A. Required Text and Materials

You may purchase the manual from Club representatives who will bring them to the lab.
You will also need a Lab Notebook: Bound, square-ruled with numbered pages, (please, not spiral bound.), a calculator with statistical functions (standard deviation and linear regression), a clear ruler, and a glue stick or tape.

B. Class Procedures

1. Lab Notebooks

Each student must record all laboratory work in his/her laboratory notebook. Write in your lab book neatly and in ink AS YOU DO THE WORK. All data should be recorded in data tables, neatly and in INK, together with appropriate units and relevant measurement uncertainty. Number the pages in your lab book (if not already numbered), and prepare a table of contents. Answer any questions asked in the write up and prepare any required plots. Plots can be pasted in to the notebook.

Describe your procedures clearly and in complete English sentences. Grammar and spelling are important! Diagrams should be included. Diagrams may be drawn in pencil. If you make a mistake, draw a single line through the incorrect material. Do not erase anything and do not tear pages out of your book. Lab notebooks will be turned in to the instructor at the end of class about every third week – see below.

2. Lab Quizzes and Final Exam

There will be lab quizzes most weeks on the preparatory reading and any preparatory calculations called for on the results sheets. There will be a lab final during the standard final exam period. HINT: You will do the Laboratory Final individually with open lab notebook. A well-written lab notebook will be of enormous help to you on this exam! Also, remember that you will do the lab final by yourself, so make sure you have learned how to do all the measurements covered in the lab.

3. Lab Report and Notebook Submissions

You will do the laboratory exercises in groups of two (or sometimes three; the instructor may change group assignments during the semester). Assume that a lab team consists of person A and person B. These team members will submit formal reports, lab notebooks, or results sheets and graphs according to the following schedule:

Experiment Submissions

1. A and B submit lab notebooks (at end of lab)
2. A and B submit results sheets and plots (at end of lab)
3. A submits formal report + lab notebook; B submits lab notebook (at end of lab)
4. A and B submit results sheets and plots
5. B submits formal report + lab notebook; A submits lab notebook (at end of lab)
6. A submits formal report + lab notebook; B submits lab notebook (at end of lab)
7. B submits formal report + lab notebook; A submits lab notebook (at end of lab)
8. A and B submit results sheets and plots
9  A submits formal report + lab notebook; B submits lab notebook (at end of lab)
10  B submits formal report + lab notebook; A submits lab notebook (at end of lab)
11  A and B submit notebooks and results sheets with plots
12  A submits formal report + lab notebook; B submits lab notebook (at end of lab)
13  B submits formal report + lab notebook; A submits lab notebook (at end of lab)
14  A submits formal report + lab notebook; B submits lab notebook (at end of lab)

The formal report should be completed after discussion and collaboration with the other member of the group, and according to the instructions in the lab manual. Graphs in the formal write-up may be completed by hand, or using a computer, and inserted into the write-up. Formal reports are to be turned in to the Physics 232 – Section 03 file drawer on the fourth floor near the elevators by 5:00 p.m. on the second day after the lab (on Mondays for Thursday labs). No exceptions. Lab notebooks are to be turned in with the formal reports. In weeks when you are not responsible for the group lab report, your lab book will be scored SATISFACTORY or UNSATISFACTORY on the basis of completeness and neatness.

4. Registration and Attendance

(a) Attendance is required. Also, you MUST REMAIN IN THE LECTURE class past the undocumented withdraw deadline to remain in the lab. (You must attend and actively participate in the lecture class, including turning in homework, up through the undocumented withdraw deadline, or else you will be required to drop the lab)

(b) If you cannot meet your regular lab section for some compelling reason, it is possible - and YOUR responsibility - to arrange a makeup in a different lab section. You will need to obtain consent of the instructors in both sections and to make your peace with your lab partner. (This should happen infrequently and, if possible, be arranged ahead of time. The lab sections are all crowded, so it is difficult to arrange to attend another section.)

C. GRADING:

The lab final will count 20-25% of total credit. Quizzes will count 10-15%. The lab reports and notebook evaluations will constitute the remaining 60-70%. Your grade will be based on the fraction of the total credit you receive according to the following table:

Minimum overall scores for each grade:

A 92% A- 90% B+ 88% B 80% B- 78% C+ 75% C 67% C- 65% D+ 63% D 53% D- 50% F < 50%

The lowest quiz score and the lowest non-formal write-up score will be dropped. This allows you to miss one lab without penalty. If you miss more than one lab, you will need to do a make-up in another section, or take an Incomplete or reduced grade. At end of semester the lab coordinator will compare grading among the sections and make any adjustments needed to assure uniformity across the sections. The instructor reserves the right to raise your grade as much as 2/3 letter grade if your scores show continuous, substantial, improvement throughout the semester.