

Physics 184 Laboratory Syllabus

Sections	001	002	003	004	005
Schedule	M 9-10:50	M 11-12:50	M 1-2:50	Tu 9-10:50	Tu 3- 4:50
Instructors	Dr. Tatiana Allen 347 Grote Hall Tel: 425-4520 e-mail: Tatiana-Allen@utc.edu http://www.utc.edu/Faculty/Tatiana-Allen			Dr. Peter Groves 219 Grote Hall Tel: 425-1766 e-mail: Peter-Groves@utc.edu http://www.utc.edu/Faculty/Peter-Groves	
	Mr. Jack Pitkin , Lab Preparator/Senior Instructor 335 Grote Hall Tel: 425-4518 e-mail: Jack-Pitkin@utc.edu				
Location	Grote 315				
Office Hours	according to schedule on the instructor's office door or by appointment				

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GENERAL DESCRIPTION

MANUAL: Description of all experiments is available for download from this web site. The experiments are taken from *Laboratory Manual. Physics 184* by L.K.Akers, C.R.Printz, C..I.Lane. Some modifications have been made.

LABORATORY WORK is an essential part of the learning process at this level of physics. During the semester you will perform ten experiments, analyze their results, write and turn in lab reports.

ATTENDANCE

Attendance at all laboratory sessions is required. If you miss a session, you will get zero for this lab. I may make exceptions and give you a make up session if I am convinced that you were ill, had a death in the family, or were involved in a similar emergency.

If you are late to a lab session for more than 10 minutes, you are not allowed to perform the experiment and you will get zero for this lab, unless other arrangement has been made.

Students are responsible for all information that is given in class.

LAB REPORT FORMAT

Your lab report is the original documented record of all the work you have performed regarding to each lab experiment. YOUR LAB REPORT SHOULD CONTAIN:

1. Title of experiment
2. Date performed
3. Your name, Partner(s) (if any)
4. The goals of the experiment
5. Theoretical background
6. Sketch of the experimental set-up
7. Experimental procedure
8. Experimental data
9. Calculations/ graphs/ results
10. Conclusions: obtained results, comparison with known parameters, discussion of errors and sources of errors.

FOR MORE DETAILED INFORMATION, SEE LABORATORY REQUIREMENTS

LABORATORY REQUIREMENTS

HOW TO PREPARE FOR THE LABORATORY SESSION

You should study the description of the experiment and start to write your lab report **BEFORE** the lab session. Take 8 1/2 x 11" loose leaf paper and write down the title of experiment, date it will be performed and your name. Read the manual and write down the goals of the experiment, sketch of the experimental set-up, and the experimental procedure. **Parts 1 through 7 of your lab report (see above) should be hand-written before the lab session and turned in during the first 5 minutes of the lab session.** It will be graded together with the rest of your lab report. It is worth 20% of your lab grade. Please make a copy for yourself, you will need it during your lab session.

LABORATORY SESSION

You will need for labs: paper, carbon paper, ruler, protractor, graph paper.

Please, respect the LAB RULES (posted in the lab). No food or drinks are allowed in lab.

During the laboratory session in class you should record all work you have performed. All activities, experimental data, results, etc., should be recorded as they occur, in ink. No erasures should be made. A single line through the "wrong material" is sufficient, with any corrections or change noted above or beside it. This will allow for the recover of information which, later, may be prove to be valuable. Your lab results should be **RECORDED IN DUPLICATE**. You can use "Laboratory research notebook" or "Computational notebook", which are available at the UTC Bookstore (Identifying number is 43-645 or 54-641). Before leaving the class, you should tear out the yellow (carbon) copies and leave them with your instructor who will keep them until the end of the semester as a proof that you have performed this experiment. Attach the white copy to your lab report.

HOW TO FINISH YOUR LAB REPORT

At home you need to perform the analysis of your experimental data. **This part of your lab report must be typed. The parts must be stapled in the correct order according to "Lab report format". Presentation is important to receive full credit.**

Make necessary calculations (do not forget to write down an example of your calculations), draw graphs, obtain results, round them properly, estimate experimental errors. The most important part of your lab report is CONCLUSION where you need to evaluate the obtained results, compare them with known parameters, discuss the errors and sources of errors. **Make sure that you understand the difference between experimental errors and mistakes.** The experimental errors are unavoidable and can be estimated from the measurement uncertainties. Mistakes should be avoided, they will reduce the amount of credit given for the lab.

Each GRAPH, attached to appropriate place in your report must have the following: Title; Properly labeled coordinate axes WITH UNITS; Clearly marked data points with error bars; Analysis/equation that best fits your data.

If you have forgotten how to round the results, estimate experimental errors, make graphs, perform analysis of the curves, you may ask your instructor or Mr. Jack Pitkin, laboratory preparator, for help materials available in the laboratory.

You should work on your lab reports individually. If you receive help from anyone else, place their name(s) under yours on the front page. If I find that two students copied their lab reports from each other and did not acknowledge the received help, the lab report will be returned ungraded, and no one student will receive credit for this lab.

You need to turn in your lab report by due date (see the schedule). No lab reports will be accepted if they are late, unless other arrangements have been made. No lab reports will be accepted after the due date of the last lab report. Your reports will be returned after grading - please keep them carefully.

TENTATIVE LAB SCHEDULE – Spring 2005

Dates			
Monday	Tuesday	Lab	Report Due
10-Jan	11-Jan	Magnetic balance	13-Jan
17-Jan	18-Jan	no lab this week	
24-Jan	25-Jan	Ohm's Law	27-Jan
31-Jan	1-Feb	Potentiometer	3-Feb
7-Feb	8-Feb	Wheatstone Bridge	10-Feb
14-Feb	15-Feb	RC Time Constant	17-Feb
21-Feb	22-Feb	no lab this week	
28-Feb	1-Mar	Oscilloscope	3-Mar
7-Mar	8-Mar	spring break	
14-Mar	15-Mar	Diode Power Supply	17-Mar
21-Mar	22-Mar	Lenses / Images	24-Mar
28-Mar	29-Mar	Diffraction	31-Mar
4-Apr	5-Apr	Inverse square law	7-Apr

TENTATIVE GRADING SCALE for each lab report

The goals of the experiment	2%
Theoretical background, Sketch of the experimental set-up	8%
Experimental procedure	10%
Experimental data	25%
Calculations; Graphs; Results, properly rounded; Experimental errors	40%
Conclusions: obtained results, comparison with known parameters, discussion of errors and sources of errors	15%
Total	100%

The grades for each lab report will be added to produce the final grade for the course.

LABORATORY EXERCISES

Experiment	Report	Data page
	Print 1 copy	Print 2 copies
Magnetic balance	download	download
Ohm's Law and Power	download	download
Potentiometer	download	download
Wheatstone Bridge	download	download
RC time constant	download	download
Use of the oscilloscope	download	download
Diode power supply	download	download
Lenses / Images	download	download
Diffraction	download	download
Radioactive Shielding	download	download

If you find that personal problems, career indecision, study and time management difficulties, etc. are adversely affecting your successful progress at UTC, please contact the Counseling and Career Planning Center at 425-4438.

If you are a student with a disability (e.g. physical, learning, psychiatric, vision, hearing, etc.) and think that you might need special assistance or a special accommodations in this class or any other class, call the Office for Students with Disabilities/College Access Program at 425-4006 or come by the office - 110 Frist Hall.

last update Jan 4, 2005