

*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 II**  
**PHY 220; Credits: 4**  
**Semester:**

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

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

**Course Description:**

This is the second part of a two-semester sequence in college physics. Algebra and trigonometry are used throughout the course. Topics include electricity and magnetism, electromagnetic waves, optics, and, atomic and nuclear physics.

**Basic Skills:**

ARC 094, ENG 088 or ESL 062

**Prerequisites:**

PHY 210

**Corequisites:**

None

<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. 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 college algebra (precalculus)	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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	<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: 978-1305-95230-0, 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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## **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](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.

## **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	Electric forces and electric fields	15	Electrostatics and Coulomb's law Handout
2	Electric forces and electric fields (con'd) & Electrical energy and capacitance	15 16	Fields and equipotential p.295 – p.303 or Handout
3	Electrical energy and capacitance	16	Ohm's law p.307 – p.313 or Handout
4	Current and resistance	17	Resistance in series and parallel p.349 – p.360 or Handout
5	Direct current circuits	18	Measurement of resistance: Wheatston bridge p.323 – p.333 or Handout
6	Direct current circuits (con'd) & magnetism	18 19	Multiloop circuits: Kirchoff's rules Handout
7	Magnetism (con'd)	19	RC time constant p.381 – p.388 or handout
8	Induced voltages and inductance	20	Force on a current-carrying wire in an external magnetic field, Handout
9	Alternating current circuits and electromagnetic waves	21	AC circuits and resonance Handout
10	Reflection and refraction of light	22	Reflection and refraction Handout
11	Mirrors and lenses	23	Spherical mirrors and lenses Handout
12	Wave optics	24	Polarization of light: Malus's law p.445 – p.450 or Handout
13	Atomic physics	28	Transmission diffraction grating: measuring the wavelengths of light p.469 – p.481 or Handout
14	Nuclear physics and energy, and elementary particles	29 30	Line spectra and the Rydberg constant p.459 – p.467 or handout
15	Review and final examination		

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