

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 II

Class Hours: 4

PHY 225; Credits: 4

Laboratory Hours per Week: 2

Semester:

Instructor Information:

Course Description: This is the second half of a two-semester sequence in calculus-based physics. Topics include electricity and magnetism, electromagnetic waves, optics, atomic and nuclear physics.

Basic Skills: Electrostatics, electric circuits, magnetism and electromagnetism; electromagnetic waves, optics, atomic and nuclear physics- required for all physics and engineering majors and recommended for all science majors who are also required to take calculus. The lab portion of this course is a continuation of the PHYS 215 lab portions and builds on the students' laboratory skills and knowledge from those labs. Emphasis for this lab is on electricity, magnetism, circuits and optics.

Prerequisites: PHY 215, 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 II -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

Alternative: Department of Science Handouts

Physics 220 & Physics 225

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 225 LECTURE TOPICS

<u>WEEK</u>	<u>LECTURE TOPICS</u>	<u>CHAPTERS</u>
1	Coulomb's Law and Electric Fields	23
2	Gauss's Law	24
3	Electric Potential	25
4	Capacitance and Dielectrics	26
5	Current, Resistance, and Ohm's Law	27
6	Direct -Current Circuits	28
7	Magnetic Fields and Magnetic Forces	29
8	Sources of the Magnetic Field	30
9	Electromagnetic Induction-Faraday's Law	31
	Inductance	32
10	Alternating- Current Circuits	33
11	Electromagnetic Waves. Nature and Propagation of Light.	34
	Geometric Optics	35, 36
12	Interference. Diffraction and Polarization	37, 38
13	Introduction to Quantum Physics. Atomic Physics	40, 42
14.	Nuclear Physics	44
15	Review for Final	

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PHY 225 LABORATORY TOPICS

<u>WEEK</u>	<u>EXPERIMENT</u>	
1	Electrostatics and Coulomb's Law	(Handout)
2	Fields and Equipotentials	(Handout)
3	Ohm's Law	(Handout)
4	Resistances in Series and Parallel	(Handout)
5	The Measurement of Resistance: Ammeter-Voltmeter Methods and Wheatstone Bridge Method	(Handout)
6	Multiloop Circuits: Kirchhoff's Rules	(Handout)
7	The RC Time Constant	(Handout)
8	Force on a Current-Carrying Wire in an External Magnetic Field Experiment	(Handout)
9	A.C. Circuits and Resonance	(Handout)
10	Reflection and Refraction	(Handout)
11	Spherical Mirrors and Lenses	(Handout)
12	Polarization of light. Malus' Law	(Handout)
13	The Transmission Diffraction Grating: Measuring the Wavelengths of Light	(Handout)
14	Line Spectra and the Rydberg Constant	(Handout)