

Marshall University
College of Science
Department of Physics

PHY 101
Conceptual Physics
Spring 2018

Instructor: Dr. André Wehner, Science 255, wehnera@marshall.edu, 304.696.2755
Office Hours: TTh 11:00-12:30, 4-6, W 6:30-7:30, or by appointment.

Class: TTh 12:30-1:45, Science 277.

Text: *Conceptual Physics*, by Paul G. Hewitt, 12th ed., *Mastering Physics* online course management system (Course ID: **PHY101S18**)

Course Description

This course provides an introduction to classical and modern physics for non-science majors. It is mainly geared at students pursuing a career in the health professions, such as Marshall's *Communications Disorders (CD)* and *Medical Imaging (MI)* programs, but also serves as a general education (Core II) course. Our study will include mechanics, the properties of matter, electricity and magnetism, light, and atomic physics, with special emphasis on *waves* and *sound*.

We will focus on developing an understanding and appreciation of the beautiful and elegant *concepts* of physics, as opposed to the acquisition of mathematical problem-solving skills. However, you will see the mathematical structure of physics in frequent equations. We will use these equations as guides to thinking. While the format is lecture-based, it is my goal to actively involve the student/class in discussion as much as possible.

Students will learn the scientific concepts and terms and will learn to display a scientific attitude. Students will develop the vocabulary, concepts and background knowledge needed to appreciate current research in physics and technology and its role in society.

This course has as its **prerequisite** MTH 120 or 121 or 123. You are expected to have a working knowledge of high school algebra and geometry. The lab corresponding to this course, PHY 101L, is a **corequisite**. *You will receive a separate grade for the lab.*

Grading

Your grade will be determined as follows:

3 exams @ 20% each = 60%

Final 20%

Homework 15%

In-class participation (worksheets) 5%

No extra credit assignments will be given and the lowest score will not be dropped.

The grading scale will be as follows:

A: $\geq 90\%$ B: $\geq 80\%$ C: $\geq 70\%$ D: $\geq 60\%$

Expectations

I expect you to be on time, prepared for class and to actively participate in the class discussion every day – being prepared means at the very least doing your homework, reading the sections, and looking over notes from previous classes.

Attendance will be recorded, but will not be counted explicitly in the grade. **Four unexcused absences will result in a lowering of the grade. If you miss more than ten classes (excused and unexcused), you will receive a failing grade.**

Physics Is Not Easy: Physics is a subject where **memorization techniques will NOT work**; this is why it is often perceived as a difficult subject. To be successful in this class, understand the individual concepts and how they relate to your favorite example; then be able to apply that concept to many other different problems and situations (the circumstances and required math for each problem may be different, but for each, the concept and approach leading to the answer is the same). To do well in this class, you will have to spend at least 3-5 quality hours per week dedicated to this class.

Homework is an essential part of this course. Homework will be assigned through the online course system *MasteringPhysics* (MP) (www.masteringphysics.com). You will need an access code for MP, which you can get bundled with the textbook at the bookstore or by itself online (it includes an etext of our textbook). Our course ID is **PHY101S18** and will be required to register

for MP. You should use your MU ID (900 number) for MP registration. The textbook (Hewitt, 12th edition) is optional; it is on reserve at the library.

You will need a scientific calculator for this class, and *you will need to know how to operate it*. You are not allowed to use anything but a calculator on a test.

There will be three tests during the course of the term, plus a comprehensive final. The questions on these will remotely resemble the questions from the homework. The solutions you present must be complete, coherent, and well-organized. You must show all work for full credit. Points will be taken off for missing or incorrect units in the answer as well as incorrect numbers of significant digits.

If you have to miss a test for a valid reason (proof required!), you will be allowed to make it up. If you know in advance you will have to miss a test, you should make arrangements to take it early.

You are encouraged to seek help from me during my office hours. Additionally, there are free university tutors available for this course. See current tutoring schedule available at:

<http://www.marshall.edu/uc/tutoring-services/> .

By enrolling in this course, you agree to the University Policies listed below. The full text of each policy is at <http://www.marshall.edu/academic-affairs/policies> .

Academic Dishonesty/ Excused Absence Policy / Computing Services Acceptable Use/ Dead Week/ Inclement Weather/ Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities/ Affirmative Action/ Sexual Harassment

The expectation at MU is that the principles of truth and honesty will be rigorously followed in all academic endeavors. This assumes that all work will be done by the person who purports to do the work without unauthorized aids. In addition, when making use of language and some idea not his or her own, whether quoting them directly or paraphrasing them into his or her own words, the student must attribute the source of the material in some standard form, such as naming the source in the text or offering a footnote. University policies are described in detail at: http://www.marshall.edu/academic-affairs/?page_id=802.

Marshall University is committed to equal opportunity in education for all students, including those with physical, learning and psychological disabilities. University policy states that it is the responsibility of students with disabilities to contact the Office of Disabled Student Services (DSS) in Prichard Hall 117, phone 304 696-2271 to provide documentation of their disability. Following this, the DSS Coordinator will send a letter to each of the student's instructors outlining the academic accommodation he/she will need to ensure equality in classroom experiences, outside assignment, testing and grading. The instructor and student will meet to discuss how the accommodation(s) requested will be provided. For more information, please visit <http://www.marshall.edu/disabled> or contact Disabled Student Services Office at Prichard Hall 11, phone 304-696-2271.

Schedule (tentative)

| Week | Day | Chapters covered |
|------|------|----------------------------|
| | | |
| 1 | 1/9 | 2 |
| | 1/11 | 2 |
| 2 | 1/16 | 3 |
| | 1/18 | 3 |
| 3 | 1/23 | 4 |
| | 1/25 | 4 |
| 4 | 1/30 | 5 |
| | 2/1 | 5 |
| 5 | 2/6 | 6 |
| | 2/8 | Test 1 (Ch. 2-6) |
| 6 | 2/13 | 7 |
| | 2/15 | 7 |
| 7 | 2/20 | 7 |
| | 2/22 | 19 |
| 8 | 2/27 | 19 |
| | 3/1 | 20 |
| 9 | 3/6 | 20 |
| | 3/8 | 21 |
| 10 | 3/13 | 21 |
| | 3/15 | Test 2 (Ch. 7, 19-21) |
| 11 | 3/27 | 22 |
| | 3/29 | 22 |
| 12 | 4/3 | 23 |
| | 4/5 | 24 |
| 13 | 4/10 | 24 |
| | 4/12 | 26 |
| 14 | 4/17 | 28 |
| | 4/19 | Test 3 (Ch. 22-24, 26, 28) |
| 15 | 4/24 | 32 |
| | 4/26 | 32 |
| | 5/1 | 12:45: Final |

Disclaimer: The above schedule, policies, procedures, and assignments in this course are subject to change in the event of extenuating circumstances, by mutual agreement, and/or to ensure better student learning.