

Introduction to the Laboratory by Professor James Seubert

Many of you who are taking Physics 100 have already taken a laboratory course elsewhere. You know that there are certain "common sense" rules that need to be followed in order for the laboratory to run successfully. There are also certain procedures that may be unique to this laboratory and that you need to know about. This introduction will point out some of these and your instructor may have more when you get to the lab.

The Department of Physics normally has on hand enough equipment for a laboratory to allow for a minimum of 10 separate setups of any given lab experiment. There are normally many more than ten people that register for a laboratory. Therefore several people will work together to use the same equipment during a scheduled lab. We want you to use common sense in doing this. Clearly everybody is not to do the experiments individually. You must work together to do the experiment. At the same time, it also stands to reason that no one should sit idly while his/her partners do all the work. Divide the work equally between everyone in your group. You will all learn that way.

The laboratories in beginning physics courses at IUPUI use what may be called a "box" method of handing out lab equipment. Much of the equipment that you will use in any particular experiment is temporarily stored in a box. One person from each group will have to pick up the box. Your lab instructor will hand you the box with most or all of the equipment that you will need to perform the current experiment. When you receive this box you will have to sign your name along with the box number on the box that you are given. The person signing for the box has primary responsibility for the equipment in that box.

It should not be necessary to tell you (but we will, anyway) that **we expect you to handle the equipment carefully**. Keep in mind that there will be many other students like yourself that will be using the equipment after you. They have the right, as do you, to expect to receive the equipment in good condition.

On the other hand, the department has the responsibility (given the limited resources that any state financed institution has) of providing you with working equipment. The laboratory staff will make a real attempt to ensure that the equipment that you receive is in good working condition. Nevertheless, sometimes it may happen that a faulty piece of equipment will be given you. If you discover that a piece of equipment is broken or is not working properly, take it to the lab instructor immediately. Don't try to fix it! Don't try to do the experiment with it! The lab instructor will leave it for the technician to repair, and will, if at all possible, give you a replacement piece.



What to do before the First Laboratory

The most important thing that you should do before you attend the first lab meeting is to read the writeup for the first laboratory. In fact, you should read the writeup before going to any of the labs. You will save time and effort if you have a rough idea of what you are going to do before you get to the lab.

Some Lab Procedures

There are some do's and don'ts that you must follow while doing the various lab exercises.

- 1) The results of measurements should be recorded neatly on the lab sheets. In the first lab (on Measurement) all measurements must be recorded, for reasons that will become evident as you take them. In subsequent labs, you may only need to record an average of several readings on the sheet that you hand in. However, even in this case, it is a good idea to have the actual readings recorded neatly on a sheet of paper (not necessarily handed in) so that you can go back and figure out where some result came from. If a strange result appears on your report, the instructor may ask you about it a week later. It may help you to get a better score if you can go back and see exactly where the number came from.
- 2) As mentioned above, we will try to provide you with equipment in good condition. It stands to reason that you must also return it in good condition. For this reason, **the lab instructor must check the box which you used before you leave the laboratory**. If something is missing or not properly stored, you will be asked to correct the problem.
- 3) Most of the time the instructor will be in the laboratory. However, there may be short intervals when he/she will find it necessary to be in the preparation room. Do not go into the preparation room looking for the instructor. Knock on the door and the instructor will respond. The reason for this rule is purely one of protecting the equipment stored in the preparation room, some of which is fairly expensive and fragile.

The rules that you are asked to follow in the laboratory are not made arbitrarily, nor are they made just to harass you. They are made with the specific intent of allowing the Department of Physics to serve as many students as possible in a way that will make the laboratories operate successfully. If you follow them, life will not be any harder for you, and it will make the experiences of other students like you more satisfactory.

