

**PHYSICS 231  
FALL 2022  
FUNDAMENTALS OF PHYSICS:  
Electricity and Magnetism**

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### **General Information**

Lecture Hours	11:30 – 12:20 am Mon/Wed
Location	PH415
Office Hours	2:00 – 3:00 pm Monday or by appointment
Laboratory Hours	<i>as scheduled for your section</i>

### **General Course Description**

This 3 credit-hour course covers the fundamentals of Electricity and Magnetism (E&M). The goal is to make you familiar with the concepts of electromagnetism, and foster problem solving skills.

### **Prerequisites**

Familiarity with calculus and calculus concepts, as well as concepts in vector algebra. A background in mathematics up to the level of Math 141-142, or equivalent, is highly recommended and is probably necessary for success in the course. The course also assumes that you are familiar with concepts in classical mechanics such as force, acceleration, work, kinetic and potential energy, and Newton's laws. If you need a refresher, please review the appropriate chapters in the text.

## Course Repetition Policy

If you are repeating the course, please refer to the [Laboratory Policy Regarding Repeating a Course](http://www.phys.utk.edu/labs/Lab%20Repeat.pdf) (<http://www.phys.utk.edu/labs/Lab%20Repeat.pdf>)

## Textbooks

You will need two books for the course:

1. **University Physics with Modern Physics** (15th Edition) by Young and Freedman. The course covers chapters from 21 to 32, only. Please ensure that chapters 21-32 are covered before purchasing a version of the textbook. The online version of the book is accessible via Canvas (VolBooks Course Materials - VitalSource). If you use a previous edition, please be aware that when referring to the text, I will implicitly refer to the content of the 15th edition. It will be your responsibility to keep track of possible changes with respect to previous editions. The inclusive online access includes the homework system access.

2. **Contemporary Introductory Physics Experiments**, 2nd Edition by James E. Parks, Hayden-McNeil Publishing, ISBN 978-0-7380-6168-9

## Announcements, Lecture Notes, Course Updates

Aside from in-class discussion, the primary method of communication between you and me will be via Canvas and/or email. This syllabus and other important information and announcements will be posted there, as well as copies of the slides used in lecture. Your grades of in-class exams will be posted in the Canvas Grade-book, and your grades will be available for only you to see.

The homework website is entered from the course menu on Canvas. At the end of the semester, your homework and laboratory grades will also be posted on Canvas.

It will be your responsibility to be aware of the content of any communication taking place in class, be it an announcement or anything related to the course material, in case you missed a class.

## Grading Policy

The semester Grade will be based on a Weighted Averages of the homework assignments, in-class participation (clickers), the laboratory, two one-hour exams, and the final exam as follows:

<b>Homework</b>	<b>35%</b>
<b>In-class participation</b>	<b>5%</b>
<b>Laboratory</b>	<b>25%</b>
<b>Two 1-Hour In-Class Exams</b>	<b>20%</b>
<b>Final Examination (2-Hour test)</b>	<b>15%</b>

**Homework** sets will be assigned On-Line using MasteringPhysics which is included in your book online access. The homework website is accessible via VitalSource-Bookshelf and the

Assignment button in the tools menu on Canvas. You will need to sign up. Each problem set will generally be available on-line at 12:00 (noon) each Wednesday and will be due at 8:00 am the next Wednesday. Exceptions (for example at Fall Break) will be noted in class.

**Due dates for problem sets are firm. Please note: No extensions or make-up problem sets will be given. In lieu of extensions, the two lowest scores on homework sets will be dropped from the average.** I generally encourage students to work together as far as homework is concerned. The goal is to use homework as one of the most effective ways of assimilating the material. Do not take advantage of the work of other people, and do not let anybody take advantage of your own work: efforts should be shared.

**In-class Participation:** In the class you will be given reading quizzes (in the form of clicker questions) at the beginning of the lecture and additional clicker questions that will contribute to your reading/participation credit. The reading quiz questions are 2 points each. The other clicker questions are 1 point for wrong answer and 2 points for correct answer. Find more information about the clickers in Canvas.

**Laboratory attendance is strictly mandatory.** Work will be graded by each Lab Instructor independently. An effort will be made to ensure a uniform grading policy between different laboratory sections. Laboratory make-ups are entirely at the Lab instructor's discretion and arrangements for such must be made with the Lab instructor directly. The laboratory exercises are an important and integral part of this course and have to be completed before a final grade will be assigned. You must complete all of the Laboratory assignments. Please note: If you fail the Laboratory part of the course, you automatically fail the entire course. You find the laboratory schedule in the announcement.

The **In-Class Exams** will be closed book and last 50-min, but a list of useful equations and constants will be provided. Questions and Problems on the Exams will generally NOT require only a purely numerical answer (like the homework). Exam and Final Exam questions will generally be similar in character to example problems in the book and example problems given during lectures. For the Exams you are required to bring a pencil and a non-programmable pocket calculator. In particular, no laptops, cell phones, or other means of communication are allowed.

The **Final Exam** is mandatory. Missing the final exam is very serious and may well result in failure of the course. It is a 2-hour exam and it covers the whole material of the course.

**NO MAKE-UP Exams WILL BE GIVEN!**

No Exam score will be dropped and ordinarily make-up Exam will NOT be given. Missing the final exam is very serious and may well result in failure of the course. However, if there are extremely serious circumstances supported by proper documentation, a make-up for an Exam and/or Final may be considered at my discretion.

## Conversion to Letter Grades

A	90 - 100
A-	85 - 89
B+	80 - 84
B	75 - 79
B-	70 - 74
C+	65 - 69
C	60 - 64
C-	55 - 59
D+	50 - 54
D	45 - 49
D-	40 - 44
F	0 - 39

## Course Material

The class covers most of the materials described in Chapters 21 -32 of the textbook. This course consists of several components: lectures, laboratories, homework problems, and reading assignments in the textbook. The material you will be expected to learn and will be tested on during the exams will be taught to you as part of all of these course components. In particular, I stress the importance of problem solving and carefully working (not just reading) your way through all the parts of the textbook. Reading the relevant chapter or sections for each week's lectures (i.e. Reading assignments) is a compulsory and vital part of the course. **The lectures will NOT just repeat the material in the textbook**, but will be rather used to discuss the course material in a variety of ways. Some lectures will follow the textbook, some other will discuss topics not covered in the textbook, and/or discuss them in a different manner.

## Questions and Appeals

I encourage you to ask questions during the lecture or/and talk to me during my office hours (Monday or by appointment – just ask after class) about the subject.

You can discuss with me and/or complain to me about the grading of a given assignment, be it homework, Lab grade, Short Exams or Final Exam. Any appeal will be entertained if it is raised no later than one week after the date on which the graded Exam/ Lab/HW are made available for return to the class. After this “appeal period” of one week, exam grades will be considered final and will not be altered. Any appeal concerning a grade in the Laboratory should directly be discussed with your Lab. instructor.

## **For students with disabilities**

The University of Tennessee, Knoxville, is committed to providing an inclusive learning environment for all students. If you anticipate or experience a barrier in this course due to a chronic health condition, a learning, hearing, neurological, mental health, vision, physical, or other kind of disability, or a temporary injury, you are encouraged to contact Student Disability Services (SDS) at 865-974-6087 or [sds@utk.edu](mailto:sds@utk.edu). An SDS Coordinator will meet with you to develop a plan to ensure you have equitable access to this course. If you are already registered with SDS, please contact your instructor to discuss implementing accommodations included in your course access letter.

## **Academic Honesty**

***All work submitted by a student is expected to represent his/her own work. Students are expected to enter their own homework without assistance from others. Students are expected to perform all work in conformance with the University policies regarding Academic Honesty.***