

Lecturer: Tim Gorringe.
Office: CP 273
Office hours: T 2-3 pm, R 1-2 pm
Office Phone: 257-8740
Textbook: College Physics
Serway and Vuille, 8th Edition
published by Brooks/Cole
Web page:: Blackboard at elearning.uky.edu

PHY211A (Sections 1, 3, 5, 7, 9). Algebra-based College Physics I. Fall 2010.

1 Course description.

This course is about the motion and properties of matter. We will examine how the earth orbits the sun, how basketballs and footballs move, why ships float, why planes fly, and various intriguing properties of gases, liquids and solids. We will discuss force, energy, momentum and other concepts and fundamental principles in physics. We will sharpen your problem solving skills and analytical thinking skills by applying these concepts and principles to wide-ranging situations.

Because we'll use some mathematics in solving physics problems a working knowledge of algebra and trigonometry, as covered in MA 109 and MA 112, or demonstrated by a ≥ 25 ACT math score, is a prerequisite for this course.

2 Course format.

PHY211 comprises two lecture classes per week, one recitation class per week, and one laboratory class per week. The lectures classes are Tuesdays and Thursdays in CP155 at 9:30–10:45 am and the recitations classes are Wednesday mornings. Please read the entire syllabus – if you have questions about the structure or the administration of the course you'll probably find the answer here. Additionally, course information, announcements, grades, etc., will be posted on the Blackboard webpage.

Lecture time will be devoted to both discussing and demonstrating the underlying physical principles of matter and motion as well as introducing problem solving techniques. Try to focus on the concepts and the methods rather than memorizing the equations. Before each lecture you should read the assigned material that is listed in the schedule.

Recitation time will be mostly devoted to the illustration of problem solving techniques and the sharpening of problem solving skills, *i.e.* how to apply the basic physical concepts to real-life problems. Your recitation instructor will work through sample problems from the weekly homework assignments and answer your questions and queries on the material. Before each recitation you should have attempted all the assigned problems from the weekly homework. The recitation is an important resource for interactive instruction - so please ask questions during class. Make sure to remember your recitation section number and your recitation instructor's name.

3 Course grade.

Your course grade will be determined according to the following table:

Hour exams	3×100
Final exam	200
Online homework	100
Recitation quizzes	100
Laboratory grade	200
Total	900

An overall score of 90% or above will guarantee an A-grade, 80% or above will guarantee a B-grade, and 70% or above will guarantee a C-grade. Detailed information on the examinations, online homework, lecture quizzes and recitation quizzes is given below.

To succeed in PHY211 you must read the textbook assignments before each lectures classes and attempt the homework assignments before each recitation classes. Anticipate spending ten or more hours a week outside the classroom on reading and homework. Take an active role in the learning process – ask questions to yourself and classmates. Talk with your lecturer, recitation instructor or laboratory instructor if you don't understand something. When you read the textbook, identify the main concepts and their consequences. When you solve the problems, write down your solutions in a clear step-by-step manner.

3.1 Exam grade (3×100 points + 200 points = 500 points).

The scheduled dates/times and relevant material for the hour exams and the final exam are given in the table at the end of this syllabus.

Each hour exam will comprise a multiple choice/short question section and three long problems. The multiple choice/short question section will mainly focus on concepts and account for 25 points of your test score. The three long problems will additionally focus on problem solving and account for 75 points of your test score. The grand total is 100 points per hour exam. For full credit on long problems all working out – including relevant concepts, diagrams, equations, *etc* – must be clearly shown.

The final examination is a comprehensive test on the entire semester's material. The two-hour final exam is worth 200 points with the same format of multiple choice/short questions and long problems as one-hour exams.

During the hour exams and the final exam you are not allowed to consult textbooks, reference books, or class notes. You are not permitted to use cell phones, laptops, PDAs, etc., during exams. An equation sheet containing the relevant equations and physical constants will be provided with the exams, *i.e.* memorization of constants and equations is unnecessary. You must bring your own calculator to the exams.

3.2 Homework grade (100 points).

Every student must register with the WebAssign online homework service for the required weekly homework assignments. Vouchers for WebAssign access are bundled with new textbook purchases at campus area bookstores, or students can purchase WebAssign access by personal credit card at <http://www.webassign.net>.

To begin using WebAssign go to the login page at <https://www.webassign.net/login.html>, click on "I have a class key", and enter the class key **uky 1318 7122**. When setting-up your account make sure to enter your 8-digit student i.d. where requested.

Each Thursday morning the weekly homework assignment will be posted on the WebAssign site. The homework assignment will cover material from both the Thursday's lecture class and the following Tuesday's lecture class. At Wednesday's recitation class your recitation instructor will work problems and answer questions from the assignment. Generally, the deadline for completing the online homework is at 11:59 pm on the Thursday after the recitation class (special arrangements for exam weeks and Thanksgiving vacation will be made). For example, the homework material from the Thursday, Aug 26 and Tuesday, Aug 31 lecture classes will be covered on Wednesday, Sep 1 recitation and due by 11:59 pm, Thursday, Sep 2.

3.3 Recitation grade (100 points).

Your recitation grade is based upon weekly recitation quizzes. These quizzes will cover the material from the weekly homework assignment in a style that is similar to the homework problems. The quizzes are given at the beginning of the recitation. To avoid the need for make-ups your lowest two quiz scores will be dropped in the calculation of your grade. Your quizzes are graded and returned by your recitation instructor.

3.4 Course evaluations (10 bonus points).

Course evaluations are an important component of our Department's instructional program. An online course evaluation system was developed to allow each student ample time to evaluate each component of the course and the instruction. The evaluation window for Fall 2010 will open on Wednesday, November 17 and close on Wednesday, December 8. To access the system during this time, simply go the Department of Physics Web page at <http://www.pa.uky.edu> and follow the link for course evaluations. You will need to use your student ID number to log into the system, and this will also allow us to monitor who has filled out the evaluation. However, when you log-in you will be assigned a random number that will keep all your comments and scores anonymous. A 15-point bonus is given to each student completing the online evaluation.

4 Excused absences, etc.

If you miss a hour exam with a valid excuse, you will receive a score based on the average of your other tests and the final. If you miss two tests with a valid excuse, you will receive an incomplete (I). Examples of excusable absences are (University Senate rule 5.2.4.2): (i) Illness of the student or serious illness of a member of the student's immediate family, (ii) the death of a member of the student's immediate family, (iii) trips for student organizations, university classes, and intercollegiate athletics. Each case requires written verification. When feasible the student should notify the instructor prior to the absence, and never more than one week after the absence. "Falling behind" and "sleeping in" are not valid excuses.

Lastly, cheating on exams and copying of homework are very serious academic offenses. Offenders are subject to punishment in accordance to University Senate rules section 6.3 and 6.4.

5 Where to get help?

- **Your instructors:** Feel free to talk with your course instructors about physics problems, questions, *etc.* All instructors have office hours, or meet with them by appointment.
- **Resource room:** The physics resource room is located in the M. I. King Science Library and is staffed by Physics & Astronomy graduate students to assist with physics homework problems, *etc.*
- **Physics tutors:** A list of physics tutors is available in the Physics office (room 177) in the Chem-Phys building.
- **Homework/exam solutions:** Solutions to the homework will be available on WebAssign after the deadline for each assignment. Solutions to the examinations will be posted to the Blackboard webpage after the completion of each exam.
- **Course information, announcements, etc:** Course information and course announcements will be posted to the Blackboard webpage.

DATE	MATERIAL	READING ASSIGNMENTS
R Aug 26	Review of dimensions, units, algebra, trigonometry, <i>etc</i>	1.1-1.9
T Aug 31	Graphical/mathematical description of one dimensional motion	2.1-2.4
R Sep 2	Galileo, falling bodies and constant acceleration	2.5-2.6
T Sep 7	The world of vectors	3.1-3.2
R Sep 9	Motion in two dimensions - basketballs, footballs and much more	3.3-3.5
T Sep 14	Isaac Newton and the Laws of Motion	4.1-4.4
R Sep 16	Applications to gravitational, normal, friction and spring forces	4.1-4.6
T Sep 21	More applications to gravitational, normal, friction and spring forces	4.1-4.6
R Sep 23	Test One	Chaps. 1, 2, 3, 4
T Sep 28	Concepts of work and energy	5.1-5.2
R Sep 30	Kinetic energy, potential energy and energy conservation	5.3-5.5
T Oct 5	Examples involving energy and power	5.6-5.7
R Oct 7	Concepts of impulse and momentum	6.1-6.2
T Oct 12	Applications to collisions, rockets and much more	6.3-6.5
R Oct 14	Mathematical description of circular motion	7.1-7.2
T Oct 19	Centripetal acceleration and centripetal force	7.3-7.4
R Oct 21	Test Two	Chaps. 5, 6, 7.1-7.4
T Oct 26	Newton's Law of the Gravitational Force	7.5
R Oct 28	Kepler's Laws of Planetary Motion	7.6
T Nov 2	Remembering force, introducing torque	8.1-8.2
R Nov 4	Torque, force and bodies in equilibrium	8.3-8.4

DATE	MATERIAL	SECTION ASSIGNMENTS
T Nov 9	Torque, acceleration and moments of inertia	8.5
R Nov 11	Rotational energy and angular momentum	8.6-8.7
T Nov 16	Selected properties of solids	9.1-9.2
R Nov 18	Test 3	Chaps. 7.5-7.6, 8, 9.1-9.2
T Nov 30	Selected properties of liquids	9.3-9.5
R Nov 25	Thanksgiving break	
T Nov 30	How ships float, how planes fly	9.6-9.8
R Dec 2	Hooke's law and harmonic motion	13.1-13.4
T Dec 7	Various examples of harmonic motion	13.4-13.5
R Dec 9	The description and properties of waves	13.7-13.11
10:30 am T Dec 14	Final	Chaps. 1-9, 13