

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: UNIVERSITY PHYSICS I

Class Hours: 4

PHY 215; Credits: 4

Laboratory Hours per Week: 2

Semester:

Instructor Information:

Course Description: This is the first part of a two-semester sequence in calculus-based physics. Topics include: motion, fluids, simple harmonic motion, mechanical waves and heat and thermodynamics.

Basic Skills: Kinematics, vectors, force, energy and work, linear momentum, rotation of rigid bodies, Gravitation, fluids; oscillatory motion; waves; thermal physics-required for all physics and engineering majors and recommended for all science majors who are also required to take calculus. The course includes a calculus-based laboratory that exposes students to a broad range of the real physical phenomena studied in the lecture course. Students learn to write introductory-level laboratory reports and become familiar with good laboratory technique.

Prerequisites: MAT 301

Corequisites: MAT 302

Course Student Learning Outcomes (Students will be able to...)	Measurements (means of assessment for student learning outcomes listed in first column)
1. Students will be able to gain knowledge of a broad, rigorous introduction to physics at the beginning college level for students who are currently learning elementary calculus.	1. Graded laboratory reports and examination problems
2. Students will be able to develop problem-solving skills.	2. Graded homework problems and examination problems
3. Improvements in physical intuition will permit students to apply the principles of physics to real world situations.	3. Performance in laboratory experiments as determined by graded laboratory reports with physical insights as important criteria.

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Below are the college's general education learning outcomes, the outcomes that are checked in the left-hand column indicate goals that will be covered and assessed in this course

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

Required Text: *“Physics for Scientists and Engineers with modern Physics Volume I -Technology Update” 10th Edition* Authors: R.A. Serway and J.W. Jewitt

Publisher: CENGAGE Learning

ISBN-13: 978-1-337-55343-8

ISBN-10: 1-337-55343-3

Student Copy ISBN: 978-1-337-55327-8

Other Resources -Laboratory Manual:

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

Publisher: CENGAGE Learning

ISBN-13: 978-1-337-03666-5

ISBN-10: 1-337-03666-8

Use of Technology: *A scientific calculator is useful for class quizzes and examinations*

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Class Participation

Participation in the academic activity of each course is a significant component of the learning process and plays a major role in determining overall student academic achievement. Academic activities may include, but are not limited to, attending class, submitting assignments, engaging in in-class or online activities, taking exams, and/or participating in group work. Each instructor has the right to establish their own class participation policy, and it is each student's responsibility to be familiar with and follow the participation policies for each course.

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, 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, 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, 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, or 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, 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.

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. For further information on integrity and behavior, please consult the college bulletin (also available online).

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PHY 215 LECTURE TOPICS

	<u>LECTURE TOPICS</u>	<u>CHAPTERS</u>
1	Measurements .	1
	One Dimensional Motion	2
2	One Dimensional Motion. Vectors	2, 3
3	Vectors. Two Dimensional Motion	3, 4
4	Newton's Laws of Motion	5
5	Circular Motion and Applications of Newton's Laws	6
6	Static Equilibrium	12
7	Energy	7
8	Conservation of energy	8
9	Linear Momentum and Collisions	9
10	Rotation of a Rigid Body. Angular Momentum	10 11
11	Oscillatory Motion and Mechanical waves. Sound waves	15,16,17,18
12	Universal Gravitation	13
	Fluid Mechanics	14
13	Temperature	19
	Heat	20
14	Heat Engines, Entropy and the Second Law of Thermodynamics	22
15	Review for Final	

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<u>WEEK</u>	<u>EXPERIMENT</u>	<u>PAGE</u>
1	Introduction to Error Analysis Mass, Volume, and Density	13-18; 33-43
2	The Simple Pendulum	49-56
3	Uniformly Accelerated Motion: Free Fall	61-62 (section TI), 65,67 (section TI)
4	Vector Addition: The Force Table	77-84
5	Newton's 2 nd Law: The Atwood Machine	89-97
6	Centripetal Force	145-154
7	Torques and Equilibrium	199-208
8	The Ballistic Pendulum	133-142 (Sections: A, B)
9	Hooke's Law and Simple Harmonic Motion	229-236
10	Standing Waves in a String	247-253
11	Archimedes' Principle	305-313
12	Thermal Co-efficient of Expansion	263-269
13	Specific Heat of a Metal	273-279
14	Heat of Fusion, Heat of Vaporization	281-294