Spring 2023 Syllabus
PHYS 222: Elements of Physics II

General Information:

Instructor: Dr. Nau Raj Pokhrel

Office: 214 Nielsen Physics Building, UTK

Email: npokhrel@utk.edu or, via the Canvas message system

Phone: (865) 974-5697

Classroom: Nielsen 415

Class Time: Monday, Wednesday, and Friday from 1:50 PM to 2:40 PM

Office Hours: Monday from 2:50 PM to 3:50 PM

Tuesday & Thursday from 11:10 AM to 12:10 PM

Or by email appointment

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 222**" in the subject line of all course related emails. This practice will help me identify course related emails and respond promptly.
- You can expect 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. If you don't get response after a couple of days or according to urgency, please resend the email.
- 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 222 is a 4 credit-hour introductory physics course with laboratory. This course covers the introduction to Electricity & Magnetism, Optics and Modern Physics. The goal is to make you familiar with basic physical principles and applications required in pre-medical, pre-dental, pre-pharmacy, and pre-veterinary programs, and give you the skills needed to work with these concepts to solve problems.

Prerequisite: PHYS 221.

You will need the following materials for the course:

1. **College Physics, OpenStax e/textbook**. This is an online textbook with spaced practice problems and feedback. You can access this textbook for this class on Canvas under Modules. The College Physics textbook by itself can be found at this Link:

(OpenStax College Physics) and can also be downloaded as a PDF.

2. For the Assignment, you will need **WebAssign inclusive access for OpenStax College Physics. You don't need to pay it separately, and you don't need any access code**. For the first-time registration, you can go to any HW link in the assignments of Canvas and proceed.
3. Contemporary Introductory Physics Experiments, 2nd Edition by James E. Parks, Hayden-McNeil Publishing, ISBN 978-0-7380-6168-9. **You don't need to purchase the new Lab Manual if you already have it from PHYS 221.** If you don't have the Lab manual, you are required to purchase it.
4. **Point Solution (Clicker) Registration:** *We will be using the clickers in almost all lectures**, but the hardware clicker won't be used. So, make sure you have downloaded the app, and it is ready by the first class.*** Follow the link provided on Canvas in the Module section to register your app. You just need to follow the link and Log-in to the website. If you see our course on the website, your registration is complete! Note that **you must use your UTK email ID** to register otherwise your score won't be integrated into Canvas. For a detail information and support, visit the UTK OIT website. **(Click Here for the Website Link)**.

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. Any changes, and notices made in the classes/announcements supersede the schedule.

Day	Week	Chapter	Topics	HW	Lab
23-Jan	1	Syllabus Review	Course Introduction		No Labs
25-Jan		Chapter 18	Vectors recall/Begin Electric Charge and Electric Field	Quiz & HW 1	
27-Jan					
30-Jan	2				Electric Fields
1-Feb		Chapter 19	Electric Potential and Potential Energy		
3-Feb				Quiz & HW 2	
6-Feb	3	Chapter 20	Electric Current, Resistance and Ohm's Law		Ohm's Law I
8-Feb				Quiz & HW 3	
10-Feb		Chapter 21	Circuits and DC instruments		
13-Feb	4			Quiz & HW 4	Ampere's Law
15-Feb		Chapter 22	Magnetism		
17-Feb					
20-Feb	5			Quiz & HW 5	Helmholtz Coils
22-Feb		Chapter 23	Electromagnetic Induction		
24-Feb		**Mid-Term Exam I Review**			
27-Feb	6	**Mid-Term Exam I (Chapters 18-21)**			e/m Ratio
1-Mar		Chapter 23	Electromagnetic Induction		
3-Mar					

6-Mar	7	Chapter 24	Electromagnetic Waves	Quiz & HW 6	Faraday's Law
8-Mar				Quiz & HW 7	
10-Mar		Chapter 25	Geometric Optics		
13-Mar	8	**Spring Break**			
15-Mar					
17-Mar					
20-Mar	9	Chapter 25	Geometric Optics	Quiz & HW 8	Refraction & Polarization
22-Mar					
24-Mar		Chapter 26	Vision and Optical Instruments		
27-Mar	10			Quiz & HW 9	Simple lenses
29-Mar		Chapter 27	Wave Optics		
31-Mar					
3-Apr	11	**Mid-Term Exam II Review**		Quiz & HW 10	Optical Instruments
5-Apr		**Mid-Term Exam II (Chapters 22- 26)**			
7-Apr		**Spring Recess**	**No Class**		
10-Apr	12	Chapter 28	Special Relativity	Quiz & HW 11	
12-Apr					
14-Apr		Chapter 29	Introduction to Quantum Physics		
17-Apr	13			Quiz & HW 12	Balmer Series
19-Apr		Chapter 30	Atomic Physics		
21-Apr					
24-Apr	14	Chapter 31	Radioactivity and Nuclear Physics		Half-life of Ba-137
26-Apr				Quiz & HW 13	
28-Apr		Chapter 32	Medical Applications of Nuclear Physics		
1-May	15	**Mid-Term Exam III Review**			Make-up Labs
3-May		**Mid-Term Exam III (Chapters 27- 31)**			
5-May		Chapter 32	Course Wrap-up		
8-May	16	**Final Exam Review**			
10-May		**Study Day**	**No Class**		
15-May	**MON**	**Final Exam (1:00 PM - 3:00 PM), Cumulative (Chapters 18-32)**			

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

Grading & Evaluation:

Clicker Quizzes & Discussion Participation: In the class meeting, you will be responding quizzes during the lectures. 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 Canvas, and on WebAssign. Please keep on checking Canvas for the HW due dates which could be different than the dates mentioned on the schedule.

Midterm Exams: There will be THREE 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.*** The midterm exams will be in the regular lecture room during the class time.

Final Exam: The final exam will be given as scheduled by the registrar's office (see the schedule). If you determine that you have a conflict with that time or have three or more exams scheduled on that day, please let me know as soon as possible. The Final Exam will be two hours in length and cumulative in scope, covering all the course materials discussed during the semester.

A formula-sheet will be available for each exam for a quick reference.

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, or the Lab Director.

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	22%
Mid Term I	10%
Mid Term II	10%

Mid Term III	10%
Final Exam	18%
Homework	20%
In-class Quiz/Discussion Participation	10%
Total	100%

Letter grade will be obtained using the conversion below:

%	Grade
90% and above	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-
< 57%	F

(Note: 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.**)**

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:

- **Please arrive to the class on time:** don't make it a habit to join late.
- **Cell Phones/Technology**: Be respectful. Use of electronic devices for academic work is fine but use of electronic devices for other purposes is not. Turn off your cell phones when

we are not using them in quizzes. While on the computers social networking is not allowed. Repeated abuse will result in being dismissed from that class and asked to return next week. No credit will be given for such dismissal.

- **Avoid side conversations**: The noise is distracting to other students, and you will impact the learning environment, so avoid private conversations in the classroom.
- **Be respectful:** Act in a matured/polite manner and be respectful of the learning process, your instructor, classroom, and your fellow students. Respect to the learning environment is projected in many ways including your body language.
- **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.

- Please communicate with me on time if you have any questions so that we can work together for the success.
- 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.
- In the class, participate actively and respond to all the clicker questions so you can earn your quiz/participation credit.
- Follow the class rules and behavior etiquette while in the class.
- Complete all the assignments on time.
- Take advantage of all the help you can get, you will need it: Instructor office hours, Tutorial Center, Lab TAs recitation hours 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. Each year I take the information provided in feedback seriously so please take the time to fill out the feedback forms in a thoughtful manner.

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). 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.

Student Disability Services Contact Information:

915 Volunteer Boulevard

100 Dunford Hall

Knoxville, TN 37996

Phone: (865) 974-6087

Fax: (865) 974-9552

Email: sds@utk.edu

Website https://sds.utk.edu/

For additional important information (Academic integrity, civility statement, UT alerts, …) please see the Campus Syllabus (Click here to download the Campus Syllabus).