

Physics 213 : University Physics II 2016 Spring (CRN: 4635) Syllabus

Meets Mon+Wed+Fri 13⁰⁰ – 13⁵⁰ + Mon 12⁰⁰ – 12⁵⁰, in Sci.277 (54 hours in-class, + final)

PHY 213 is a 4-credit course for majors in a Physical Science, Math, or Engineering.

You are expected to enroll in Phy204 (or 214) during the same term as Phy.213.

Instructor : Dr. Curt Foltz ... Science 159 ... foltzc@marshall.edu ... 304 696-2519

Office hours: M_W 9³⁰-11³⁰; F 10³⁰-12³⁰; TR 13³⁰-15³⁰; W 14³⁰-16³⁰; and by chance

Do stop by my office, anytime 9-6³⁰. I'll put a note on my office door if I'm elsewhere.

Regular Attendance & Diligent Preparation is expected - Tenacious Attention anticipated

- lecture activities will sometimes show a different perspective than our textbook has.
- Classmates' discussion issues have much greater impact on your learning if you participate.
- Necessary recitation / practice / exercise is not as much fun, if done outside of class.
- Commentary that accompanies an example problem solution is important for understanding.

Prerequisites: Phy.211 (or Phy.201), and Mth.230.

When you encounter ideas from these courses that are hazy, try to sharpen them.

(textbook? a study partner can be much more help here – see me if they are not).

Text: **University Physics with Modern Physics**, 13th ed. by Young & Freedman (Pearson 2012)

Web browser : course home page: www.science.marshall.edu/foltzc/p21316s.htm

WebAssign.net account, for rapid feedback on some homework sets: key marshall 6028 5568

email access : I will use your marshall email address for official communications

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

time & effort: outside of class, 6-8 effective hours per week to undertake assignments

Recommended : notebook with empty pages (to use in class, and outside of class)

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

study partner : it's usually more fun and more thorough than studying by yourself

occasional access to a different book, for a new perspective on a sticky topic

(*concepts*: Lightman, Mills, Beiser, Dixon, Barrett ; *practical*: Schaum's Outline

(*different*: Tom Moore, Reese, Constant ; *advanced*: Feynman, Lorrain, Shadowitz)

Objectives: Phy.213 is part two in a three-semester sequence introducing the concepts and principles which describe and explain the physical world's behavior. Theories relate a field & potential (Electric, Magnetic, Strong) to its source by causal logic, and to its influence on quantities immersed within it (*via* Force, Work, Impulse, Action, *etc*). Students will simplify scenarios (from astro, bio, chem, geo, space, electronics, technology) to obtain conceptual and quantitative descriptions of the processes which would ensue. Students will represent invisible quantities on diagrams, will graph relationships, and will use cause-effect wording to describe processes. Students will translate between words, diagrams, and symbolic forms (math). Students will manipulate symbols with algebra and calculus to obtain new statements, will interpret calculation results in these scenarios, and will use appropriate numerical quantities (with units!) to compute formerly unknown variables. Students will practice recognizing typical magnitudes for quantities on atomic, human, and planetary scales.

Second half of an introduction to physics for students of physical science or engineering, using calculus and vectors by components: E&M fields, circuits; ray optics, interference; atoms, nuclei

The subjects split naturally into 4 Units, so we'll have 4 Unit Exams (#4 as final Exam).

We'll have 2 or 3 Topic Quizzes per Unit ~ every 2 chapters – nearly every week.

200 pts = 4 Exams \times 60+40+60+40 pts/Exam (Feb, Feb, Mar; May.06 @12:45)

100 pts = 10 Quizzes \times 10 pts/Quiz

75 \pm 10 pts = 16 \pm 2 HomeWork sets \times 5 pts/HW (lowest 1 dropped)

+ 25 \pm 5 pts = 25 \pm 5 ClassWork sets \times 1 pt/CW (lowest 1 dropped)

400 \pm 8 pts \Rightarrow letter grade boundaries plan : A > 85% > B > 77% > C > 68% > D > 60%

Rules : If you miss a quiz or exam, contact me before the next class to arrange a make-up.

Late homework will be out of 3 points (not 5); out of 1 after that set's solutions are posted.

Homework will be posted at www.science.marshall.edu/foltzc/p21315f.htm or at webassign

“suggested as practice” will not be graded, but should guide our classroom activities.

do some practice before the graded problems; some before a quiz, some before exams

solutions on paper (HW, Quiz, Exam) must show an intermediate step for the answer to count.

expect about half the HW questions to be graded via webassign, but practice steps on paper!

Physics II digs deeply into the *properties* and *behavior* of physical *objects* and *fields*.

Phy213 bridges from classical view (objects distinct from fields) to a modern view.

We might spend 30% of our effort on objects, 40% on fields, 30% on math/geometry.

We will use vector components, and take derivatives of functions, with no hesitation.

We will integrate functions and change integration variables, gently with commentary.

We will draw pictures of vector fields (in 3+1 dim), and “translate” to calculus.

Suggestions: look at the chapter pictures & read the captions, before class begins.

ask questions in class when you don't understand what we're doing, and why do it like that

try a few practice problems, before next class – participate in discussion of them

We'll engage in recitation activities whenever we need our memories stirred.

Statements that are valid for ALL Classes at Marshall: Academic Forgiveness/Affirmative

Action/Dead Week/Sexual Harassment/Academic Rights & Responsibilities

see www.marshall.edu/catalog/files/ug_15-16_final_published.pdf for current details

Academic Dishonesty Policy: honesty is the foundation of science.

Class Attendance Policy: don't come to class if you're really sick – but do email me that day!

Incomplete Grade Policy: “I” requires that you've done $\frac{3}{4}$ of the course already, on-track for a C

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 over-risk your safety trying to get to/from class in a blizzard.

Computing Services' Acceptable Use Policy : don't “lend” your account to others ; don't send

spam from it, or solicit from it. For details, see www.marshall.edu/ucs/CS/accptuse.asp