

PHY204 - General Physics Lab
Spring, 2017

Time: Thur. 9:00 am - 10:50 am, S103
Instructor: Dr. Jon M. Saken
Office: S178 (Science Bldg.)
Phone: 696-2753
E-mail: saken@marshall.edu
Office Hours: Tues./Thurs. 2:00 pm - 3:30 pm
Wed. 10:00 am - 12:00 pm
Required Text: *PHY204 Laboratory Manual*, 5th edition (2017, Van Riner)

Catalog Description: Required of all students taking Physics 201-203, unless exempt by special permission. (CR: PHY 203 or PHY 213.)

Fuller Course Description: These laboratory exercises accompany the lecture courses PHY 203 or PHY 213 and cover similar material: several concepts in electricity, some concepts in optics, and a single concept in radiation.. However, the pace of 204 will generally be different from that of 203/213, so labs may involve material that has not yet been discussed in the lecture section.

Grading:	Lab Reports	60%	A	90 - 100
	Exam I	20%	B	80 - 89
	Exam 2	20%	C	70 - 79
			D	60 - 69
			F	0 - 59

Note that, by departmental policy, students must pass at least one of the lab exams to pass the course.

Absences: Students who are absent for any reason should attend a different section of the lab in order to make up the missed lab or test. Students who have excused absences can do this at no penalty; students with unexcused absences will be penalized 20%, *but only with the written permission of both instructors*. If it is impossible for an excused absence to be made up in this way, that lab will simply be dropped from the average. If it is impossible for an unexcused absence to be made up in this way, the student will receive a zero for that lab. Both excused and unexcused absences from tests must be made up, even if no later section is available.

Student Responsibilities Before Class: *Students must check which experiment will be performed in the upcoming lab.* This step is important, since the labs do not occur in a simple sequence (see the Schedule below). After reading through the experiment as described in the lab manual (or handout, which will be distributed by the instructor during the preceding lab), the student should read through the corresponding sections of his/ her 203/213 textbook. In many cases, these sections will not have been covered in lecture yet. Students are not expected to master the material, just to be familiar with it.

Student Responsibilities During Class: Students must come to lab on time. A student who is excessively late would not be able to participate fully in the lab and so will not be allowed to participate at all. Such a student should make arrangements to attend a later section if possible. The lab report from the previous week is due at the beginning of lab, as soon as the students arrive. There will be no time to make last-minute calculations or write-ups.

In most cases the student must set up the apparatus, test to see if it works, and then take data. *Particular attention must be given to the safety concerns for the lab; most involve electricity, some involve lasers, and one*

involves radiation. It will require steady work to finish the experiment by the end of the lab period. Concentrate on collecting data, particularly if time is running out. Calculations can be done after the experiment is finished. Each student must contribute to all parts of the experiment.

Each student should make sure to get the FULL NAME of his/her partner(s) (normally, 2 students to a table), together with contact information (phone or email).

Make sure to return the lab equipment to the same condition it was in when you arrived: disassemble circuits and turn off and/or unplug power supplies, oscilloscopes, function generators, lasers, etc.

Students must have the instructor initial their lab reports or data sheets.

Student Responsibilities After Class: Each lab report should be clearly marked with the student's FULL NAME on (at least) the first page; immediately underneath this should be "LP:" followed by the lab partner's full name. Do not just use first names or nicknames. *For "date", write the time and day of the week when your section meets.*

The report should include all lab manual pages on which data is entered, calculations done, questions answered, etc. Show at least one explicitly worked example for each type of calculation you must perform. Any relevant graphs must be included. Every member of the group must have their own copies of these graphs. Answer all questions in the report.

Students are encouraged to work together on lab reports, but each student must understand all calculations and analyses, just as they must understand how to make each measurement when performing the experiment. These items are fair game for the lab exam.

The completed reports are to be stapled and turned in at the immediate beginning of the next lab class. Students are not permitted to work on last weeks report or homework in lab. An unexcused absence results in a zero for the that lab, but the previous weeks report may be turned in within 24 hours at a penalty of 20%. The lowest lab report will be dropped from the average.

University Policies:

By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to: <http://www.marshall.edu/academic-affairs/policies/>

Academic Dishonesty/ Excused Absence Policy for Undergraduates/ Computing Services Acceptable Use/ Inclement Weather/ Dead Week/ Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities of Students/ Affirmative Action/ Sexual Harassment

Other Course Policies:

- Any work handed in late will suffer a 20% penalty per **calendar** day. This does not apply for any day for which there is an excused absence.
- Makeup work will **NOT** be allowed except for *documented* emergencies.
- If you must miss a class contact me immediately. Also, be sure to let me know at least a week ahead of time if a university activity will require an absence from class.
- Cell phone use is not permitted in the classroom. Please turn cellphones to OFF or vibrate while in class.
- Except for calculators, *all other electronic devices must be turned off in class.* Laptops, tablets, etc.

- Any act of academic dishonesty of any kind will result in a final grade of F for the class.

Learning Outcome	Practiced in	Assessed in
observe and measure	each lab activity	lab results, exams
control & manipulate with devices	most lab activities	lab results, exams
use careful math analysis	most labs analysis	lab Reports, exams
recognize uncertainties and errors	lab Reports	lab Reports, exams
form & test hypotheses	some lab activities	exams
conclude from observations	each lab activity	exams
communicate experiment results	each lab Report	lab Reports
notice calibration issues/effects	some lab activities	lab Reports, exams
recognize uncontrolled variables	some lab activities	lab Reports, exams
know basic equipment principles	some lab activities	lab Reports, exams

1 Credit Hr.

Physics 204 Laboratory

Spring 2017

Week:	Experiment:
Jan. 9 – 13	Lab 1: Electric Charges & Electric Force
Jan. 17 – 20	Lab 2: Electric Field & Electric Potential
Jan. 23 – 27	Lab 3: Ohm's Law
Jan. 30 – Feb. 3	Lab 4: Kirchhoff's Laws
Feb. 6 – 10	Lab 5: The Magnetic Field & Force
Feb. 13 – 17	Lab 6: Faraday's Induction Law
Feb. 20 – 24	Lab 7: The LRC Circuit
<i>Feb. 27 – Mar. 3</i>	<i>Make-Up Labs/Review Sessions</i>
Mar. 6 – 10	First Lab Exam: Labs 1 – 6
Mar. 13 – 17	Lab 8: Reflection & Refraction
<i>Mar. 20 – 24</i>	<i>Spring Break</i>
Mar. 27 – 31	Lab 9: Thin Lenses
Apr. 3 – 7	Lab 10: The Telescope & The Microscope
Apr. 10 – 14	Lab 11: Diffraction & Interference
Apr. 17 – 21	Lab 12: The Atom
<i>Apr. 24 – 28</i>	<i>Dead Week (Make-Up Labs/Review Sessions)</i>
May 1 – 5	Second Lab Exam: Labs 7 – 12