TEXAS TECH UNIVERSITY
TTU K-12

Physics (PHYSICS) 1A
Syllabus

Course Name

PHYSICS 1A

Physics I – Semester A

Course Information

PHYSICS 1A is the first semester of this two-semester course.

Physics is a course about how the world works. Much of what we see and hear is taken for granted and now you can learn why you see what you see, why you hear what you hear, and why you feel what you feel. Enjoy this time of discovery!

Physics is a course in which the successful student will learn to understand, explain, and calculate the effects of nature. Concepts covered are motion, forces, energy, behavior of matter, and transfer of thermal energy. The student will apply concepts by answering questions, calculating values, and performing experiments to deepen their understanding of their physics knowledge.

Course Delivery Method

Online

Contacting Your Instructor

You may contact your instructor through the Blackboard messaging system. Technical support is available 24/7 at www.k12.ttu.edu.

Prerequisites

This course is recommended for students in Grades 9-12.

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Course Objectives

After completing this course, you should be able to:

1. conduct investigations using safe, environmentally appropriate, and ethical practices;
2. use a systematic approach to answer scientific laboratory and field investigative questions;
3. use critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom;
4. know and apply the laws governing motion in a variety of situations;
5. understand the nature of forces in the physical world; and
6. understand that changes occur within a physical system and apply the laws of conservation of energy and momentum.

PHYSICS addresses the required Texas Essential Knowledge and Skills (TEKS). These can be found at the Texas Education Agency website.

Textbook and Materials

Textbook(s)

Students will need the textbook, *Conceptual Physics*, the *Concept-Development Practice Book*, physics lab pack, and access to a computer to complete this course. You should take notes as you read assigned materials and work through practice activities. You might want to do this the traditional way by keeping a spiral notebook, or you can do it the 21st-century way by keeping your notes on your computer.

The required textbook for this course is:

- Hewitt, Paul G. (2002). *Conceptual Physics*. Upper Saddle River, N.J.: Prentice-Hall. ISBN 0-13-054254-7.

Materials

- Hewitt, Paul G. (2002). *Concept-Development Practice Book*. Upper Saddle River, N.J.: Prentice Hall. ISBN 0-13-054259-8.

- Physics 1A LabPaq, PK-TTU-1 (required; available from MBS Direct)

- Scientific Calculator (recommended; I prefer one with a screen, such as a TI-83, so I can view what I have typed in)

Technical Requirements

- Internet access – preferably high speed (for accessing Blackboard)

- Email
- Word processing software such as Microsoft Word
- Adobe Reader (download from Adobe.com)
- Audio and video capabilities (for watching/listening to course content)

Technical Skill Requirements

Be comfortable with the following:

- using a word processor
- Internet search engines and browsers

Course Organization

This course consists of seven units (15 chapters) with corresponding practice activities, labs, end-of-chapter questions, unit quizzes, and a final exam. All lessons will be submitted electronically.

Each lesson contains the following:

- Introduction and Instructions
- Learning Objectives and Curriculum Standards
- Learning Activities
- Assignments

Each lesson includes several activities that present content knowledge. Each lesson also includes multiple graded assignments to ensure that you learn the content that has been presented in the activities. Some of the assignments are automatically-graded quizzes, and some are written assignments or activities that your instructor will grade. Be sure you read all instructions carefully and ask your instructor for help if something is not clear.

Course Outline

Please note that some assignments will be hidden from you when you start the course. As you move through the lessons and complete assignments, more will unlock for you.

Lesson	Topic	Approximate Time for Completion
Lesson 1	Introduction to Physics	Two weeks
Lesson 2	Unit 1A: Kinematics: Linear and Projectile Motion	Two weeks
Lesson 3	Unit 1B: Kinematics: Newton's Laws of Motion	Two weeks

Lesson	Topic	Approximate Time for Completion
Lesson 4	Unit 1C: Momentum and Energy	Two weeks
Midterm Exam		
Lesson 5	Unit 2: Circular Motion and Universal Gravitation	Two weeks
Lesson 6	Unit 3: Properties of Matter: Liquids and Gases	Three weeks
Lesson 7	Unit 4: Thermal Energy	Three weeks
Final Exam		

Assignment Schedule

Each of the following must be completed to complete the course. Items with an asterisk (*) indicate that these are summative assessments for the course.

Lesson	Weeks	Assignments
1	1-2	Checkpoint 1 (Non-graded) Lesson 1 – Complete Lab: Experimental Errors and Uncertainty Lesson 1 – Complete: Making Informed Decisions Lesson 1 – Quiz: Conversions, Significant Figures, and Scientific Notation Lesson 1 – Quiz: Conversions, Significant Figures, and Scientific Notation (Essay 1) Lesson 1 – Quiz: Conversions, Significant Figures, and Scientific Notation (Essay 2)
2	3-4	Lesson 2 – Complete Lab: Acceleration Lesson 2 – Complete Lab: Projectile Motion Lesson 2 – Complete: End of Chapter Review – Chapters 2 and 3 Lesson 2 – Complete: End of Chapter Problems – Chapters 2 and 3
3	5-6	Lesson 3 – Complete Lab: Inertia Lesson 3 – Complete Lab: Friction Lesson 3 – Complete Lab: Balloon Rocket Lesson 3 – Complete: End of Chapter Review – Chapters 4, 5, and 6 Lesson 3 – Complete: End of Chapter Problems – Chapters 4, 5, and 6 Lesson 3 – Quiz: Unit 1B Lesson 3 – Quiz: Unit 1B (Essay 1) Lesson 3 – Quiz: Unit 1B (Essay 2) Checkpoint 2 (Non-graded)

Lesson	Weeks	Assignments
4	7-8	Lesson 4 – Complete Lab: Conservation of Momentum Lesson 4 – Complete Lab: Hooke's Law Lesson 4 – Complete: End of Chapter Review – Chapters 7 and 8 Lesson 4 – Complete: End of Chapter Problems – Chapter 7 and 8
		*Midterm Exam
5	9	Lesson 5 – Complete Lab: Centripetal Acceleration Lesson 5 – Complete: End of Chapter Review – Chapters 9 and 12 Lesson 5 – Complete: End of Chapter Problems – Chapter 9 and 12 Lesson 5 – Quiz: Unit 2 Lesson 5 – Quiz: Unit 2 (Essay)
6	13-14	Lesson 6 – Complete Lab: Liquids and Gases Lesson 6 – Complete: End of Chapter Review – Chapters 19 and 20
7	15-16	Lesson 7 – Complete Lab: Specific Heat Capacity of Metals Lesson 7 – Complete: End of Chapter Review – Chapters 21, 22, and 24 Lesson 7 – Complete: End of Chapter Problems – Chapter 21 Lesson 7 – Quiz: Unit 4 Lesson 7 – Quiz: Unit 4 (Essay 1) Lesson 7 – Quiz: Unit 4 (Essay 2) Checkpoint 3 (Non-graded)
		Final Exam

Course Credit

Each lesson will consist of completing and submitting one or more assignments. The **Assignment** sections at the end of each lesson will specifically detail what to complete and submit for each lesson. Assignments may include quizzes (multiple choice, true-false, matching), essay or short answer questions, written assignments, laboratory experiments, and/or offline activities.

The course grade will be calculated as follows:

- 50% coursework average;
- 50% summative assessment average, including the final exam;
- A passing course grade is 70 or higher.

Students must attempt all assignments in the course. The final exam will not be available until all assignments have been accepted and graded by the teacher.

Students who score below 70% on the final exam will be eligible for one re-exam opportunity.

Coursework

The graded assignments within each lesson are formative in nature. This means that they are designed to assist you in applying and demonstrating the lesson concepts, as well as identifying areas in which you need additional review. You may use all the lesson's learning activities to assist you as you complete the graded assignments.

Summative Assessments

Summative assessments are those that allow you to demonstrate mastery of the course objectives. For summative assessments, you will NOT be allowed to use the learning materials. These are opportunities for you to show what you have learned by that point in the course. Summative assessments may be proctored using the online proctoring system Proctorio. Information about Proctorio is provided in **Remote Proctoring** in the Syllabus section of your course. The summative assessments for this course are as follows:

- Summative Assessments **(20% of Course Grade)**
    - Midterm Exam
- Summative Final Exam **(30% of Course Grade)**

Course Completion and Extensions

- Students may not complete the course in less than 30 days.
- All courses expire six months after the enrollment date. Student may purchase a single three-month extension for a fee.
- Extensions are non-refundable and non-transferrable.

Academic Integrity

It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and high standard of integrity. The attempt of students to present as their own any work not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offenders liable to serious consequences, possibly suspension.

"Scholastic dishonesty" includes, but is not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, and any act designed to give unfair academic advantage to the student (such as, but not limited to, submission of essentially the same written assignment for two courses without the prior permission of the instructor) or the attempt to commit such an act.

Student Expectations

You will be expected to log into the Blackboard course regularly to be aware of possible announcements/reminders and to pace your progress in the course.

Students are expected to maintain an online environment conducive to learning, which includes "netiquette" (Internet etiquette). Please review the basic rules for Online Discussion Netiquette. Ensure that your email messages, discussion board postings, and other electronic communications are thoughtful and respectful. Diverse opinions are welcome in this course, and you are expected to demonstrate an open mind and courtesy when responding to the thoughts and ideas of others.

The following are prohibited:

- making offensive remarks in email or the discussion board;
- using inappropriate language or discussing inappropriate topics online;
- spamming;
- hacking;
- using TTU or Blackboard email or discussion boards for commercial purposes;
- using all caps (considered shouting in online communications); and
- cyber-bullying or online harassment of any type.

Inappropriate behavior shall result in consequences ranging from a request to correct the problem, to removal from the course or even the university, depending on the severity of the behavior. Disciplinary actions will be taken according to the TTU K-12 Student Handbook.

Communication

- You can expect a reply from your instructor within 2 business days.
- Use the Blackboard Course Messages tool for sending messages to your instructor.

Submitting Assignments

You will submit all assignments through the Blackboard Assignment Tool, rather than by email. For assignments that require you to upload a PDF or other document, please title your assignment files "lastName_firstName_assignmentName.*xxx* (.pdf, .doc, .xl, .jpg, etc.)".

Technical Difficulties

Getting Help

For student assistance with Blackboard, visit TTU K-12 Support.

Computer Problems

A working computer is necessary for online coursework. Computer problems will not be accepted as a valid reason for failure to complete course activities within the allotted time frame. Identify a second computer, before the course begins, that you can use if you experience computer problems.

Server Problems

When the Blackboard server needs to be taken down for maintenance, the Blackboard administrator will post an announcement in your course informing you of the time and date. If the server experiences unforeseen problems, your course instructor will notify you.

Lost or Corrupted Files

You must keep/save a copy of every project/assignment on an external disk or personal computer. In the event of any kind of technology failure (e.g., Blackboard server crash or virus infection, students' own computer problems, loss of files in cyberspace, etc.) or any disputes, the instructor may request or require you to resubmit the files. In some instances, the instructor may need to open another attempt within Blackboard, so communication with your instructor is critical in these circumstances.