

Physics Lab 2229 Course Syllabus
Spring 2013
Chuck Lear – Instructor

Course Overview:

Experimental physics is the source of data without which you could never test the theories you are studying in your lecture class. This lab will hone your abilities to actually do physics, take and interpret data. The subjects dealt with are electricity & magnetism, light, atomic structure and radiation. Each weekly laboratory session involves a 3-hour experiment. You will learn about various types of instrumentation that is used to gather data. The data is usually in the form of numbers, sometimes in the form of “yes-no” or more descriptive type of answers. You will learn to record data properly and interpret it to answer questions.

Your grade will depend a little bit on getting the “right answer”, but much more on how you take your data, display it, and analyze it to answer the questions that are posed. If you attend regularly, display adequate workmanship in the class, and complete all your lab reports you will do well grade-wise.

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Office Hours: Wednesday and Thursday 4:00 to 5:30 p.m., usually in the adjunct office SL 210, or in an open lab. I can also meet by special arrangement. I am part time and will often be off campus.

An electronic copy of this syllabus may be found under Resources on the web site <http://physics.weber.edu/lab>.

Global Course Objective:

Formal lab course objectives are set out on page 2 of the Introduction to your lab manual. In addition to these, there is another important global objective that is met in the lab:

Develop observation skills and critical thinking skills. Critical thinking includes recognizing what is known, what is unknown and to be found out, and searching for relationships between the two. This type of thinking is logical and reasonable, and distinguishes between what is true, what is not true, and what you don't know (not enough information). This type of thinking is essential to problem solving.

Working Objectives:

Work as a group. Two or three people at a lab bench are desirable. If you must work alone, even if you have the best of excuses, you will lose three percentage points.

Complete formatted lab reports. They will be graded on the basis of 100 percentage points. I will post the grading criteria for the report paragraphs during the three-hour performance period of each lab. The lab report must include a pre-lab write-up as described below.

Report all relevant data pertaining to lab objectives. Space is often provided in the report sheets to record these. Often, addendum sheets will be needed to fully display data.

Finish on time. Lab reports will be accepted at the end of the period in which the lab is performed. Lab reports are late at 12:00 noon on Friday of the week of performance. My mailbox for report submittal, if needed, is in the physics office, on the top shelf to the right of the entrance. Lab reports will be returned at the beginning of the next week's lab.

Perform guided data analysis. You need to show your work, and it can be the result of partner collaboration. I will answer any questions you have, but you must ask!

Draw conclusions when called for. Base conclusions on your data and analysis, and use your own words. They need to be clearly stated and identified, and do not have to agree with your text or theory.

Meeting these objectives is easier than it looks. You will get the hang of it after a lab or two.

Pre-Lab Reports:

The lab report must include a written plan describing your approach to the lab. This plan should be done in advance, but may be turned in with the report, after the lab. The plan should be about a half-page, preferably typewritten. Your plan should include these four items:

- a) Your **objectives** for the lab. These should reflect the purpose of the lab, but may be of your own devising.
- b) The **physical principles** addressed in the lab. These are given on the first page of the lab instructions. Don't just copy them. Describe them.
- c) A description of the **data to be taken**. List the things you will **observe and measure** (raw data). Calculated quantities (reduced data) should not be included in this description.
- d) A brief **data analysis plan**. Describe how you will use the data, or what you will calculate from the data (reduced data), or how you will meet your objectives, etc. This does not need to be lengthy.

The lab instructions sheets may not have clear objectives, but they do have clear statements of physics principles. The individual lab objectives may be taken to be the use or demonstration of the physics principles.

Late Submittal:

Labs submitted between Friday noon and start of the following week's lab will be corrected starting from half credit. Do not turn in labs that are more than a week late. You should take the initiative to review and correct them yourself.

You need to take the initiative to inform me in advance of your planned absence from a lab. If you have an unplanned absence due to an emergency, you must inform me as soon as possible. Absences need to be made up as soon as possible after your return, by arrangement with me and with the equipment manager, Rick Schroeder. Late report submittal will be arranged if needed. Reports that are late due to uncoordinated circumstances or other carelessness will be zeroed.

Grading:

Late reports and failure to work in a group will result in grading impact as described above.

Written work will be graded on a criteria scale:

90-100, excellent	80-90, very good
70-80, satisfactory	60-70, needs improvement
50-60, unsatisfactory	0-50, no apparent effort

Each lab will be scored on a hundred-point basis depending on how well it meets the working objectives. Each lab has an identifiable number of work units. These will include data records and analysis questions. I will assign point values to each work unit to add up to 100. I will have these value assignments ready for your inspection during the time period each lab is in session. I will write your earned points (e.g. 9) over the work unit value (e.g. 10) as a fraction (e.g. 9/10) at the top of the work unit, and put your total earned points at the top of the report.

The grade value of the lab final exam will be determined by your lecture instructor. I will submit your lab grades to your lecture instructor who will then determine their worth in your overall course grade.

I will not attempt to keep my grade values consistent with other lab instructors'. I will try to adhere to the same standards within a lab group, and, with less diligence, within the class as a whole.

I will usually provide written explanation for points deducted, but I make no commitment. If you don't understand your point loss, your first recourse is to compare with others in the class.

I will not attempt to decipher bad grammar or penmanship. If I cannot clearly understand your intent, I will mark you down. I will listen to arguments about this, but generally do not give them much weight.

I will keep your grade records and combine them with your 2010 course grades at the end of the term. Your lab grades are worth 25% of the course. See me if you have inquiries about your grades or your lab average.

Academic Integrity:

The policies of Section IV:D of the Student Responsibilities as outlined in the Student Code will be followed. In particular, I will be on the lookout for direct plagiarism from textbooks and from your lab partners. Of course, you are expected and allowed to use your lecture course material and work closely with your team to draw conclusions from your data. Some similarities of expression in your lab reports are unavoidable. Nonetheless, you are expected to do your own thinking, draw your own conclusions and express them in your own words. If you must make direct use of another's words, give credit where it is due.

The first instance of cheating will result in a warning and a possible zero on that assignment. Further violation will result in failure of the class.