

BASIC PHYSICS, Phys-007-20

Summer 2023– Syllabus (Tentative)

Description and Structure of the Course

Second Session: July 10, 2023– August 11, 2023

Monday through Friday, 1:00 - 2:30 p.m.

Twenty five classes, ninety minutes per class

Classroom: Reiss #283

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 the requirements at your school for courses taken at other institutions.

2. Course Prerequisites

You should be familiar with basic algebra and 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 in terms of the lengths of its sides. (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 the first ten chapters 1-10, and will be given out at the end of class on July 24 and will be due by 5:00 pm on July 27. A second exam tentatively covering chapters eleven to twenty, 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 be in class on August 11, and cover chapters 22-29.

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/guidance-for-faculty-and-staff-on-how-to-support-students/>)

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/) (<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 7/10/2023	About Science – Measurements & About Motion; Newton's 1 st Law	1, 2
(2) Tuesday 7/11/2023	About Motion; Newton's 1 st Law (cont)	2
(3) Wednesday 7/12/2023	Linear Motion	3
(4) Thursday 7/13/2023	Newton's 2 nd Law of Motion	4
(5) Friday 7/14/2023	Newton's 2 nd Law of Motion – cont.	4
(6) Monday 7/17/2023	Newton's 3 rd Law of Motion	5
(7) Tuesday 7/18/2023	Momentum	6
(8) Wednesday 7/19/2023	Momentum Work & Energy	6, 7
(9) Thursday 7/20/2023	Rotational Motion	8
(10) Friday 7/21/2023	Gravity, Projectile & Satellite Motion	9 & 10

(11) Monday 7/24/2023	Liquids Exam 1 (Chpts 1-10)	13
(12) Tuesday 7/25/2023	Gases	14
(13) Wednesday 7/26/2023	Temperature, Heat & Expansion	15
(14) Thursday 7/27/2023	Heat Transfer	16
(15) Friday 7/28/2023	Thermodynamics	18
(16) Monday 7/31/2023	Vibrations & Waves	19
(17) Tuesday 8/1/2023	Sound Exam 2 (Chpts 11- 20)	20
(18) Wednesday 8/2/2023	Electrostatics	22
(19) Thursday 8/3/2023	Electric Current	23
(20) Friday 8/4/2023	Magnetism	24
(21) Monday 8/7/2023	Electromagnetic Induction	25
(22) Tuesday 8/8/2023	Properties of Light	26

(23) Wednesday 8/9/2023	Reflection and Refraction	28
(24) Thursday 8/10/2023	Light Waves	29
(25) Friday 8/11/2023	Exam 3 (Chpts 22 – 29)	

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