Physics 232
Electricity, Magnetism & Physical Optics

1 General Information

Instructor : Bom Soo Kim
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Additional course website: https://pa.as.uky.edu/bki247/phy232
Location & time: Chemistry-Physics 153, MWF 9:00-9:50 (sections 1-5), 10:00-10:50 (sections 6-10)
Office hour : Chemistry-Physics 265, MWF 11:00-11:50

*** If you have any questions, please come by to my office. If you prefer, please contact by email to arrange additional meetings!

2 Course Outline

2.1 About the course

This course is an introduction to the fundamental principles that describe electromagnetic forces, waves and physical optics. Basically, they describe how we 'see' because they are the theory of light! Majority of our daily activities are (in)directly related to these subjects. Like gravity, we constantly interact with and manipulate electric and magnetic forces. This course aims to arm you with the basic concepts needed to understand how electromagnetic forces affect your daily life. For example, after this course you should be able to deduce how your car starts, why your cell phone loses reception in the elevator and how your LCD laptop screen projects images to your eye.

The prerequisites for PHY 232 are PHY 231 + MA 213. This class requires a strong background in algebra, calculus and differential equations. If at any point during the semester you find yourself struggling with the mathematical requirements for this course, please contact the instructor and/or recitation instructors immediately. A quick review or simply a new approach to the math concepts may be all that is needed. You must be able to communicate your understanding of the physics principles via mathematical equations in order to succeed in this class.

2.2 Textbook, Web Assign and Clicker

Required :

1. *Physics for Scientists and Engineers,* (7^{th} ed. or higher) by by Serway and Jewett.
   The 9^{th} edition is rather expensive. It is your option to buy a previous version, especially 7^{th} or 8^{th}. There are four sections that are different compared to 7^{th} edition. The differences are minimal and can be practically ignored.
2. *Web Assign.*
   It is required! See the homework section for details.
3. *Clicker*: an interactive device. It is required!
   When you respond during the class, it will automatically store your response to a system. You can keep track of your progress. We are going to use it to develop your thinking ability in a given amount of time.

2.3 Class Policies

No electronic devices, except clickers and calculators, are permitted to be activated or visible in lecture. This includes all cell phones, laptops and tablets. If you must take a phone call please, step outside of the classroom. Failure to comply with these rules will result in an automatic 1% reduction in your final grade.

2.4 Grading Policies

The Instructor and all the TAs will try to organize materials and presentations for each section to maintain quality with collective efforts. The grading scheme and rubrics will be available online so that students will be able to check them.

Final grades will be based on from the exam, homework, quiz and class participation grades according to the following weighting:

Exam 1	15 %
Exam 2	15 %
Exam 3	15 %
Final Exam	15 %
Homework	25 %
Recitation Worksheet	10 %
Class Participation	5 %

Your letter grade for the course will be assigned according to your final % points earned. You are guaranteed to earn an A if your final score is $> 85\%$, a B if your final score is $> 70\%$, a C if your final score is $> 55\%$ and a D if your final score is $> 40\%$. These cut-offs are upper limits and may be lowered depending on the class average.

2.5 Exams

Three fifty minute in-class exams and a cumulative two hour final will be administered during the semester. Exams will consist of multiple choice and free-response problems. Partial credit will be awarded to students who demonstrate a logical and clearly written progression toward the final answer. The university policy on excused absences can be found in University Senate (Rule 5.2.4.2).

Absence from a scheduled exam, without prior permission from the professor, will result in an automatic zero. Scheduling for make-up exams will be determined on a case-by-case basis.

2.6 Homework

The WebAssign online homework service is required for weekly homework submission. Problem sets are posted in the WebAssign interface and are due by 11:59 PM on the date specified in the assignment. If you believe there is a problem with the grading or the operation of WebAssign please contact me directly. Each recitation section will be assigned a WebAssign class key. Students must use the appropriate class key to self-enroll in the class roster that corresponds to their recitation section. If you do not already have a WebAssign account you can create one after verifying the class key. Follow these steps to self-enroll:

1. Go to the WebAassign login page https://www.webassign.net/
2. Click *I have a Class Key* in STUDENT roll-down
3. Enter the class key you received in your recitation section
4. Click *Submit*
5. Verify that you are enrolling in the correct section and click *Yes, this is my class*

6. If you have an existing WebAssign account select *I already have a WebAssign account* and follow the remaining instructions.

7. If you do not have an existing WebAssign account select *I need to create a WebAssign account* and follow the remaining instructions. You may use a voucher, free with a new textbook, or a personal credit card to purchase an account.

To begin using WebAssign go to https://www.webassign.net/login.html. If you have problems consult http://www.webassign.net/manual/student_guide/c_s_help_landing_page.htm. If your problems persist please contact the Instructor directly.

2.7 Recitation

Each student is assigned to a recitation session. These sessions are designed to help you learn how to use the concepts discussed in lecture to solve quantitative problems. Students will work in small groups to solve problem worksheets distributed by the TAs. These worksheets will be graded and the two lowest grades for the semester will be dropped. Students arriving over 10 minutes late to recitation may not receive credit for work completed on the group worksheet. *Makeup recitation sessions will NOT be granted for ANY reason.*

2.8 Class Participation

Students will be asked to use clickers to answer conceptual questions during the lecture portion of this course. Students will receive two points for each question answered correctly, one point for each question answered incorrectly and no points for unanswered questions. After lecture, students will receive a % grade based on their answers to that days questions. The six lowest daily participation grades are dropped at the end of the semester. Submitting answers via a clicker ID that is not associated with your name is an act of academic dishonesty and will be prosecuted accordingly.

Create a TurningPoint Account :
Students are required to purchase a TurningPoint Account license to participate in TurningPoint Cloud sessions. An account license must be purchased if the student is using the ResponseWare (mobile device) or the clicker.

1. Log into Canvas

2. Navigate to the course in which you are using the clicker.

3. Click Modules in the left navigation.

4. Click the link for TurningPoint Cloud Registration.

5. Click on “Create an Account”

6. Enter your uky email address and click Create.

7. Check your email and click the link to verify your Turning Account.

8. Enter all required fields as noted by the asterisks.

9. Enter and confirm your password in the fields provided.

10. Select the box labeled ”By checking this, you agree to comply with the “End-User License Agreement and Terms of Use.”

11. Click Finish.

12. If you have a license code and/or device ID, enter them in the appropriate box and click Redeem and/or Register.

13. Click Finish.

Purchase or Redeem a License :
A Turning Account license is required for responses from response devices or ResponseWare to be tracked by the instructor. The Turning Account license also includes a ResponseWare license.

1. Sign in to your Turning Account (access through your Canvas course).
2. Click LIcense from the main screen.
3. Do one of the following:

- If you have already purchased a license code from your bookstore, click Add License, enter the code in the License Code field, and click Redeem.
- If you have not purchased a license code, click Add License and then click Purchase a License. Your browser will be directed to the Turning Technologies Student Store.

2.9 Resource Center, DRC

If students need various accommodations for whatever reasons, students are required to present letters of accommodation for the current semester from the Disability Resource Center (DRC). Please visit DRC webpage http://www.uky.edu/StudentAffairs/DisabilityResourceCenter/index.html and request the letter as early as possible in the semester.

2.10 Course Evaluations

Course evaluations are an important (and mandatory!) component of our Department's instructional program. An on-line course evaluation system was developed to allow each student ample time to evaluate each component of the course and instructor, thus providing the Department with meaningful numerical scores and detailed commentary while minimizing the loss of instructional time in the classroom. A few weeks before the end of the semester an email, with a link to the evaluation system, will be sent to your official uky account. Additional information may be found at : http://www.uky.edu/eval/.

3 Class Schedule *(subject to change)*

Month	Date	Contents	
Aug	24	Class Protocol	
Aug	25	Recitation: Review Vector Calculus	
Aug	26	23.1-23.3	HW 1 (Saturday Aug 27^{th})
Aug	29	23.4-23.5	
Aug	31	23.6-23.7	
Sep	1	Recitation: Chapter 23	
Sep	2	24.1-24.2	HW 2 (Saturday Sep 3^{rd})
Sep	5	Labor Day HOLIDAY	
Sep	7	24.2-24.3	
Sep	8	Recitation: Chapter 24	
Sep	9	24.3-24.4	HW 3 (Saturday Sep 10^{th})
Sep	12	25.1-25.2	
Sep	14	25.3-25.4	
Sep	15	Recitation: Chapter 25	
Sep	16	25.5-25.6	HW 4 (Saturday Sep 17^{th})
Sep	19	EXAM 1 Chapter 23-25	
Sep	21	26.1-26.2	
Sep	22	Recitation: Return Exam 1	
Sep	23	26.3-26.4	
Sep	26	26.5-26.6	HW 5 (Tuesday Sep 27^{th})
Sep	28	26.7-27.1	
Sep	29	Recitation: Chapter 26	
Sep	30	27.2-27.3	
Oct	3	27.4-27.5	HW 6 (Tuesday Oct 4^{th})
Oct	5	27.6 & 28.1	
Oct	6	Recitation: Chapter 27	
Oct	7	28.2-28.3	
Oct	10	28.3-28.4	HW 7 (Tuesday Oct 11^{th})
Oct	12	REVIEW	
Oct	13	Recitation: Chapter 28	
Oct	14	EXAM 2 Chapter 26-28	
Oct	17	29.1-29.2	
Oct	19	29.3-29.4	
Oct	20	Recitation: Return Exam 2	
Oct	21	29.5-29.6	HW 8 (Saturday Oct 22^{th})
Oct	24	30.1	
Oct	26	30.2-30.3	
Oct	27	Recitation: Chapter 29	
Oct	28	30.3-30.4	HW 9 (Saturday Oct 29^{th})
Oct	31	30.5	
Nov	2	30.6-31.1	
Nov	3	Recitation: Chapter 30	

Month	Date	Contents	
Nov	4	31.1-31.2	HW 10 (Saturday Nov 5^{th})
Nov	7	31.3-31.4	
Nov	9	31.5-31.6	
Nov	10	Recitation: Chapter 31	
Nov	11	32.1-32.2	HW 11 (Saturday Nov 12^{th})
Nov	14	32.3-32.4	
Nov	16	32.5-32.6	
1 Nov	17	Recitation: Chapter 32	
Nov	18	REVIEW	HW 12 (Saturday Nov 19^{th})
Nov	21	EXAM 3 Chapter 29-32	
Nov	23	Thanksgiving HOLIDAY	
Nov	24	Thanksgiving HOLIDAY	
Nov	25	Thanksgiving HOLIDAY	
Nov	28	34.1-34.2	
Nov	30	34.3-34.4	
Dec	1	Recitation: Chapter 25	
Dec	2	34.6-34.7	HW 13 (Saturday Dec 3^{rd})
Dec	5	37.1-37.3	
Dec	7	38.1-38.2	
Dec	8	Recitation: Return Exam 1	
Dec	9	38.3-38.4	HW 14 (Saturday Dec 10^{th})
Dec	12	Final Exam	Section 01-05 at 10:30 am
Dec	12	Final Exam	Section 06-10 at 08:00 am