

Montclair High School

Course Syllabus

Department: Science
Course: AP PHYSICS C Part II – Electricity & Magnetism
Level: Advanced Placement
Credits: 6

Course Description:

This course is designed to be the equivalent of the second semester of an introductory college physics course usually taken by physics/engineering majors during the first year of college and will prepare students for the E&M section of the Level C AP Physics Exam. Since this course builds on skills and knowledge learned in A.P. Physics One, only students that have successfully completed A.P. Physics One should consider taking this course. In addition to covering the required text material, students may also be involved in general laboratory activities. Classes meet six periods a week (one double period, four single periods). Topics covered include measurement, electric forces, electric fields, magnetism, electromagnetism, electricity and circuits. Emphasis is placed on the use of algebra, trigonometry and calculus to solve problems and analyze data. Prior skills needed to achieve proficiency therefore include those learned in algebra, trigonometry, and calculus. Strong math and problem solving skills are therefore a necessity. Since the ability to perform integration is a necessity it is strongly recommended that students first complete a course in calculus. It is further recommended that the only students have maintained at least a "B" average in their math courses consider this level of physics.

Standards:

HS-PS2-4; HS-PS3-5; HS-PS2-5

Anchor Text(s):

Text Title	Publisher/Author	Year/Edition	ISBN	Text Distribution
Fundamentals of Physics	John Wiley and Sons/Halliday, Resnick, Walker	2008/8 th edition	978-0470-04474-2	Hard copy

Supplementary Materials:

N/A

Units of Study:

- ✓ Electric Charge
- ✓ Electric Fields
- ✓ Gauss' Law
- ✓ Electric Potential
- ✓ Capacitance
- ✓ Current & Resistance
- ✓ Circuits
- ✓ Magnetic Fields
- ✓ Magnetic Fields due to Currents (Ampere's Law)
- ✓ Induction and Inductance
- ✓ Magnetism of Matter; Maxwell's Equations

Proficiencies:

By the end of this course, students will:

- Read, understand and interpret physical information - verbal, mathematical and graphical.
- Describe and explain the sequence of steps in the analysis of a particular physical phenomenon or problem; that is
- describe the idealized model to be used in the analysis, including making any simplifying assumptions necessary.
 - state the principles or definitions that are applicable.
 - specify relevant limitations on applications of these principles.
 - carry out and describe the steps of the analysis mathematically.
 - interpret the results or conclusions, including discussion of particular cases of special interest.
- Use basic mathematical reasoning, arithmetic, algebraic, geometric, trigonometric or calculus, where appropriate - in a physical situation or problem.
- Perform experiments and interpret the observations, including making an assessment of experimental uncertainties.

In addition, students are expected to:

1. Maintain a high level of participation and preparation.
2. Complete assignments. Group study recommended.
3. Accomplish successfully all graded work such as chapter tests, quizzes and labs.
4. Demonstrate a cooperative attitude and to contribute to the learning process of the class.
5. Prepare for and Take the AP test!

Evaluation & Assessment:

- Tests/Quizzes 70%
- Assignments 20%
and Classwork
- Laboratory 10%
Work

Final Grade:

The Final Grade will consist of each marking period (22.5% each), the midterm exam (5%) and the final exam (5%). The midterm and the final exam (in April) will be mock AP tests, where the midterm will include some of the topics and the final will include all of the topics.

Prior to beginning any lab activities, all students must have submitted a Safety Contract which has been duly signed by both the student and their parent/guardian. This contract will be kept on file by the teacher for the duration of the course.