Syllabus for PHYS 2A Laboratory
for General Physics (75049)

(updated on 8/27/2010)

Fall 2010 California State University, Fresno

Course Information

Units: combined w/ 2A lecture to be 4

Time: Th. 6:25 pm – 9:15 pm

Location: McLane Hall 174

Course Website:
Please use "Black Board"
http://blackboard.csufresno.edu

Instructor Name: Dr. Pei-Chun Ho

Office Number: McLane Hall 254

E-Mail: pcho@csufresno.edu

Telephone: 559-278-5990

Office Hours:
M, W: 12:15 PM — 1:30 PM
Tu: 12:00 PM — 1:30 PM
Th: 12:00 PM — 1:00 PM

Course Description

This one unit course will introduce the experiments associated with fundamentals of Newtonian mechanics, the physics of fluids, deformation of objects, the development of oscillations and mechanical waves, and some aspects of Thermal Physics to understand temperature and internal energy, which students learn from PHYS 2A.

Course Format

This course will include assigned readings in your lab manual that should be completed "before" each lab. Introduction part of the laboratory report has to be completed and turned in to instructor before each session starts. During the lab session there will be a short lecture, a quiz, small demonstration how to set up apparatus, and experiments and data analysis actually performed by students.

Corequisite with PHYS 2A

PHYS 2A and all the other prerequisites required by PHYS 2A

What You Will Need to Purchase for this Course

PHYS 2A Laboratory Manual from the University Bookstore

Lab Reports and Quizzes

Lab Reports

Prelab-Activity Requirement

♦ Upon agreement of all PHYS 2A laboratory instructors, starting from Lab#1 Graphical Analysis, students must turn in both the prelab activities and the Introduction section of the each lab report to instructor right before each lab session starts, otherwise the experiment will not be allowed to perform by the students who do not do so.

♦ Students cannot copy the introduction directly from the laboratory manual, and it needs to be students' own wording and description.

♦ If there is any information on the pages of the prelab activities that a student wants to keep such as the formula or introduction of the lab manual, the student may used the photocopied pages for the prelab activities or the student can create one's own tables or graphs neatly one some notepapers and label each questions clearly.

♦ All prelab activities have to have detail procedures in order to receive full points.

Standard Format of Scientific Report for PHYS 2A Laboratory

Official coversheet of the lab report, which can be downloaded from "Course Document" from "Black Board"

(0) Prelab Activities:
Answering the prelab questions in 2A lab manual. Detail explanation, reasoning, and calculation procedures are required. Showing answers only will not get any credits. They must be turned in class right before each session starts.

(I) Introduction:
Background of the experiment and the motivation
They must be turned in class right before each session starts.

(II) Experimental Results, Analysis, and Discussion
Collected Data, Graphs of the Data
Data analysis, Graphs of the analyzed Data

(III) Questions
Answering the questions in 2A lab manual in a concise and organized way (detail explanation and calculation procedures are required).

(IV) Summary or Conclusion (in an objective, logical, and scientific manner)

How a lab report will be graded?

Grade of each laboratory report (with score of full scale 20 points) will be determined base on the following criteria:

Introduction and prelab activities	4/20
Data Collection and Reporting	4/20
Data Analysis (calculations and graphs)	5/20
Questions	4/20
Organization, Legibility and Written conclusion	3/20

♦ All data must have the signature of a lab instructor.

♦ Each report must have a cover sheet attached, which you can download from Black Board.

♦ All reports must be turned in the same day of the lab. However, if you cannot finish the report in the lab and have to turn in late, the report has to be typeset and be turned in by noon (i.e. 12:00 PM) of the Friday of the same week to Dr. Ho 's mail box at Physics Department.

♦ Students are allowed to drop one worst grade of the lab reports.

Quizzes

At least six quizzes will be given randomly during the semester: The lowest of the quiz scores will be dropped from grade calculation.

There will be two questions for each quiz, and will be written questions, which require procedures. Questions are based on pre-laboratory exercise from either previous or current lab, and questions from previous lab reports.

Quiz will be offered after course instruction and will need to be completed within 15 mins. *No additional time will be allowed for those arriving late for the quiz.*

Policy about Quizzes

Either early or make-up quizzes will not be allowed by the instructor. If a quiz is missed for a compelling reason (e.g. illness documented by a physician's official letter with clinic's letter head), the part of the grade that quiz would have counted will be voided, and the rest of the grade will be counted as 100%.

Study Expectations

Attendance to the lab is mandatory. If a student misses more than 2 labs, he/she will automatically fail the course. Each student will submit one's own lab report at the end of each lab although a student will work in groups of 2-4 people (ideally 3 people). Students may not use any data or reports from other lab sessions or years or copy data from lab mates, which are not taken by the student's participation. If one does so, his(/her) behavior will be considered as cheating and plagiarism. Anyone caught cheating and plagiarism will be dealt with in accordance to the Policies and Regulations as spelled out in 2009-2010 University Catalog, **http://www.csufresno.edu/catoffice/current/policies.html.**

Free Physics tutoring in is offered in the Department of Physics, please contact Physics Office for detail schedule (TEL: 278-2371). In addition, there is also free tutoring provided by the Learning Center in the Peters Building Annex Trailers (TEL: 278-3052 or visit **www.csufresno.edu/learningcenter**).

Grading (100%)

12 Reports:	70%
6 Quizzes	30 % (No final exam for 2A Laboratory)

- You are allowed to be waived "one" worst grade from lab reports and "one" from the quizzes for the final average.
- Grade will not be curved within the same lab session, but may curved with all PHYS 2A lab sessions
- If you miss more than 2 labs you will automatically fail the course.
- Definitely no make-up laboratories and no make-up quizzes
- The grade from 2A laboratory session will contribute 15% - 20% (depending on the policy of the Physics Department, typically 15%) of a weighted grade to your total PHYS 2A grade.
- In the case of a student has to "retake" the course of PHYS 2A in the subsequent semester, only if one's previous PHYS 2A Laboratory grade is scored 85.00% or above, PHYS 2A Laboratory can be waived. And this condition can only be valid for one calendar year. Please read the section of Physics Department Policy on Repeating 2AL/2BL" on Page 2 of Laboratory Manual of PHYS 2A or contact Physics Office for details.

Course Goals and Primary Learning Outcomes

Course Goals

The main goal of the laboratory course will be to assist life-science-majored students in learning to describe, analyze, and predict the physical phenomena associated with electromagnetism such as electricity, magnetic force, particle-wave dual natures of light. From actually performing the experiments and analyzing the data, students will be able to associate physics concepts with real world and understand the application of the physics laws they learn in lectures.

Primary Learning Outcomes:

Upon successful completion of this laboratory course, students will be able to

- Analyze one-, two-, and three-dimensional linear and rotational motions of objects by using Kinematic equations.
- Describe and analyze motions by using pictorial, tabular, graphical, and mathematical representations on an object's position, velocity, acceleration, and mechanical energy.
- Apply Newton's three laws and free-body diagram to analyze the net external force on an object and the resulting motion.
- Apply conservation laws in Physics to simplify analysis of motions.
- Associate mechanical laws with nature phenomena, such as various linear and rotational motions, spring motion, mechanical energy conservation or dissipation, and simple harmonic motion.

- Write a formal scientific report, which will benefit their future careers.

Course Policies & Safety Issues

Laboratory Behavior

Both the instructor and the students are to adhere to high standards of professionalism, common courtesy, and respect for others. Please refrain from the following behaviors, bearing in mind that if your behavior interrupts the class you may be asked to leave the class for the rest of the period:

- Coming to lab session late is not tolerable (no later than 5 minutes after a session starts). If you must leave early, please get instructor's signature on data sheets, otherwise the collected data will not count.
- Using cellular phones in class. Please turn off your phone before class.
- Disruptive behavior. This includes talking to others, reading newspapers, etc. Please be ready to attend to the subject of the class; if you are not motivated to learn please do not come and distract those who are motivated.
- Talking out of turn during laboratory instruction period. This can be rude and disruptive. However, I am very interested in what you have to say, and will be happy to entertain questions and comments if you wait your turn.
- Speaking to anyone in a rude or aggressive fashion, or speaking of others in a disrespectful fashion.

University Policies

http://www.csufresno.edu/academics/policies_forms/instruction/RequiredSyllabusPolicyStatements.htm

Students with Disabilities

Upon identifying themselves to the instructor and the university, students with disabilities will receive reasonable accommodation for learning and evaluation. For more information, contact Services to Students with Disabilities in University Center Room 5 (278-2811).

Honor Code

"Members of the CSU Fresno academic community adhere to principles of academic integrity and mutual respect while engaged in university work and related activities." You should:
(a) understand or seek clarification about expectations for academic integrity in this course (including no cheating, plagiarism and inappropriate collaboration)
(b) neither give nor receive unauthorized aid on examinations or other course work that is used by the instructor as the basis of grading.
(c) take responsibility to monitor academic dishonesty in any form and to report it to the instructor or other appropriate official for action.

Instructors may require students to sign a statement at the end of all exams and assignments that "I have done my own work and have neither given nor received unauthorized assistance on this work." If you are going to use this statement, include it here.

Cheating and Plagiarism

"Cheating is the actual or attempted practice of fraudulent or deceptive acts for the purpose of improving one's grade or obtaining course credit; such acts also include assisting another student to do so. Typically, such acts occur in relation to examinations. However, it is the intent of this definition that the term 'cheating' not be limited to examination situations only, but that it include any and all actions by a student that are intended to gain an unearned academic advantage by fraudulent or deceptive means. Plagiarism is a specific form of cheating which consists of the misuse of the published and/or unpublished works of others by misrepresenting the material (i.e., their intellectual property) so used as one's own work." Penalties for cheating and plagiarism range from a 0 or F on a particular assignment, through an F for the course, to expulsion from the university. For more information on the University's policy regarding cheating and plagiarism, refer to the Class Schedule (Legal Notices on Cheating and Plagiarism) or the University Catalog (Policies and Regulations).

Computers

"At California State University, Fresno, computers and communications links to remote resources are recognized as being integral to the education and research experience. Every student is required to have his/her own computer or have other personal access to a workstation (including a modem and a printer) with all the recommended software. The minimum and recommended standards for the workstations and software, which may vary by academic major, are updated periodically and are available from Information Technology Services (http://www.csufresno.edu/ITS/) or the University Bookstore. In the curriculum and class assignments, students are presumed to have 24-hour access to a computer workstation and the necessary communication links to the University's information resources."

Disruptive Classroom Behavior

"The classroom is a special environment in which students and faculty come together to promote learning and growth. It is essential to this learning environment that respect for the rights of others seeking to learn, respect for the professionalism of the instructor, and the general goals of academic freedom are maintained. ... Differences of viewpoint or concerns should be expressed in terms which are supportive of the learning process, creating an environment in which students and faculty may learn to reason with clarity and compassion, to share of themselves without losing their identities, and to develop and understanding of the community in which they live . . . Student conduct, which disrupts the learning process, shall not be tolerated and may lead to disciplinary action and/or removal from class."

Copyright policy

Copyright laws and fair use policies protect the rights of those who have produced the material. The copy in this course has been provided for private study, scholarship, or research. Other uses may require permission from the copyright holder. The user of this work is responsible for adhering to copyright law of the U.S. (Title 17, U.S. Code). To help you familiarize yourself with copyright and fair use policies, the University encourages you to visit its copyright web page:
http://www.csufresno.edu/library/libraryinformation/campus/copyright/copyrtpolicyfull.pdf
For copyright Questions & Answers:
http://www.csufresno.edu/library/libraryinformation/campus/copyright/faqcopyright.pdf

Digital Campus course web sites contains material protected by copyrights held by the instructor, other individuals or institutions. Such material is used for educational purposes in accord with copyright law and/or with permission given by the owners of the original material. You may download one copy of the materials on any single computer for non-commercial, personal, or educational purposes only, provided that you (1) do not modify it, (2) use it only for the duration of this course, and (3) include both this notice and any copyright notice originally included with the material. Beyond this use, no material from the course web site may be copied, reproduced, re-published, uploaded, posted, transmitted, or distributed in any way without the permission of the original copyright holder. The instructor assumes no responsibility for individuals who improperly use copyrighted material placed on the web site.

(Detail lab schedule listed in the next page)

PHYS 2A Lab Schedule (updated on 8/23/2010)

First 15-20 minutes will be a short introduction and a demonstration of the lab. But if there is a quiz, which will be proceed before the instruction. Please be on time, **no make-up quizzes and labs are allowed**.

Week	Th.	Topic of the lab
1	8/26	Lab 0: Introduction to the 2A Lab Lab manual must be purchased in the University Bookstore. Students have to read through Page 1 to 5 to understand the general rules for 2AL. Students have to prepare each experiment before they come to the lab sessions. The prelab activity and the introduction part of the lab report are required to turn in right before each lab session starts.
2	9/2	Lab 1: Graphical Analysis
3	9/9	Lab 2: Introduction to Motion
4	9/16	Lab 3: Accelerated Motion Quiz 1 covers Lab 1 Graphical Analysis
5	9/23	Lab 4: Vector Addition Quiz 2 covers Lab 2 Introduction to Motion
6	9/30	Lab 5: Centripetal Force
7	10/7	Lab 6: Newton's 2nd Law Quiz 3 covers Lab 3 Accelerated Motion and Lab 4 Vector Addition
8	10/14	Lab 7: Conservation of Linear Momentum (**p**)
9	10/21	Lab 8: Simple Harmonic Motion (S.H.M.) Quiz 4 covers Lab 5 Centripetal Force and Lab 6 Newton's 2nd Law
10	10/28	Lab 9: Forces (F) and Torques (τ) in Equilibrium
11	11/4	Lab 10: Buoyancy and Archimedes' Principle Quiz 5 covers Lab 7 Conservation of Linear **p** and Lab 8 S. H. M.
12	11/11	**No Lab!!! (Veteran's Day)**
13	11/18	Lab 11: Waves in Strings, Metal Rods, and Air
14	11/25	**No Lab!!! (Thanksgiving Recess)**
15	12/2	Lab 12: Specific Heat Quiz 6 covers Lab 9 F and τ in Equilibrium and Lab 10 Buoyancy and Archimedes' Principle
16	12/9	**No Lab!!! (end of Instruction)**
17	12/16	**No Lab!!! (Finals' week)**