PHYS 113 – General Physics I – Fall 2009 **KSU - 4 credits**

Section:	Instructor:	Contact Info.
LEC: MW 8:30 & 9:30, CW103	Gary Wysin	CW309, 532-1628, wysin@phys.ksu.edu
QUIZ: W 5:30 - 6:45, CW101-103	Gary Wysin	Office hours: MW 10:30-12:00 & appt.
REC: T 1:30, 2:30 & 3:30	Gary Wysin	
REC: T 8:30, 9:30 & 11:30	Eric Schultz	CW301, 532-2665, eschultz@phys.ksu.edu
Director of Labs:	David Van Domelen	CW402, 532-1605, dvandom@phys.ksu.edu

Important!
You must register for all four PHYS 113 sections, LEC, QZ, REC, and LAB. If you are missing any of these, get on the wait list immediately!

Text
Physics: Principles with Applications (6^{th} Ed.), Douglas C. Giancoli.

Course Web Sites
See lecture notes and other aids at www.phys.ksu.edu/personal/wysin/GPI/ .
See your current grades at K-State Online (online.ksu.edu).

Prerequisites
A basic knowledge of algebra, trigonometry, geometry and a calculator.

Description
PHYS 113 is an algebra/trigonometry based introductory physics course dealing with the topics of motion, mechanics, matter and energy. Emphasis will be placed on the basic principles and concepts and their applications in everyday life.

Objectives
Successful students will obtain a broad idea of how to analyze the processes of nature, what goes on in the world, and how some technology works, including the basic concepts and how to make numerical estimates of interesting quantities. Also to learn critical analysis of real-life situations!

Grading
Grades will be determined from Recitation, Quiz, Labs, and Final Exam, as follows:

Task	Points	Grading scale
Homeworks/quizzes (REC, best 15/16)	200	A: 1000–901
Lab writeups (LAB, best 12/13)	200	B: 900–801
Hour Exams (QUIZ, best 4/5)	500	C: 800–701
Lecture iClicker Questions	100	D: 700–601
Total	1000	F: below 601

Lecture will include iClicker in-class questions for summarizing understanding of the concepts and problem solving; the total attendance and performance points will be scaled out of 100 points. Each of the 16 recitation grades is worth 10 points; the best 15 will be scaled out of 200 points. Each lab writeup is worth 10 points; the best 12 will be scaled out of 200 points. The lowest of the hour exams, each worth 125 points, will be dropped. Because lowest scores are dropped, there are no makeup recitations, labs, or exams. The last hour exam takes the place of the final exam, 6:20 - 8:10 p.m., Tuesday, Dec. 15, in CW101, 102 & 103 (See http://courses.k-state.edu/fall2009/information/xam.htm).

Lecture iClicker Questions
I will use the iClicker response system to question you during lecture about the concepts you are learning. Each day, I'll pose about 3 to 6 questions to which you can respond via an iClicker. You'll get 1 point per day for attendance (answer most of the questions) and 1 point per question for each correct answer. At the end of the semester, the total iClicker points will be scaled out of 100 (10% of your grade).

You can get an iClicker at a bookstore, or, use one you have for another class, or use one you get from someone else. Further info about registering your iClicker is given on an attached sheet.

Laboratory

The laboratory is a required and integrated part of the course, and counts 20% towards your grade. *A passing grade (60%) in the laboratory is required to pass the course.* See the lab manual and listen to your lab instructor for rules and grading procedures. Labs begin the **first week** of class. You must have a lab manual at the first lab. They are available at the Arts and Sciences copy center in the basement of Eisenhower Hall.

Credit for Previous Lab Work

Students retaking the course, who have successfully completed the lab must contact David Van Domelen in CW402 (532-1605) during to the first week of lab to get credit for the previous lab work.

Recitation and Homework

Doing homework problems is an important part of obtaining success in physics, helping you organize your thoughts, **learn the concepts**, and **apply them**. There are homework problems assigned with each lecture, try to do them as soon as possible after the lecture, and not get behind!!! See the problem-solving-tips on pages 3 and 4.

In each day of recitation, you will get you a grade based either on your homework or a short in-class quiz, for a total of 10 points. For collected HW, one problem or question will be graded for up to 10 points. If you do not have that one, you can select an alternate problem to be graded for up to 5 points.

Whether HW or quiz, what you hand in should show the details of how you solved the problems. To orient your solution, you should list the given quantities (with their symbols and values with units) and list the quantity you are looking for (with its symbol and units). Include necessary diagrams, the equations you applied, show how the numbers with units were inserted after that, and finally, give a numerical answer with the correct units. No credit will be given if just the final numerical answer is given. You are allowed to discuss and work together with other students, but what you hand in must be done by you. If you worked with others to do your HW, please acknowledge it with a statement on your paper, like "I worked with George R. Bush on this assignment."

Hour Exams

These take place on Wednesdays at 5:30–6:45 p.m. in CW 101,102,103, except for the last one, which will be in the final exam time, 6:20–8:10 p.m., Dec. 15, see the schedule. If you have an official University event, such as participation in a KSU sports team, debate team, etc., that conflicts with an exam time, you might be able to take that exam early, ask me. There are no makeup exams, but your lowest score of the five exams will be dropped.

The exam problems will be based on the same concepts as covered in the homeworks and iClicker questions. Try to **study the concepts** and **how to apply them**, *do not* just try to memorize how to solve *particular* problems. One page on the exam will be an equation sheet that summarizes the important formulas you may need to do the problems in those chapters. This equation sheet will be posted to KSO some days before the exams.

Final Exam

The Final Exam is the last hour exam, covering chapters 13, 14, & 15, on Tuesday, December 15, from 6:20 – 8:10 p.m. in CW 101,102,103. If you are satisfied with the grades you have up to that point, then the exam could be the hour exam that you drop, and your grade will be calculated without it. Be aware, that the course grade you see in KSO is only an **estimate** of your grade. Until all iClicker, recitation and lab grades are entered, KSO does not give your precise grade, due to the low scores being dropped and scaling of points. Only when all components have been entered, is it correct. If in doubt, take the final exam, it can only raise your grade or leave it unchanged.

Tips on doing homework problems

* **Don't wait until the last minute.**

Begin homework assignments several days before they are due.
You can surely do some of them even before hearing about the topic in lecture.

* **What's going on here?**

Sketch the situation. Make it seem real for yourself.
Identify desired quantities, with their units.
I want to find distance, in meters
List the quantities you know, with units.
I know velocity, in meters/sec.
Recall the definitions of these items, it may help a lot!
What are the important equations or relations between them?
Velocity times time equals distance. $x = vt$.

* **Get help if you need it.**

Being completely stuck is no fun. If you really are getting nowhere, and have no idea what to do next, you are encouraged to cooperate with other students, or seek help from your instructors.

* **What's my strategy?**

What concepts and equations apply?
Briefly state your strategy in words and sentences.
(Pretend you are explaining to another student.)
Write down the equation(s) you will use, in symbols.

* **Solve algebraically for the desired quantity.**

You may need to combine some equations, or use trigonometry, that's OK!
Get the quantity you want on the left of the equals sign, and everything else on the right.
Don't skip steps.

* **Do the arithmetic, with units.**

Substitute numbers with units in your equation.
$x = vt$ becomes $x = (5.0\ m/s)(2.0\ s) = 10\ m$.
Keep the units on everything until the end. It's a useful check.

* **Write down the answer, with correct units!**

* **Does the answer make sense?**

Is the number of reasonable size, not excessively large or small?
If you change the given numbers to very simple cases, will you get an expected result?
If you modified the situation into a simpler one, will your approach still work?

* **Enjoy the challenge.**

Hey, you figured out something new. Now you understand it.
And it wasn't so simple.
Have confidence, you can do as well or better on the next problem!

Physics Study Hints:

1. Read the textbook, paying attention to the equations and figures.

2. When you take notes in class, don't just copy equations and diagrams. Listen to the instructor and write down the *ideas* behind the equations and diagrams!

3. Study the examples in the book in order to learn how to solve problems.

4. If you don't understand, formulate a question. Write down your questions so you can ask your instructor later. Then ask your instructor later!

5. Stop occasionaly and think about what you just read. Try to think of real-life examples where the physics ideas might be applicable.

6. Look at extra questions and level I problems, just to see if you would know how to answer them. If so, you have a good grasp of the definitions of basic concepts.

7. If you can't work a difficult homework problem, try to work a related, but easier one first. Or, try breaking your problem into steps or parts.

8. Keep in mind, the level II problems usually require you to apply more than one concept. You probably need to use more than one equation.

9. In physics, the same idea can be expressed several ways: as a picture or diagram, an equation, or a graph. Look for the main idea. Think about how the different presentations help you to understand it.

10. Remember, physics isn't always complicated. Most of the ideas are of the simple, common-sense type.

Laboratory Hints:

1. Work smart, which is to say, efficiently. Check yourself as you go along (hints 3,5,6 above). Do it right the first time, because you won't have time to do it over.

2. Write down the names and telephone numbers of your lab partners on your data sheet.

3. Read the lab manual before lab. Figure out what you want to look for, and how you will look for it. Write this down before you get to lab. (This is the start of your lab report.)

4. In lab, pay attention to the lab instructor's explanation. Some things aren't in the lab manual.

5. While taking data, make a graph right away so you can see if your data make sense. Professional physicists do this all the time. Plot each data point as soon as you've finished writing down the number. This habit can save a lot of trouble later, because you can immediately see what the data are doing!

6. After you have taken a few data points, do a sample calculation for analyzing the data. This will (a) let you know if your data make sense, (b) let you know whether you understand what you are doing, (c) let you know if you've forgotten to write down any quantities. A sample calculation will save you from getting home, then realizing that you forgot to get a number.

7. Write down everything on your data sheets. Never rely on your memory. Use pen. Never erase. Cross mistakes out neatly instead, so you can still read them if you have to. Write down ideas that occur to members of your lab group, too!

8. Work as a team. Make sure that everyone gets to play with the equipment. Report broken equipment to the lab instructor, so he can make sure it gets fixed.

9. Graphs on the data sheet may be crude. Graphs in the lab report should be drawn large enough to see, preferably on a full page. Graphs and tables must have titles. The axes on graphs must have labels (i.e., numbers, name of quantity being plotted, and its units).

10. Use words and sentences to describe what you are doing. Correct spelling and grammar are encouraged. Graphs, tables and equations supplement the words. They never replace words.

Schedule for General Physics I, Fall 2009

Date	Reading	Lec. Topics / Rec. Homework Due on Date Shown	Labs & Exams
8-24 Mo	1-1 to 1-8	Ch. 1 – Science, Measurements, Units, Numbers	
8-25 Tu	Rec. 1	Ch. 1 — **Q**3,7; **P**5,12,20,26,37,38,46,48	Intro. to Lab
8-26 We	2-1 to 2-4	Ch. 2 – 1-Dimensional Kinematics, Velocity, Acceleration	
8-31 Mo	2-5 to 2-7	Ch. 2 – Motion with Constant Acceleration; Free Fall	
9-01 Tu	Rec. 2	Ch. 2 — **Q**7,11; **P**2,4,7,16,18	Velocity &
		Ch. 2 — **Q**17,19; **P**21,24,27,35,39,69	Acceleration
9-02 We	3-1 to 3-4	Ch. 3 –Vectors: Addition, Subtraction, Components	
9-07 Mo	no class	Labor Day Holiday	
9-08 Tu	Rec. 3	Ch. 3 — **Q**2,7; **P**2,6,8,10,11,37,55,58	Vectors &
9-09 We	3-5 to 3-8	Ch. 3 – 2-Dimensional Motion, Projectiles; Relative Motion	Forces
9-14 Mo	4-1 to 4-6	Ch. 4 – Newton's Laws of Motion; Gravity in Problems	
9-15 Tu	Rec. 4	Ch. 3 — **Q**16,18; **P**19,21,24,27,31	Galileo's
		Ch. 4 — **Q**3,8; **P**3,5,8,12,23,25	Inclined Plane
9-16 We	4-7 to 4-9	Ch. 4 – Newton and Free-Body Diagrams; Friction	**Exam 1, Chs. 1,2,3**
9-21 Mo	4-7 to 4-9	Ch. 4 – Problems with Friction, Inclines	
9-22 Tu	Rec. 5	Ch. 4 — **Q**9,14,19; **P**29,37,40,44,56	Newton's 2nd Law
		Ch. 4 — **Q**20,21; **P**52,65,75,77,79	
9-23 We	5-1 to 5-5	Ch. 5 – Circular Motion and Centripetal Acceleration	
9-28 Mo	5-6 to 5-9	Ch. 5 – Newton's Law of Gravitation, Orbits	
9-29 Tu	Rec. 6	Ch. 5 — **Q**1,3; **P**2,5,11,18,21,25	Centripetal
		Ch. 5 — **Q**20,21; **P**28,34,43,46,77	Acceleration
9-30 We	6-1 to 6-5	Ch. 6 – Work, Kinetic and Potential Energy	
10-05 Mo	no class	Fall Break Holiday	
10-06 Tu	Rec. 7	Ch. 6 — **Q**5,16; **P**3,8,18,22,27,31	Work & Energy
10-07 We	6-6 to 6-10	Ch. 6 – Conservation of Mechanical Energy	
10-12 Mo	7-1 to 7-5	Ch. 7 – Linear Momentum and 1D Collisions	
10-13 Tu	Rec. 8	Ch. 6 — **Q**8,18; **P**34,38,42,43,51,55,60,62	Linear Momentum
		Ch. 7 — **Q**1,5; **P**4,7,15,19,22,65	
10-14 We	7-6 to 7-10	Ch. 7 – More on Collisions; Center of Mass	**Exam 2, Chs. 4,5,6**
10-19 Mo	8-1 to 8-4	Ch. 8 – Rotation: Kinematics, Torque	
10-20 Tu	Rec. 9	Ch. 7 — **Q**13,15; **P**31,34,41,46,70	Angular Momentum
		Ch. 8 — **Q**2,4; **P**4,8,11,19,25,26	
10-21 We	8-5 to 8-8	Ch. 8 – Rotation: Dynamics, Inertia, Angular Momentum	

Schedule for General Physics I, Fall 2009 (continued)

Date	Reading	Lec. Topics / Rec. Homework Due on Date Shown	Labs & Exams
10-26 Mo	9-1 to 9-4	Ch. 9 – Static Equilibrium of Objects	
10-27 Tu	Rec. 10	Ch. 8 — **Q**13,19; **P**27,37,45,55,62	Density & Bouyancy
		Ch. 9 — **Q**5,7,8; **P**1,6,11,21,22,32	
10-28 We	10-1 to 10-6	Ch. 10 – Static Fluids: Density and Pressure	**Exam 3, Chs. 7,8,9**
11-02 Mo	10-7 to 10-10	Ch. 10 – Bouyant Forces, Bernouli & Moving Fluids	
11-03 Tu	Rec. 11	Ch. 10 — **Q**3,7; **P**3,6,8,10,15,18	Simple Pendulum
		Ch. 10 — **Q**9,16; **P**63,22,29,33,40,45	
11-04 We	11-1 to 11-4	Ch. 11 – Vibrations; Simple Harmonic Motion	
11-09 Mo	11-5 to 11-10	Ch. 11 – Waves: Frequency, Wavelength, Speed	
11-10 Tu	Rec. 12	Ch. 11 — **Q**1,10; **P**3,10,16,24,29,32	
		Ch. 11 — **Q**12,13; **P**37,38,41,45,46	Vibrating Strings
11-11 We	11-11 to 11-13	Ch. 11 – Waves: Interference, Standing Waves	
	12-1 to 12-4	Ch. 12 – Sound, Intensity and Level; Sources	
11-16 Mo	13-1 to 13-8	Ch. 13 – Atomic Theory, Temperature, Ideal Gas Law	
11-17 Tu	Rec. 13	Ch. 11 — **Q**20,21; **P**53,55,59,61,77	No Lab
		Ch. 12 — **Q**1,4; **P**3,4,9,14,24,26,30,36	
11-18 We	13-8 to 13-11	Ch. 13 – Ideal Gases and Kinetic Theory	**Exam 4, Chs. 10,11,12**
11-23 Mo	14-1 to 14-5	Ch. 14 – Heat: Temperature Changes, Latent Heat	
11-24 Tu	Rec. 14	Ch. 13 — **Q**1,5; **P**4,26,28,29,32	No Lab
		Ch. 13 — **Q**16,20; **P**35,49,54,85	
11-25 We	no class	Thanksgiving Holiday	
11-30 Mo	14-6 to 14-8	Ch. 14 – Heat: Conduction, Convection, Radiation	
12-01 Tu	Rec. 15	Ch. 14 — **Q**2,7; **P**2,7,9,22,31	Latent Heat of LN2
		Ch. 14 — **Q**11,19; **P**18,33,35,38,40,41,50	
12-02 We	15-1 to 15-3	Ch. 15 – Thermodynamics, 1st Law, Energy Conservation	
12-07 Mo	15-4 to 15-6	Ch. 15 – Thermodynamics, 2nd Law, Engines & Cooling	
12-08 Tu	Rec. 16	Ch. 15 — **Q**1,5; **P**1,4,6,9,16,18	No Lab
		Ch. 15 — **Q**11,14; **P**21,25,31,32,59	
12-09 We	15-4 to 15-6	Ch. 15 – Thermodynamics, Heat Pumps, Refrigeration	
12-15 Tu	no lecture	**Final Hour Exam**, 6:20–8:10 p.m., CW101,102,103	**Exam 5, Chs. 13,14,15**

IMPORTANT STATEMENTS:

Disabilities
Any student with a disability that needs a classroom accommodation, access to technology or other assistance in this course should contact Disability Support Services and/or their instructor.

University Statement Regarding Academic Honesty
Kansas State University has an Honor System based on personal integrity, which is presumed to be sufficient assurance in academic matters one's work is performed honestly and without unauthorized assistance. Undergraduate and graduate students, by registration, acknowledge the jurisdiction of the Honor System. The policies and procedures of the Honor System apply to all full and part-time students enrolled in undergraduate and graduate courses on-campus, off-campus, and via distance learning. The honor system website can be reach via the following URL: `www.ksu.edu/honor`.

A component vital to the Honor System is the inclusion of the Honor Pledge which applies to all assignments, examinations, or other course work undertaken by students. The Honor Pledge is implied, whether or not it is stated: "On my honor, as a student, I have neither given nor received unauthorized aid on this academic work." A grade of XF can result from a breach of academic honesty. The F indicates failure in the course; the X indicates the reason is an Honor Pledge violation.

My Additional Statements on Academic Honesty
Note that you are permitted to work with (not copy from!) other students on homework problems (and labs) if you acknowledge cooperation by writing "I worked with (name)" on the assignment. Use of a solution manual for doing classwork (lab, HW, iClicker) is an unauthorized aid. You are allowed to discuss iClicker questions with each other during lecture, but really, make your own final selection of answer, be independent! Sometimes your neighbors get the wrong answer! The recitation quizzes and all exams must be entirely your own work.

University Statement Defining Expectations for Classroom Conduct
All student activities in the University, including this course, are governed by the Student Judicial Conduct Code as outlined in the Student Government Association By Laws, Article VI, Section 3, number 2. Students that engage in behavior that disrupts the learning environment may be asked to leave the class.

University Campus Safety Statement
Kansas State University is committed to providing a safe teaching and learning environment for student and faculty members. In order to enhance your safety in the unlikely case of a campus emergency make sure that you know where and how to quickly exit your classroom and how to follow any emergency directives. To view additional campus emergency information go to the University's main page, `www.k-state.edu`, and click on the Emergency Information button.

Copyright Statement

Using your i>clicker in class

You are asked to purchase an i>clicker remote (through the bookstore) for in-class participation and voting on questions.

Please bring your text and clicker to each class.

i>clicker is a response system that enables you to respond to questions I pose during class. You will be graded on that feedback and/or your in-class participation during Lecture.

In order to receive this credit, you should register your i>clicker remote by Sep. 2. You must have come to class at least once and voted on at least one question, in order to complete this registration properly.

FOR WEB REGISTRATION: Once you have voted on a question in my class:

1. **Go to www.iclicker.com/registration.**
2. **Enter your first name, last name, student ID=KSU wID, and i>Clicker ID. (Your i>Clicker ID is found on the back of your i>clicker remote.)**

FOR ROLL CALL REGISTRATION: In Lecture on 8/26, 8/31 and 9/02, I'll use the i>Clicker program to do a roll call registration. You will look for your name on the screen, and click the letters that appear next to your name. That is all you need to do, easier than web registration.

You will receive 1 point per class for participation/attendance and 1 performance point for each correct answer to multiple-choice questions that illustrate that day's concepts. I might ask questions on that day's reading or on ideas introduced in that day's or previous days' lectures. Periodically I will copy the total i>Clicker points over to your K-State Online grade book. At the end of the semester, the total points will be scaled out of 100 (10% of your grade).

Questions? Need help?

Contact us at support@iclicker.com or by phone at 866-209-5698.

i>clicker