

PHYS 0102-910 – SUMMER SESSION II 2022

GENERAL PHYSICS: ELECTROMAGNETISM, OPTICS, MODERN PHYSICS

Instructor	Sukalpa Basu, PhD
Office	DRL 2C5
Email	subasu@sas.upenn.edu
Class Meeting Times	MTWRF 10:15 PM - Noon
Office Hours / Recitation	MTWRF Noon – 12:30 PM
TA/Grader	TBD

Course Description A continuation of PHYS 101 emphasizing an introduction to classical electricity and magnetism, light and optics, special relativity, the quantum theory of matter, and nuclear physics. Suggested for students in a pre-health program.

Text Physics: Principles with Applications, 7th Edition, Giancoli (Recommended but not required).

Course Pre-requisite Entrance credit in algebra and trigonometry

Course Structure This class will be taught in an active learning format. Most of the classroom time will be devoted to working on selected problems in small groups, with ample opportunities to interact with and ask questions. To take full advantage of this course structure, it is essential to keep up with the class and view the recorded lectures and example problems before coming to class. *Your key to success - keep up with the work!*

SNAPSHOT OF A TYPICAL CYCLE

There will be **FIVE** cycles in this course each terminating in an exam. Follow the color codes in the course calendar on the next page for the descriptions and details provided below:

BLUE CC/WU Days: Complete the CC/WU assignments for all units covered in the cycle. Each assignment will require you to do the following:

- Watch the video lectures to get a good idea of what we are about to cover in that cycle. Annotated lecture notes will be provided.
- Complete and submit the 'Concept Check' questions. These are graded for completion and provide feedback to me regarding your comprehension of the concepts presented in the videos. I'll address common misconceptions during lecture.
- Attempt the warm-up problem. No submission required. The warm-up problem will be solved in class, so bring your solution to class for self-assessment.

YELLOW CW DAYS:

- CW days will start off with a brief lecture summarizing the key concepts and common misconceptions based on the feedback received through Concept Checks.
- Warm-up problem(s) will be solved in detail during class.
- You will solve a set of assigned questions/problems (CW set) in a group setting.

GREEN EXAM DAYS:

- All exams are cumulative, in-class, closed book, and timed for 90 mins.
- A formula sheet will be posted on Canvas under 'Modules' for your reference.
- Basic scientific calculators are permitted.
- The lowest exam score may be replaced by the **average of all 5 exams**.
- HW for **ALL** units covered this cycle will be due at midnight the day **BEFORE** the exam.
- Students with a disability who require special accommodations are required to obtain appropriate documentation from the [Office of Student Disabilities Services](#). Once I receive approvals from SDS, accommodations will be provided.
- If you believe a grading mistake has been made, write a description of the mistake, as you see it, and email me the next day for consideration. Requests for regrading after that will not be considered.

Honor Code

You are encouraged to study with other students, and to discuss questions on the homework assignments in general terms. All numerical calculations should represent your own work. Obviously, any form of copying or cheating on exams is strictly forbidden. In general, you are expected to abide by Penn's Code of Academic Integrity.

COURSE CALENDAR

The course calendar is for planning purposes only and is subject to change.

Topics	Dates	Activities
Unit 1A: Electric Charge and Electric Forces (Ch 16) Unit 1B: Electric Fields (Ch 16) Unit 1C: Electric Potential Energy (Ch 17) Unit 1D: Electric Potential (Ch 17) Unit 1E: Capacitance (Ch 17)	June 30 (R)	Syllabus
	July 1 (F)	CC/WU 1A-1E
	July 4 (M)	Independence Day (No class)
	July 5 (T)	CW-1A
	July 6 (W)	CW-1B
	July 7 (R)	CW-1C/1D
	July 8 (F)	CW-1E
	July 11 (M)	Exam 1 (HW due at midnight on July 10)
Unit 2A: Ohm's Law (Ch 18) Unit 2B: DC Circuits (Ch 19) Unit 3A: Magnetic Fields (Ch 20) Unit 3B: Forces on Charges in Fields	July 12 (T)	CC/WU
	July 13 (W)	CW-2A/2B
	July 14 (R)	CW-3A
	July 15 (F)	CW-3B
	July 18 (M)	Exam 2 (HW due at midnight on July 17)
Unit 3C: Forces on Current Carrying Wires and Loops (Ch 20) Unit 4A: Faraday's Law (Ch 21) Unit 4B: Transient Phenomena (Ch 21)	July 19 (T)	CC/WU
	July 20 (W)	CW-3C
	July 21 (R)	CW-4A
	July 22 (F)	CW-4B
	July 25 (M)	Exam 3 (HW due at midnight on July 24)
Unit 4C: Alternating Currents (Ch 21) Unit 4D: Electromagnetic Waves (Ch 22) Unit 5A: Geometrical Optics - Mirrors (Ch 23) Unit 5B: Geometrical Optics – Lenses (Ch 23) Unit 5C: Optical Instruments (Ch 25) Unit 5D: Physical Optics (Ch 24)	July 26 (T)	CC/WU
	July 27 (W)	CW-4C
	July 28 (R)	CW-5A/5B/5C
	July 29 (F)	CW-5D
	Aug 1 (M)	Exam 4 (HW due at midnight on July 31)
	Unit 6A: Special Theory of Relativity (Ch 26) Unit 6B: Quantum Mechanics (Ch 27 and 28) Unit 6C: Nuclear Physics (Ch 30)	Aug 2 (T)
Aug 3 (W)		CW-6A/6B
Aug 4 (R)		CW-6C
Aug 5 (F)		Exam 5 (HW due at midnight on Aug 4)

GRADING

Grade Breakdown

Component	Percent of Total
Exams (5)	60
Classwork (Concept Checks, CW sets, Attendance)	30
Homework	10

*** You must pass the laboratory to pass the course. ***

Grading Scale

Please use the grading scale below as a **general guideline** to keep track of your grades throughout the semester.

Letter Grade	Numerical Grade Range
A	95 - 100
A-	90 - 94
B+	87 - 89
B	83 - 86
B-	80 - 82
C+	77 - 79
C	73 - 76
C-	70 - 72
D+	67 - 69
D	61 - 66
F	0 - 60

Grading Policies

- **Concept Checks** are graded for completion only.
- **HW Assignments:** Complete the assigned problem/question set(s). For free response, grade your work (in red ink) based on the posted solutions, and upload them on Canvas as a single pdf file. They will be graded for completion but considered complete only if the self-assessment is completed.
- **CW Assignments:** CW assignments may include conceptual questions and/or free response questions. Multiple choice or conceptual questions will be graded for accuracy whereas free response questions will be graded based on the physics grading rubric. Collaboration in your CW groups is expected to complete these assignments. After completion of the classwork set, you will be required to upload your work as a single pdf file in Canvas. No other file format or email submissions will be accepted. Detailed instruction on how to upload your files on Canvas can be found [here](#).

ATTENDANCE POLICY

- If you anticipate missing a CW session due to illness, personal or family crises, etc. you are required to turn in a [Course Absence Report](#) followed by an email to be considered excused and provided an opportunity to submit the missing assignment.
- **Unexcused CW/Exam days will be counted as a zero.**
- Students who miss three or more CW days will be encouraged to withdraw.
- **For an excused absence reported through Course Absence Report and followed up by an email prior to the exam day, the following policies will be implemented:**
 - If you are missing an exam due to medical reasons, a doctor's note will be required. For non-medical reasons, an email is required prior to the scheduled exam along with appropriate documentation.
 - You may then be allowed to replace the grade for the missed exam by the average of the remaining 4 exams.
 - **Failure to comply with the above will result in unexcused absence and the associated assignment/exam will then be counted as zero.**
- You are expected to tell the truth about your situation and failure to do so is a violation of Penn's [Code of Academic Integrity](#).
- If you expect a conflict with a religious obligation, you should discuss this with me as early as possible in the term.

Study Hints

- It is crucial that you keep up with the work, and plan to spend time out of class every day studying and doing the homework. The material is progressive, in that each chapter depends on material presented in previous chapters. If you get behind, you cannot just skip a chapter and go on to the next; you must comprehend the material at each stage before you can progress.
- Seek help from me or the TA during office hours, or in your study groups.
- The Weingarten Learning Resources Center can provide professional instruction on strategies for exam preparation, taking exams, time management, etc.
- Check your grades on Canvas on a regular basis and should you have any questions or concerns email at subasu@sas.upenn.edu. Waiting until the end of the semester is not a good strategy.