Chapter 26 – Direct-Current Circuits
- **Exam 2 on 10/24 covering Chapters 24-26**
- Chapter 27 – Magnetic Field and Magnetic Forces
- Chapter 28 – Sources of Magnetic Field
- Chapter 29 – Electromagnetic Induction
- Chapter 30 – Inductance
- **Exam 3 on 11/21 covering Chapters 27-30**
- Chapter 31 – Alternating Current
- Chapter 32 – Electromagnetic Waves
- **Comprehensive Exam on 12/2 covering Chapters 21-32**

## University Policies

### Attendance Policy

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to [Student Rule 7](#) in its entirety for information about excused absences, including definitions, and related documentation and timelines.

### Makeup Work Policy

Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor.

Please refer to [Student Rule 7](#) in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor" ([Student Rule 7, Section 7.4.1](#)).

"The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence" ([Student Rule 7, Section 7.4.2](#)).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (See [Student Rule 24](#).)

### Academic Integrity Statement and Policy

"An Aggie does not lie, cheat or steal, or tolerate those who do."

"Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case" ([Section 20.1.2.3, Student Rule 20](#)).

*You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at [aggiehonor.tamu.edu](http://aggiehonor.tamu.edu).*

### Americans with Disabilities Act (ADA) Policy

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact the Disability Resources office on your campus (resources listed below) Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors as soon as possible.

*Disability Resources is located in the Student Services Building or at (979) 845-1637 or visit [disability.tamu.edu](http://disability.tamu.edu).*

## Title IX and Statement on Limits to Confidentiality

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking.

With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see [University Rule 08.01.01.M1](#)):

- The incident is reasonably believed to be discrimination or harassment.
- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, a person who is subjected to the alleged conduct will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University's goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

*Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with [Counseling and Psychological Services \(CAPS\)](#).*

*Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University's [Title IX webpage](#).*

## Statement on Mental Health and Wellness

Texas A&M University recognizes that mental health and wellness are critical factors that influence a student's academic success and overall wellbeing. Students are encouraged to engage in healthy self-care by utilizing available resources and services on your campus

*Students who need someone to talk to can contact Counseling & Psychological Services (CAPS) or call the TAMU Helpline (979-845-2700) from 4:00 p.m. to 8:00 a.m. weekdays and 24 hours on weekends. 24-hour emergency help is also available through the National Suicide Prevention Hotline (800-273-8255) or at [suicidepreventionlifeline.org](http://suicidepreventionlifeline.org).*

## COVID-19 Safety and Aggies

To help protect Aggieland and stop the spread of COVID-19, Texas A&M University urges students to be vaccinated and to wear masks in classrooms and all other academic facilities on campus, including labs. Doing so exemplifies the Aggie Core Values of respect, leadership, integrity, and selfless service by putting community concerns above individual preferences. COVID-19 vaccines and masking — regardless of vaccination status — have been shown to be safe and effective at reducing spread to others, infection, hospitalization, and death.