

PHYS 231: Electricity & Magnetism – Fall 2021

Instructor Information:

Instructor:	Prof. Ruixing Zhang, Department of Physics & Astronomy
Office:	203 South College
Email:	ruixing@utk.edu or, via the Canvas message system
Class Location:	Nielsen 415
Class Time:	Monday and Wednesday, 11:45 AM – 12:35 PM;
Lab Instructors:	TBA
Office Hours:	Monday 1:00 – 2:00 PM (or by email appointment) via Zoom link https://tennessee.zoom.us/j/94952953743

Communication: The majority of classroom communication will be conducted via the Canvas for this class. To ensure prompt response from me, follow the email policy:

- Please put **“PHYS 231”** in the subject line of all course related emails. This practice will help me identify course related emails and respond promptly.
- You can expect up to a 24-hour delay in responding to emails; I will try to minimize such delays, but do not email me on the evening an assignment is due or before an exam expecting an immediate response.
- Before emailing me with questions about the course, please ensure that the information is not already provided in the course syllabus or on Canvas.

Course Description & Goals:

Course Overview: Physics 231 is a 3 credit-hour fundamentals of physics course with laboratory. This course covers the Fundamentals of Electricity and Magnetism (E&M). The goal is to make you familiar with the concepts of electromagnetism, and give you the skills needed to work with these concepts to solve problems in this field.

Pre/corequisites: The course and text assume you are familiar with calculus and calculus concepts, as well as concepts in vector algebra. The prerequisite(s) of the course are PHYS 135 or PHYS 137 or EF 151 or EF 152, and the corequisite is Math 142.

Resources: You will need the following materials for the course:

1. Pearson MyLab and Mastering Physics for University Physics with Modern Physics (15th Edition) by Young and Freedman. For *registering with Pearson Mastering Physics*, please follow **VitalSource Bookshelf** tab on the left sidebar in Canvas. For details, please

follow the instruction provided in this YouTube link:
<https://tinyurl.com/MasteringPhysicsUTK>.

2. University Physics with Modern Physics (15th Edition) by Young and Freedman. **If you prefer eText, it is included in the Pearson MyLab, you do NOT need to purchase the print Textbook.** If you prefer the print textbook, you can have one, **but you do not need to purchase the current edition of the textbook.** The material does not change significantly between editions and any recent edition will meet your needs for the course.
3. Contemporary Introductory Physics Experiments, 2nd Edition by James E. Parks, Hayden-McNeil Publishing, ISBN 978-0-7380-6168-9. **You are required to purchase a current edition of the Laboratory manual. Please wait to hear from your TA for the details about the book and other lab resources.**
4. **Turning (Clicker) Registration:** **We will be using the clickers in almost all lectures, so, make sure you have the app and it is ready by the first class.** Follow the link provided on Canvas Module to register your app. The link is posted on the Modules section as well. Note that **you have to use your UTK email ID** to register otherwise your score won't be integrated into Canvas and won't be registered. So, do not use non-UTK email addresses to register your clicker. For instructions in details, visit the UTK OIT website (<https://utk.teamdynamix.com/TDClient/2277/OIT-Portal/KB/ArticleDet?ID=117398>).

Course Format:

- We will cover the **Electromagnetism** section of the textbook, which includes chapters 21 through 31. We will build heavily on concepts presented in your previous physics courses.
- The course consists of two lectures week, which does not leave enough time to cover every aspect of each chapter in detail. We will, therefore, proceed using a mix of traditional lecturing, and problem-solving demonstrations/active-learning exercises.
- **For this approach to succeed, you have to come to the class prepared.** I strongly encourage you to complete the reading assignments as posted on Canvas. That way, you will have an opportunity to email me questions you might like to have addressed during the class.

Course Repetition Policy: If you are repeating the course, you may not need to repeat the laboratories. Please refer to the Laboratory policy regarding repeating a course and follow instructions there: <http://www.phys.utk.edu/labs/Lab%20Repeat.pdf>

Class Schedule: The following is a class schedule along with lecture topics, assignments etc. This is a **tentative** schedule, and might differ as our class speed. We will discuss in the class if there are any changes, and notices made in the classes/announcements supersede the schedule.

Class sessions:

1.	W Aug. 18	Introduction	
2.	M Aug. 23	Chap 21-I	
3.	W Aug. 25	Chap 21-II	
4.	M Aug. 30	Chap 22-I	
5.	W Sep. 1	Chap 22-II	1 st HW due
6.	W Sep. 8	Chap 23-I	2 nd HW due
7.	M Sep. 13	Chap 23-II	
8.	W Sep. 15	Chap 24-I	3 rd HW due
9.	M Sep. 20	Chap 24-II	
10.	W Sep. 22	Chap 21-24 Review	4 th HW due
11.	M Sep. 27	Midterm #1	
12.	W Sep. 29	Chap 25-I	
13.	M Oct. 4	Chap 25-II	
14.	W Oct. 6	Chap 26-I	5 th HW due
15.	M Oct. 11	Chap 26-II	
16.	W Oct. 13	Chap 27-I	6 th HW due
17.	M Oct. 18	Chap 27-II	
18.	W Oct. 20	Chap 28-I	7 th HW due
19.	M Oct. 25	Chap 28-II	
20.	W Oct. 27	Chap 29-I	8 th HW due
21.	M Nov. 1	Chap 29-II	
22.	W Nov. 3	Chap 25-29 Review	9 th HW due
23.	M Nov. 8	Midterm #2	
24.	W Nov. 10	Chap 30-I	
25.	M Nov. 15	Chap 30-II	
26.	W Nov. 17	Chap 31-I	10 th HW due
27.	M Nov. 22	Chap 31-II	
28.	W Dec. 1	N/A	11 th HW due
	Thursday Dec. 9	FINAL EXAM	

Grading & Evaluation:

Clicker Quizzes & Discussion Participation: In the class meeting, you will be responding quizzes at the end of the lecture. Clicker response grade is divided equally to participation (50%) and the correct response (50%). Your participation in discussion forum on canvas also includes the participation grade.

Homework Assignments: You will be assigned homework on MyLab and Mastering Physics. You will have three attempts for each Homework, and the highest grade will be the HW

grade. For the assignments will be due on the indicted due date under the assignment module on Canvas.

Midterm Exams: There will be two midterm tests. The tentative dates for the midterms are indicated on the schedule. ***Please note that these dates are subject to change as we progress through the course material but they will be finalized at least a week prior so that you can plan accordingly.*** Each midterm exam will be 50 minutes in length.

Final Exam: The final exam will be given on Dec. 9th 2021, during the regular class time. The Final Exam will be two hours in length and cumulative in scope, covering chapters 21 to 31 of the textbook. A formula-sheet will be available for each exam for a quick reference.

Make-up Policy: If a known conflict exists you should contact me at least **two weeks** in advance to make alternate arrangements. If the Physics 231 final exam is your third exam of the day, you should contact me by **Wednesday, November 17th** to make alternate arrangements.

Laboratory: The laboratory sections are mandatory. **If you fail the Laboratory section of the course, you will fail the course regardless of your scores in class.** Lab reports will be turned in to your Teaching Assistant. Teaching Assistant is responsible for grading them. Please resolve any disputes regarding your laboratory grade with your TA. If you are unable to reconcile the issue, please write to me.

Grading Scheme:

Grades: Your grade is calculated based on many elements of the course. See the table below for details on this.

Course Element	%
Laboratory	25%
Mid Term 1	15%
Mid Term 2	15%
Final Exam	20%
Homework	15%
In-class Quiz/Discussion Participation	10%
Total	100%

Letter grade will be obtained using the conversion below:

%	Grade
>90%	A

87% - 89%	A-
83% - 86%	B+
80% - 82%	B
77% - 79%	B-
73% - 76%	C+
70% - 72%	C
67% - 69%	C-
63% - 66%	D+
60% - 62%	D
57% - 59%	D-
<56%	F

Other Information:

Class Rules: Students need to follow the following guidelines and class room etiquette in order to ensure a positive and respectful learning environment for everyone:

- **Be respectful:** Act in a matured/polite manner and be respectful of the learning process (See the rules posted on Canvas).
- **Raise your hand:** If you have a question or comment during the class, please raise your hand.
- **Share the air:** If you have been dominating the discussion or participating disproportionately, let others participate. Alternatively, if you haven't said much, you are encouraged to participate more.
- Please use **respectful and (socially) inclusive language**.

How to succeed and get a good grade in the class: The number of lecture hours in this class are not enough to cover all parts of the syllabus in detail. Hence reading assignments and home works are provided. A good portion of success in this class depends on coming class to prepared, actively participating during the class and completing home works as assigned.

- Read the course material before coming to the class otherwise you will be lost and cannot follow the lecture completely.
- This course assumes that you have calculus background. There is not enough time in the course to review math basics in detail, so it critical that you refresh your vector calculus, differentials, integrals and non-Cartesian coordinate systems. This will help you follow the material presented in the lecture more thoroughly. Otherwise you will be lost.

- For this reason, be critical of your math background. If you are having trouble with the mathematical concepts, please ask for help.
- In the class, participate actively and answer reading quizzes and other clicker questions so you can earn your participation credit. Again, this relies heavily on how prepared you come to the class.
- Follow the class rules and behavior etiquette while in the class. Don't surf the internet or text with your friends.
- Read the textbook ACTIVELY. Active reading means reading the book with a pen and paper nearby. You should try to re-derive equations as you go and be critical of your understanding of how the book gets from point A to point B. Note any questions that you have so you can ask them during lectures, via email, or during office hours.
- **Take advantage of all the help you can get, you will need it: Instructor office hours, Lab TA help etc.**

Your Feedback/Suggestions on the course: You are encouraged to provide feedback on any aspect of the course all through the semester using any communication method you prefer. Your **grades will not be impacted by any feedback** you provide, they will be purely based on your coursework and lab work. However, your discretion in these matters is expected. You will also have an opportunity to give feedback at the end of the semester through the Course Evaluation System. Your feedback is critical in improving the course!

Students with Disabilities:

If you need course adaptations or accommodations because of a documented disability, please contact the Student Disability Services (SDS). This will ensure that you are properly registered for the services provided by SDS. University Policy forbids me from making special accommodations without a letter from the Office of Student Disability Services.

Disability Services Contact Information:

2227 Dunford Hall

Knoxville, TN 37996-4020

Phone: (865) 974-6087

Fax: (865) 974-9552

Email: sds@utk.edu

Website: <https://sds.utk.edu/>

Campus Syllabus

The campus syllabus provides additional important information, including academic integrity, UT alerts, wellness, etc. The campus syllabus can be found via <https://teaching.utk.edu/wp-content/uploads/sites/78/2021/08/Campus-Syllabus-Fall-2021.pdf>.

COVID-19 Guidelines

With the spread of the Delta variant of COVID-19, students, faculty, and staff will be **required to wear masks in classrooms, labs, and for indoor academic events** required for students such

as orientation. This requirement will remain in place until conditions improve and the university communicates new instructions.

The university strongly recommends that all members of the campus community be vaccinated for their own protection, to prevent disruption to the semester, and to prevent the spread of COVID-19. Vaccination information and appointment signups are available at tiny.utk.edu/vaccine. The Student Health Center medical staff is available to students to answer questions or discuss concerns about vaccines, and the center provides vaccines free of charge for anyone 18 years or older who would like one.

If you think you are sick or have been exposed to COVID-19, you should contact the Student Health Center or your preferred health care provider. You can also contact the university's COVID-19 support team for guidance by filling out the COVID-19 self-isolation form at covidform.utk.edu.

You must not attend class if you have tested positive for COVID-19 and are in the isolation period, if you have COVID-19 symptoms and have not been cleared by a medical provider, or if you are an unvaccinated close contact in the quarantine period.

If you need to miss class for illness, contact me via ruixing@utk.edu. You can find more information and updates at utk.edu/coronavirus.

DISCLAIMER

The instructor reserves the right, when necessary, to alter the grading policy, change examination dates, and modify the syllabus and course content. Modifications will be announced in class. Students are responsible for announced changes.

Good luck and have a great semester :)