

*This syllabus is provided as a general informational guide. Some of the information may vary depending on the specific course section and instructor. Different sections of the same course may require different textbooks. Verify the section specific textbook information in the CUNY's Academic Course Schedule Web Page. Modifications of the grading system presented here will be communicated by the instructors of the sections when they meet the class.*

**BOROUGH OF MANHATTAN COMMUNITY COLLEGE**

The City University of New York

Department of Science

**Title of Course: PHYSICS I  
PHY 210; Credits: 4  
Semester:**

**Lecture Hours per Week : 4  
Laboratory Hours per Week: 2**

**Instructor Information (Name, Phone#, Office#, email):**

**Course Description:**

This is the first part of a two-semester sequence in college physics. Algebra and trigonometry are used throughout the course. Topics include motion, mechanics, fluids, simple harmonic motion, mechanical waves, and heat and thermodynamics.

**Basic Skills/Prerequisites:**

MAT 056

**Corequisites:**

<b>Student Learning Outcomes (Students will be able to...)</b>	<b>Measurements (means of assessment for student learning outcomes listed in first column)</b>
1. Identify and apply the fundamental concepts and methods of a life or physical science.	1. Graded problems involving calculations based on a lab exercise: exam questions.
2. Apply the scientific method to explore natural phenomena, including hypothesis development, observation, experimentation, measurement, data analysis, and data presentation.	2. Laboratory experiments will require the statement of a hypothesis, gathering of experimental data followed by analysis and presentation of this data.
3. Use the tools of a scientific discipline to carry out collaborative laboratory investigations.	3. Laboratory experiments will require the students to work in groups and carry out collaborative laboratory investigations.
4. Gather, analyze, and interpret data and present it in an effective written laboratory or fieldwork report.	4. Graded lab reports, where students will report, analyze and present scientific data.
5. Identify and apply research ethics and unbiased assessment in gathering and reporting scientific data.	5. Graded lab exercise with emphasis on the truthful collection, recording and reporting of data independent of previous expectations.

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	<b>General Education Learning Outcomes:</b>	<b>Measurements (means of assessment for general education goals listed in first column):</b>
X	<b>Communication Skills-</b> Students will be able to write, read, listen and speak critically and effectively.	Laboratory reports with emphasis on discussion and conclusions
X	<b>Quantitative Reasoning-</b> Students will be able to use quantitative skills and the concepts and methods of mathematics to solve problems.	Examinations, Homework problems/quizzes
X	<b>Scientific Reasoning-</b> Students will be able to apply the concepts and methods of the natural sciences.	Graded laboratory reports with scientific validity of discussions is an important criterion.
	<b>Social and Behavioral Sciences-</b> Students will be able to apply the concepts and methods of the social sciences.	
	<b>Arts &amp; Humanities-</b> Students will be able to develop knowledge and understanding of the arts and literature through critiques of works of art, music, theatre or literature.	
	<b>Information &amp; Technology Literacy-</b> Students will be able to collect, evaluate and interpret information and effectively use information technologies.	
	<b>Values-</b> Students will be able to make informed choices based on an understanding of personal values, human diversity, multicultural awareness and social responsibility.	

### Required Text & Readings:

Serway and Vuille: "*College Physics 11<sup>th</sup> Edition*",

Publisher: Cengage Learning,

ISBN-10: 1-305-95230-0, ISBN-13: 978-1-305-95230-0, 978-1-305-96536-2 or equivalent

### Laboratory Manual:

Jerry D. Wilson, Cecilia A. Hernandez-Hall: *Physics Laboratory Experiments, Custom Edition*

Publisher: Cengage Learning

ISBN-13: 978-1-377-03666-5, ISBN-10:1-337-03666-8

### Other Resources:

**Use of Technology (If Applicable):** A scientific calculator

### Evaluation and Requirements of Students:

The student is evaluated on the basis of his or her performance on a series of quizzes/homework and examinations worth a total of 75% of the final grade. The student is required to turn in a laboratory report for each experiment performed. The report is due one week following the performance of the experiment. The Laboratory grade accounts for the remaining 25% of the final grade

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**BMCC is committed to the health and well-being of all students. It is common for everyone to seek assistance at some point in their life, and there are free and confidential services on campus that can help.**

**Single Stop** [www.bmcc.cuny.edu/singlestop](http://www.bmcc.cuny.edu/singlestop), room S230, 212-220-8195. If you are having problems with food or housing insecurity, finances, health insurance or anything else that might get in the way of your studies at BMCC, come by the Single Stop Office for advice and assistance. Assistance is also available through the Office of Student Affairs, S350, 212-220- 8130.

**Counseling Center** [www.bmcc.cuny.edu/counseling](http://www.bmcc.cuny.edu/counseling), room S343, 212-220-8140. Counselors assist students in addressing psychological and adjustment issues (i.e., depression, anxiety, and relationships) and can help with stress, time management and more. Counselors are available for walk-in visits.

**Office of Compliance and Diversity** [www.bmcc.cuny.edu/aac](http://www.bmcc.cuny.edu/aac), room S701, 212-220-1236. BMCC is committed to promoting a diverse and inclusive learning environment free of unlawful discrimination/harassment, including sexual harassment, where all students are treated fairly. For information about BMCC's policies and resources, or to request additional assistance in this area, please visit or call the office, or email [olevy@bmcc.cuny.edu](mailto:olevy@bmcc.cuny.edu), or [twade@bmcc.cuny.edu](mailto:twade@bmcc.cuny.edu). If you need immediate assistance, please contact BMCC Public safety at 212-220-8080.

**Office of Accessibility** [www.bmcc.cuny.edu/accessibility](http://www.bmcc.cuny.edu/accessibility), room N360 (accessible entrance: 77 Harrison Street), 212-220-8180. This office collaborates with students who have documented disabilities, to coordinate support services, reasonable accommodations, and programs that enable equal access to education and college life. To request an accommodation due to a documented disability, please visit or call the office.

### **College Attendance Policy**

At BMCC, the maximum number of absences is limited to one more hour than the number of hours a class meets in one week. For example, you may be enrolled in a three-hour class. In that class, you would be allowed 4 hours of absence (not 4 days). In the case of excessive absences, the instructor has the option to lower the grade or assign an F or WU grade.

### **BMCC Policy on Plagiarism and Academic Integrity Statement**

Plagiarism is the presentation of someone else's ideas, words or artistic, scientific, or technical work as one's own creation. Using the idea or work of another is permissible only when the original author is identified. Paraphrasing and summarizing, as well as direct quotations, require citations to the original source. Plagiarism may be intentional or unintentional. Lack of dishonest intent does not necessarily absolve a student of responsibility for plagiarism. Students who are unsure how and when to provide documentation are advised to consult with their instructors. The library has guides designed to help students to appropriately identify a cited work. The full policy can be found on BMCC's Web site, [www.bmcc.cuny.edu](http://www.bmcc.cuny.edu). For further information on integrity and behavior, please consult the college bulletin (also available online).

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### Outline of Topics:

Week	LECTURE	CHAPTER	LAB EXPERIMENT
1	Introduction to Physics: Units, trigonometry and vectors	1	Introduction to error analysis; mass, volume and density, p.13-p.18, p.33-p.43
2	Motion in one dimension	2	The simple pendulum, p.49-p.56
3	Motion in two dimensions	3	Uniformly accelerated motion: Free fall, p.61-62 (section TI), p.65-67 (section TI)
4	Newton's laws of motion	4	Vector addition: The force table, p.77-84
5	Energy	5	Newton's 2 <sup>nd</sup> law: The Atwood machine, p.89-p.97
6	Momentum, impulse, and collisions	6	Centripetal force, p.145-p.154
7	Rotational motion and gravitation	7	Torque, equilibrium, p.199-p.208
8	Rotational equilibrium and dynamics	8	Ballistic pendulum, p.133-p.142 (Sec:A, B)
9	Fluids and solids	9	Hooke's law and simple harmonic motion, p.229-p.236
10	Thermal physics	10	Standing waves in a string, p.247-p.253
11	Energy in thermal processes	11	Archimedes's principle, p.305-p.313
12	The laws of thermodynamics	12	Thermal co-efficient of expansion, p.263-p.269
13	Vibrations and waves	13	Specific heat of a metal, p.273-p.279
14	Sound	14	Heat of fusion, heat of vaporization, p.281-p.294
15	Review and final exam		

In the laboratory, students will perform experiments to illustrate the applications of physics. Written reports will be collected and graded. The laboratory reports will constitute 25% of the student's final grade.