

PHYS 251 Laboratory
Call #: 05657

Tuesday
10:00 – 12:00

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Clippinger 338
Office Hours: M 1-3, Th 2-3

INTRODUCTION Physics 251 is the first calculus-based introductory physics courses. You are expected to have completed at least Calculus I (263A or 263B or 266A). Topics to be covered include vectors, Newtonian mechanics, rotational dynamics, and gravitation.

MATERIALS You must bring your lab manual, a ruler, protractor, calculator and lab notebook to every lab meeting. Any handouts passed out in lecture should also be brought to lab. The new lab manual (green cover) should be available at Follett's University Bookstore.

ASSIGNMENTS AND GRADING I expect you to attend each lab having already read the lab procedure for that week. The lab schedule for this quarter is available for download from LON-CAPA. Following each lab period, you will have 48 hours to finish writing up the lab, and place your notebook in the drop box (labeled with my name and our lab time) in the basement of Clippinger, west wing. For each day late after that, I will deduct 2 points from your score. Since your lab session is on Tuesday, **the due date for each lab will be Thursdays by 5 PM.**

You are required to furnish your own notebook for this course. If you run out of pages, you are still responsible for providing your own notebook (even if you have to buy a new one). The notebook must be **QUAD-RULED and SEAM-BOUND (no spiral binding)**. Any charts or graphs printed from a computer must be cropped and taped into the book – **NO LOOSE PAGES!** Your work should be done in **PEN** with scratch work on the **LEFT HAND PAGES** and your presentable work on the **RIGHT HAND PAGES**. I will *ignore* anything you write on the left hand pages.

I WILL NOT ACCEPT LAB NOTEBOOKS THAT FAIL TO MEET THE ABOVE REQUIREMENTS!!!

A more detailed guide to the proper format of the lab notebook may be found below.

In addition to the weekly lab reports, you must also submit a draft and final version of a technical report. This quarter, the technical report will entail a more complete analysis the lab scheduled for **Tuesday, October 2 - (Determination of Acceleration due to Gravity)**. We will discuss the technical report more before that lab period. You will submit both a hard copy to me and an electronic copy to LON-CAPA.

Grading will work as follows:

- Weekly lab reports (20 pts each)
- Draft of technical report (20 pts) - due Tuesday, October 9, 2007
- Final version of technical report (40 pts) - due Tuesday, October 23, 2007

Your grade for 251 lab will be a straight percentage (points earned divided by points possible). At the end of the quarter I will submit these numbers to your lecture instructor, who will incorporate them such that the lab is worth 20% of your final grade for the course.

ATTENDANCE Attendance is mandatory at all lab classes. Any student absent more than twice without a university-approved excuse will fail the lab. If you are absent or need to be absent for any reason, speak to Stephen Goss (Clippinger 042) to schedule a make-up time.

Note: Even with a valid excuse, you receive a zero for any lab missed. The zero is replaced with your score after you make up the lab.

The make-up policy is posted on the laboratory door, and is also available from LON-CAPA. I will take attendance at the beginning of each class.

Physics 251 Laboratory Schedule
Fall 2007, Tuesday 10:00-12:00

Lab Date:	Due Date:	Experiment:	Number:
Sept. 11	Sept. 13	Measurement and Error	1
Sept. 18	Sept. 20	Data acquisition and analysis with an air track	2
Sept. 25	Sept. 27	Vector treatment of concurrent forces	3
Oct. 2	no notebook due Oct. 9 in lab Oct. 23 in lab	Determination of acceleration due to gravity Technical Report DRAFT Technical Report FINAL VERSION	4
Oct. 9	Oct. 11	Centripetal Force	5
Oct. 16	Oct. 18	Collisions in one dimension	7
Oct. 23	Oct. 25	Ballistic Pendulum	8
Oct. 30	Nov. 1	Experimental determination of the Moments of Inertia	9
Nov 6	Nov. 8	Laws of equilibrium for non-concurrent forces	10

THE WEEKLY PHYSICS LABORATORY REPORT

(to be handed no later than 48 hours after the lab)

The laboratory report is a record of the experiments performed and the results derived from the experiments. It serves to confirm the experiment and techniques used and the date when the experiment was performed. It serves as a document for precedence such as a patent application or a challenge to the data. All major university, government and industrial institutions require that such a record be kept of all the experiments performed in their laboratories.

In writing your Laboratory Reports you are to follow the instructions in this handout, although you should refer to the 250 Series Laboratory Manual. We are working on a new version of the Manual, where there are conflicts, this documents supercedes the Manual, if in doubt ask, ingram@ohio.edu.

One of the purposes of a laboratory course in physics is to train students in the analysis of acquired data and its recording and subsequent presentation. During each experiment your observations, any notes, and the data should be recorded in ink on the left-hand page of a bound laboratory notebook and be dated. The first page of the laboratory notebook should contain the course title and the second page a table of contents (built as experiments are entered). After the conclusion of each experiment a laboratory report should be written in the same notebook on the right-hand page in ink according to the following format:

LABORATORY (*NUMBER*)

TITLE OF LABORATORY (1pt)

I. Introduction (2pts)

*This section should include a brief presentation - **IN YOUR WORDS** - of the purpose of the experiment and the physical relationships explored. Physical Laws and their equations appropriate to the experiments, with a sentence or two introducing them, their use, and definition of symbols, must be included.*

II. Experimental Method (or Procedure) (3pts)

A. A list of the materials and apparatus used in the experiment is recorded in this section. Be sure to include equipment serial numbers or other special identifiers when appropriate.

B. A step-by-step outline of the procedure followed.

III. Data (6pts)

Data acquired during the course of the experiment should be recorded in a neat and concise fashion. Use blocked tabular form whenever possible and always identify any symbols used. Remember that units must always be included with any data recorded. For tables units should be included at the head of each column. A DATA TABLE MUST HAVE A CONCISE HEADING DESCRIBING THE DATA. GRAPHS SHOULD FOLLOW THE FORMAT GIVEN IN THE "GRAPHING AS A TOOL"WRITE-UP.

IV. Results (4pts)

Computations based on the acquired data are entered in this section. One sample calculation, sufficient to demonstrate the method used, should be given for each type of computation. The results should be recorded in a neat manner with the proper units included.

V. Discussion and Conclusion (4pts)

Comparisons of experimental results to known or theoretical values are presented in this section. Sources of systematic errors should be reported and any unusually large random error discussed. Criticisms or comments (favorable or unfavorable) concerning the nature of the experiment or the condition of the apparatus also may be included.

Finally, any questions posed in the laboratory manual should be answered after this section under the heading Questions.

*Updated 7-September-2007
For distribution in lab session 11-September-2007*