PHYS 113 – General Physics I – Fall 2012 **KSU - 4 credits**

Section:	Room	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 1:30-3:30 & appt.
REC: T 8:30	CW143	Gary Wysin	CW309, 532-1628, wysin@phys.ksu.edu
REC: T 9:30	CW146	Gary Wysin	CW309, 532-1628, wysin@phys.ksu.edu
REC: T 10:30	CW143	Ellie Sayre	CW329, 532-2124, esayre@phys.ksu.edu
REC: T 11:30	CW143	Ellie Sayre	CW329, 532-2124, esayre@phys.ksu.edu
REC: T 12:30	W025	Andrew Ivanov	CW010, 532-1699, aivanov@phys.ksu.edu
REC: T 1:30	CW146	Andrew Ivanov	CW010, 532-1699, aivanov@phys.ksu.edu
REC: T 2:30	CW143	Shawn Westmoreland	CW33, 532-5768, westmore@phys.ksu.edu
REC: T 3:30	CW143	Shawn Westmoreland	CW33, 532-5768, westmore@phys.ksu.edu
Director of Labs:		Tracy Tuttle	CW402, 532-1605, trtutt@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
Do the on-line homework assignments at	www.masteringphysics.com

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
Hour Exams (best 4/5)	500	A: 1000–901
Lab writeups (best 12/13)	200	B: 900–801
On-line homework (15 × 15 pts.)	225	C: 800–701
Recitation (show-work, 15 × 5 pts.)	75	D: 700–601
Total	1000	F: below 601

Recitation includes an in-class show-work element on paper (15 assignments × 5 pts. each) and an on-line homework in masteringphysics.com (15 assignments × 15 pts. each). 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. 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. 11, in CW101, 102 & 103 (See http://courses.k-state.edu/fall2012/information/xam.htm).

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 **second week** of class. You do not need to buy any lab manual. The lab information will be found in electronic form on KSOL before each lab. Address your questions about lab grades and procedures either to your lab instructor or to Tracy Tuttle, the Director of Undergraduate Physics Labs, CW402.

Credit for Previous Lab Work

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

Homework and Recitation

Doing homework problems is an important part of obtaining success in physics, helping you organize your thoughts, **learn the concepts**, and **apply them**.

There will be two elements to submitting homework: a "show-work" problem submitted on paper in recitation class (5 points), and on-line submission of the full assignment at masteringphysics.com (15 points).

The recitation is where you can go for help with problem solving and learning the concepts. If you have already attempted some of the HW before the recitation, you will get more out of it. The recitation will be oriented towards learning and applying ideas in general, not necessarily to particular problems. The recitation should improve your overall understanding of physics, and help you prepare for exams as well.

Show-work: The choice of the show-work problem is up to your recitation instructor. It may be from the on-line assignment or it could be another problem. Your "show-work" problem must show the details of how you solved it: include necessary **diagrams**, identify the **concepts** or **physics principles** you are using, show the **equations** you apply, and show how the numbers with units are inserted after that, and finally, a numerical answer with the correct units. No credit will be given for just numbers or a yes/no response. Keep in mind that students who do best on exams are the ones who work carefully, writing things out clearly with well-organized presentation of the **concepts** and **equations** used before inserting numbers. See the problem solving tips on pages 3 and 4, and the Guide to Solving Physics Problem hand-out in KSOL.

On-line: Each on-line assignment will be available at www.masteringphysics.com about 10 days before the associated recitation. The problems are from the Giancoli text and other textbooks, as well as Pearson's "self-tutorial-problems". The due dates will be 11:59 pm Tuesdays. None of your on-line scores will be dropped. You are allowed to work with others (not copying) on your HW, which means discuss the ideas and things you don't understand, until you do. Many of the problems have randomized numbers: everybody gets different numerical values. So you will be happiest if you understand what you are doing. You are not allowed to use solution manuals, on-line solution websites, etc. These are considered unauthorized aids and a violation of the honor code. The point of homework is to practice thinking, not copying a solution algorithm from another source.

To get access to the on-line homework you will need to buy an access code for masteringphysics. It can be purchased online at masteringphysics.com, at the bookstores, or also as an option to be included with a paper text or an e-text.

On exams, you will need to show how you solved problems, so it will be good to practice this when doing your HW, even if it is not necessary for submitting online HW. So for your own benefit, acquire the habit of writing out the details of your solutions. You can 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. Remember that on exams, no credit will be given if just the final numerical answer is given.

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., Tuesday, Dec. 11, 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. Old exams and solutions can be found on the course website. 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 KSOL some days before the exams. Solution keys to the exams will be posted on the course website.

Final Exam

The Final Exam is the last hour exam, covering chapters 13, 14, & 15, on Tuesday, December 11, 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 Final 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 KSOL is only an **estimate** of your grade.

Until all homework and lab grades are entered, KSOL 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.

Plan early, keep up with the course, take responsibility for your learning and your grade, and you can get done with PHYS 114 early! 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 2012

Date	Reading	Lecture Topics / Recitation Conceptual Questions	Week's Lab
8-20 Mo	1-4,5,6	**1.** Measurements, Units, Numbers	
8-21 Tu	Recitation 1	**1. Q**3,7. See masteringphysics.com for **online HW.**	No Lab
8-22 We	1-1,2,3,7	**1.** Science, Estimations	
8-27 Mo	2-1 to 2-4	**2.** 1-Dimensional Kinematics, Velocity, Acceleration	
8-28 Tu	Recitation 2	**2. Q**7,11.	Intro. Kinematics
8-29 We	2-5 to 2-7	**2.** Motion with Constant Acceleration; Free Fall	
9-03 Mo	no class	Labor Day Holiday	
9-04 Tu	Recitation 3	**2. Q**17,19.	Projectile Motion I
9-05 We	3-1 to 3-4	**3.** Vectors: Addition, Subtraction, Components	
9-10 Mo	3-5 to 3-8	**3.** 2-Dimensional Motion, Projectiles; Relative Motion	
9-11 Tu	Recitation 4	**3. Q**2,7,16,18.	Projectile Motion II
9-12 We	4-1 to 4-5	**4.** Newton's Laws of Motion	**Exam 1, Chs. 1,2,3**
9-17 Mo	4-6	**4.** Newton's Laws and Gravity	
9-18 Tu	Recitation 5	**4. Q**3,8,9,14.	No Lab
9-19 We	4-7 to 4-9	**4.** Newton and Free-Body Diagrams; Friction	
9-24 Mo	4-7 to 4-9	**4.** Problems with Friction, Inclines	
9-25 Tu	Recitation 6	**4. Q**19,20,21.	Newton's 2nd Law
9-26 We	5-1 to 5-5	**5.** Circular Motion and Centripetal Acceleration	
10-01 Mo	5-6 to 5-9	**5.** Newton's Law of Gravitation, Orbits	
10-02 Tu	Recitation 7	**5. Q**1,3,20,21.	Centripetal Acceleration
10-03 We	6-1 to 6-5	**6.** Work, Kinetic and Potential Energy	
10-08 Mo	6-6 to 6-10	**6.** Conservation of Mechanical Energy	
10-09 Tu	Recitation 8	**6. Q**5,8,16,18.	Work & Energy
10-10 We	7-1 to 7-5	**7.** Linear Momentum and 1D Collisions	**Exam 2, Chs. 4,5,6**
10-15 Mo	7-6 to 7-10	**7.** More on Collisions; Center of Mass	
10-16 Tu	Recitation 9	**7. Q**8,13,15,18.	Momentum & Collisions
10-17 We	8-1 to 8-4	**8.** Rotation: Kinematics, Torque	

Schedule for General Physics I, Fall 2012 (continued)

Date	Reading	Lecture Topics / Recitation Conceptual Questions	Week's Lab
10-22 Mo	8-5 to 8-8	**8.** Rotation: Dynamics, Inertia, Angular Momentum	
10-23 Tu	Recitation 10	**8. Q**2,4,13,19.	Torque & Inertia
10-24 We	9-1 to 9-4	**9.** Static Equilibrium of Objects	
10-29 Mo	10-1 to 10-6	**10.** Static Fluids: Density and Pressure	
10-30 Tu	Recitation 11	**9. Q**5,7,8. **10. Q**3,7.	Buoyancy & Archimedes
10-31 We	10-7 to 10-10	**10.** Buoyant Forces, Bernouli & Moving Fluids	**Exam 3, Chs. 7,8,9**
11-05 Mo	11-1 to 11-4	**11.** Vibrations; Simple Harmonic Motion	
11-06 Tu	Recitation 12	**10. Q**9,16. **11. Q**1,10.	Oscillations
11-07 We	11-5 to 11-10	**11.** Waves: Frequency, Wavelength, Speed	
11-12 Mo	11-11 to 11-13	**11.** Waves: Interference, Standing Waves	
	12-1 to 12-4	**12.** Sound, Intensity and Level; Sources	
11-13 Tu	Recitation 13	**11. Q**12,13,20,21. **12. Q**1,4.	Intro. Waves
11-14 We	13-1 to 13-8	**13.** Atomic Theory, Temperature, Ideal Gas Law	**Exam 4, Chs. 10,11,12**
11-19 Mo	no class	Thanksgiving Holiday	
11-20 Tu	no class	Thanksgiving Holiday	No Lab
11-21 We	no class	Thanksgiving Holiday	
11-26 Mo	13-8 to 13-11	**13.** Ideal Gases and Kinetic Theory	
11-27 Tu	Recitation 14	**13. Q**1,5,16,20.	Gas Laws
11-28 We	14-1 to 14-5	**14.** Heat: Temperature Changes, Latent Heat	
12-03 Mo	14-6 to 14-8	**14.** Heat: Conduction, Convection, Radiation	
12-04 Tu	Recitation 15	**14. Q**2,7,11,19. **15. Q**1,5.	No Lab
12-05 We	15-1 to 15-3	**15.** Thermodynamics, 1st Law, Energy Conservation	
12-11 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 who needs a classroom accommodation, access to technology or other assistance in this course should contact Disability Support Services and/or the instructor. DSS serves students with a wide range of disabilities including, but not limited to, physical disabilities, sensory impairments, learning disabilities, attention deficit disorder, depression, and anxiety.

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 homework is an **unauthorized aid**. 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

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Dear Student:
In this course you will be using MasteringPhysics®, an online tutorial and homework program that accompanies your textbook.

What You Need:

- ✓ **A valid email address and your KSU WID**
- ✓ **A student access code**: **Purchase at bookstore or at MasteringPhysics.com**
- ✓ **The ZIP code for your school: 66502**
- ✓ **A Course ID: MPWYSIN2012F**

Register

- Go to www.masteringphysics.com and click **New Students** under **Register**.
- To register using the Student Access Code, select **Yes, I have an access code**. Click **Continue**. Or click **No, I need to purchase access online now**.
- **License Agreement and Privacy Policy:** Click **I Accept** to indicate that you have read and agree to the license agreement and privacy policy.
- Select the appropriate option under "Do you have a Pearson Education account?" (**yes**, if you used Mastering in another course) and supply the requested information. Upon completion, the **Confirmation & Summary** page confirms your registration. This information will also be emailed to you for your records. You can either click **Log In Now** or return to www.masteringphysics.com later.

Log In

- Go to www.masteringphysics.com.
- Enter your Login Name and Password and click **Log In**.

Enroll in Your Instructor's Course and/or Access the Self-Study Area

Upon first login, you'll be prompted to do one or more of the following:

- **Join your MasteringPhysics course** by entering the **Course ID** provided by your instructor**.**
- Enter a Student ID, if prompted. This is your KSU WID, a nine-digit number. Do not enter your KSU eID here.

Click **Save** and **OK**.

Congratulations! You have completed registration and have enrolled in your instructor's MasteringPhysics course. To access your course from now on, simply go to www.masteringphysics.com, enter your Login Name and Password, and click **Log In**. If your instructor has created assignments, you can access them in the **Assignments Due Soon** area or by clicking **View All** in this area. Otherwise, click on **Study Area** to access self-study material.

Support

Student Technical Support Line: 877.672.6877
Monday – Friday 12pm – 8pm EST

Access Customer Support at www.masteringphysics.com/support, where you will find:

- System Requirements
- Answers to Frequently Asked Questions
- Additional contact information for Customer Support, including Live Chat