

# **BASIC PHYSICS, Phys-007-20**

## **Summer 2021 Syllabus (Tentative )**

### **Description and Structure of the Course**

*Second Session* July 12, 2021– August 13, 2021  
Monday through Friday, 1:00 - 2:30 p.m.

*Twenty five classes, ninety minutes per class*

*Classroom:* If in person, room 502 Reiss Science Building,  
if virtual, via Zoom.

*Professor:* *Mark A. Esrick*

*526 Reiss Science Building*

*Email: [esrickm@georgetown.edu](mailto:esrickm@georgetown.edu)*

*Office Hours: Hours to be determined on the first day of classes,  
and by appointment.*

### **Textbooks<sup>1</sup>**

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

### **Grades**

<u>Category</u>	<u>Percentage of final grade</u>
<i>Homework</i>	<b>40%</b>
<i>Midterm</i>	<b>20%</b>
<i>Being Prepared for Class</i>	<b>10%</b>
<i>Interest &amp; participation in class</i>	<b>10%</b>
<i>Final Examination (not cumulative)</i>	<b>20%</b>

## Course Overview

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 those 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.

A midterm, covering the first ten chapters will be given out at the end of class on July 26 and will be due July 29. A second exam covering chapters eleven to twenty three, will be given out on the last day of classes and will be due August 15.

Students are expected to attend every class, and I will check attendance at the beginning of every class. It has not yet been decided if classes will be held in person, or virtually via Zoom. If classes are virtual, please keep your cameras on during class so that we all can see, and get to know, each other. I encourage you to work together on homework problems when running into difficulties (for example via Zoom, if classes are virtual), and to email me with questions. I will have office hours in 526 Reiss (or via Zoom if classes are virtual), at times to be decided on the first day of classes.

## Tentative Timetable

<b>Period/ Date</b>	<b>Topic</b>	<b>Chapters</b>
<b>1 – M, 07/12</b>	About Science – Measurements & About Motion; Newton’s 1 <sup>st</sup> Law	1, 2
<b>2 – T, 07/13</b>	About Motion; Newton’s 1 <sup>st</sup> Law (cont)	2
<b>3 – W, 07/14</b>	Linear Motion	3
<b>4 – R, 07/15</b>	Newton’s 2 <sup>nd</sup> Law of Motion	4
<b>5 – F, 07/16</b>	Newton’s 2 <sup>nd</sup> Law of Motion – cont.	4

<b>Period/ Date</b>	<b>Topic</b>	<b>Chapters</b>
6 – M, 07/19	Newton's 3 <sup>rd</sup> Law of Motion	5
7 – T, 07/20	Momentum	6
8 – W, 07/21	Momentum Work & Energy	6, 7
9 – R, 07/22	Rotational Motion	8
10 – F, 07/23	Gravity, Projectile & Satellite Motion	9 & 10
11 – M, 07/26	Temperature & Heat, Heat Transfer <small>Midterm given out at end of class and due by 10:00 pm July 29</small>	15 16
12 – T, 07/27	Thermodynamics	18
13 – W, 07/28	Vibrations & Waves	19
14 – R, 07/29	Sound Musical Sounds	20 21
15 – F, 07/30	Electrostatics	22
16 – M, 08/02	Electric Current	23
17 – T, 08/03	Magnetism	24
18 – W, 08/04	Electromagnetic Induction	25
19 – R, 08/05	Properties of Light	26
20 – F, 08/06	Light Waves	29
21 – M, 08/09	Light Quanta	31
22 – T, 08/10	The Atom & the Quanta	32

<b>Period/ Date</b>	<b>Topic</b>	<b>Chapters</b>
23 – W, 08/11	The Atomic Nucleus and Radioactivity	33
24 – R, 08/12	Nuclear Fission and Fusion	34
<b>25 – F, 08/13</b>	Special Relativity <small>Final Exam will be given out at end of class and will be due August 15 at 10:00 pm</small>	35

<sup>1</sup> The textbooks will be available in the GU bookstore, but they may be available at a lower price on the Internet.