

Science Academy Class Information

Physics (2008-2009)

Class Time: Wednesdays, 9:45 a.m. to 11:45 p.m.

Location: Bethany Collegiate Church, Township Line Road, Havertown

Instructor: Lisa Swieson (610.355.9174, LSwieson@science-resources.org)

Textbook: *Physics: Principles and Problems* (Glencoe McGraw-Hill, ©2002) and *Student Lab Manual*

Class Web Site: www.science-resources.org/physics0809.htm

Overview. This is a rigorous physics course, appropriate for all college-bound students, especially those planning to major in science or engineering. Students should be motivated and willing to work hard. Students will gain an understanding of basic principles and apply math skills to the solution of physics problems. Weekly labs will give students hands-on opportunities to apply concepts learned.

Class Particulars: Each week, the first 45-60 minutes of class will be spent reviewing assignments and preparing for lab. The remainder of the time will be in lab. I hope to schedule a field trip at the end of the school year. The last class session of each term will be devoted to a practical lab exam.

Supply List: The following items will be necessary for most labs – each student should have:

- Scientific Calculator (capable of doing scientific notation and trigonometric functions)
- Metric Ruler (30 cm)
- Protractor
- Graph Paper (one pack or tablet of 25-50 sheets)
- Mechanical Pencil (for drawing graphs during class)

Students are expected to bring the following to class each week: textbook, notebook, pen and pencil, folder/binder for handouts, calculator, and all written assignments (see below). Graph paper, ruler, and protractor will be needed for many labs.

Dress Code: Students should wear comfortable (not baggy) clothing that is easily washable or that you don't mind getting dirty. Long hair **must** be tied back. No open-toed shoes, bracelets, rings, or loose jewelry should be worn.

Assignments: Each student will receive an assignment sheet, which will list all of the assignments for several weeks at a time. (Assignments will also be posted online at the class web site.) The assignment sheet can also be used to track hours or days, if desired. Assignments will include:

- **Readings.** Students will be expected to read 2 or 3 sections (around 25 pages) each week from the assigned textbook.
- **Lab Prep.** Each week, students will receive instructions to prepare for the next lab. These may involve readings or written work.
- **Lab Report.** A short write-up of each lab will be due the week following the lab. I recommend writing up the lab report Wednesday afternoon or evening, while everything is still fresh in the student's mind.
- **Other Written Assignments.** Most reading assignments will have corresponding written assignments, either questions or problems, that are intended to solidify the students' understanding of the readings. If any student encounters difficulty with these written assignments, s/he should contact me by phone or email for extra help.
- **Tests.** At the end of each unit, students will be given a take-home test, which will consist of questions and problems very similar to the ones the students have been doing for homework. Tests should be taken on the date indicated and mailed to me the following day so that I can score them before the next class. These are **not** open book, so I ask each parent (please!) to supervise these tests and sign them before mailing them back to me. There will be a total of 8 tests during the year.

Honors Credit (optional): In addition to the regular course work, students who would like to receive honors credit for this course must 1) complete the honors assignments and 2) complete a science fair project utilizing physics (or engineering). This involves background research and a corresponding research paper (to be completed and turned in before experimentation), an experiment following a scientific method, an oral presentation to be given to the class, and participation in science fair. (Details for this project will be distributed to honors students in September.) In addition, honors students must maintain a B average (or higher) during the school year. An additional class for honors students will meet monthly on Friday afternoons (1:00) at Cornerstone High School and/or before class on Wednesday (9:30 a.m.) – please alert me if there is a conflict! Honors students will also continue to meet during the science fair break in January/February.

Grades: All written work will be used to calculate each student's grades. Class participation will be used to determine borderline grades, and lab technique figures into the lab scores. In calculating grades, I will drop each student's lowest lab score *each semester* (two per year) and his/her lowest test score for the year. Grades will be calculated as followed:

General

Homework: 25%

Labs: 25%

Tests: 25%

Practical Exams: 25%

Honors

Homework: 20%

Labs: 20%

Tests: 25%

Practical Exams: 25%

Science Fair Project: 10%

A: 90-100%

B: 80-89%

C: 70-79%

D: 60-69%

Mid-Week Help: In addition to being available by phone or email during the week, as questions arise I will also send emails (check email regularly!) and maintain a class web site containing assignments, answers to questions, extra information & clarification, etc.

Absence: I realize that students may need to miss class once or twice for illness or family obligations. If your child must miss class, please let me know ahead of time. Even so, students are responsible for the material they missed – homework assignments must still be completed and handed in, and, though the lab itself cannot usually be made up, students must understand the principles investigated during lab. Note that, since the student's lowest lab score will be dropped each term, absence need not affect that portion of the student's grade, unless the student misses more than one lab each term.

Lab Safety: It is essential that lab safety rules be followed carefully. Remember, students who repeatedly ignore these rules are putting themselves and their classmates at risk and will be suspended from class with no refund. In addition, students will be expected to pay for equipment that they break.

About Your Textbook: Within each chapter is a one-page feature about real-world physics ("How It Works," "Physics and Society," etc.). I encourage you to read these when you get to them, but you do not have to answer the questions.

In the back of your textbook is a Math Handbook. All of these pages should be review, so ***if your math is a little rusty, please go over pages 737-747 before our first class.***

Science Resources will buy back your textbook at the end of the year for one-half the price you paid for it (i.e., for \$31.00) ***if it is in good condition*** – no writing (other than your name in the front), no dog-eared or torn pages, no spills, etc. To help keep it in good condition, I recommend putting a book cover on it. I plan to teach this class again in a few years, so if you have a younger sibling, you may want to keep it. The Lab Manual is a consumable workbook and cannot be sold back.

I look forward to seeing you in September!

Lisa Swieson