

Syllabus
Physics 1050, Concepts of Physics
University of Wyoming, Spring Semester 2012

Lecturer

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Objectives

After completion of this course, the successful student will be able to:

- Explore and interpret scientific models.
- Identify and describe the physics underlying familiar phenomena.

Course Content and Approach

How does the world work? How can we find out? These questions are the basis of the science of physics. This course is a one-semester survey of physics for students with a minimal mathematics and science background. It addresses the three major domains of classical physics: mechanics, thermodynamics, and electricity/magnetism. The emphasis is on developing a correct qualitative understanding of physical principles and communicating it clearly rather than on being able to substitute numbers into a formula to produce the expected answer.

Required Purchases

Textbook: *Conceptual Physics*, Eleventh Edition, by Paul G. Hewitt, with *Practicing Physics* workbook, published by Pearson Addison Wesley.

Laboratory Manual: *Physics 1050 Laboratory Manual*. This is a photocopied course packet, available at the University Bookstore.

Prerequisite

The only formal course prerequisite is completion of MATH 1000 or passing the Mathematics Placement Examination at Level 3. Students must solve equations for a single variable, manipulate exponents, add and multiply polynomials, and multiply and divide fractions. Necessary vector operations will be taught in class.

If you find yourself struggling, please see me or your teaching assistant for help sooner rather than later. We will do whatever we can to help you succeed.

Grading

The final grade will be determined from cumulative points attained. Grading is on a standard scale (90's = A, 80's = B, 70's = C, 60's = D, < 60% = F).

A total of 1000 points will be available in the course. They are apportioned as follows:

Item	Number	Points/ea	Points Available
Exams	7	100	700
Labs	15	20	300

The exams (except for the final) may be re-taken if you are not satisfied with them. Only the latest score will count. To re-take an exam, you must apply: review how to do all the problems you missed, ascertain why you got them wrong, and submit a formal application detailing both what you did wrong and what you should have done right. (Basically, you must prove that you have mastered the material, so that you won't waste your time or mine just hoping to be luckier the next time.) *Initial applications must be made no later than one week after the scores are released.* If the application is accepted, you may re-take the test during the next testing period. If the application is rejected, you may apply again.

A note about grades: Your grade in this course reflects only your performance over a 15-week period on a limited set of evaluations. It does not reflect your worth as a person or what I think of you. Because of the limited scope of this course, your grade is not a prediction of your future success or an evaluation of your potential in any career. In short, do not cause yourself (or your instructor) anxiety by making more of your grade than it really is.

Course Components

Classes

Tuesday and Thursday 9:35–10:50, Classroom Building, room 314. Attendance is expected at all classes.

Group Work

Each class will include work to be done in groups. This work is a vital component of the class! Please make an effort to solve all class work problems, and to ensure that all members of your group understand each problem and solution.

Student Groups

Student groups for class work are assigned. New groups will form from time to time during the semester.

In-class feedback

Each class will include interactive PollEverywhere questions. This is a system by which you submit immediate responses by text message or over the internet. It provides me with immediate feedback, and gives you an opportunity to immediately apply what you have learned.

Register your phone or laptop at polleverywhere.com

Each day in class you'll be able to vote on questions or give feedback using your phone or laptop. You should be able to participate without registering. If you register your device, I will be able to link you to your answers. To register:

1. Go to polleverywhere.com and create an account; click on “Signup”
2. De-select “I am an educator”
3. Select “United States” (not “United States – Education”)
4. Once your account has been created, register your cell phone number (ignore this if you use a laptop)
5. Go under “settings” to add the number (with your area code). Follow instructions to certify your cell phone number.
6. Please allow me to see your name: Under “Settings” choose “Voter Registration”. Select “Register as a voter”. On the next page you should enter my email: “rbarrans@uwyo.edu”.

Bring your phone or laptop to each class meeting. Standard text messaging rates may apply. If you use a laptop, point your browser at pollev.com/richbarrans and login in order to participate in voting.

Laboratories

Laboratory Sessions

There are three laboratory sections, meeting at **1:10–3:00 PM** in the **Physical Sciences Building, room 130**. Section **10** meets on Tuesday, Section **11** meets on Wednesday, and Section **12** meets on Thursday.

Students registered for the lecture portion of this course are also required to register for a laboratory session. There are fifteen (15) labs, each worth twenty (20) points. Laboratory participation is an essential component of the course.

Pre-Labs

Students should be familiar with each lab before it begins. The pre-lab activities are intended to familiarize you with the lab and to review specific skills you will use in the lab. The pre-lab constitutes part of the complete lab.

Signing in and out

Sign the appropriate spot on the sheet near the lab room entrance when you enter. Sign only your own line—do not sign for anyone else! If you attend a session different from your registered one, write your name and ordinary section and sign your name on a blank line.

Lab Grades

Labs are graded on an all-or-nothing basis. If you are prepared, you can complete most of the labs during the session. Present your completed lab to your instructor for approval when you leave. If it is satisfactory, you receive full credit. If it is not satisfactory, you may immediately fix what is wrong for full credit, or you may arrange a time to meet with your instructor before your next lab session to have the completed lab approved.

You receive credit for a lab only if you have signed its sign-in sheet *and* your lab instructor approves your work..

Homework, Drills, and Practice

Problems addressing the course topics will be available on Sakai. Problems for which written answers may be submitted for feedback may also be assigned from time to time at the instructor's discretion. Practice problems may also be available on Sakai before exams. These are to help you learn the material and to prepare for the exams. They do not count toward your course grade. However, working these problems will very likely maximize your exam scores, which do count toward your course grade.

Examinations

There will be six exams during the semester and a seventh during the scheduled final exam period. Exams will not be cumulative, but the course is intrinsically progressive. In other words, skills and insights needed for one exam may also be needed in subsequent exams.

The six in-semester exams will be administered on-line through the Sakai system. They must be completed in one sitting during the allotted time period. All exams are open-note and open-book. Calculators are permitted. You are also permitted to access the internet during the in-semester exams.

However, any means of communication, consultation, or collaboration with any person (other than the instructor) while taking an exam is not allowed. By way of example, and in no way intended to limit the scope of what is considered "communication," forbidden means of communication include speech, writing, any visible sign or symbol, vocal utterances, overheard speech, sound generated by any means, gestures including sign language, e-mail, text-messages, postings to message boards, or any other means of transferring information to another mind, whether or not known to the instructor or available at the time of publication of this syllabus. If you finish an exam before a classmate begins it, you may not communicate about the exam with the classmate until (s)he also finishes.

Sharing of any materials with classmates during exams is prohibited.

Resources

Class web site

Course information, lecture outlines, and other resources will be posted on the class web site at barransclass.com/phys1050. Please check the class web site at least once each week for notices.

Sakai

Practice problems and exams are presented through Sakai, which can be accessed at wyosakai.uwyo.edu.

Textbook

The textbook is your first source of information. The assigned sections of the text are to be read by each student before class. Guides to all the assigned readings are available on-line.

Instructor

During my listed office hours, I will be physically in my office, or I will leave a note on my desk stating where I can be found nearby (lab, department office...). You are also welcome to see me in my office any other time that I am there—if the door is open, please come in.

If visiting me in my office is inconvenient, the very best way to contact me is by e-mail. I can pretty much guarantee that I will forget any conversation in class. If I have my wits about me when you speak to me in class, I will ask you to send me an e-mail to remind me of what we discussed. If I forget, please send the e-mail anyway.

The hour immediately before class is not a good time to contact me, because I will be concentrating on preparing for class. After class is usually better, unless I am in a hurry to tidy up before the next class.

Finally, I am not permitted to disclose your grades by telephone or e-mail, so please do not ask!

Absences

Please inform me of anticipated absences before they occur. If an anticipated absence will force you to miss an exam, make alternative arrangements before the exam time. Exams missed due to an unforeseen absence may be made up if the student has an official University excuse or at the instructor's discretion. Arrangements for make-up exams must be made within seven calendar days of your return to school. If you do not take an exam or make-up exam during its allotted time and do not have an approved excuse, you will not be allowed any further make-ups for that exam.

If you miss a laboratory due to an anticipated absence, attend another session during the same week to make it up without penalty. Beforehand, please contact both your session's TA and the TA of the session you will attend to make arrangements. If you are unable to attend any session of a lab due to an approved reason, contact the course instructor. At his discretion, he may either schedule a make-up at another time or pro-rate your missed lab.

Late Work

Labs must be completed during their session or before the beginning of the subsequent session. Exams must be taken at the allotted time.

Ethical Expectations

Students are expected to respect others' opinions and abilities, and to help each other during group work and laboratory. Those who disrupt the class or interfere with other students' opportunity to learn will be asked to leave the class. If you have a mobile phone or any other distracting equipment, leave it home, turn it off, or silence it and refrain from non-class use during class.

Academic honesty develops respect between faculty and students, ensures fair and effective grading, and creates an environment that fosters learning. Students are expected to work together on group work and labs, and encouraged to study together. However, all submissions must represent your OWN work. Students are required to do their own work on examinations: no consultation with another conscious being, in or out of the class, is permitted while taking an exam. Teachers and students should report suspected violations of standards of academic honesty to the instructor, department head, or dean.

Academic dishonesty is forbidden and will be dealt with according to University procedures. Academic dishonesty primarily involves a student representing another's work as his own or assisting another student to represent another's work as his own. This includes, but is not limited to, signing an absent student's name to a lab sign-in sheet, submitting material for grading that is also submitted to another class, "dry-labbing" or recording data in lab that you did not actually observe, submitting a material written by another without proper attribution, and copying or collaborating on exams. A comprehensive description of academic dishonesty can be found at http://www.uwyo.edu/generalcounsel/support/UniRegs/802_rev_3.doc. You are far better off learning physics than pretending to. Physics is great fun. Any involvement in a case of academic misconduct is not.

University Studies Program Statement

This course fulfills the Physical Science (SP) component of the 2003 University Studies Program. SP courses include basic and applied study of interactions that govern all physical and chemical phenomena. They emphasize the laws of motion, the relationships of space, time, mass and energy, electromagnetic radiation, macroscopic and microscopic views of matter, chemical transformation, and quantum principles. They introduce the scientific approach, its scope and limitations. They provide a term-long laboratory experience (or equivalent substantial experimental work integrated with the lecture).

Special Accommodations

If you have a physical, learning, or psychological disability and require accommodations, please let me know as soon as possible. You will need to register with, and provide documentation of your disability to, University Disability Support Services (UDSS) in SEO, room 109 Knight Hall, 766-6189, TTY: 766-3073, udss@uwyo.edu. Please discuss any special needs you have with me as well, so that I can best accommodate you.

Disclaimer

Information in the syllabus was, to the best of the instructor's knowledge, correct when distributed at the beginning of the term. However, the instructor reserves the right, acting within

the policies and procedures of the University of Wyoming, to make changes in the course content or instructional techniques during the term without notice or obligation. If any changes to the syllabus become necessary, students will be notified orally in class and by e-mail.

Intended Schedule

Month	Day	Topic	Reading	Other
Jan	10	Fundamentals		Lab 1
	12	1-D Motion	ch. 3, Ap. C, Ap. B (rec.)	
	17	Vectors and static forces	26–27, 74–77, Ap. D	Lab 2
	19	Force and motion	ch. 2, ch. 4	
	24	Projectiles	171–177, 184–191	Lab 3
	26	Impulse and momentum	83–88	Exam 1
Feb	31	Conservation of momentum	66–73, 89–95	Lab 4
	2	Work and energy	101–107, 111–116	
	7	Conservation of energy	107–111, 52–53	Lab 5
	9	Circular motion	122–128, 135–138	Exam 2
	14	Torque, angular momentum	128–129, 140–142	Lab 6
	16	Conservation, atoms	91 (box), 196–199	
	21	Fluids and pressure	228–239	Lab 7
	23	Heat and phase changes	268–275, ch. 17	Exam 3
	28	Entropy	ch. 18	Lab 8
	Mar	1	Entropy	
6		Elasticity	215–216	Lab 9
8		Oscillations	334–337	Exam 4
12–16		Spring Break		
20		Waves	337–342	Lab 10
22		Waves	ch. 20, 368–373	
Apr	27	Gravity, fields	150–157, 160, 178–187	Lab 11
	29	Electric charge	382–397	Exam 5
	3	Electric current	404–414	Lab 12
	5	Circuits and magnets	414–418, 424–431	
	10	Magnets and charges	431–434	Lab 13
	12	Magnetic induction	ch. 25	Exam 6
May	17	Electromagnetic radiation	456–464, 288–292	Lab 14
	19	Light and color	Ch. 27	
	24	Radioactivity	201–204, ch. 33	Lab 15
	26	Fission and fusion	ch. 34	
	3	Final Exam (Exam 7) 10:15–12:15		