

# Physics 104: Principles of Physics II

## Laboratory Syllabus

### Objectives

Physics is constructed upon, and verified by, experimental results. The concepts you will learn in the lecture portion of the course are not simply abstract ideas: they constitute the framework that physicists use to represent how the real world actually works. The laboratory portion of this course will give you the opportunity to test out these concepts in experiments you construct. The hands on application of your understanding of physics in the laboratory will complement your learning in the classroom.

To get the most out of this learning opportunity, you must commit yourself to being actively engaged in the laboratory session. This means thinking carefully about both what you expect to observe, as well as what your results say about what actually happened. Make the room noisy! Be unafraid to express your thoughts in lively discussions – this is the sound of learning in action.

### Location and schedule

The instructional lab is located in Regents 119. There are two laboratory sections, meeting at MW 10:15AM–12:45PM, and TTh 10:15AM–12:45PM.

The enrollment is limited to 24 students per section. To accommodate as many students as possible, and in order to stay within this limit, we may ask you to change sections.

The 10 laboratory topics will complement the Physics 102 lecture course and will explore topics such as fluids, thermal physics, electricity, magnetism, circuits, light, optics, and wave optics. Note that the lab topics are subject to change.

### **Session format**

An Instructor and/or a Teaching Assistant will lead your lab section. When you arrive at lab, be sure to record your attendance on the sign-in sheet and pick up a copy of the lab manual and the report form. The manual contains the instructions for completing the lab, and is available on Blackboard prior to the lab session.

You are required to check-in with your instructor or TA at several points during each lab before continuing on to the remainder of the lab activities. The purpose is to ensure that you have followed good experimental procedures and have an adequate data set for subsequent analysis.

You will have at most two lab partners. We expect you to work collaboratively and share the responsibilities of the lab. However, the lab report is your own, so you do not have to agree with your lab partners on the answers to the questions asked in the report. At the end of the session, turn in your completed report to either your Instructor or TA, and sign-out.

### **Grading**

Each lab is worth a total of 20 points. These points are allocated in two broad categories. The first is setup, prediction (if any), data collection activities, and quality of your experimental work; this category is worth 8 points. The second category, worth 12 points, is data analysis and answers to questions in the report.

Of the 8 points for the first category, you will receive 4 points for meeting all checkpoints in a lab. Your instructor or TA must initial your lab report at each checkpoint to receive credit. Missing a single checkpoint is penalized the same, a 4 point deduction, as missing many.

A standard deduction of 0.5 point will be taken for instances of incorrect units or significant figures.

## **Expectations and policies**

Arrive on time and come prepared for your lab session. The lab manual is available on Blackboard for you to review prior to your lab session.

You can only attend the lab session for which you are registered.

Missed labs are excused only for pre-arranged University sanctioned events, extreme circumstances, emergencies, or with a Dean's approval, and must be made up at the first available opportunity, within the same week.

Unexcused missed labs receive 0 points.

If you do not turn in a lab report at the end of the session, you will be deducted 2 points, unless otherwise stated by your Instructor. Each subsequent day late receives an additional 2 point deduction.

Be safe in the lab. Your instructor or TA will describe all necessary safety precautions – follow them, as well as your common sense!

Eating or drinking in the lab is not permitted.

Store your backpacks, bags, etc in the cubbies near the lab entrance in order to keep the workspace around the lab benches clear.

Remember that the Honor code applies in the lab. The collaborative nature of your work in the lab does not conflict with the spirit of the honor code. After discussions with your lab partner(s), simply use your own words to complete the lab report.