Phy.202 §206 (CRN 5680) 2017 Spring Syllabus (General Physics I Lab)

Course-Section Web Site: www.science.marshall.edu/foltzc/p20217s.htm

Class meets _W_ 15:00-16:50 (=3pm-4:50pm) in Science 100, from Jan.11 – May.03 (Exam 2)
Attendance at each lab meeting is required; you must do the lab work before reporting on it!
If you expect to miss a lab, contact me early so we might slip you into a different Lab section.
I will supervise a few make-up opportunities during the semester, maybe Friday/Saturday.
Exam 2 will occur during Finals week on May.03, at our regular time 3:00pm.

Instructor: Dr. Curt Foltz ; Science 159 ; foltzc@marshall.edu ; (304) 696-2519
office hours: _T_R_ 12:00–1:00pm + 5:30–6:30pm ; _W_ 12:30–2:30pm ; M__ 2:30–3:30pm
other times by appointment or chance; see www.science.marshall.edu/foltzc

Catalog Course Description: PHY 202 General Physics I Laboratory. 1 hr
Laboratory to accompany Physics 201 or Physics 211, focusing on mechanics, concepts and applications. 2 hrs. Lab (CR: PHY 201 or PHY 211).

This lab course emphasizes physical concepts, over techniques of measurement and analysis, so is intended for Natural Science majors. It is a pre-requisite for Physics II and Physics II Lab. (for less math but faster pace with less depth, consider Phy.101 or PS 109 surveys)

Required: workbook: Physics 202 Laboratory Manual. by MU Physics Dep't, (2016)
calculator : non-programmable, with buttons (not menu) for EE or EXP , x^2 , $\sqrt{x}$, cos , $\sin^{-1}$
pen or pencil; erasable pencil is recommended for data, answers, calculations and computation
attendance: (with pencil, calculator, LabManual, textbook) at each class meeting, ready to learn
time & effort: outside of class, about 2 effective hours/week to complete assignments

Recommended: notebook with lined pages … easier to use than plain blank printer paper.
a positive attitude … we're trying to embed these concepts deeply, not waste your time.
preparation … some labs (esp. 2nd half) might be done before topics are covered in Lecture.
cooperation with lab partners … best way to learn is to teach, best instruction is by peers.
balance … between struggling to understand (yourself) , and asking when you don't.

Overview: Phy.202 is a hands-on "guided investigation" through a few classic scenarios of kinematics, mechanical motion, oscillations and waves, and thermal phenomena. The reason to do the activities and record data from the computer screen is so you have specific results to thoughtfully describe and explain and evaluate, to connect them to Physical theory. These labs concentrate on the most straightforward foundations to make sure they are solidly understood – there are plenty of lecture topics which are not even hinted at in this set of labs.

Most work can be done in-class, reaching consensus with your lab partners (we will typically work in trios). Predictions, data, and essay answers are to be written into the workbook during the lab period. The lab instructor must initial your workbook for them to be graded later.
Switch roles often so each partner practices manipulating, measuring, and mouse-running.
Always watch the details of your partners' activity with a skeptical attitude, to avoid blunders; if 2 partners measure the same thing and get 2 different results, one might have fooged up.

Much of the "lab learning" happens while writing your conclusion. Write it by yourself (solo), outside of class, isolated from discussions with others about what "ought to be concluded". In the conclusion: mention what the lab was trying to demonstrate, summarize the results that your team obtained, comment on whether they are what *ought to be expected* based on theory, and either suggest why they are not, or what measurements make you most uncertain that they are (as expected). Multi-variable propagation of measurement uncertainties is overkill.

Unfortunately, much of each lab report score is based on home-work (textbook) style questions that are related to the lab topic; these may be discussed with others, but only using words ! (not numbers, letters, or math symbols – that's cheating).

Staple your Homework and Conclusion that lab's Worksheet set (including graphs, if asked for), and turn in the entire report at the beginning of the next lab meeting.
Do include your lab partners' names on the first page ("L.P: Jane D & Joe S")
You will receive the graded report at the lab meeting after – yes, 2 weeks after doing the lab.

Department policy requires 2 lab exams; nothing on the exams is to be discussed with others. The Exams will not be homework-based; they will include a hands-on "practical" portion.

Grade Components: 12 Lab Reports × 5% each = 60 %
2 Lab Exams × 20% each = 40 %

Letter Scale: 100% > A > 90% > B > 80% > C > 70% > D > 60% > F …
with the additional condition that you must have done (to conclusion) at least 9 of the labs, and the additional condition that you must pass (>60%) at least 1 Exam, to pass the course.

date	lab # , title		
Jan.11	1 , Introduction to Motion		
Jan.18	2 , Accelerated Motion		
Jan.25	3 , Mathematical Description of Motion		
Feb.01	4 , Projectile Motion		
Feb.08	5 , Force and Motion		
Feb.15	6 , Circular Motion		
Feb.22	7 , Work and Energy		
Mar.01	*Make-up Labs and prep for Exam 1*		
Mar.08	**Exam 1** , including Labs 1 – 6 (but not Lab 7)		
Mar.15	8 , Collisions 9 , Simple Harmonic Motion		
Mar.22	- *Spring Break – no Labs*		
Mar.29	9 , Simple Harmonic Motion		
Apr.05	10 , Periodic Motion of a Pendulum		
Apr.12	11 , Longitudinal Waves and Sound		
Apr.19	12 , Temperature and Heat … due Apr.24 (Mon)		
Apr.26	*Make-up Labs and prep for Exam 2* … Lab 12 returned		
May.03	**Exam 2** , including Labs 7 – 12		

Statements that are valid for ALL Classes at Marshall:

These are printed in your MU catalog – the current version is also on-line at
www.marshall.edu/wpmu/academic-affairs/?page_id=802/

+ Academic Dishonesty Policy: progress in science is founded on honesty and openness – no lying, no cheating, no stealing (plagiarism) – zero tolerance!

+ Computing Services' Acceptable Use Policy :, don't "lend" your account, or send spam from it, or solicit from it … remember to LOG OUT before leaving the Lab!

+ Incomplete Grade Policy: to receive an "I", you must have completed ¾ of the course successfully (*i.e*, passing); course work must be completed within 1 semester (*i.e*, by 2014 May)

+ Students with Disability Policy: the student must initiate procedures to document a disability, then request accommodations, thru the Office of Disability Services (Prichard 117).

+ Inclement Weather Policy: don't over-risk your safety to get to class

Some Student Learning Outcomes: based on the Attributes of Core II Physical & Natural Science

Student Learning Outcome	Practiced	Assessed
based on observation & measurement	each lab in workbook	conclusions, exam Q
control, manipulate, & measure via devices	each lab performance	exam Q & P
collect & analyze data, notice uncertainties	each lab in workbook	conclusions, exam Q
formulate hypotheses & design exp'tal tests	most labs performance	conclusions, exam Q
interpret & communicate results	each lab in workbook	exam Q
validity from calibration, precision, accuracy	each lab performance	exam Q
uncontrolled variables muddle interpretation	some lab performance	conclusions, exam Q
basic principles of equipment design & use	most lab performance	exam Q & P
explanation relates to concept via math logic	some labs in workbook	homework, exam Q
reasoning with correct vocabulary	each lab in workbook	conclusions, exam Q
numerical predictions of observable quantity	each lab in workbook	homework, exam Q

As you can see from the above table, the Exams are more important than any one Conclusion – so treat the conclusions as practice thinking (deeply about the experiment) before the Exams!