Phy.204-205 2014 Spring (CRN 2225) Syllabus (Gen.Physics II Lab)

Instructor: Dr.Curt Foltz ; foltzc@marshall.edu ; Science 159 ; (304) 696-2519
office hours: M 9:30-12:30 , T 10:30-12 , W 11:30-12:30 , R 10:30-12 , F 9:30-12:30, and app't.

Class meets W 1:00–2:50pm, from Jan.13–May.02 in Science 103 ; Exam 2 is Fri.May.09 @ 12^{45}
You are expected to enroll in Physics II Lecture during the same term as Phy.204 Lab.

Absences: contact me ASAP and we'll try to slip you into another section that week (W4,R10)

Phy.204 is : a 1-credit Lab course intended for Natural (not Physical) Science majors, so it mostly tries to show the lecture concepts, and concentrates on using basic tools.

Prerequisites: Phy.201 or Phy.211, and Phy.202 or Phy.212
Physics II Lab expects that you learned the core facts and ideas and skills from Physics I – if you did not, it is your responsibility to recognize what you're missing, to learn it now. Read the Lab Manual with this in mind – if it doesn't make sense, see me before Lab.

Required: Physics 204 Lab Manual, 2013 ed. by *Marshall University*, from Van Griner (2014)
calculator : non-programmable, with buttons (not menu) for EE or EXP , x^2 , $\sqrt{x}$, cos , $\sin^{-1}$
pen and/or pencil : multiple colors might help ; erasing of blunders WILL be allowed
attendance : at each class, ready to learn (with pen, pencil, calculator, manual, textbook)
MU email access … I'll use your marshall address as an official communication channel.
time & effort: in class and out, ≈ 4 effective hours/week to analyze, contemplate, & write

Recommended: web browser … for any Phy.204 web site content, and to links beyond it
a physics textbook … with index … so you can look up stuff that you don't know (yet)
a positive attitude … we're trying to provide learning experiences (not waste your time).
preparation … some labs might be on topics that your Lectures have not yet treated.
cooperation with lab partners … best way to learn is to teach, best instruction is by peers.
balance … between struggling to understand by yourselves, and asking when you don't.

Grade Components : 12 lab reports × 5% each = 60 %
2 lab exams × 20% each = 40 % (⅓ practical, ⅔ paper)

Letter Grade Plan : 100% > A > 90% > B > 80% > C > 70% > D > 60% > F …
with the extra condition that you must pass (>60%) at least 1 exam to pass the course.

Overview: Phy.204 is a set of experiments & measurements to show classic phenomena in electricity, magnetism, optics, and radiation. The 204 labs are harder to understand than the 202 labs, because electricity is microscopic and invisible. You'll need diagrams that represent microscopic behavior, to connect lab results with (lecture) theory. Read the Lab thoroughly – isolate what you don't understand – then study that stuff before lab begins. You'll need a good idea of what *should* happen, to distinguish useful data from "garbage" (instrument mis-read? wrong setting? loose connection? fried device? wrong assembly?). The labs are done in pairs (not trios), so there's only one other to ensure that you're right. Teams will assemble their own lab setups, adjust settings, then measure quantities in it; all teams should find similar relationships, even if using much different values.

Physics 204 Lab reports consist of:

(1) diagrams drawn which show what setups were used and what was measured
(2) data, often in table format, of those measurements … with Units !
(3) results computed from that data (with Units!) which are relevant to theory
(4) computations of percentage difference between two (or more) experimental results, and a paragraph discussing those differences (or similarities)
(5) a paragraph of generalized conclusions regarding what was learned during the lab.

=> Your lab reports should be your primary study aids to prepare for the Lab Exams.

Schedule Plan :	Jan.15	Jan.24	Jan.29	Feb.05	Feb.12	Feb.19	Feb.26	Mar.05
	~~*asbestos*~~	Lab 1	Lab 2	Lab 3	Lab 4	Lab 5	Lab 6	Lab 7

Mar.12	Mar.19	Mar.26	Apr.02	Apr.09	Apr.16	Apr.23	Apr.30	Fri.May9
Exam 1	~~*break*~~	Lab 8	Lab 9	Lab 10	Lab11	Lab12	~~*make-ups*~~	**Exam 2**

If MU is closed during Tue, Wed, or Thr , we will need to modify the schedule above.

Physics 204 Students will:

treat the observation and measurement of Nature as the foundation of the science subject
obtain hands-on experience and develop skill in using devices to control, manipulate, and measure
practice empirical data collection and careful mathematical analysis, and be aware of uncertainties
make observations, formulate hypotheses, and design experiments to test them
appropriately interpret experimental results and communicate them effectively
discuss the roles that calibration, precision, and accuracy play in validity of experiments
recognize uncontrolled variables in their interpretation of experimental results
be able to discuss basic principles inherent in the design, production, and use of our equipment.

Statements that are valid for ALL Classes at Marshall:

Academic Dishonesty Policy : honesty is the foundation of science. see pp.66-70 in the catalog : www.marshall.edu/catalog/undergraduate/ug_10-11_published.pdf

Affirmative Action Policy : equal opportunity at Marshall is on pp.63-64 of the catalog

Computing Services' Acceptable Use Policy : don't "lend" your account to others ; don't send spam from it, or solicit from it. see www.marshall.edu/ucs/CS/accptuse.asp

Incomplete Grade Policy: to receive a grade "I", you must have done ¾ of the course work, at an acceptable (passing) proficiency (percentage) ; see pp.86-87 in the catalog.

Students with Disability Policy : the student must initiate procedures … first, see info at www.marshall.edu/disabled/ … then, contact the Office of Disabled Student Services (in Prichard Hall 117 , phone 696-2271) , which will communicate with me.

Inclement Weather Policy: don't overly-risk your safety trying to get to or from class in a blizzard, flood, or tornado. See pg.64 in the catalog.