Principles of Physics I
Physics 1408 Fall 2008

Section	PHYS 1408-001	PHYS 1408-002	PHYS 1408-003
Instructor	Dr. David Lamp	Dr. Sung-Won Lee	Dr. Igor Volobouev
Class Time	TR 2-3:20	MWF 11-11:50	MWF 1-1:50
Classroom	SC 007	SC 007	SC 010
HW Course ID	LAMP2008	LEE2008	VOLOBOUEV2008
Office	SC 21	SC 117	SC 13
Office Hours	MTWRF 8-9, by appt, or open door	MWF 2-3 & by appt	WF 2-3, R 1-2, by appt, or open door
E-mail	David.Lamp@ttu.edu	Sungwon.Lee@ttu.edu	i.volobouev@ttu.edu
Phone	(806) 742-3234	(806) 742-3730	(806) 742-4572

Texts: *Physics For Scientists And Engineers,* 4th edition, by Giancoli (ISBN 013-227559-7 or 978-013-227559-0) bundled with *Mastering Physics* (student access kit) Comparison shop this text; it is way expensive. It is available at all 4 bookstores in town and on-line, prices vary.

Laboratory Manual Principles of Physics I Physics 1408 (ISBN 1-58874-629-1) is available at all 4 bookstores, prices may vary.

Course Coverage: Time permitting, the course will cover material from the first 20 chapters in the text. We will cover kinematics, mechanics, statics, rotation, fluids, mechanical waves, and thermodynamics.

Grading Policy: The following scores will be accumulated during the course of the semester: In-Class Quizzes; Labs; On-Line Homework; Exam 1; Exam 2; Exam 3; Final. The course grade will be based on the quizzes, labs, on-line homework, two of your three exam scores, and the final. **NO MAKEUP EXAMS OR QUIZZES WILL BE GIVEN.** The lowest grade of the 3 in-class exams will be dropped. So, only the highest 2 of the 3 one-hour exams will count in determining your course grade. Your letter grade will tentatively be determined according to the following scale: 50 D; 65 C; 80 B; 90 A.

Relative weights for the different portions of the course grade are

Hour exam	15%
Hour exam	15%
Final	25%
Lab section	20%
On-line homework	10%
In-class quizzes	15%
Total	100%

Quizzes: Unannounced in-class quizzes based on assigned reading, homework, labs, and material covered in class will be given. The timing for administering these quizzes will be unknown to the students and the quizzes cannot be made up. These quizzes are an 'attendance mechanism'. In other words, 'attend class or you'll lose points.' The frequency of quizzes will vary between the sections and quizzes in one

section will have very little to do with quizzes in another section.

Labs: A separate short description of the requirements in the lab is attached. In short, do the lab, write up the lab, attend recitation, learn how to do the problems. Lab is a required portion of the course. Recitation will help you with problems which figures into your quiz grade, homework grade, and exam grades. Recitation is a very important part of the course.

Homework: Homework problems are assigned and graded on the web through the commercial site **MasteringPHYSICS**. Once you are registered at that website you will be able to download the assignments. The assignments are posted each Monday and are due by 11:30 pm on the Tuesday a week later. You will be able to retrieve the answers after the due date. Pay attention to the instructions on the homework website about how the homework is scored.

To access **MasteringPHYSICS** you must register at the website http://www.masteringphysics.com. Instructions are in the Student Access Kit. Please do this ASAP. The HW course ID is listed on the front of the syllabus under your section and there is no class password. If you do not have a Student Access Kit (part of the text for the course), you will need to purchase one through the **MasteringPHYSICS** website. This website is not at TTU and you should give yourself plenty of time to submit answers. Sometimes the network can be slow or down.

The value of the assigned homework problems is that they are the basis for the in-class quiz problems and all of the problems on your exams. Doing well on the homework is crucial to your success in the course. Do not let the small percentage weight delude you into thinking these homework problems are in some way optional. They are the single best factor in determining how you do in the course.

Exams: Three one-hour exams will be given. The lowest of these 3 exams will be dropped from the calculation of your course grade. You may bring a 3x5 note card to the exams. This note card can be used to list any equations or words that help you in solving physics problems.

Final: A comprehensive final exam will be given. You may bring a 3x5 to it as well.

Course Goals:

This course is intended to acquaint students with the basic laws of physics, to develop a better understanding of physical science in general, and help prepare you for other upper division science classes. To this end, the course will emphasize a mix of conceptual understanding and standard "end-of-chapter" homework solving skills.

Core Competency Statement: Students graduating from Texas Tech University should be able to: explain some of the major concepts in the Natural Sciences and to demonstrate an understanding of scientific approaches to problem solving, including ethics.

Expected Learning Outcomes:
Upon successful completion of this course, students will be able to:
Describe the basis of the scientific method.
Distinguish between a scientific theory and speculation.
Explain at a quantitative level the fundamental elements of energy and motion.

Methods for Assessing the Expected Learning Outcomes:
The expected learning outcomes for the course will be assessed through: non-Graded Pre- and Post-Tests, Guided Classroom Discussion, Graded Quizzes, Lab Exercises and Homework, In-class Exams, and the Final.

Important Notes:
Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services office at 335 West Hall or 806-742-2405.

The faculty is strongly committed to upholding standards of academic integrity. These standards, at the minimum, require that students **never** present the work of others as their own.

Strategy for Success:

- λ Be prepared! Study your notes and read the material in the text *before* we cover it in class. This will help you keep up, will make for more productive classroom interaction, and will help keep you prepared for those unannounced in-class quizzes that will make up part of your semester grade.
- λ Begin all homework assignments as soon as possible. The assignments take time and thought. The homework isn't graded separately, but the quizzes and test questions are based on the problems you do in the homework. Homework is essential to pass.
- λ Once you can work through a problem with your notes, book, study group, etc., write the question down on a blank sheet of paper and then try to rework it entirely on your own a day or so later.
- λ Never wait until the night before a test to "begin" studying.
- λ The course schedule is fast. Don't get left behind.
- λ Come see your instructor when you get stuck--that's what I'm here for! I am always willing to help anyone who tries.
- λ There are also TAs, SI instructors, help sessions available. Avail yourself of all resources.

TENTATIVE SCHEDULE FOR Fall 2008 1408-001

T August 26 Pre-Test Syllabus 1 Measurement & Estimation	R August 28 2 1-D Kinematics
T September 2 2 1-D Kinematics 3 2-D & 3-D Kinematics	R September 4 3 2-D & 3-D Kinematics
T September 9 4 Dynamics & Newton's Laws	R September 11 4 Dynamics & Newton's Laws 5 Using Newton's Laws
T September 16 5 Using Newton's Laws	R September 18 6 Gravity & Newton's Synthesis
T September 23 6 Gravity & Newton's Synthesis 7 Work & Energy	R September 25 Exam 1 Chapters 1, 2, 3, 4, 5, and 6
T September 30 7 Work & Energy 8 Conservation of Energy	R October 2 8 Conservation of Energy 9 Linear Momentum
T October 7 9 Linear Momentum 10 Rotational Motion	R October 9 10 Rotational Motion 11 Angular Momentum
T October 14 11 Angular Momentum 12 Static Equilibrium	R October 16 12 Static Equilibrium
T October 21 12 Static Equilibrium 13 Fluids	R October 23 Exam 2 Chapters 7, 8, 9, 10, 11, and 12
T October 28 13 Fluids	R October 30 14 Oscillations
T November 4 14 Oscillations 15 Wave Motion	R November 6 15 Wave Motion 16 Sound
T November 11 16 Sound	R November 13 Exam 3 Chapters 13, 14, 15, and 16
T November 18 17 Temperature & Ideal Gas Law	R November 20 18 Kinetic Theory of Gases
T November 25 19 First Law of Thermodynamics	R November 27 Thanksgiving
T December 2 20 Second Law of Thermodynamics Post-Test	R December 4 Dead Day
T December 9 1:30-4:00 pm FINAL	

TENTATIVE SCHEDULE FOR Fall 2008 1408-002

M August 25 Syllabus 1 Measurement & Estimation	W August 27 2 1-D Kinematics	F August 29 2 1-D Kinematics
M September 1 Labor Day NO CLASS	W September 3 3 2-D & 3-D Kinematics	F September 5 3 2-D & 3-D Kinematics
M September 8 4 Dynamics & Newton's Laws	W September 10 4 Dynamics & Newton's Laws	F September 12 5 Using Newton's Laws
M September 15 5 Using Newton's Laws	W September 17 5 Using Newton's Laws	F September 19 6 Gravity & Newton's Synthesis
M September 22 6 Gravity & Newton's Synthesis	W September 24 Exam 1 Chapters 1, 2, 3, 4, 5, and 6	F September 26 7 Work & Energy
M September 29 7 Work & Energy	W October 1 8 Conservation of Energy	F October 3 8 Conservation of Energy
M October 6 9 Linear Momentum	W October 8 9 Linear Momentum	F October 10 10 Rotational Motion
M October 13 10 Rotational Motion	W October 15 11 Angular Momentum	F October 17 11 Angular Momentum
M October 20 12 Static Equilibrium	W October 22 12 Static Equilibrium	F October 24 Exam 2 Chapters 7, 8, 9, 10, 11, and 12
M October 27 13 Fluids	W October 29 13 Fluids	F October 31 14 Oscillations
M November 3 14 Oscillations	W November 5 15 Wave Motion	F November 7 15 Wave Motion
M November 10 16 Sound	W November 12 16 Sound	F November 14 Exam 3 Chapters 13, 14, 15, and 16
M November 17 17 Temperature & Ideal Gas Law	W November 19 17 Temperature & Ideal Gas Law	F November 21 18 Kinetic Theory of Gases
M November 24 18 Kinetic Theory of Gases	W November 26 Thanksgiving	F November 28 Thanksgiving
M December 1 19 First Law of Thermodynamics	W December 3 20 Second Law of Thermodynamics	
F December 5 1:30-4 pm FINAL		

TENTATIVE SCHEDULE FOR Fall 2008 1408-003

M August 25 Syllabus 1 Measurement & Estimation	W August 27 2 1-D Kinematics	F August 29 2 1-D Kinematics
M September 1 Labor Day NO CLASS	W September 3 3 2-D & 3-D Kinematics	F September 5 3 2-D & 3-D Kinematics
M September 8 4 Dynamics & Newton's Laws	W September 10 4 Dynamics & Newton's Laws	F September 12 5 Using Newton's Laws
M September 15 5 Using Newton's Laws	W September 17 5 Using Newton's Laws	F September 19 6 Gravity & Newton's Synthesis
M September 22 6 Gravity & Newton's Synthesis	W September 24 Exam 1 Chapters 1, 2, 3, 4, 5, and 6	F September 26 7 Work & Energy
M September 29 7 Work & Energy	W October 1 8 Conservation of Energy	F October 3 8 Conservation of Energy
M October 6 9 Linear Momentum	W October 8 9 Linear Momentum	F October 10 10 Rotational Motion
M October 13 10 Rotational Motion	W October 15 11 Angular Momentum	F October 17 11 Angular Momentum
M October 20 12 Static Equilibrium	W October 22 12 Static Equilibrium	F October 24 Exam 2 Chapters 7, 8, 9, 10, 11, and 12
M October 27 13 Fluids	W October 29 13 Fluids	F October 31 14 Oscillations
M November 3 14 Oscillations	W November 5 15 Wave Motion	F November 7 15 Wave Motion
M November 10 16 Sound	W November 12 16 Sound	F November 14 Exam 3 Chapters 13, 14, 15, and 16
M November 17 17 Temperature & Ideal Gas Law	W November 19 17 Temperature & Ideal Gas Law	F November 21 18 Kinetic Theory of Gases
M November 24 18 Kinetic Theory of Gases	W November 26 Thanksgiving	F November 28 Thanksgiving
M December 1 19 First Law of Thermodynamics	W December 3 20 Second Law of Thermodynamics	
S December 6 1:30-4 pm FINAL		

Physics 1408 Lab/Recitation

Section Number: _____

Lab/Recitation Coordinator: Dr. Soyeun Park Section Instructor: _____
Assistant Professor of Physics
Office SC 107
Phone 806 742-2264
Soyeun.Park@ttu.edu

Laboratory Manual Principles of Physics I Physics 1408 (ISBN 1-58874-629-1) is available at all 4 bookstores, prices may vary.

Lab	Date	Activity
1	Aug 25-29	Error Analysis and Mass Determination Discussion of Recitation portion of the lab Pre-test
	Sept 1-5	Labor Day NO LAB MEETINGS
2	Sept 8-12	Instantaneous Velocity and Constant Acceleration Recitation
3	Sept 15-19	The Ballistic Gun: Projectile Motion Recitation
4	Sept 22-26	Newton's Second Law Recitation
5	Sept 29-Oct 3	Uniformly Accelerated Motion: A Freely Falling Body Recitation
6	Oct 6-10	Conservation of Energy Recitation
7	Oct 13-17	Conservation of Linear Momentum Recitation
8	Oct 20-24	Rotational Motion Recitation
9	Oct 27-31	Static Equilibrium Post-test Recitation (if time allows)
10	Nov 3-7	Fluid Mechanics Recitation
11	Nov 10-14	Simple Harmonic Motion Standing Waves of Sound Recitation
12	Nov 17-21	Standing Wave in Strings Recitation
	Nov 24-28	Thanksgiving NO LAB MEETINGS
	Dec 1-3	Last Week of Class NO LAB MEETINGS

Each student is expected to:

1. Prepare beforehand by studying the Lab Manual an preparing for the lab you will be doing. Purchase a current manual. It is updated and revised yearly; prior years' manuals are obsolete.
2. Exercise care with the equipment. You are accountable for damage from willful misuse. **NO FOOD OR DRINKS ARE ALLOWED IN THE LABS.**
3. Attend all labs. Each lab supplements what is taught in the lecture. There will be no lab make-ups. The lowest grade will be dropped at the end of the semester to accommodate legitimate absences.
4. Before leaving the lab, show your data to the instructor and obtain his/her signature on the data table in the manual.

Lab Grade is determined by Reports two-thirds and Participation one-third. We will use a grading scale of 50 D; 65 C; 80 B; 90 A.

Laboratory Reports: Write your report as required in the manual or as discussed in more detail by your instructor. Minimal lab reports include

a. Short summary of the objective of the experiment and how the measurements were made.
b. Presentation of your measurements and other data in well-organized form. Enter the data in a table (in the manual) for results whenever possible.
c. Show your calculations in the lab report.
d. Discuss the experimental errors and clearly present you results with error estimates.
e. Include units for all numerical results.
f. Discuss your results and draw conclusions from your results.
g. Answer all questions asked in the manual and number them accordingly.
h. The reports should be well organized and concise. Expect a lower grade for poor presentation (sloppy measurements and data handling).
i. The reports are always due at the beginning of the next laboratory session.

Participation in the lab and the recitation means you are actually involved in all aspects of the instruction. Variously you will be doing lab exercises, collecting data, reasoning out what is happening, writing it all up for submission, solving problems related to your homework assignments as a table group, presenting your solutions to the class as a whole, and defending your reasoning. Problem solving is a major part of this course. It is a vital part of the education of any scientist or engineer. To some extent this is the course where you first formalize that process. Then you'll use it for the rest of your career.