

Physics 10 On-Campus Syllabus

Errata as of August 23, 2013:

1. My web site is now kbcheney.com
2. We are now using Canvas.pasadena.edu not Blackboard
3. My lecture notes and lots more sample questions:
 - a. Free at kbcheney.com
 - b. Printed at the Book mart

Good luck,

Ken

PHYSICS 10 INFORMATION

September 1, 2008
Ken Cheney

Phones: My office 585-7134, Department 585-7140
Web Site: www.paccd.cc.ca.us/physics/teachers/cheney/kp.htm
e-mail: kbcheneyP10@pasadena.edu
Office: E310C, office hours posted by the door, or any time you find me!
Blackboard/WebCT: pcc.blackboard.com for on line posting of grades

COURSE DESCRIPTION: Applications of Physics to modern life with little math.

PREREQUISITE: Minimum grade of C in elementary algebra.

REFERENCES:

TEXT: Paul Hewitt, "Conceptual Physics Fundamentals", Pearson Addison Wesley. Any edition will do. In fact any similar book will do!

FOR THE BOOK TESTS: Soon at the "Book Mart North West across Colorado Blvd.

Feynman: "Surely You're Joking, Mr. Feynman", first book test

Watson: "The Double Helix"

TENTATIVE OUTLINE

INTRODUCTION: Why Physics?

ASTRONOMY: Where did all this come from? Will we be sucked into a BLACK HOLE?

MICROSCOPIC PHYSICS: What's hiding in there?

MECHANICS: What makes it go? Can I beat the game?

RELATIVITY: What is obvious is not necessarily so.

ELECTRICITY AND MAGNETISM: From current to cyclotrons and how to avoid electrocution.

IMAGES: What's to seeing?

PHOTOELECTRIC EFFECT AND OTHER STRANGE GOING ONS: Light acting funny again.

ELECTROMAGNETIC RADIATION: Light and its relatives; gamma, X, UV, visible, IR, microwaves, radio

TEMPERATURE-HEAT-KINETIC THEORY: Why not 100 miles per gallon? And, back in time!

UNCERTAINTY: What! Uncertain Physicists??

ATOMS: Why its vital that electrons be stand-offish. All of chemistry in a day.

NUCLEAR PHYSICS: Not just theoretical! What's wrong with a little fallout?

FUNDAMENTAL PARTICLES: Well . . . one can always hope.

ATTENDANCE (FROM THE PCC BULLETIN):

Students are expected to attend every session of class. It is especially important to attend the first session or make prior arrangements with the instructor. Otherwise a student's enrollment in the class may be cancelled.

A student may be dropped by the instructor when the total number of absences, regardless of cause, is equal to the number of hours the class is scheduled to meet in a two week period.

Students have the responsibility of officially withdrawing from the College or dropping from class when they stop attending. Otherwise "F" grades may be awarded.

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TESTS:

Much of the benefit of Physics 10 is the exposure to a wide variety of theories, demonstrations, and applications of physics. To benefit from this exposure you must actually be in class! The testing plan is designed to encourage you to attend every class from beginning to end, and to reward you if you do attend.

1. Every four or five weeks: multiple guess test, 50% of grade.
2. At random times: Very easy quizzes at the beginning or end of class on the topics covered during the last class meeting. Perhaps a re-quiz at the end of class. 50% of grade.
3. Essay test on SURELY YOU'RE JOKING MR FEYNMAN during the fourth week, test on THE DOUBLE HELEX or LUCY about six weeks later. Pass or fail: Two passes = Improve your grade by one letter grade. One pass = No change in your grade, No passes = Decrease your grade by one letter grade. Not graded on spelling or grammar!
4. Optional comprehensive final, multiple guess.

SAMPLE ESSAY QUESTIONS ON THE BOOKS:

These must include at least three specific examples from the book supporting your answers.

1. Did the problem(s) yield to superbly planned and meticulously organized attack(s)? Give examples.
2. What (if any) qualifications did the author(s) have for investigating the problems? Give examples.
3. What were the benefits of working on this sort of problem where they did? Give examples.
4. How did the scientific behavior of the author or his colleagues compare with what you expected?

EXTRA CREDIT:

- No more than one submission per week, none during the last week of lectures.
 - No more than three of any one type, except class participation.
 - Please date all work.
1. Suggestions as to how to improve the class. Explain how your suggestion will work better than the current method. I already know to talk louder. [2 points maximum]
 2. Research paper on some current research topic in Physics or Astronomy. Articles (3 or more, about your topic) no more than six months old, no books. Two or more pages, your reactions. Include a Xerox of the first page of each article. Include a Xerox showing the name and date of the magazine. Include a neat, complete bibliography. [3]
 3. Do-it-yourself field trip to Physics or Astronomy site. Two pages of your reactions to the exhibits and evidence that you were there. Tell how the exhibits related to what we are discussing. Possibilities include: Griffith Observatory (Griffith Park), Museum of Science and Industry or Aero Space Museum (Exposition Park), Tours of JPL (Pasadena), Exploratorium (San Francisco), Fleet Museum (Balboa Park, San Diego). You must include a dated receipt or a picture of yourself at the site. [5]
 4. Home made experiments relating to topics discussed in class. Bring the equipment to show me. [5]
 5. Class demonstration of physics principles. e.g. "The Physics of Electric Guitars." Consult with the teacher first. [10]
 6. Current (since the last class meeting) news about physics and astronomy for posting: newspaper, TV, radio, . . . If from a newspaper cut or Xerox to include the date. [1]
 7. Class participation: Good questions, answers, or suggestions. Must have been called on not shouted out! No more than one per class meeting unless quite spectacularly good. [1]
 8. Everyday observations of physics in action. Write a paragraph of so on some observation you made of a physical principle we discussed in class. [3]
 9. Attend a lecture on Physics or Astronomy. Write a two page report on what was interesting and how it related to what we have discussed in class. Evidence you were there. [5]
 10. Remind the class what we were discussing at the end of the last period. [\pm 3]
 11. See Web based ideas at <http://www.pacod.cc.ca.us/physics/teachers/cheney/syl-p10w.htm>