

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

City University of New York

Department of Science

**Title of Course: GENERAL PHYSICS EXPERIMENTS
PHY 109**

**Lecture hours 1
Lab hours 2
Credits 3**

Course Description

This course serves as an experimental introduction to general physics, especially for students who are not science oriented. A selected number of basic topics in physics are carefully examined and subjected to experimental verification. The relevance of the scientist and his/her work to the lives of non-scientists is continually examined.

Basic skills Prerequisites:

(MAT 12 or MAT 14 or MAT 41 or MAT 51) and (ENG 88 or ESL 62) and ACR 94

Co-requisite: PHY 108

Required Text & Readings

Physics of Everyday Phenomena, A Conceptual Introduction to Physics; 8th Edition;

Author: Griffith & Brosing

McGraw-Hill, ISBN-10: 978-1-308-17220-6

ISBN-13: 978-1-308-17220-0

Other Resources

General Physics Laboratory Manual (Prepared and handed by the Science Department)

Calculator

Ruler (metric)

Evaluation & Requirements of Students

Exams/quizzes 30%

Laboratory reports 70%

Total 100%

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LABORATORY

| <u>WEEK</u> | <u>EXPERIMENT/ACTIVITY</u> | <u>Page</u> |
|--------------------|---|--------------------|
| 1. | Measurements and Unit Conversions _____ | 1 |
| 2. | Reading and Drawing Simple Graphs _____ | 5 |
| 3. | Acceleration Due to Gravity: Free Fall Apparatus _____ | 8 |
| 4. | Newton's 2 nd Law – Atwood's Machine _____ | 10 |
| 5. | Simple Harmonic Motion: The Vibrating Spring _____ | 12 |
| 6. | Rotational Equilibrium _____ | 15 |
| 7. | Archimedes Principle _____ | 18 |
| 8. | Specific Heat of a Solid _____ | 21 |
| 9. | Ohm's Law _____ | 23 |
| 10. | Series and Parallel Connections of Resistors _____ | 25 |
| 11. | Air Column Resonance: The Velocity of Sound _____ | 27 |
| 12. | Light Reflection and Refraction _____ | 29 |
| 13. | Focal Length of Converging Lens: Simple Telescope _____ | 33 |
| 14. | Spectra _____ | 37 |
| 15. | Final exam | |

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.

Academic Adjustments for Students with Disabilities

Students with disabilities who require reasonable accommodations or academic adjustments for this course must contact the Office of Services for Students with Disabilities. BMCC is committed to providing equal access to all programs and curricula to all students.

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.

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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 website, www.bmcc.cuny.edu. For further information on integrity and behavior, please consult the college bulletin (also available online).

Pathways learning outcomes and assessment measurements

| Course Student Learning Outcomes (Students will be able to...) | Measurements (means of assessment for student learning outcomes listed in first column) |
|---|--|
| 1. Identify and apply the fundamental concepts and methods of the physical science. | 1. Graded homework and exam problems and questions on mechanics, electromagnetism, optics, and others will measure how students identify and apply the fundamental concepts and methods of the physical science. |
| 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 and reporting the findings. |
| 4. Gather, analyze, and interpret data and present it in an effective written laboratory or fieldwork report. | 4. Graded laboratory reports, where students will report, analyze and present scientific data collected in the experiments performed. |
| 5. Identify and apply research ethics and unbiased assessment in gathering and reporting scientific data. | 5. Graded lab reports with emphasis on the truthful collection, recording and reporting of data independent of previous expectations. |

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| | General Education Learning Outcomes | Measurements (means of assessment for general education goals listed in first column) |
|---|--|---|
| | Communication Skills- Students will be able to write, read, listen and speak critically and effectively. | |
| | Quantitative Reasoning- Students will be able to use quantitative skills and the concepts and methods of mathematics to solve problems. | |
| ☐ | Scientific Reasoning- Students will be able to apply the concepts and methods of the natural sciences. | 1. Graded problems involving calculations, exam questions. 2. Graded lab reports involving the collection, tabulating and plotting of physical data. |
| | 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. | |
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| | Communication Skills- Students will be able to write, read, listen and speak critically and effectively. | |
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| ☐ | Scientific Reasoning- Students will be able to apply the concepts and methods of the natural sciences. | 2. Graded problems involving calculations, exam questions. 2. Graded lab reports involving the collection, tabulating and plotting of physical data. |
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