

## Physics 213: University Physics II 2018 Fall (CRN: 3695) Syllabus

Meets Mon 10–11<sup>50</sup> +Wed+Fri 11<sup>00</sup>–11<sup>50</sup>, in Sci.277 (58 in-class “hours” of 3 ks + final)

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

You are expected to enroll in Phy204 during the same term as Phy.213.

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

Office Hours: MTWRF 12:30 – 14:00 & \_W\_F 9:30 – 10:30 & most M\_W\_F afternoons

Do stop by my office, anytime 9-6<sup>30</sup>. 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.
- Class discussion issues have a 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&Mth.229), Co-requisites Phy.204 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**, 14th ed. by Young & Freedman (Pearson 2016)

Web browser : course home page: [www.science.marshall.edu/foltzc/p21318f.htm](http://www.science.marshall.edu/foltzc/p21318f.htm)

on-line homework account, for rapid feedback on homework (MasteringPhysics)

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 ... in 159/281

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

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

Objectives: Phy.213 is part two in a 2-or-3-semester sequence introducing the concepts and

principles which describe and explain the physical world's behavior. *Source quantities*

contribute to fields & potentials (Gravity, Electric, Magnetic, Strong) in their vicinity, which

influence *field quantities* immersed within them (*via* Force, Impulse, Work, Power, Action).

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 quantities. Students will

practice recognizing typical magnitudes for quantities on atomic, human, and planetary scales.

Physics II digs deeply into the *properties* and *behavior* of physical *objects* and *fields*. It bridges from classical view (items compress at contact) to modern view (items are field resonances). 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 draw pictures of vector fields (in 3+1 dim), and “translate” to symbolic math. We will integrate functions and vector components, gently with diagrams and commentary.

We will spend about 5 in-class hours on each Topic – 2 or 3 related textbook chapters/Topic. Textbook “suggested practice” will not be graded, but should guide our classroom activities (do odd exercises and practice problems before the graded set; do graded set before the Quiz). Solutions on paper (Quiz, Exam) must show intermediate steps for the answer to count – at all – Topic Homework will be graded on-line, electronically, but practice writing steps on paper! We’ll have 2 or 3 Topic Quizzes per Unit ~ 2 chapters/topic – nearly one quiz per week. We’ll group Topics into 4 Units (*E, B, S, ψ*), so we’ll have 3 Unit Exams and a Final Exam.

50 pts = 10 HomeWork sets × 5 pts/set                      (typically ½ slope above 3 out of 5)  
100 pts = 10 Quizzes × 10 pts/Quiz                      (typically ⅔ slope above 7 out of 10)  
200 pts = 4 Exams × 60+40+60+40 pts/Exam (Sep, Oct, Nov; Tue.Dec.11 @10:15)  
350 pts => letter grade boundaries plan : A > 85% > B > 75% > C > 65% > D > 55%

Absence Rule: If you miss a quiz or exam, contact me before the next class to arrange a make-up. Late homework will lose 15% per day late, but never more than 50%.

Quiz keys will be posted on Topic pages, past [www.science.marshall.edu/foltzc/p21318f.htm](http://www.science.marshall.edu/foltzc/p21318f.htm) .

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](http://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 ¾ 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/](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 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](http://www.marshall.edu/ucs/CS/accptuse.asp)