Marshall University

College of Science

Department of Physics

PHY 201

General Physics I

Fall 2018

Instructor: Dr. André Wehner, Science 255, wehnera@marshall.edu, 304.696.2755

 Office Hours: MW 9:00-11:00, 4:00-6:00, or by appointment.

Class: TTh 11:00-12:15, Science 277.

Text: *College Physics 4th edition*, by Knight, Modified Mastering Physics (sign up on Blackboard)

**Catalog Description:**

**PHY 201-203 General Physics. 3 hrs. I, II, S.**

A course in general physics for all science majors with the exception of physics and

engineering majors. 3 lec. (PR: MTH 127 or 130 and MTH 122 or 132; CR: PHY 202

and 204 for 201 and 203, respectively; 201 must precede 203)

**Course Description**

Physics is the most fundamental science. Its laws and theories describe the workings of the universe at the most basic level. Physics deals with the structure of matter, the forces acting on matter, as well as the origin and fate of the universe.

PHY 201 is the first part of a two-semester algebra-based introductory physics sequence for **life science, architecture, technology and Earth and environmental science majors.** Many of you will need to take a professional school entrance exam with a physical science portion, such as the MCAT; this course and its second part, PHY 203, should prepare you for it.

We will focus on one cornerstone of classical physics: **mechanics** – the science of motion. We will cover the traditional parts of mechanics: kinematics (description of motion), dynamics (reasons for motion), and statics (absence of motion), as applied to **solids** and **fluids** in a biological context. We will then cover oscillations, waves, sound, and thermodynamics. Should you continue with PHY 203, you will then be exposed to other branches of classical physics, such as electromagnetism and optics.

This course has as its **prerequisite** MTH 127/130 (college algebra) and MATH 122/132 (trigonometry, precalculus). You are expected to have a working knowledge of college algebra, trigonometry, and high school geometry. The lab corresponding to this course, PHY 202, 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%

Online Homework 15%

In-class participation 5%

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

The grading scale will be as follows:

A: ≥ 90% B: ≥ 80% C: ≥ 70% D: ≥ 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.**

Homework is an essential part of this course. You are expected to spend several hours each week on homework. Homework will be assigned through the online course system *MasteringPhysics*. You will need to register for Mastering Physics through your Blackboard account. The access code is included in the textbook at the Marshall bookstore or can be purchased separately online.

You will need a scientific (or graphing) 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. You are encouraged to bring a ruler and graph paper to class.

There will be three tests during the course of the term, plus a comprehensive final. The questions on these will remotely resemble the questions, exercises, and problems covered in class and homework. Since every problem is different, it will do you no good to memorize specific problems. 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.

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

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.

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 | Material covered (chapter) |
|  |  |  |
| 1 | 8/21 | Introduction, PreTest |
|  | 8/23 | 1 |
| 2 | 8/28 | 2 |
|  | 8/30 | 2 |
| 3 | 9/4 | 3 |
|  | 9/6 | 3 |
| 4 | 9/11 | 4 |
|  | 9/13 | 4 |
| 5 | 9/18 | Test 1 |
|  | 9/20 | 5 |
| 6 | 9/25 | 5 |
|  | 9/27 | 6 |
| 7 | 10/2 | 7 |
|  | 10/4 | 8 |
| 8 | 10/9 | 8 |
|  | 10/11 | 9 |
| 9 | 10/16 | 9 |
|  | 10/18 | Test 2 |
| 10 | 10/23 | 10 |
|  | 10/25 | 10 |
| 11 | 10/30 | 11 |
|  | 11/1 | 11 |
| 12 | 11/6 | 14 |
|  | 11/8 | 15 |
| 13 | 11/13 | 16 |
|  | 11/15 | Test 3 |
| 14 | 11/27 | 12 |
|  | 11/29 | 12 |
| 15 | 12/4 | 13 |
|  | 12/6 | 13, Post-Test |
|  | 12/11 | 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.

Student Learning Outcomes for PHY 201

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| --- | --- | --- |
| **Student Learning Outcomes** | **How students will practice each outcome in this Course** | **How student achievement of each outcome will be** **assessed in this Course** |
| Students will learn the subject of Physics and will develop the skills of problem solving and scientific thinking | Understanding conceptual how things work, then start learning how to solve problems involving matter in motion (trajectories) in one- and two-dimensions; solve problems in static and dynamic equilibrium; understand concepts like work, energy, momentum, and implement the laws relating these concepts; rotational kinematics and dynamics; all using the mathematical tools from algebra, and trigonometry | Attendance to Lecture Group Work, Homework, Tests, Examinations. |
| Students will build a strong foundation that will enable them to understand the laws of nature that underline the field of Physics, and constitute a background for other scientific fields.  | State in words and in formulas functional relationships in physics; interpret equations found in the textbook books, and identify *limitations* applying to those equations; properly chose and implement equations to solve physical problems | Attendance to Lecture Group Work, Homework, Tests, Examinations. |
| Students will demonstrate the ability to think critically and will learn the essential skills of approaching and solving real-life problems. | Apply physical principles to everyday life problems, employ critical thinking skills to solve problems. | Attendance to Lecture Group Work, Homework, Tests, Examinations. |
| Students will understand how science operates and the linking of a theoretical model with reality. | Demonstrate the ability to work effectively. Read and interpret graphs and data, being able to fit existing data and predict new data. | Attendance to Lecture Group Work, Homework, Tests, Examinations. |