

Syllabus
Physics 1210, Engineering Physics I; Section 04
University of Wyoming, Spring Semester 2012

Lecturer

Richard Barrans, Ph.D., M.Ed., Department of Physics and Astronomy
PS 110, 766-6516, rbarrans@uwyo.edu. Office Hours: MWF 10–10:50, R 11–11:50

Graduate Teaching Assistant

Gaurab Rimal, PS 109, grimal@uwyo.edu. Office Hours: W 4–5, F 10–11

Course Content

Welcome to introductory physics for engineers and scientists! This course is an introduction to the fundamental processes in our universe, including mechanics, gravity, and waves. You will gain physical intuition and problem solving ability which will allow you to explain and predict what goes on in the world. Physics I is the foundation which underlies disciplines as diverse as astronomy, biology, chemistry, engineering, geology, medicine, and meteorology. Calculus I is a co- or pre-requisite.

Required Materials

Textbook: *Sears and Zemansky's University Physics*, 13th Edition, by Young and Freedman, published by Pearson Addison Wesley. *Volume 1 UW Edition*, which contains only material for this semester, is available at the University Bookstore. The full volume, which contains material for both this class and PHYS 1220, is not.

MasteringPhysics: Bundled with the textbook, available from bookstore separately, or at www.masteringphysics.com.

Laboratory Manual: *Calculus Based University Physics I: Mechanics and Waves, A Laboratory Manual*, by Rudi Michalak. Available at the University Bookstore.

Grading

The final grade will be determined from cumulative points attained. Grading will be 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 /each	Total points
Exams	2	200	400
Final	1	200	200
Homework	best 12 of 14	12	144
Worksheets	Best 14 of ?	4	60
Laboratory	best 10 of 11	20	200

Extra Credit: Up to 20 points extra credit (this is 2% of the course total, so it can raise your percentage up to 2%) at the instructor's discretion. I will base this on attendance and participation in class, in lab, and the numbers of homeworks and labs and discussion classes you attend. *This is all-or-nothing.* To earn all 20 points, attendance needs to be very nearly perfect and you must complete very nearly every assignment and lab.

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 as a scientist or engineer. In short, do not cause yourself (or your instructor) anxiety by making more of your grade than it really is.

Course Components

Integrated Lecture/Lab

Monday, Wednesday, and Friday 2:10–3:50 PM, Physical Sciences Building, room 133. Since ideas and definitions from the text will be used freely in class, it is necessary for you to read and study the assigned chapters before class. I will avoid presenting the exact examples in your text. Instead, class meetings are for addressing the difficult points in the text as well as for helping to place the readings “in the big picture.” The more actively engaged you are in class, the better you will learn and perform. Hence, there will be frequent conceptual questions posed in class—questions that you will be expected to discuss with your neighbors.

Participation in each laboratory is essential for the successful completion of this course. Laboratory participation is required. **You must average at least 60% on the labs to pass this course.** There will be no makeup labs as the lowest two lab scores are dropped. Each lab is worth 20 points. Labs will consist of a pre-lab homework (5 points) to be turned at the beginning of Monday’s class. The lab report itself must be completed in lab and checked by your TA at the end of lab (10 points). There is also a post-lab homework (5 points) which must be completed during the week and turned in on the following Monday. Late pre-labs, labs, or post-labs will automatically lose 2 points. Thus, it is better to do work late rather than not at all, but it will be difficult to do well if you are consistently late.

Homework

The assignments will be posted on-line via the MasteringPhysics website below. Students are encouraged to work together, but each student must submit their own work. The MasteringPhysics problems will be answered and graded online. There will also be a homework posted on the class web site to be turned in on paper. The deadline for each homework will be indicated; typically the on-line questions would need to be answered by 2:10 PM the following Wednesday, and written problems are due at the start of lecture on that same day.

For the written exercises: As in “real life,” you should give credit to any sources or people you find helpful. For example, if you work on a problem in a group, the names of all the other members in that group should be given. To receive full credit, your homework must be

legible and the logic must be easy to follow. No credit will be given for incomplete work or incorrect units and **late homework will not be accepted**. Neither faxed nor e-mailed homework will be accepted. Please staple loose sheets together.

MasteringPhysics.com advice and information

If you buy a new book, a MasteringPhysics access code kit will come bundled with your book. If you buy a used book, you'll have to purchase MasteringPhysics access separately, either online at MasteringPhysics.com or at the bookstore desk (usually more expensive).

- The procedures for self-registration are explained at www.masteringphysics.com (this is also the login site). Your access code is inside the student access kit that comes with the text (please see me if you do not have the kit). The course ID is "REBP121004S12". You may choose your login and password. Use your 6-digit number as ID. **Be sure to select the option for MP which accompanies the Young & Feedman 13th Edition textbook.**
- Never use the browser's "back" button. Use the links provided.
- You will be able to submit each answer repeatedly, and full credit can be earned even on the final attempt (however, no credit will be awarded if you do not initially answer correctly on a two-part multiple-choice problem; partial credit only will be awarded if you initially answer wrong on a three-part multiple-choice problem, etc). Please hit "submit" after answering each question. Selecting "submit problem" will result in the problem being graded. Selecting "submit problem" voids the option of additional attempts!
- Some problems have multiple components, so be sure to answer each portion.
- Many problems have hints to help you along the way. You will not be penalized for looking at the hints, and sometimes bonus credit (3%) will be awarded if you answer correctly without peeking at the hints. Either way, you win. Note that this possible bonus credit will be an extremely tiny fraction of your overall course grade, so please don't agonize over the choice.
- Parameters may be randomized! Your friend's question may have different numbers!
- There is a 2% tolerance for answers; e.g. you can be off by, say, 1.8% and receive full credit. All the same, keep plenty of significant digits for the intermediate calculations.

Entering formulas in Mastering Physics:

Sometimes Mastering Physics will ask you to enter algebraic formulas as your answers. Here is a chart on how to convert common formulas into Mastering Physics symbolic language. Also, be sure to do homework #0 where you get to practice this.

<i>Formula</i>	<i>Mastering Physics Coding</i>
$\frac{1}{2} a_x t^2$	1/2 a_x t^2 or 1/2 * a_x * t^2
$\mu_s / (F_1 + F_2)^2$	mu_s / (F_1 + F_2)^2
$\sqrt{a^2 + b^2}$	sqrt(a^2 + b^2)
$v_0^2 + a \Delta t$	v_0^2 + a Delta t
3×10^8	3 * 10^8

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.

Exams

Homeworks will contain mostly quantitative problems. Class meetings will provide you with largely conceptual, multiple-choice questions and complex, ill-defined problems requiring collaborative effort. The exams will contain both quantitative and conceptual problems, and have both multiple-choice and written formats. The exams will be closed book and closed notes. You may use a calculator. **No make-up exams will be given without advance arrangement.** If you have a conflict with an exam time, make arrangements with the

instructor well in advance. All examinations are required and none of the scores will be dropped or replaced.

Internet

Course information and lecture outlines will be posted on the class web site at www.barransclass.com/phys1210.

Absences

If you will miss a lab due to an anticipated absence, the best alternative is to make up the lab another time that week. This can be a challenge, because the room is tightly scheduled, and some of the procedures require more than one person. However, the lowest lab score is dropped, so one missed lab is not a catastrophe.

Student Conduct

Students are expected to respect others' opinions and abilities, and to help each other during group work activities. Those who repeatedly 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 Expectations

Academic honesty develops respect between faculty and students, ensures fair and effective grading, and creates an environment that fosters learning. Although I encourage you to study with other students, any assignments, exams, and lab submissions must represent your OWN work.

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, 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://uwadmnweb.uwyo.edu/legal/Uniregs/ur802.htm>. There is a well-defined procedure to judge such cases, and serious penalties may be assessed. Do not risk your career by engaging in unethical conduct!

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 330 Knight Hall, 766-6189, TTY: 766-3073, udss@uwyo.edu. Please discuss any special needs you may have with me as well, so that I can best accommodate you.

Office Hours

During my listed office hours, I will be either 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.

Additional Help

Except for finals week, Tau Beta Pi tutors are available every MTWR evening from 7–9 PM and at other times throughout the day in Room 1070 of the Engineering Building; <http://www.eng.uwyo.edu/societies/tbp/tutoring/>. “Physics at Night” help sessions will also be held six hours each week in PS 239, generally Monday–Wednesday evenings from 7–9.

How to Succeed in Physics

- Work both independently and in groups of your peers who can help you understand the course material. If you need help finding a group of classmates to work with, I will help connect you.
- Take each exam at the scheduled time. If you have a scheduling conflict due to a University-sponsored activity, it is your responsibility to inform the instructor well before the date of the exam.
- Spend approximately 6–9 hours outside of class doing homework and reading the text each week. If you are spending more time than this, please see the instructor so that we can ensure that you spend your time efficiently.
- Work many problems beyond the assigned homework. As with everything, practice, practice, practice.
- Attend every class. Obtaining missed material is your responsibility.

Disclaimer

Information in the syllabus was, to the best knowledge of the instructor, correct when distributed at the beginning of the term. The instructor, however, 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 on the web site.

Intended Schedule

Week	Reading	Lab*	Notes
Jan 9, 11, 13	2.1–4	FCI	Homework #0 (practice) is due Jan 13
Jan 16 , 18, 20	2.5–6; 3.1–2	Michalak Lab 0, Changing Motion	Homework #1 is due Jan 18
Jan 23, 25, 27	3.3–5; 4.1–2	Michalak Lab 1, Projectile Motion	Homework #2 is due Jan 25
Jan 30; Feb 1, 3	4.3–6; 5.1–2	Michalak Lab 2, Verifying Newton's Law	Homework #3 is due Feb 1
Feb 6, 8, 10	5.3–6; 6.1	Michalak Lab 3, More Studies of Forces	Homework #4 is due Feb 8
Feb 13, 15, 17	6.2–4; 7.1	Michalak Lab 4, Energy	Homework #5 is due Feb 15
Feb 20, 22, 24	7.2–5; 8.1–2		Homework #6 is due Feb 24 Exam 1 is Thursday Feb 23, ch. 2–6
Feb 27, 29; Mar 2	8.3–6; 9.1–2	Michalak Lab 5, Momentum	Homework #7 is due Feb 29
Mar 5, 7, 9	9.3–6; 10.1–2	Michalak Lab 6, Ramp Race	Homework #8 is due Mar 7
Mar 12–16	Spring Break		
Mar 19, 21, 23	10.3–6; 12.1–2	Michalak Lab 7, Atwood Machine with Torque	Homework #9 is due on Mar 21
Mar 26, 28, 30	12:3–6; 13.1–3	Online Lab A	Homework #10 is due on March 28
Apr 2, 4, 6	13.4–7	FCI	Homework #11 is due Apr 4
Apr 9, 11, 13	14.1–7	Michalak Lab 9, Periodic Motion	Homework #12 is due Apr 13 Exam 2 is April 12, , ch. 7–10, 12–13
Apr 16, 18, 20	15.1–8	Online Lab B	Homework #13 is due Apr 18
Apr 23, 25, 27	16.1–9		Homework #14 is due Apr 27
May 2	Cumulative Final Exam Wednesday May 2, 1:15–3:15 PM		

*The laboratory dates may deviate from this schedule to match other sections using the same equipment.