**Marshall University Physics Department**

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| **Course Title/Number** | **PHY 204-202** |
| **Semester/Year** | **Spring 2014** |
| **Location** | **SCI 100** |
| **Instructor** | **John Winfrey** |
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| **E-Mail** | [**winfreyj@marshall.edu**](mailto:winfreyj@marshall.edu) ***Please put PHY 204 in the subject line*** ***of email*** |
| **Office/Hours** | **MWF 10:00 – 10:50; MWF 2:00-2:50** |
| **University Policies**  **Instructor Policies** | **By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy be going to** [**www.marshall.edu/academic-affairs**](http://www.marshall.edu/academic-affairs) **and clicking on “Marshall University Policies.” Or, you can access the policies directly by going to** [**http://www.marshall.edu/academic-affairs/?page\_id=802**](http://www.marshall.edu/academic-affairs/?page_id=802)  **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.**  **Inclement Weather Policy: This course will comply with Marshall University’s rules for inclement weather. Please reference the Marshall University website, if questionable weather conditions exist, to determine if class will be meeting.**  **General Emergencies:** [**http://www.marshall.edu/emergency/**](http://www.marshall.edu/emergency/)[**http://www.marshall.edu/emergency/mualert/**](http://www.marshall.edu/emergency/mualert/)  **Midcourse Corrections: Information in this syllabus was, to the best knowledge of the instructor, considered correct and complete when distributed at the beginning of the term. The instructor, however, reserves the right, acting within policies and procedures of Marshall, to make changes in the course content and/or instructional techniques during the term without notice or obligation.**  **Student Conduct: Student rights and responsibilities are outlined in the Marshall catalog, page 34. Especially, the infractions and violations listed under "Conduct, Rights and Regulations" will be enforced in this class. Students who disrupt class may be removed from class (failing all of the activities for the day) on a daily basis, as warranted, by the instructor. Continuing behavior problems will result in an instructor drop of the offending student.**  **Cell Phone/Ipad/anything electronic: Telephones may be set to vibrate during regular class times. If an emergency call comes through, please leave the class before you answer it. Otherwise, just enjoy the vibration. If during an EXAM, ANY of these devices are “on” or “visible”, they belong to me and you get a zero (0) on that exam*.*** |

**Required Textbook & Materials:** Physics 204 Laboratory Manual (current year; be careful, bookstores sell old ones which are significantly different), Scientific Calculator.

**General Instruction:**

The primary goal of these labs is to develop an understanding of the physics principles that you learn from your lectures about mechanics. You are expected to learn concepts, experimental procedure, and computation steps for each experiment. This process should enhance the learning that takes place in the lecture class.

**During the Lab Session:**

The class will meet once a week and you are required to complete the Lab during the Lab section. You will work with your party. You will have to set up apparatus, test to see if it works, make predictions, collect data, and discuss results and answer questions as you follow your Lab manual. I would like to emphasize that the Lab will be a team work, so I expect all persons in the team work together. I will not accept that one person is working while another person is just watching.

You are expected to complete data collection within the two hour class period. Actual data values often vary from laboratory table to table. At the end of the laboratory period you are to have the instructor initial your data sheets as a consistent part of the procedure and so that they can ‘catch’ big boo boo’s before you leave the room (and equipment goes away). Usually, any error between experiment and theory > 10% means a mistake (often misreading an instrument, failed instrument, or conversion of units error). Calculate % error on the fly, and immediately inform your instructor of any error > 10%.

**Before you leave the Lab, have your Instructor initial your data**. If there is a boo-boo, it can be remedied on the spot.

If need be, you can finish calculations, answer the Conclusion questions, and write a Concluding Report after class and before the next class. If the calculations give you problems come and ask questions during the laboratory or during an office hour.

It is expected that you understand what you will be doing in the Lab before you come in, so you must read your Lab manual before you come to the Lab. I will give very short quizzes to check your understanding of the **current lab**.

***Lab Report***

Your laboratory report should include:

* Data tables filled in from your lab manual
* Calculations: you should show all the calculations no matter how simple or complex.
* Questions in manual answered
* Concluding Report\*.

\* Concluding Report:

There should be statements about:

* Discussion of your results for the lab. Do they qualitatively support the relevant theory?
* Comparison of data with theory. (There should be error analysis and list of sources of error.)

The discussion will show if you understand what you are doing in the experiment. The discussion is typically from one-half to one page long.

I would like to emphasize that the Lab is a team work, but the Concluding Report and the Lab Conclusions must be individual work. If several Lab reports or Lab homework look the same, the score of each work will be the actual score of the work divided by the number of copies.

The Lab Conclusions are the best measure of what YOU have taken away from the lab experience. Thus, they are prime bait for exam questions. If you receive points off for any of these, it is your job to get it right before the Exams.

***Deadline:***

Lab reports are due at the *beginning* of the next Lab period. You have to complete your reports at home, not in the Lab. Lab report and Lab homework will have 5% deducted each day it is late and will not be accepted for grading if it is more than a week late. If you are absent on the due date, you should turn in the lab as soon as you can to my office or the department Office and not wait until the next Lab period.

***Absence:***

You should try to arrange to join another Lab at different time. Make-ups, once the week has past, are difficult because equipment is torn down. There is a last-ditch chance to make up labs during dead week; this is not optimal since: a) you will have a lab exam on some of them, and b) you need the time to be readying yourself for Final’s.

\*\*Other Labs Each Week where make-ups should be done:

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| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | T | 08:00a - 09:50a | | S | 103 | Richards, Howard | | T | 12:00p - 1:50p | | S | 103 | Shanholtzer, Wesley | | W | 11:00a - 12:50p | | S | 103 | Fan, Xiaojuan | | W | 1:00p - 2:50p | | S | 103 | Foltz, Curtis | | R | 08:00a - 09:50a | | S | 103 | Foltz, Curtis | | R | 10:00a - 11:50a | | S | 103 | Shanholtzer, Wesley | | W | 4:00p - 5:50p | | S | 103 | Fan, Xiaojuan | |  | | |  |  |  |  |
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***Exams:***

We will have two exams:

-Exam1: First 6 experiments

-Exam2: Remainder of experiments

**Department Policy: you must pass one of these exams to pass the lab course**.

***Grading:***

Your grade for the course will be calculated as follows:

Quizzes 10

Lab reports: 40

First Exam: 25

Second Exam: 25

**Total points 100**

**Notes to the Wise**: Your lab experience (and performance in lecture) will be more pleasant and fruitful if you pre-read each lab.

A schedule of labs is appended. Also, you are more likely to finish the lab in a timely manner (there may be exceptions).

Week: Experiment:

Jan. 13-17 Lab 1: Law of Charges

Jan. 20-24 Lab 2: Electric Field & Potential

Jan. 27-31 Lab 3: Kirchhoff’s Laws

Feb. 3-7 Lab 4: Introduction to the Oscilloscope

Feb. 10-14 Lab 5: The RC & RL Series Circuit

Feb. 17-21 Lab 6: The LRC Resonant Circuit

Feb. 24-28 Lab 7: Transistor Amplifier Characteristics

Mar. 3-7 *Make-Up Labs/Review Sessions*

**Mar. 10-14 First Lab Exam: Labs 1 – 6**

*Mar. 17-21 Spring Break*

Mar. 24-28Lab 8: Reflection & Refraction

Mar. 31-Apr. 4 Lab 9: Thin Lenses

Apr. 7-11 Lab 10: The Telescope & The Microscope

Apr. 14-18 Lab 11: Diffraction & Interference

Apr. 21-25 Lab 12: The Atom

*Apr. 28-May 2 Dead Week (Make-Up Labs/Review Sessions)*

**May 6 8:00 am Second Lab Exam: Labs 7 – 12**