Fall 9-1-2018

PHSX 206N.04: College Physics I - Laboratory

Paul H. Janzen
University of Montana - Missoula, paul.janzen@umontana.edu

PHSX 206N -- College Physics I Laboratory Autumn 2018

Instructor: Paul Janzen
Office: CHCB 121
Office hours: M 1:00 - 3:00, W 10:00 - 12:00, F 2:00 - 3:00, and by appointment
Phone: 243-2374
Email: paul.janzen@umontana.edu
Text: (none)
Website: Lab materials will be posted on the Moodle site for this course
Lab: Wed 1:00-2:50 PM (section 4)
Corequisite: PHSX 205
Credits: 1

Description

The goal of the laboratory is to aid students in both their mastery of quantitative laboratory techniques and their conceptual understanding of physics. The material covered will track with the topics covered in the corequisite lecture course. Quantitative laboratory techniques will include reading an array of measuring instruments, handling the uncertainty (error) that results from the measuring instruments, understanding the distinction between precision and accuracy, and performing proper analysis and plotting of data. It is essential to keep up from the start, as the concepts in this course build on each other.

Learning Outcomes:

At the end of this course, the student:

- Will have learned how to properly take measurements and record data.
- Will have learned how to interpret results both statistically and graphically.
- Will have experimentally confirmed theories presented in lecture.

Required Materials

You will need the following materials for the course:

- laboratory notebook
- scientific calculator and pencil
- weekly labs (downloaded from Moodle)
- USB thumb drive to save data

Laboratory

There will be 11 two-hour labs during the semester. Out of the 11 labs, the 10 highest scores will count toward your final grade. **You are required to attend the labs, take measurements, and keep a notebook for each lab. There will be no opportunity for make-up labs.**

Each week, you should download and print a copy of the current lab, and bring it to your lab session. You are expected to have read the instructions prior to arriving at the lab and to have completed the associated pre-lab

quiz on Moodle. **Pre-lab quizzes will be taken on Moodle and close at 11 PM on Monday the week of lab. Quizzes are an individual effort.** Before performing the next experiment, you will be given an open-notebook quiz on the previous week's lab. Approximately 15 minutes will be allotted for completing lab quizzes.

The experiments are designed to take approximately two hours for measurements and an additional hour or two outside of lab for preparation beforehand and data analysis after. This is consistent with the time expectations for a one-credit course.

Grading

Your grade for the course will be determined by a combination of pre- and post-lab quizzes. **There will be no make-up labs so attendance is mandatory.** Grading will be divided as follows:

Pre-Lab Quizzes: 15%
Post-Lab Quizzes: 85%

This course can be taken only with the traditional grading option. We strive for consistency in grading between the many laboratory sections. As a result, grades with fall within **roughly** the same distribution for each section: approximately 25% A, 25% B, 25% C, and 25% D and F. All students who complete the first two labs will be counted in this total and thus some of the D and F grades will be associated with students who have withdrawn from the course.

Add/Drop can be performed online until September 17. **Add/Drop** can be performed with the instructor's and advisor's signatures until October 29.

All students must practise academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Code is available for review online at http://www.umt.edu/student-affairs/dean-of-students/default.php

Students with disabilities may request reasonable modifications by contacting me. The University of Montana assures equal access to instruction for students with disabilities in collaboration with instructors and Disability Services for Students, which is located in Lommasson Center 154. The University does not permit fundamental alterations of academic standards or retroactive modifications.

Tentative Course Schedule

Week		Laboratory Topic
1	8/27-31	*NO LAB*
2	9/3-7	Measurement
3	9/10-14	Kinematics
4	9/17-21	Forces
5	9/24-28	*NO LAB*
6	10/1-5	Centripetal Force
7	10/8-12	Collisions
8	10/15-19	Angular Momentum
9	10/22-26	Ballistic Pendulum

10	10/29-11/2	Buoyant Force
11	11/5-9	*NO LAB*
12	11/12-16	Hooke's Law
13	11/19-23	Standing Waves
14	11/26-30	*NO LAB*
15	12/3-7	Heat and Work
16	12/10-14	**Finals Week** - *NO LAB*

Paul Janzen 2018-08-24