BASIC PHYSICS, Phys-1001-20

Summer 2025– Syllabus (Tentative)

Description and Structure of the Course

Second Session: July 7, 2025 – August 9, 2025
Monday through Friday, 1:00 - 2:30 p.m.
Twenty five classes, ninety minutes per class
Classroom: 539 Reiss Science
Professor: *Mark A. Esrick*

Textbooks

1. Paul G. Hewitt, *Conceptual Physics*, 12th Edition (required)
2. Paul G. Hewitt & P. R. Wolf, *Problem Solving in Conceptual Physics*, 12th Edition (required)

(The textbooks will be available in the GU bookstore, but they may be available at a lower price on the Internet.)

Course Outline

1. Course Description

In this 3-credit, algebra-based course, we will study the basic principles used to describe and explain physical phenomena. We will cover topics in Classical Physics, which include Mechanics, Waves, Sound, Heat, Electricity, Magnetism, Light Waves, basic ideas in Quantum Physics, and time permitting, a brief introduction to Special Theory of Relativity. This course is appropriate for non-science majors, and for those who desire a more conceptual and less mathematical introduction to physics before taking a two-semester physics course required for science majors, and for anyone interested in gaining insight into the physical laws that governing observed phenomena. We will emphasize the conceptual understanding of the laws of nature and their applications in explaining and predicting the way matter and energy interact.

Note: This course cannot be used to fulfill one of the science requirements for non-science majors at Georgetown University.

(Please check whether this course will satisfy requirements at your school.)

2. Course Prerequisites

You should be familiar with basic algebra and basic trigonometry.
In particular, you should be able to solve simple algebraic equations, and
know the definition of the trigonometric functions sine, cosine and tangent
of the angles of a right triangle. (We will review the aforementioned topics in class as the need for them arise.)

3. Homework

Solving problems is essential for understanding and applying the concepts we will cover in the course. Homework problems will be given out at the end of each class and will be due at the beginning of the next class. I encourage you to work with other students on the homework, and to see me as well.

4. Exams

There will be three exams. Exam 1, will tentatively cover chapters one through 8, and will be given out at the end of class on July 25, and will be due by 5:00 pm on July 28. A second exam tentatively covering chapters nine to eighteen, will be given out at the end of class on August 1 and will be due by 5:00 pm on August 4. Exam 3 will tentatively cover chapters twenty to twenty nine and will be given out at the end of class on August 11 and will be due by 5:00 pm August 14.

5. Grades

The homework will count for 40% of your final grade, and each of the three exams will count for 20% of your final grade.

6. Attendance and Other Course Policies

6.1 Attendance

Students are expected to attend all classes. If you are ill, or have a family, or other emergency, please email me if you will miss a class.

6.2 Cell Phones and Laptops

Please do not use cell phones or laptops during class, as they can be a
distraction to other students (and to you as well).

6.3 Academic Integrity

When you collaborate with classmates on homework, the actual writeup of the solutions you hand in should be yours alone.

Do not ask others for help on exams. Please ask me if you need clarification on any of the exam problems.

7.0 Sexual Misconduct

Georgetown University and its faculty are committed to supporting survivors and those impacted by sexual misconduct, which includes sexual assault, sexual harassment, relationship violence, and stalking. Georgetown requires faculty members, unless otherwise designated as confidential, to report all disclosures of sexual misconduct to the University Title IX Coordinator or a Deputy Title IX Coordinator. If you disclose an incident of sexual misconduct to a professor in or outside of the classroom (with the exception of disclosures in papers), that faculty member must report the incident to the Title IX Coordinator, or Deputy Title IX Coordinator. The coordinator will, in turn, reach out to the student to provide support, resources, and the option to meet. [Please note that the student is not required to meet with the Title IX coordinator.]. More information about reporting options and resources can be found on the Sexual Misconduct Website: https://sexualassault.georgetown.edu/resourcecenter.
If you would prefer to speak to someone confidentially, Georgetown has a number of fully confidential professional resources that can provide support and assistance. These resources include:

Health Education Services for Sexual Assault Response and Prevention: confidential email sarp@georgetown.edu

Counseling and Psychiatric Services (CAPS): 202.687.6985 or after hours, call (833) 960-3006 to reach Fonemed, a telehealth service; individuals may ask for the on-call CAPS clinician

More information about reporting options and resources can be found on the Sexual Misconduct Website.

(***Above statement and TIX faculty resources found at: https://sexualassault.georgetown.edu/get-help/complainants-resources/undergrad-resources/)***

Title IX Pregnancy Modifications and Adjustments
Georgetown University is committed to creating an accessible and inclusive environment for pregnant students. At any point throughout their pregnancy students may request adjustments/modifications based on general pregnancy needs or accommodations based on a pregnancy-related complication or medical need. Students may also request accommodations following labor and delivery based on a complication or medical need.

SCS students must complete the Pregnancy Adjustment Request Form (https://titleix.georgetown.edu/title-ix-pregnancy/student-pregnancy/) and submit it to the SCS Deputy Title IX Coordinator at titleixscs@georgetown.edu. Upon receiving the completed form, the Deputy Title IX Coordinator will schedule a meeting with the student to discuss the requested adjustments and implementation process.

8. Tentative Timetable

Date	Topic	Chapters
(1) Monday 7/07/2025	About Science – Measurements & About Motion; Newton's 1st Law	1, 2
(2) Tuesday 7/08/2025	Newton's 1st Law continued	2
(3) Wednesday 7/9/2025	Linear Motion	3
(4) Thursday 7/10/2025	Newton's 2nd Law of Motion	4
(5) Friday 7/11/2025	Newton's 2nd Law of Motion – cont.	4
(6) Monday 7/14/2025	Newton's 3rd Law of Motion	5
(7) Tuesday 7/15/2025	Momentum	6
(8) Wednesday 7/16/2025	Momentum Work & Energy	6, 7
(9) Thursday 7/17/2025	Rotational Motion	8
(10) Friday 7/18/2025	Gravity, Projectile & Satellite Motion Exam 1 (Chpts 1-8)	9 &10 Take Home Exam 1 (Chpts 1-8)

(11) Monday 7/21/2025	Liquids	13
(12) Tuesday 7/22/2025	Gases	14
(13) Wednesday 7/23/2025	Temperature, Heat & Expansion	15
(14) Thursday 7/24/2025	Heat Transfer	16
(15) Friday 7/25/2025	Thermodynamics	18
(16) Monday 7/28/2025	Vibrations & Waves	19
(17) Tuesday 7/29/2025	Sound Exam 2 (9-18)	20 Take Home Exam 2 (Chpts 9-18)
(18) Wednesday 7/30/2025	Electrostatics	22
(19) Thursday 7/31/2025	Electric Current	23
(20) Friday 8/01/2025	Magnetism	24
(21) Monday 8/04/2025	Electromagnetic Induction	25
(22) Tuesday 8/05/2025	Properties of Light	26

(23) Wednesday 8/06/2025	Reflection and Refraction	28
(24) Thursday 8/07/2025	Light Waves	29
(25) Friday 8/08/2025	Exam 3 (Chpts 19 – 29)	Take Home Exam 3 (Chpts 19 – 29)

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