

South Plains College

Common Course Syllabus: PHYS 1410

Revised Fall 2022

Department: Science

Discipline: Physics

Course Number: PHYS 1410.001

Course Title: Elementary Physics

Available Formats: face to face

Campus: Levelland

Instructor: Dr. Kimberly Bouldin

Office: S70 Levelland campus, B032 (Downtown Lubbock)

Office hours: MW 12:30-1pm (Levelland), 2-2:30 (Lubbock),

TTh 10-11am & 12:30-1pm (Levelland), F 9am-noon (Levelland), *other times by appointment*

Office phone number: 806-716-2950

Email: KBouldin@southplainscollege.edu

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Course Room: S65

Course Description: Conceptual level survey of topics in physics intended to acquaint liberal arts and other non-science majors with the basic laws and vocabulary of physics. A minimum level of mathematics is used.

Credit hours: 4

Lecture hours: 3

Lab hours: 3

Course Textbook: Conceptual Physics by Paul G. Hewitt, 12th edition, required

Supplies: Students will each need a three ring binder, loose leaf paper or a spiral notebook that will fit inside the binder, a scientific calculator (not a phone), and writing utensils.

This course partially satisfies a Core Curriculum Requirement: Life and Physical Sciences Foundational Component Area (030)

Core Curriculum Objectives addressed:

Communication skills--to include effective written, oral, and visual communication.

Critical Thinking skills--to include creative thinking, innovation, inquiry and analysis, evaluation and synthesis of information.

Empirical and Quantitative skills--to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

Teamwork skills--to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

Student Learning Outcomes:

Upon successful completion of this course, students shall be able to:

1. Distinguish between displacement, velocity, and acceleration
2. Solve simple problems involving uniform motion
3. Apply Newton's laws of motion to various physical examples
4. Understand the concepts of momentum and the conservation of momentum
5. Understand the concepts of energy and the conservation of energy
6. Describe the different phases of matter from an atomic perspective
7. Understand how depth of fluid affects pressure and force
8. Understand the concepts of density and buoyant force
9. Discuss the first law of thermodynamics and various means of heat transfer
10. Make simple calculations involving changes in temperature and phase when different systems interact
11. Understand the forces that give rise to oscillatory motion
12. Describe and calculate the basic properties of waves
13. Distinguish between different types of waves and wave phenomena
14. Discuss electric charge and the role it plays in atomic structure
15. Calculate electric forces using Coulomb's law
16. Describe electric field and its effects
17. Understand simple circuits and make calculations using Ohm's law
18. Describe magnetic field and its effects
19. Explain the spectrum of electromagnetic waves and the properties of blackbody radiation
20. Understand image formation using mirrors and lenses
21. Calculate the image position and magnification produced by a simple thin lens
22. Discuss various optical phenomena such as reflection, refraction and dispersion of light
23. Discuss and perform simple calculations related to the quantum nature of matter
24. Describe the functioning of a laser
25. Explain the basic structure of a nucleus
26. Distinguish between the three basic types of radioactivity
27. Use radioactive half-life in simple calculations
28. Describe the basic principles of radioactive dating
29. List the four fundamental interactions and give examples of each
30. Understand the basic concepts of the theory of relativity

Student Learning Outcomes Assessment: A pre- and post-test will be used to determine the extent of improvement that the students have gained during the semester.

Breakdown of Grading:

Lab exercises/homework	10%
Quiz average	10%
Exam 1	25%
Exam 2	25%
Midterm project	25%
Final	5%

Grading scale:

100---A---90, 89---B---80, 79---C---70, 69---D---60, 59---F---0

(**Bonus points** may be given for assignments and activities that are considered above and beyond course requirements. *Students are strongly encouraged to attempt all bonus assignments.*)

Attendance Policy:

Attendance in this class will be taken from completed assignments. Everything done face-to-face in class will be recorded and posted on Blackboard. If a student feels ill with ANY symptoms of COVID-19, the student will be required to stay home and complete the assignments for the day at home.

If you are experiencing any of the following symptoms, please do not attend class and either seek medical attention or test for COVID-19.

- Cough, shortness of breath, difficulty breathing
- Fever or chills
- Muscles or body aches
- Vomiting or diarrhea
- New loss of taste and smell

Please also notify DeEtte Edens, BSN, RN, Associate Director of Health & Wellness, at dedens@southplainscollege.edu or 806-716-2376. Proof of a positive test is required. A home test is sufficient but students must submit a photo of the positive result. The date of test must be written on the test result and an ID included in the photo. If tested elsewhere (clinic, pharmacy, etc.), please submit a copy of the doctor's note or email notification. Results may be emailed to DeEtte Edens, BSN, RN at dedens@southplainscollege.edu.

A student is clear to return to class without further assessment from DeEtte Edens, BSN, RN if they have completed the 5-day isolation period, symptoms have improved, and they are without fever for 24 hours without the use of fever-reducing medication.

Students must communicate with DeEtte Edens, BSN, RN prior to their return date if still symptomatic at the end of the 5-day isolation.

You should always check Blackboard before coming to class in order to make sure that class has not been cancelled due to the instructor's illness.

Computer/Software requirements

Minimum Computer Requirements:

1. Personal computer with a 1 GHz Pentium processor and at least 512 MB of RAM memory, a minimum 5 GB of free hard drive, running Windows 7 / MacOS 10.8 or later (Windows 10 / MacOS 10.12 recommended).
2. Web Browser: Google Chrome seems to work the best with Blackboard and HOL.
3. A high speed internet connection of 5+ Mbps.
4. Microsoft Office and Microsoft PowerPoint and Word software (a recent version, preferably 2016 or higher).
5. Windows Media Player (the latest version).
6. Soundcard and functioning speakers.
7. Knowledge of how to navigate Google Chrome web pages and how to deal with pop-up blockers and other devices and warnings on Google Chrome.
8. Knowledge of how to download files from the Google Chrome and find them on your computer once they are downloaded.
9. Knowledge of basic operations of Microsoft Word and Microsoft PowerPoint.
10. Knowledge of how to view and adjust videos with Windows Media Player.

Additional notes on technology:

I will respond to individual emails as quickly as I can. I will always send a reply email when an assignment is sent through email to let the student know that I have received it. If you send me something through email, and you do not receive a response within 2 days, please resend it. I will always at least touch base with you within a 2-day time period unless I am ill.

Also, a student will not be punished in the even that Blackboard or an SPC server is down when an assignment is due. If you need to print, turn something in, or access something online, please try to do so ahead of time and not at the last minute in order to avoid this situation.

Academic Integrity

It is the aim of the faculty of South Plains College to foster a spirit of complete honesty and a high standard of integrity. Classroom behavior that is not conducive to learning will be dealt with according to the guidelines set forth on the South Plains College Catalog. The attempt of any student to present as his or her own work which he or she has not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offender liable to serious consequences, possibly suspension.

Student Code of Conduct Policy: Any successful learning experience requires mutual respect on the part of the student and the instructor. Neither instructor nor student should be subject to others' behavior that is rude, disruptive, intimidating, aggressive, or demeaning. Student conduct that disrupts the learning process or is deemed disrespectful or threatening shall not be tolerated and may lead to disciplinary action and/or removal from class.

Diversity Statement: In this class, the teacher will establish and support an environment that values and nurtures individual and group differences and encourages engagement and interaction. Understanding and respecting multiple experiences and perspectives will serve to challenge and stimulate all of us to learn about others, about the larger world and about ourselves. By promoting diversity and intellectual exchange, we will not only mirror society as it is, but also model society as it should and can be.

Disabilities Statement

Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request accommodations in this class should notify the Disability Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodations must provide acceptable documentation of his/her disability to the Disability Services Office. For more information, call or visit the Disability Services Office at Levelland (Student Health & Wellness Office) 806-716-2577, Lubbock Centers (located at the Lubbock Downtown Center) 806-716-4675, or Plainview Center (Main Office) 806-716-4302 or 806-296-9611.

Non-Discrimination Policy

South Plains College does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs and activities. The following person has been designated to handle inquiries regarding the non-discrimination policies: Vice President for Student Affairs, South Plains College, 1401 College Avenue, Box 5, Levelland, TX 79336. Phone number 806-716-2360.

Title IX Pregnancy Accommodations Statement

If you are pregnant, or have given birth within six months, Under Title IX you have a right to reasonable accommodations to help continue your education. To activate accommodations you must submit a Title IX pregnancy accommodations request, along with specific medical documentation, to the Director of Health and Wellness. Once approved, notification will be sent to the student and instructors. It is the student's responsibility to work with the instructor to arrange accommodations. Contact Crystal Gilster, Director of Health and Wellness at 806-716-2362 or email cgilster@southplainscollege.edu for assistance.

Campus Concealed Carry Statement

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in South Plains College buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and South Plains College policy, license holders may not carry a concealed handgun in restricted locations. For a list of locations and Frequently Asked Questions, please refer to the Campus Carry page at: <https://www.southplainscollege.edu/campuscarry.php>
Pursuant to PC 46.035, the open carrying of handguns is prohibited on all South Plains College campuses. Report violations to the College Police Department at 806-716-2396 or 9-1-1.

PHYS 1410 Elementary Physics Tentative Schedule Fall Semester 2022

<p>Week 1 Aug 29, Aug 31 Introduction, Ch 1 Lab 1—Fresnel lens and solar power demonstration, Size of the Sun (weather permitting) HW Ch 1</p>	<p>Week 9 Oct 24, 26 Ch 9 Lab 9—Gravity Flatland video HW Ch 9</p>
<p>Week 2 Sept 7 (Sept 5 Labor Day holiday) Ch 2 Lab 2—Size of the Solar System (outside if weather permits) HW Ch 2</p>	<p>Week 10 Oct 31, Nov 2 Ch 10 Lab 10—Projectile Motion HW Ch 10</p>
<p>Week 3 Sept 12, 14 Ch 3 Choose Midterm Project topic on Blackboard Lab 3—1D Air Rocket (Weather permitting) HW Ch 3</p>	<p>Week 11 Nov 7, 9 Ch 22 Lab 11--Electrostatics Review for Exam 2 HW Ch 22</p>
<p>Week 4 Sept 19, 21 Ch 4 Lab 4—Use the Force! Nova video—Mathematical Mysteries HW Ch 4</p>	<p>Week 12 Nov 14, 16 Ch 23 Lab 12—simplest motors HW Ch 23 Exam 2 over Ch 7-22 on Nov 16</p>
<p>Week 5 Sept 26, 28 Ch 5 Lab 5—Egg drop contest Quiz 1 over Ch 1-4 on Sept 28 HW Ch 5</p>	<p>Week 13 Nov 21 (Nov 23 holiday) Ch 24 Lab 13—Simple motor HW Ch 24 (last HW assignment)</p>
<p>Week 6 Oct 3, 5 Ch 6 Lab 6—Momentum HW Ch 6 Review for Exam 1</p>	<p>Week 14 Nov 28, Nov 30 Midterm presentations Days 1 & 2</p>
<p>Week 7 Oct 10, 12 Ch 7 Lab 7—Conservation of Energy/Marble coaster Exam 1 over Ch 1-6 on Oct 12 HW Ch 7</p>	<p>Week 15 Dec 5, 7 Midterm presentations Day 3 Midterm Quiz on Dec 7 Selected topics and demos Bonus projects due by Dec 5.</p>
<p>Week 8 Oct 17, 19 Ch 8 Lab 8—Rotational Motion HW Ch 8</p>	<p>Final exam will be posted on Blackboard by 8am on the morning of Dec 12 and will be due by Dec 12 at midnight.</p>