

## Phy.203 §201 2014 Spring (2214) Syllabus (General Physics II)

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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

Phy.203 is : a 3-credit undergrad course, intended for Natural (not Physical) Science majors.

(Chem, Engr, Geol, and Math majors should consider Phy.213+320 instead of Phy.203)

You are expected to enroll in Phy.204 Laboratory during the same term as Phy.203

Class meets in Sci.277, M\_W\_F 8-8:50am, Jan.13 - May.02 ... final Exam Mon.May.05, 8am

Classes will include many questions & exercises - the class is customized for participants.

if you do not routinely participate during class, you cannot complain that it is not useful

Absences: if you miss a Quiz or Exam, schedule with me before the next class to make it up

- otherwise the make-up assessment will probably not be of similar difficulty (oral?).

Prerequisites: PHY 201

Most students finish 201 with a few bad habits and some holes in their understanding.

Do NOT try to hide these by blindly copying someone else's work or a textbook example!

Rather, mention them in class (or after class) so we can patch those weak spots ASAP.

Required textbook: *Sears & Zemansky's College Physics* 9th ed. by Hugh Young ... Volume 2

from Pearson/ AddisonWesley (2012) ... (readings will be from Ch.17 - Ch.30, in vol.2)

calculator : non-programmable, with keys (not menu) for EE/EXP,  $x^2$ ,  $\sqrt{x}$ ,  $\cos x$ ,  $\sin^{-1} x$ ,  $e^x$

web browser : for our Phy.203 web site (on CoS server) and to useful links beyond it

(MU-Online, *MasteringPhysics*, PhysicsForums, KohnAcademy, etc.) see "topic links"

at left edge of the course web site: [www.science.marshall.edu/foltzc/p20314sp.htm](http://www.science.marshall.edu/foltzc/p20314sp.htm)

attendance: (with pen or pencil, calculator, textbook) at each class meeting, ready to learn

time & effort: in class and out,  $\approx$  8 effective hours/week to read, do assignments, ponder

MU email access: I'll use your Marshall address as an official communication channel.

Recommended: notebook with lined pages ... extremely useful ! (out-of-class and in-class)

courage ... to ask for help before you're hopelessly lost (in class) ... or between classes

study partner ... it's way more fun than by yourself, & can be more thorough (peer view)

Maybe try: update your Physics concept map weekly (show me) ... maybe color-code it.

a workbook - not-for-dummies (*Shaum's Outline*, or *Boone's MCAT Physics Guide*).

a different textbook's treatment for some topic (borrow from Drinko or Sci.159)

(for serious self-study: books by *Walker* or *Urone* or *Giordano* or *Knight* or *VanHeuvelen* )

(for easy-read concepts: books by *Hewitt* or *Gonick* or *Dixon*).

Schedule Plan: the course will split into 4 Units (each Unit contains about 3 Chapters)

(1) Electricity ; (2) Magnetism & AC ; (3) Optics ; (4) Atoms & Nuclei

Unit Exam - 60 minute, closed-book, closed-notes solo event, to relate topics of that Unit to

each other and to topics in previous Units (all Exams are essentially "comprehensive").

Exam pg 1 has key formulas, not equations. NO 3x5 cards, NO graphing calculators.

Exam 1 (60 pt) Feb.12 ; Ex.2 (40 pt) Mar.07 ; Ex.3 (60 pt) Apr.11 ; Ex.4 (40 pt) May.07

Topic Quiz - 15 minute, closed-book, closed-notes solo event, will *focus on* the recent topic. mult.choice/completion/match/rank for vocabulary, units, facts; 1 or 2 “plug & chug” questions and usually one indirect scenario to describe (4-6 sentence or 2-3 equation).

Homework assignments will be posted on each Topic web page, linked to from p203 page. “Suggested practice” will not be graded, but should guide our classroom activities. Some graded homework will be on paper, about half will be on-line and should inform your out-of-class study activities before the Quiz. Plan for 2 HW sets for each topic.

Overview: Physics 203 is the second half of a two-semester sequence, introducing concepts & principles which describe and explain the physical world’s behavior. Students should expect explanations for change to be based on objects interacting with their environment.

In Physical Theory, Fundamental Fields (Gravity, Electric, Magnetic, Strong, Weak) arise from sources, and cause influence to another object’s modifiable properties (*via* Force); each conserved quantity (momentum & Energy, Angular momentum, charge, mass) has a current (*via* geometry) which carries a related field as it travels, doing *Least Action*.

Students will apply theories to simplified scenarios in diverse situations (from biology, chemistry, technology) to describe them with concepts and numbers. Students will use diagrams to represent the invisible, graphs to show relationships, cause-effect wording to describe processes; will translate words & diagrams in-to and out-from symbolic forms (equations & formulae), will manipulate symbols to obtain new statements, and will interpret their calculated results in terms of predicted behavior in the original scenario. Students will become familiar with typical sizes for important quantities, on a few scales.

Equations and formulae are much easier to apply correctly if one knows the vocabulary and geometry; they are much easier to remember if one understands why each term is “as it is”. My approach to Physics II is to make this explicit, as early as is feasible.

Before class to start a topic, study the pictures & their captions, to dissect the equations. Ask in class when you don’t understand what we’re doing and why it works; how to tell? Do some exercises before trying the problems that are graded! (it saves time, eventually). Do some practice problems before the Quiz ... do some different ones before the Exam. Set-up twice as many answers as you solve; read twice as many problems as you set up. Before a Quiz or Exam, use summaries, notes, vocabulary, and concept maps to make up questions that might be on it; can you answer your study partner’s practice questions?

Point Plan:  $4 \text{ exams} \times 50 \text{ points(avg.)}/\text{exam} = 200 \text{ points}$  (58 % of the total course grade)

$10 \text{ quizzes} \times 10 \text{ points}/\text{quiz} = 100 \text{ points}$  (29% of the course grade)

$15 \text{ homeworks} \times 3 \text{ pts(avg.)}/\text{hw} = 45 \text{ points}$  (13% of the course grade)

The quizzes and home-works count is approximate ... if the count decreases, then the “points each” will remain constant, so total points (and %) in that category will change; if the count increases, I’ll drop your lowest quiz or homework score.

Letter Plan:  $100\% > A > 85\% > B > 75\% > C > 65\% > D > 55\% > F$

I may adjust any letter boundary downward at any time without advance notice.

### Flexibility Disclaimer:

Several situations might occur during the semester that would require us to modify our schedule. Exam 4's date is not likely to change, but nothing else is set in stone. I will obtain class approval before making any big changes (say, skipping Quiz 5), but don't sweat the small stuff. Ok?

### Phy.203 students will:

internalize a base of facts and theories needed to understand Physics II subject matter  
be able to point out unifying principles behind this phenomena (many are atomic-scale)  
employ mathematical and/or logical rigor to relate scientific concepts and explanations  
discuss reasoning on open-ended science-related issues, using science vocabulary correctly  
make quantitative predictions of observable quantities, in approximately realistic scenarios  
grow in their ability to synthesize more complex results from more basic observations  
recognize that Science is built upon the enduring base of fact, but its interpretation is tentative  
recognize assumptions in a chain of reasoning, judge their validity, and explore implications  
read science texts critically, and interpret them with comprehension, correctly

### 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](http://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/acptuse.asp](http://www.marshall.edu/ucs/CS/acptuse.asp)

Incomplete Grade Policy: to receive a grade "I", you must have done  $\frac{3}{4}$  of the course work, at an acceptable proficiency (passing with a "C" 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/](http://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.