

2012-2013
AP Physics B Course Syllabus
AP Physics C: Electricity and Magnetism Syllabus
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COURSE DESCRIPTION

AP Physics B Course Overview

AP Physics B is a continuation of the topics studied in Laboratory Physics. This course is concerned with the study of electricity, magnetism, quantum mechanics, heat and thermodynamics, and other modern physics concepts. AP Physics B is ideal for students who are planning on attending college and studying any scientific, technological, engineering or mathematical field of study. It is also designed to be equivalent to the second semester of college physics. Students electing this course should have completed Lab Physics and Trigonometry either a GPA of at least 3.0 in each course. **Upon completion of the course students are encouraged to take the AP Physics B exam. The cost of the AP exam will be paid by the district.**

AP Physics C: Elec. & Mag. Course Overview

This is a rigorous academic course requiring an excellent mathematics background. The course includes much laboratory work. Physics is the study of the relationship between matter and energy. It is also designed to be equivalent to the second semester of college physics. This course is concerned with the study of Electricity, Magnetism, Quantum Mechanics, Heat and Thermodynamics and other modern physics topics. Students enrolled in this course will be part of the AP Physics B class. They will do all work in the AP Physics course as well as some extra work beyond that course. Prerequisites include permission from Mr. Couch, an A or B in both Algebra 1 and 2, and either an A or B in Trigonometry or be enrolled in Trigonometry. It is also preferred that students have already taken either Lab Physics or AP Physics C: Mechanics and have earned at least a C. **Upon completion of this course students are encouraged to take the AP Physics C exam in Electricity and Magnetism and do well. The cost of the AP exams will be paid by the district.**

Students will be required to complete all of the work for the AP Physics B course as well as extra assignments outside of class in preparation for the AP exam.

COURSE CONTENT

Scope and Sequence for Lab Physics and AP Physics

Lab Physics

- a. First Nine Weeks
 - i. Chapter 1 The Science of Physics
 - ii. Chapter 2 Motion in One Dimension
 - iii. Chapter 3 Two-Dimensional Motion and Vectors
- b. Second Nine Weeks
 - i. Chapter 4 Forces and the Laws of Motion
 - ii. Chapter 5 Work and Energy
 - iii. Chapter 6 Momentum and Collisions
 - iv. Chapter 7 Circular Motion and Gravitation
- c. Third Nine Weeks
 - i. Chapter 8 Fluid Mechanics
 - ii. Chapter 9 Heat
 - iii. Chapter 10 Thermodynamics
 - iv. Chapter 11 Vibrations and Waves
- d. Fourth Nine Weeks
 - i. Chapter 12 Sound
 - ii. Chapter 13 Light and Reflection
 - iii. Chapter 14 Refraction
 - iv. Chapter 15 Interference and Diffraction

AP Physics B

- e. First Nine weeks
 - i. Chapter 16 Electric Forces and Fields
 - ii. Chapter 17 Electrical Energy and Current
 - iii. Chapter 18 Circuits and Circuit Elements
 - iv. Chapter 19 Magnetism
- f. Second Nine Weeks
 - i. Chapter 20 Electromagnetic Induction
 - ii. Chapter 21 Atomic Physics
 - iii. Chapter 22 Subatomic Physics
 - iv. Chapter 8 Fluids
- g. Third Nine Weeks
 - i. Chapter 9 Heat
 - ii. Chapter 10 Thermodynamics
 - iii. Advanced Topics
- h. Fourth Nine Weeks
 - i. Review for AP Exam in May
 - ii. After exam topics of student interest for example Relativity, Advanced Electronics or Personal Investigations

PENNSYLVANIA ACADEMIC STANDARDS FOR PHYSICS

- 3.1 Unifying Themes
- 3.2 Inquiry and Design
- 3.4 Physical Science, Chemistry and Physics
 - 3.4.12.A Structure and Properties of Matter
 - 3.4.12.B Energy, Heat and Temperature
 - 3.4.12.C Motion and Force
 - 3.4.12.D Composition and Structure of the Universe

TEXT

Holt Physics by Serway and Faughn, published by Holt Rinehart and Winston 2006
There should be an AP Physics C review book TBD

WEB RESOURCES

Text book homepage is www.go.hrw.com keyword HF6 HOME

NSTA resources – www.scilinks.org

My webpage on School Fusion - http://lab-physics.mr-couchs-class.blackhawk.bhs.schoolfusion.us/modules/groups/integrated_home.phtml?gid=942718&sessionid=2b81adcbea63e7a48161c8b4230928c8

My page on BVIU's Moodle pages – still under construction

METHODS OF INSTRUCTION

There are many different modes of instruction that I use in class depending on the goals of the lesson. Some of them include: lecture, PowerPoint presentations, Prezi lectures, class discussion, lab activities, demonstrations, interactive lecture/demonstrations, cooperation learning, differentiated instruction, tiering....

REQUIRED MATERIALS

1. A scientific calculator – see BYOT below
2. A notebook for classroom notes.
3. A separate notebook for laboratory
4. Your book.
5. A writing utensil.
6. Your school handbook

BYOT

There is a new initiative in the district about students being about to bring their own technology into the school for use in school. While the details of this are not ironed out yet there are a couple of thoughts that I have on this subject. In general students will be able to use any of their own technological devices during class so long as

- 1) Its use is directly related to the lesson
- 2) it does not prohibit the educational process of others
- 3) Obeys all school rules
- 4) It is not used during a test or a quiz – during tests and quizzes students will only be allowed to use calculators provided by Mr. Couch – students may borrow these calculators during class, but they are not to leave the classroom.

METHODS OF ASSESSMENT

A. Chapter tests

Chapter test will be given on all chapters. The midterm will cover the chapters to date and the final will cover the entire course.

B. Quizzes - as needed, both announced and unannounced

Periodically there will be quizzes following the day of a lab.

C. Laboratory Reports and Work Sheets

Every one is to turn his or her own work in.

D. Homework Assignments

I expect every assignment to be completed. Assignments that I give are not busy work. They are practice with the skills and information in the chapter. If you do not practice, you will not learn. Assignments are placed into one of two categories, either they are miscellaneous work, or they are a homework check. Miscellaneous assignments are ones that students complete, practicing material already discussed in class. I expect students to be able to complete these assignments with a high degree of success. Homework check assignments are ones in which students are just learning the material. I expect full effort on all assignments, but these homework check ones will only be graded on effort and not on correctness like the miscellaneous assignments.

E. Cooperative group projects

F. EXTRA CREDIT:

One way to earn extra credit is through bonus articles. Each is worth 3 bonus points. You may do as many as you want, however, you can only raise your grade by 5% both in any one category and overall. Only 2 articles are to be read during any one-class period. If more than 2 articles are turned in one day, then the extra will be read the following class period. Please be advised that it is possible for some articles to be pushed to the next grading period, so plan ahead. The last day to turn in articles for a particular grading period is the last Friday of that grading period. Another way to earn bonus points is by completing bonus assignments. I will give these at the beginning of a chapter and they are due on the day you take the chapter test for that material. Not every chapter has a bonus assignment, but most do have at least one. Bonus assignments must be completed individually. They must also be turned in on time – no exceptions.

LATE WORK

Each category of assignments has its own rules on late work. Chapter test and quizzes must be taken on the day assigned. If absent on the day of a test, the student will be expected to make up the test or quiz on the day he/she returns to school. Miscellaneous work will be penalized 10% of the amount possible for each day it is turned in late. Homework checks will be worth a maximum of 80% for one day late, 50% for two days late and 0% after that. Reasonable exception to these rules will be accepted on an individual basis.

RETAKE POLICY

Students may retake quizzes and test during each grading period with the following rules:

- 1) All retakes are completed outside of normal class time, but can be during study halls, homeroom or afterschool.
- 2) The first retake during each grading period is a “free one” meaning no restrictions
- 3) After that students may only raise their score by a maximum of 10% unless extenuating circumstances are present.
- 4) Students should expect that their parents/guardians will be informed of all retakes.
- 5) The midterm and final are not eligible for retakes.

GRADING

According to district policies, A: 100-92%, B: 91-83%, C: 82-74%, D: 73-65%, E: below 65%. A 91.5% will be rounded to 92%. A 91.4% will be rounded to 91%.

However, the top score on the assignment from all sections of the course determines 100%. I also use a weighted averaging system. I will teach you a method of recording your own grades and calculating them on your own. The percentages are below:

| | |
|--------------------------|-----|
| A. Chapter tests/Quizzes | 60% |
| B. Miscellaneous work | 30% |
| C. Homework checks | 10% |

CLASSROLL.COM

Assignments for the week will be available by the first school day of the week at 7:30 am. Student grades will be updated as soon as possible depending on the length of the assignment. Please monitor Classroll often so that you will be aware of your or your child’s grade at any time. You will also be able to check on assignments in case your child is absent. **If you have lost your user ID or password to classroll.com please contact the high school office for a replacement at your earliest convenience.**

GUIDELINES/ BEHAVIOR

- 1) Classroom expectations include promptness, readiness to work, and respect for self, for others, and for the learning environment. In short, students should adhere to Blackhawk’s Expect / Respect policy.
- 2) All facets of the Blackhawk Student Handbook apply to this class.
- 3) Students are expected to be prepared for class having read and completed all assigned work in advance.
- 4) Success in this class is correlated with the amount of time one spends on coursework outside of class. Use that time to complete assignments, to read and study the text and narratives, and to study class notes. Spend time looking over maps and other graphic materials in the text.

MY SCHEDULE

All of my classes are in room 222. Please feel free to ask for a pass to come to another section if you are in need of extra help. I usually spend my prep periods in the science office or in my room; this is again time available for you to get extra help. Homeroom is another great time to get help. I cover the homeroom in 222.

YOUR EDUCATION IS YOUR RESPONSIBILITY.