

PHYSICS 152 — COLLEGE PHYSICS

UH MANOA — Fall Semester 2007

Course Information & Policies

Lecture MWF 12:30–1:20 p.m.
Physical Science Building (“PSB” or “PhySci”), Rm. 217

Instructor Mr. Michael Nassir
E-mail: nassir@hawaii.edu
Course Web page: <http://www.phys.hawaii.edu/~nassir/phys152/>
Office: Watanabe Hall, Rm. 426, (808) 956-2922

Help Hours: • Wednesdays 2:30–4:00 p.m. in PSB 217
• Thursdays 4:30 p.m.–6:00 p.m., in PSB 217
• By appointment in Watanabe 426 (office)

Required Materials TEXTBOOK: Young & Geller, *College Physics*, 8th ed. (2006), Vol. 2 only (Chaps. 1–16 only)
ONLINE HOMEWORK ACCESS: *Mastering Physics* website — requires access code (valid for one calendar year): <http://www.masteringphysics.com>

Partial Book (151 only): • Vol. 2 paperback — sold with *Mastering Physics* Access Kit at UH Bookstore
Full Book (151 & 152): • Vols. 1 & 2 hardcover — sold with *Mastering Physics* Access Kit at UH Bookstore
If already have book: • *Mastering Physics* Access Code only: available online for \$44.50 (credit card only) at <http://www.masteringphysics.com> — click on “Young/Geller, College Physics, 8/e” cover (with photo of swimming dolphins), then choose “Buy Now.” Access is valid for one calendar year.

CALCULATOR with scientific notation, trig functions, and exponents/logarithms

Optional Books Ford, *Student Solutions Manual for Young & Geller 8th ed.*, Vol. 2 only (Chaps. 17–30 only) (2006) paperback (ISBN 0-8053-9352-8): approx. \$30 new at UH Bookstore

Gonick & Huffman, *The Cartoon Guide to Physics* (1990) paperback (ISBN 0-06-273100-9): approx. \$19 new, \$15 used at UH Bookstore

Course Description

This course continues a two-semester introduction to the fundamentals of physics begun in Physics 151, and will cover electricity, magnetism, optics, special relativity, and atomic & nuclear physics. Lectures and problem-solving will regularly use the mathematical tools of algebra, geometry, trigonometry, and vectors, but not calculus. **Prerequisites:** PHYS 151; a grade of “C” or better in MATH 140 (trigonometry & pre-calculus) or higher; or instead, a passing score on the Mathematics Department’s Math Assessment Exam.

If you also need to take PHYS 152L lab, it is strongly recommended that you do so concurrently with the lecture; the lab provides a hands-on way of reinforcing and complementing many of the topics presented in lecture. However, concurrent enrollment in PHYS 152L lab is *not* mandatory for all students in PHYS 152 lecture.

Grading & Course Work

• **Final grades** will be computed on a **curve** (to be decided), based on your **overall course percentage** relative to the other students in the class. Your overall course percentage will be computed as follows:

Online Homework	10%
Hand-in Paper Homework	10%
Midterm Exams #1 & #2	18% each
Take-home Midterm Exam #3	8%
Final Exam	36%

After each major exam, I will circulate grade sheets (listed by your “roster numbers,” not names) displaying all of your scores, and I will provide a histogram showing the relative scores of everyone in the class. I urge you to double-check your scores on my grade sheets, as well as the score tallies on your individual papers — while I apologize in advance for any errors, they will inevitably happen with such a large class. Please help me to correct them. Final exam scores and final grades will be posted outside my office and will be available for viewing on MyUH shortly after the term ends.

• **Online Mastering Physics Homework** will usually be due on a weekly basis and will be graded automatically on the *Mastering Physics* website. Your scores likewise will be reported to me automatically. Details on how to log in at <http://www.masteringphysics.com> will be provided in a separate handout.

• **Hand-in (Paper) Homework** sheets will usually be due on Fridays in lecture, and will be graded either by our class grader or by me; please see me outside of class with any questions about grading. **Late paper homework** will **NOT** be accepted *for any reason* after solutions for that assignment have been distributed, usually at the end of lecture on the due date. All paper homework assignments will be worth the same number of points, and your **TWO lowest paper homework scores** will be **dropped**.

• **Exams:** Three **Midterm Exams** will test you on material from each month of the course. Roughly half of the **Final Exam** will cumulatively review all of this material, while the other half of the final exam will cover new material from the last month of the course. The first two midterm exams will be 50 minutes long, given during regular class periods, and the third midterm will be take-home with no time limit. My planned exam schedule is as follows:

Midterm #1	Friday, September 21	Chaps. 17–19
Midterm #2	Friday, October 19	Chaps. 20–22
Midterm #3	out Friday, November 16 , due Wednesday, Nov. 21	Chaps. 23–26
Final Exam	Monday, December 10, 12:00 noon – 2:00 p.m.	Chaps. 27–30 & cumulative review

You are allowed to bring 1 sheet of **handwritten notes** (no printouts or photocopies) to the first and second midterms, and 2 sheets to the final exam. However, do NOT let your “cheat sheet” become a substitute for learning formulas and practicing problems! (The MCAT and similar exams do NOT allow open notes — you must memorize your formulas.) You will be allowed to retain your “cheat sheets” after each exam to build upon for later exams. *You must take all midterms and the final exam to avoid a failing grade in the course.*

• **Reading assignments** will be assigned on the course website. The listed reading assignments are the specific sections of the text that will be covered in lecture and that you are responsible to know for exams.

Solving Physics Problems

- You will need a **calculator** with **scientific functions** (trigonometric & exponential/logarithmic functions, and power-of-10 notation) for homework AND EXAMS. (Graphing calculators are not necessary.)

- On all assignments and exams that call for free-response answers, you must **SHOW YOUR WORK**. Writing only the correct final answer without showing your steps is *not* acceptable and will result in little or no credit. It is a central notion in science to show your method along with your results, so that others can follow your reasoning and can question any steps or assumptions. Always display your major mathematical steps from your initial formula(s) to your final answer, and annotate your reasoning with sketches and verbal explanations where appropriate. Also, clear and complete explanations will help you later when reviewing your own work or studying for exams. It is never possible to “show too much work,” but it is easy not to show enough!

Final answers must include **UNITS** and use an appropriate number of **SIGNIFICANT FIGURES**, and sometimes should be written in **SCIENTIFIC NOTATION**. To receive full credit, your answers to **free-response problems** MUST contain at least the first 3 of the following:

1. **initial formula**, followed by algebraic rearrangement (if necessary)
2. **substitution** (“plugging in” known values), followed by calculation steps (if necessary)
3. **final answer**, underlined or boxed, with proper **units**, **sci. notation** (if needed), & **significant figures**
4. additional **diagrams** or **comments**, as needed (...a picture is worth 10^3 words!)

- **Organization** and **neatness** matter! They will result naturally if you follow the above format. Mathematical steps should read sequentially and logically. Disorganized or illegible work will be penalized.

- Please do NOT use **red ink** on any assignments or exams — we reserve that color for grading.

Collaboration

Working in pairs or groups is common in science, and indeed is encouraged: teamwork can help you to make more efficient measurements and to catch errors, and explaining something to another person is a great way to learn it yourself. However, if you are working with a classmate while completing a physics assignment (or while making measurements in lab), there are a few guidelines to follow:

(1) You are strongly encouraged **first to attempt each homework problem YOURSELF, individually** (or in lab, even when working with a partner, to make many lab measurements YOURSELF). That way, you will get the educational value and the experience that comes from working the problem (or using the equipment) and “seeing for yourself.” Then, after you have tried first on your own, you can compare your answer (or lab results) to others’ work as a “sanity check.”

On homework: If you are stuck on a homework problem, you should seek just enough help to get unstuck. It is unwise to let someone simply feed you the entire solution, since you lose the educational value of working through the problem on your own. If necessary, try changing the numerical values in the problem and attempting it again by yourself, to ensure that you understand completely how to do the problem if you were to encounter it again on your own... say, on an exam.

In lab: If your results differ from other students’ results by only a bit, then *you should keep your own results* — most scientific measurements vary slightly due to “random error” (this will be discussed in lab), so you should *not* change yours to match a friend’s measured value. After all, how do you know which measurement is the “correct” one, yours or your classmate’s? Record what *you* see or measure. (If your results differ *wildly*, then it is appropriate to try to figure out “what went wrong.” Small variations, however, are common and are a natural part of the random error inherent in making measurements.)

(2) All free-response solutions on all submitted assignments should ultimately be **in your own words**, reflecting **your own understanding** of the problems. You should plug numbers into your calculator and attempt (or re-attempt) all calculations *yourself*, even if you received assistance from others along the way.

Any passages or calculations that are **directly copied or plagiarized** from another student (or portions lifted from any other uncited source) will be given a score of **zero**. Again, your submitted work should reflect *your own understanding* of the problems.

In lab: If you make measurements together with a lab partner, or if you share initial “raw” data, make a note in your lab report of who your lab partner was for any particular experiment. Then, be sure that your

calculations and the written passages of your lab reports are *in your own words*, even if your raw data or measurements are identical to your partner's.

(3) During **in-class exams**, **NO collaboration** of any sort is allowed; exams must be *entirely your own work*. Exams copied from another student, even partially, will be given a score of **zero**. Cases of cheating or plagiarism may be referred to the Dean of Students for disciplinary review.

Getting Help

- **Regularly-scheduled help sessions** (solving homework problems, answering questions, etc.) will be held every Wednesday and Thursday — see “Help Hours” above for times and places.
- The **Physics Learning Center in Watanabe 421** is open whenever Watanabe Hall is open, for all students to come and study together on physics homework. There are tables, sofas, blackboards, and computers. Generous graduate and undergraduate Physics majors from the Society of Physics Students usually sign up on a schedule on the blackboard for weekly **volunteer tutoring** hours; if you are interested in getting help, I suggest that you go to Wat 421 and check the board for any tutoring times.
- You may also drop by to see me in **my office, Watanabe 426**, during afternoons at times other than the regularly scheduled help sessions. However, I suggest that you call first to make sure that I am in, and please forgive me if I happen to be busy and ask you to return at another time. You may also make an appointment with me if you wish.
- The Department of Physics & Astronomy Office (Watanabe 416) maintains a list of grad students and others who are available for hire as **private tutors** — please stop by Wat 416 and ask the Department staff for a copy of the list.

Lecture Notes

• **Electronic scans** of all my overhead transparencies during the semester will be made available on the Web as **PDF files**. I will try to update the notes roughly once a week, and I will create a link to each scanned lecture from the PHYS 152 Syllabus webpage as the PDFs become available. Be sure that you have a PDF viewer (such as Adobe's *Acrobat Reader*, available for free on the Web, or Apple's *Preview*) installed on your computer so that you can view PDF files.

Extra Handouts

Extra copies of all handouts are always available in pockets on my office door immediately following lecture. [*Note: Watanabe Hall is locked daily sometime after 4:30 p.m.*] Many of the handouts are also available as PDF files and will be linked from the course Syllabus page — those can, of course, be downloaded anytime.

Graded Homework & Exams

Graded homework and exams will be circulated one time in lecture after they are graded. Any papers that are not picked up in lecture will be left in the **wooden cubby boxes outside the rear of our lecture hall, PSB 217**. Look for “PHYS 152 Fall 2007,” and find the box for your roster number. Please leave the boxes tidy and organized for your classmates' benefit.