**Cocke County High School**

# Physics
# 2025-2026 Syllabus

## Part 1: Course Information

### Instructor Information

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### Course Description

Physics is a course that deals with the relationship between matter and energy and how they interact. The following major areas will be investigated: Motion and Stability; Forces and Interactions; Energy; The Transfer of Energy and Energy Conservation.

**Prerequisite**

- It is recommended that students complete Biology I and Math II or higher before enrolling in Physics.

**General Education/High School Pathway Area**

- In order to graduate, students are required to take either Physics or Chemistry.

### Textbook & Course Materials

**Required Text:Zitzewitz, P. W., Haase, D. G., & Harper, K. A. (2026). *Tennessee Physics*. McGraw-Hill Education. ISBN 978-1-265-12517-2** Textbook may be accessed online through Clever

**Recommended Texts & Other Readings or Resources.**

- Other readings may be made available either online or in print during the course.

### Course Requirements

- 3 ring Binder
- College Ruled Notebook Paper
- Pencil or Pen (dark blue or black ink)

- Calculator with Trigonometric Functions
- Colored Pencils
- Ruler
- Transparent tape
- Elmers Glue
- Poster board

## Course Structure

Course content will be delivered through lecture, discussion, textbook assignments, multimedia presentations, library and internet research, laboratory investigations, student presentations, and other methods.

It is very important that students in physics complete all homework in a timely manner. Students will be given class time to work on problems and ask for assistance. Physics is a very math intensive subject and students who do not work assigned problems will have difficulty succeeding in the course.

### Online Resources

Online textbook: login through Clever
Crash Course Physics: https://thecrashcourse.com/topic/physics/
Physics Fundamentals:
http://www.gpb.org/physics-fundamentals/episodes/physics/all
Physics in Motion: https://www.gpb.org/physics-in-motion
PhET labs: https://phet.colorado.edu
The Physics Classroom: https://www.physicsclassroom.com/
The Mechanical Universe:
https://www.youtube.com/playlist?list=PL8_xPU5epJddRABXqJ5h5G0dk-XGtA5cZ
PBS Space Time: https://www.youtube.com/@pbsspacetime
Annenburg Learner: http://www.learner.org
Science News for Students: Science News Explores
Smithsonian: https://www.si.edu/
TedED: https://www.youtube.com/@TEDEd

# Part 2: Student Learning Outcomes

### PHYS1.PS2: Motion and Stability: Forces and Interactions

1) Investigate and evaluate the graphical and mathematical relationship (using either manual graphing or computers) of one-dimensional kinematic parameters (distance, displacement, speed, velocity, acceleration) with respect to an object's position, direction of motion, and time.

2) Algebraically solve problems involving constant velocity and constant acceleration in one-dimension.

3) Algebraically solve problems involving arc length, angular velocity, and angular acceleration. Relate quantities to tangential magnitudes of translational motion.

4) Use free-body diagrams to illustrate the contact and non-contact forces acting on an object. Use the diagrams in combination with graphical or component-based vector analysis and with Newton's first and second laws to predict the position of the object on which the forces act in a constant net force scenario.

5) Gather evidence to defend the claim of Newton's first law of motion by explaining the effect that balanced forces have upon objects that are stationary or are moving at constant velocity.

6) Using experimental evidence and investigations, determine that Newton’s second law of motion defines force as a change in momentum, F = Δp/Δt.

7) Plan, conduct, and analyze the results of a controlled investigation to explore the validity of Newton's second law of motion in a system subject to a net unbalanced force, Fnet = ma or Fnet = Δp/Δt.

8) Use examples of forces between pairs of objects involving gravitation, electrostatic, friction, and normal forces to explain Newton's third law.

9) Use Newton’s law of universal gravitation, F = Gm1m2/r2, to calculate the gravitational forces,mass, or distance separating two objects with mass, given the information about the other quantities.

10) Develop and apply the impulse-momentum theorem along with scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on an object during a collision (e.g., helmet, seatbelt, parachute).

11) Use experimental evidence to demonstrate that air resistance is a velocity dependent drag force that leads to terminal velocity.

12) Develop a model to predict the range of a two-dimensional projectile based upon its starting height, initial velocity, and angle at which it was launched.

13) Plan and conduct an investigation to provide evidence that a constant force perpendicular to an object's motion is required for uniform circular motion (F = m v2 / r).

## PHYS1.PS3: Energy

1) Investigate conduction, convection, and radiation as a mechanism for the transfer of thermal energy.

2) Use the principle of energy conservation and mathematical representations to quantify the change in energy of one component of a system when the energy that flows in and out of the system and the change in energy of the other components is known.

3) Assess the validity of the law of conservation of linear momentum (p=mv) by planning and constructing a controlled scientific investigation involving two objects moving in one-dimension.

4) Construct an argument based on qualitative and quantitative evidence that relates the change in temperature of a substance to its mass and heat energy added or removed from a system.

5) Define power and solve problems involving the rate of energy production or consumption ($P = \Delta E/\Delta t$). Explain and predict changes in power consumption based on changes in energy demand or elapsed time. Investigate power consumption and power production systems in common use.

6) Recognize and communicate information about energy efficiency and/or inefficiency of machines used in everyday life.

7) Compare and contrast the process, design, and performance of numerous next-generation energy sources (hydropower, wind power, solar power, geothermal power, biomass power, etc.).

You will meet the objectives listed above through a combination of the following activities in this course:

Lecture, class discussion, laboratory activities, library and Internet research, student presentations, dissection and other group and individual activities. In order for students to succeed in this course it is vital that they participate in all class activities and complete all assignments.

# Part 3: Topic Outline/Schedule

| | Module | Unit Title | Standards |
|---|---|---|---|
| 1st Nine Weeks | 1 | A Physics Toolkit (2 weeks) | PHYS1.PS2.1 |
| | 2 | Representing Motion (1 week) | PHYS1.PS2.1 |
| | 3 | Accelerated Motion (1 week) | PHYS1.PS2.1<br>PHYS1.PS2.2 |
| | 4 | Forces in One Dimension (2 weeks) | PHYS1.PS2.4<br>PHYS1.PS2.5<br>PHYS1.PS2.6<br>PHYS1.PS2.7<br>PHYS1.PS2.8<br>PHYS1.PS2.11 |
| | 5 | Displacement and Force in Two Dimensions (1 week) | PHYS1.PS2.4 |
| | 6 | Motion in Two Dimensions (1 week) | PHYS1.PS2.12<br>PHYS1.PS2.13 |
| | 7 | Gravitation (1 week) | PHYS1.PS2.9<br>PHYS1.PS213 |

| | | | |
|---|---|---|---|
| 2nd 9 weeks | 8 | Rotational Motion<br>(1 week) | PHYS1.PS2.3<br>PHYS1.PS2.5<br>PHYS1.PS2.6 |
| | 9 | Momentum and Its Conservation<br>(2 weeks) | PHYS1.PS2.3<br>PHYS1.PS2.4<br>PHYS1.PS2.10 |
| | 10 | Energy and Its Conservation<br>(1 week) | PHYS1.PS3.5<br>PHYS1.PS3.6<br>PHYS1.PS3.7 |
| | 11 | Thermal Energy<br>(2 weeks) | PHYS1.PS3.1<br>PHYS1.PS3.2<br>PHYS1.PS3.4 |
| | 12 | States of Matter<br>(1 week) | PHYS1.PS3.1<br>PHYS1.PS3.2 |
| | 13 | Vibrations and Waves<br>(1 week) | PHYS1.PS2.9<br>PHYS1.PS3.7 |
| | | Semester Review and Exam | |

# Part 4: Grading Policy

It is very important for students to master the course content in Biology I, therefore, each student will be asked to correct any class assignment for which they receive a grade lower than 70%. Students should be able to complete all work during class time. Students who do not correct class work or complete assignments during class time will be expected to attend tutoring. Laboratory work is an important part of this class. Students with unexcused absences on lab days will receive a zero for their lab grade. Also students who violate any lab safety policy will receive a zero for that day's lab.

### Late Work Policy

Be sure to pay close attention to deadlines—there will be no makeup assignments or quizzes, or late work accepted without a serious and compelling reason and instructor approval. Students who know they will be absent on a project date, should present their project prior to the assignment date to avoid receiving a zero. Students have 3 days after an excused absence to make up any missed work.

### Viewing Grades in ASPEN (optional)

Points you receive for graded activities will be posted to the ASPEN GradeBook. Click on the My Grades link on the left navigation to view your points.

Your instructor will typically update the online grades 5 days following the completion of an activity. You will see a visual indication of new grades posted on your ASPEN home page under the link to this course.

## Letter Grade Assignment

Student assignments will be weighted as follows:

| | |
|---|---|
| 20 % | Daily classwork and homework |
| 40% | Chapter Tests and Projects |
| 20% | Laboratory activities and hands on activities |
| 20% | Quizzes |

Final grades assigned for this course will be based on the percentage of total points earned and are assigned as follows:

| Letter Grade | Percentage | Performance |
|---|---|---|
| A | 90-100% | Excellent Work |
| B | 80-89% | Good Work |
| C | 70-79% | Average Work |
| D | 60-69% | Poor Work |
| F | 0-59% | Failing Work |

# Part 5: Course Policies

## Attend Class

Students are expected to attend all class sessions as listed on the course calendar.

## Participate

Students are encouraged to participate in all classroom activities. Failure to participate in class activities will adversely affect a student's grade.

## Build Rapport

If you find that you have any trouble keeping up with assignments or other aspects of the course, make sure you let your instructor know as early as possible. As you will find, building rapport and effective relationships are key to becoming an effective professional. Make sure that you are proactive in informing your instructor when difficulties arise during the semester so that they can help you find a solution.

## Complete Assignments

Assignments must be submitted by the given deadline or special permission must be requested from the instructor *before the due date*. Extensions will not be given beyond the next assignment except under extreme circumstances.

All discussion assignments must be completed by the assignment due date and time. Late or missing discussion assignments will affect the student's grade.

## Incomplete Policy

Under emergency/special circumstances, students may petition for an incomplete grade. An incomplete will only be assigned in the event of an extreme emergency. All

incomplete course assignments must be completed within a time period to be determined based upon the number of missing or incomplete assignments. An extreme emergency may include illness or an accident involving the student or the death of an immediate family member. A family or school trip WOULD NOT BE CONSIDERED AN EMERGENCY. Students should complete assignments BEFORE such an event.

## Academic Dishonesty Policy

Academic dishonesty includes such things as cheating, inventing false information or citations, plagiarism and helping someone else commit an act of academic dishonesty. It usually involves an attempt by a student to show possession of a level of knowledge or skill that he/she does not possess.

A student suspected of academic dishonesty may receive an oral reprimand. Parents may be contacted. A grade of zero may be given in which case the student may be allowed to retake a different version of the test or redo the assignment. A student may also be referred to administration for disciplinary action.

# Student Testing Code of Ethics and Security

It is important for you as a student to know that the following guidelines are to be strictly followed. This year the TNReady EOC test will count at least 15% of your final semester grade. Your work on this test is very important and it deserves your best effort.
I understand that during testing on the days of the assessment, I am responsible for:

- Not having any electronic devices on me or in my purse/backpack/pockets
    - Including but not limited to cell phones, smart phones, smart watches, etc. **during testing or during breaks.**
    - Best practice is for students to leave devices at home or in their lockers on the day of testing.
    - If I am caught with a device during testing or during breaks, my test may be nullified, resulting in a zero as at least 15% of my semester grade, and any school level disciplinary action as deemed appropriate by the administration.
- Trying my best on the test

- If I do not attempt to test (I give **no answers or randomly answer** questions) my test score may be nullified, resulting in a zero as at least 15% of my semester grade, and any school level disciplinary action as deemed appropriate by the administration.
- The testing administrators and proctors in the testing environment will determine if no answers or random answering is taking place.
- I will focus and put forth effort on the test .

- Being honest and not cheating
  - If I am caught cheating (taking pictures of the test, writing down and passing answers, talking to other students, looking on other computers, using software outside the testing platform), my test may be nullified, resulting in a zero as at least 15% of my semester grade, and any school level disciplinary action as deemed appropriate by the administration.

**Important Note:** Any form of academic dishonesty, including cheating and plagiarism, may be reported to the office of student affairs.

**Course policies are subject to change.** It is the student's responsibility to check for corrections or updates to the syllabus. Any changes will be posted in the classroom.