SYLLABUS FOR PHY-132: University Physics II Laboratory

SECOND SUMMER SESSION, 2001

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OFFICE HOURS:

Daily (except for examination days) 1:00-2:00 PM (in the Help-Study Room)

I. INTRODUCTION

PHY-132 is the 1-credit laboratory course accompanying PHY-131, University Physics II, which covers the subject of Electricity and Magnetism. PHY-131 must be taken at the same time as (or either before) PHY-132.

For logistical and economical reasons the material covered in the two courses is not coordinated in time. The expectation is that, over the course of the term, material learned in one course will enhance the understanding of the material received in the other.

The manual for this laboratory is online at

http://www.public.asu.edu/~gbadams/sum02/131/132syll.html

You are responsible for downloading these pages, reading them beforehand, and bringing them with you to the appropriate lab. DO NOT PRINT OUT YOUR LABS ON THE PRINTERS IN THE LAB ROOMS. These files are in pdf format.

II. COURSE FORMAT AND POLICIES

A. Schedule

The course during this Summer Session commences on Tuesday, July 2 and concludes on Friday, Aug 2. There are no Monday sessions. A schedule of experiments and meeting dates is distributed with this Syllabus. Laboratory Sessions are scheduled on Tuesday - Friday from 10:40 AM until 12:40 PM or from 3:00 PM until 5:00 PM. IMPORTANT NOTE: NO FOOD OR DRINK IS ALLOWED IN THE PHYSICS LAB ROOMS.

Help-Study sessions are for the students' benefit in gaining assistance with the conceptual and procedural basis of an experiment. The Help-Study Hall (PSF-462) will be staffed by the Instructor and Teaching Assistants from 1:00 until 3:00 PM each day except on PHY-131 examination days (July 9, 17, 25, and Aug 2). Teaching Assistants will not otherwise keep office hours except by appointment, but will alert their respective sections to the hours which they

will be present in the Help-Study hall. However, assistance may be solicited from any member of the course staff on duty.

B. Laboratory and Grading Policy

There are ten experiments scheduled for the term. Nine experiments will be graded; the first experiment, Introduction to the Oscilloscope, will not be graded. In order to obtain a passing grade (C or better), a student must have completed seven of these. An A grade requires completion of all nine with a least a grade of C in each lab.

The laboratory format is based on cooperative learning. Students will work together in teams of three or four. Teams will be organized by the section TA at the beginning of each set of three experiments; thus, during the term each student will have three sets of teammates. All team members are expected to participate in all aspects of the experiment and to understand each function thoroughly, as well as the physical basis of the experiment and the conclusions drawn from the data.

Each team will be given a team grade based upon a **team interview** conducted by the TA and/or the lab instructor. Thus, in general, all members of each team will receive the same grade for each lab. However, the section TA has the option of lowering the grade for an individual team member based upon appropriate reasons including, but not limited to, absence or failure to participate fully with one's team. Likewise, the TA may recommend a higher grade under suitable circumstances.

During the interview, each team member will be asked one or two questions. Questions are asked to the individual team member, not to the team as a whole, and those individuals must answer alone without prompting from other members of the team. So, no matter how you decide to divide up the tasks of the lab among your team members, it its the responsibility of the team to make sure that every team member knows all the relevant points of the lab before the interview begins. Also reviewed during the team interview will be the data, the analysis, and the conclusions, which must be prepared beforehand in an acceptable format (see below under **Presentation of Results**). The interview questions and this team write-up will carry approximately equal weights in determining the team grade.

The team grades will be letter grades carrying the following values:

A 4.00	B^+ 3.33	C^+ 2.33
A^- 3.67	B 3.00	C 2.00
	B^- 2.67	etc.

Any team receiving a grade of less than B^- in the initial interview will be asked to repeat the interview and/or redo their team write-up. The highest possible grade in a repeat interview is an A^-.

Roughly, in the interview and on the team write-up, major issues or questions are worth $\frac{2}{3}$ of a point and secondary or smaller issues are worth $\frac{1}{3}$ of a point. For example, in 131, error propagation issues are usually worth no more than $\frac{1}{3}$ of a point. On the other hand, after having done the lab on Electric Field Plotting, an inability to describe the major properties of electric fields would be worth at least $\frac{2}{3}$ of a point. Similarly, in the team write-up, failing to properly label axes on graphs might cost only $\frac{1}{3}$ of a point or less; while an incorrect calculation of a critical value would cost at least $\frac{2}{3}$ of a point.

Your final lab grade will be the average of your nine lab grades with:

$A \geq 3.5$ B = 2.5 - 3.49 C = 1.5 - 2.49 D = 0.5 - 1.49 F <0.5

An A also requires completion of all nine graded labs (C or better). A final grade of B also requires completion of at least eight of the graded labs (C or better). Completion of less than seven graded labs is an automatic F.

C. Data Recording

Data are to be recorded **in ink** on $8\frac{1}{2} \times 11$ quadrille sheets (5×5). Team members should share the cost of a pad of quadrille paper. These are to be no erasures or "white-outs". Errors are to be lined out. At the end of each laboratory period or the conclusion of the experiment, each data sheet is to be dated and initialed by all team members and section TA. Data should be recorded in tabular form with well-labeled columns, or otherwise distinctly entered onto the data sheet. The data may be transferred to computer spreadsheets, etc., for analysis if the team so desires. Each team member should obtain photocopies of all signed data and analysis sheets. (This is for your own protection.)

D. Presentation of Results

Under the interview structure and in light of the summer's compact schedule, no individual formal written experimental reports are required.

However, the data are to be analyzed, with full attention to experimental and statistical uncertainties, where required, and the results are to be presented in tabular and/or graphical format as appropriate. There should also be a clearly written description of the analysis process complete with pertinent equations. **Be sure to state your conclusions prominently and clearly.** All these documents, initialed and dated, as well as the original raw data sheets, are to be presented at the interview. At least one person in your group should keep a photocopy of the entire packet.

E. Scheduling of Interviews

Most interviews will occur during the last hour or so of the second day on which the particular experiment is scheduled on a first-come first-served basis. Interviews normally will last no more than ten or fifteen minutes.

F. Relation to Lecture

The Department of Physics and Astronomy cannot afford to stock sufficient equipment to allow all students to conduct the same experiment at one time. Therefore, it is impossible to coordinate closely the laboratory work with material covered in the PHY-131 lecture. Consequently, some students may encounter a concept or physical principle in the lab before learning about it in lecture. This is not necessarily a bad ordering of the learning process; many prefer it. On the other hand, some students may wait for a week or more after learning the physics theory before doing the relevant experiments. In either case, it is expected that material encountered in each course will eventually be reinforced by material from the other course in such a way as to enhance understanding.

G. Withdrawal

Withdrawal policies are established by the University (see the 2002 ASU Calendar at http://www.asu.edu/calendar/academic.html.) The deadline for unrestricted course withdrawal is July 8.

Beginning July 1, this information, plus course info updates, will be available on the internet at **http://www.public.asu.edu/~gbadams**