



## COURSE OUTCOME:

### Course Description

***My message to all educators is, what counts is not what you cover; but what counts is what you uncover. And this is often forgotten. So, there is a general tendency, not everyone but a general tendency, to ram too much down the throats of the students, and overlook that that's very antiproductive, because it goes one ear in, as we say in Holland, and it goes the other ear out again. So what you cover is not what matters, but what you uncover is what matters. And if you can somehow do it so that there are parts of the course that they will remember for the rest of their lives, that's even more important. If a student has come to my lectures, on rainbows, and haloes, and glories, for the rest of their lives, rainbows will never be the same. And they will always think of me when they see a rainbow. And in fact sometimes 20 or 30 years after a lecture, they send me still pictures. and they say, "Professor Lewin, I saw a rainbow, and I thought of you and here is a picture." And the interesting thing is, they sometimes send me a picture which is not even a rainbow, which is a glory; but that doesn't matter. What it shows is, that I have succeeded in making them love physics. And that is my goal. And that should be the goal of every educator. To make them love physics.***  
***-- Walter Lewin, MIT professor***

Welcome to AP Physics 1,

I consider the AP program a very serious matter, and I expect you to be as serious about the work as I am. The primary purpose of the course is to have a good introductory physics experience while preparing also for the AP physics 1 exam.

It is designed and conducted as a serious course with special emphasis placed on those skills necessary for success in college, including note taking, reading, and understanding the college text. It is important that you read the text assignment before coming to class. To encourage you to make this a priority, I will conduct unannounced quizzes frequently.

### Hyperlink to local curriculum, state standards, and/or competencies

[https://www.tn.gov/content/dam/tn/education/standards/sci/sci\\_standards\\_reference.pdf](https://www.tn.gov/content/dam/tn/education/standards/sci/sci_standards_reference.pdf)

## INSTRUCTION:

### Topics/Skills Covered

- Kinematics – One Dimensional Motion
- Kinematics – Two Dimensional Motion
- Dynamics
- Energy
- Momentum
- Simple Harmonic Motion (SHM)
- Rotational Motion – Torque, Kinematics, Dynamics, Angular Momentum, Rotational Energy
- Waves
- Circuits



## Resources:

### Materials Needed

Some things you will need:

- Composition (100 page) Lab Notebook (check with teacher, I might have extras)
- Pencil with a good eraser -- most of your work will be in pencil, and you will make a lot of mistakes.
- Ruler -- Metric, preferably 30 cm.
  
- If your last name begins with: A-K- Please bring a roll of paper towels and a bottle of hand sanitizer; L-Z – a roll of paper towels and a box of Kleenex.
  
- Protractor -- I especially like the ones with the hole.
- Binder- It is best to have a 1 inch binder with a pocket in the front for your lab notebook that you bring to class every day. You should have a large binder that you keep at home to “download” to as we move through the units. There is no reason to haul every unit around with you all semester, however, you will need it all (and well-organized) in the end. We recycle almost all school supplies at my house. I would recommend doing so with binders if you can.
- Glue Stick & Scissors -- for putting stuff in the lab notebook
- Graphing Calculator -- you must have a graphing calculator with you at every class session. This will be used for taking and analyzing laboratory data as well as for homework and tests.

You will need to bring all of this stuff every day. You will be surprised at how many different things you may need in a single class period. Because this is so, you may want to get a pencil bag or something to put in the front of your notebook.

### Fees

## This course has a **\$30.00** fee

This fee is for the purpose of providing physics related materials for classroom use.

If writing a check, please make the check payable to **Gibbs High School**.

Fees can be paid **online**, please check the school website for information.

We desperately need this money for lab equipment and other supplies. Please pay it as soon as you can or donate more if you are able to.

### Resources

- Textbook: *Physics Principles with Applications 5th ED.*, Douglas C. Giancoli, 1998, Prentice Hall, Upper Saddle River, New Jersey.
- Compliance with Instructional Materials Policy & Procedure I-211
  - Materials used in class meet this policy.
- Compliance with Use of Audiovisual Works Policy and Procedure I-230- 2
  - Concept demonstration media were provided by the textbook company
- Technology
  - Calculator, Google Drive (Each student has a separate account), Canvas, Parent Portal

 **Safety Procedures**

- Follow KCS School board policies for a regular education classroom. A red Emergency folder is available in the classroom to provide information about procedures

 **Statement about religious content**

- The content of this course is mathematics and how to use mathematics concepts to solve problems. There is no direct religious content.

**ASSESSMENT:** **Expectations**

- Students:
- 1) Attend class
  - 2) Take notes
  - 3) Ask Relevant Questions throughout the lesson
  - 4) Complete assignments with accuracy
  - 5) Get assistance (if needed)
  - 6) Maintain a positive attitude for learning on a daily basis.

*It is the goal of the instructor for all students to succeed as long as these expectations are met.*

 **Grading Policy**

Do not stress about your grade. This is an AP course and the focus is on learning concepts and principles. AP points will be a good way to supplement your grade; be sure to take advantage of them when they are offered.

New rule this year: You will only receive the +5% AP curve if you take the AP Physics 1 Exam in the spring. All AP courses now have the requirement that you have to take the AP Exam to earn the curve. (Don't worry, you probably won't need that curve, but the opportunity is available in case you do.) I will offer review opportunities in the spring.

Grades will be determined by accumulation of points.

**Grade Scale:**

A	93-100
B	85-92
C	75-84
D	70-74
F	below 70

- Tests – 40%
- Quizzes – 25%
- Homework, Class Assignments, and Projects – 20%
- Final Exam – cumulative exam which will count 15% of final grade



## □ Explanation of Assignments/Tests/HW/Labs, etc.

Students will be expected to complete all assignments and projects assigned throughout the semester.

### ○ Tests

- There will be a test at the end of each unit. These tests will consist of 20 multiple-choice and 2 free response questions. The multiple-choice test will be administered from 10:00- 10:30am on test days and the make-up from 3:40-4:10 pm within two school days after the in-class test. If you are late you will not get extra time. The Free Response section will be taken after the multiple-choice test is completed. The multiple-choice and the free response on these tests will come primarily from old AP exams. These unit tests have a tighter time-ratio than the actual AP exam. Once I've graded the tests using the AP grading criteria, the grades are scaled appropriately. These tests are very challenging for students. The goal is to make the practice hard so the game is a breeze.

### ○ AP Physics 1 exam

- The AP Physics 1 exam will be administered during the spring. If you want the 5% points added to your overall grade, then you will have to take the AP Physics 1 exam. There will be a few review sessions in the spring, but you will need to be responsible to do more than attend those review sessions. The Physics 1 exam will usually count as a non-science major's entire science requirement in college! Imagine going to college and not having to take any science courses! (Check with the school you plan to attend to see credit opportunities.)

### ○ Labs

- Labs in this course are designed as discovery situations. The goal is to take data in class, derive an equation(s) from the trends of that data and use that equation to work problems involving physical situations that we couldn't or wouldn't want to handle in the lab. Labs are the meat of this course and in my humble opinion the very best part!!!

### ○ Homework

- I am new to this course so homework will be a work-in-progress. Expect problems similar to labs and AP Physics 1 Exam questions. I am currently working on obtaining us access to Webassign for homework, but I'm not sure if we will be able to afford it this semester. You will work these problems using the problem solution format. You will use the sample problem I hand out to you as a guide and work all problems in this fashion. No exceptions. I will not grade problems that are not worked in the prescribed manner. The goal is for you to get every point possible on the AP exam. This means working the problems so the grader can find those points on your exam. We will practice this all semester.
- It is good to work together on homework. We will have study-group sign-up during the first week of school. These study groups will be expected to meet regularly. New groups will be chosen by the teacher periodically.



- These study groups are a big deal. They are the only way most folks make it through tough classes in college, so learning the skill now is a real advantage. STUDY GROUPS ARE RECOMMENDED. Please include everyone when planning meetings.
- Your Study Guide for each unit will let you know which problems should be worked for which days.

## □ **Make-Up Work Policy/Late Work Policy**

Reference the policy described in the student handbook.

Essentials: Students must request make-up work from teachers within three days of returning to school.

Students must complete work within two days after receiving the assignment.

Students who miss one day will be expected to be prepared to participate in all previously assigned classroom activities, including tests and quizzes, and labs on the day they return.

Missed exams and quizzes must be completed in room 116 after school within two days of the in-class test/quiz.

If a student does not complete an exam or quiz within the expected timeframe, then the student will earn a 0 for that grade. This policy is flexible depending on the circumstances.

Assignments, including tests, quizzes, and homework will be document on the assignment list for your class. Check the absentee box in class (on the AC unit) when you return from an absence.

### ○ **What to do if you're absent**

Don't be.

The concepts here are really among the most abstract that you will encounter in high school. You are taking a college course and preparing for a very difficult exam. I will expect you to take care of anything you miss, post-haste. Use the other students in the class first and then come to me if you still have questions.

**A special note on college visits:** This is something that typically comes up in the spring, so shouldn't affect you as much, but in the spring reviews will be offered for the AP exam. I know there are times when you need to go. Please remember, however, that there is a limit to the amount of material you can digest in a certain period of time. If you miss three or four AP classes at this time of year, it may seriously impact your AP scores. So if you absolutely have to be gone on a school day, I would try to prepare in advance as much as possible and really limit the number of times this occurs.

**Tests:** This is really bad. First, the day of the test is when everyone is most "up" for it, and somehow the combined suffering of a whole class gives you support in working through your pain. Don't miss a



test unless you could not possibly perform on that day due to illness. Second, the make-up will not be the same as the original. Make-up for tests will be after school as described in section V of this syllabus.

**Quiz:** Alternate make up.

**Labs:** If you miss a lab, you are none-the-less responsible for what happened. You will get the data either by performing that experiment after school (most likely scenario) or by getting data from your partner, at my discretion. You may be assigned some alternate activity to make up for the absence. If you miss a pre-lab, you should come in early so you will be prepared to do the experiment with your group. If you don't know what you missed, call your lab partner.

**Lecture, etc.:** Get notes from your lab partner and check the website. Many helpful things will be posted there. Something may have been discussed or demonstrated that you will need in order to understand the following day's work. Call your lab partner to find out.

○ **Pep rallies, Assemblies, Fire Drills, and Other Distractions**

From time to time something comes up that interrupts the regular schedule. Please get back to class as soon as possible afterwards. I will start class whether you're there or not, and it's quite a disruption to have people arrive late.

□ **Portal Post Policy**

Students will receive feedback about their performance through assessments in class. Work will be graded as assignments are completed and recorded in the gradebook within a timely manner.



## GENERAL EXPECTATIONS:

### □ Students:

#### ○ Attendance Policy

***Attendance policy will follow the Gibbs High School student handbook.***

#### ○ Classroom Policy/Procedures

##### ○ **Classroom Rules:**

- Be on time
- Be prepared
  - Before the bell:
    - sharpen pencils
    - collect materials at your desk
- Be respectful
  - Raise your hand and wait to be recognized before asking a question or making a comment
  - Keep questions and comments on topic
  - Talk at appropriate times with appropriate voice
- Pay attention
- Do your own work
- No food or drinks
- Cell Phone Policy: ***See it. Hear it. Take it.***

#### ○ The Lab

- While we will not be working with lots of liquid chemicals as you may have done in chemistry, you should still be aware that a laboratory requires special caution in its use. There are some hazardous chemicals around (e.g. the photographic chemicals used to study motion and for laser holography experiments), and they will be labeled. In any case, don't mess with the stuff you find in the lab without specific instructions. You may think you know what you're doing, and maybe you do; but maybe you don't, and the consequences of your being wrong could be disastrous. Your being in the lab is a privilege, and I will not hesitate to remove you from it if you do not show respect for the lab and for the equipment.
- If there is a fire, tell me, and I will take care of it. In case your help is needed, you will need to know where the fire extinguishers and blanket are located. Also, be sure you are aware of the location of the emergency shower and eyewash stations in case there is a major chemical spill. This seems extremely unlikely, though.
- Don't sit on the lab tables. This is always a good rule when you are in someone else's lab—you never know what was on those tables before you.



- **The Storeroom (if there is one)**

- Don't go in there—it makes me really nervous. And don't mess with the stuff lying on the tables or in the display cases. Some things will be left out by another class. Some of it will be my stuff. It's all tempting, so control yourself.
- We will also have brief quizzes at the beginning of class that may or may not cover homework at all, but rather concern lab activities, lecture concepts, or whatever happened previously in the course.

- **Cell Phones**

We will use cell phones frequently in class. You may have them out with my permission.

Please ask first. “See it, Hear it, Take it” is in effect, but please remind me if I ask and I have already given permission – blame my bad short-term memory.

On test days you will turn in your cell phone for the duration of the test and pick it up when you leave.

- **Honor Code**

Students are expected to do their own work. This includes class work, projects, tests, quizzes, etc. Reference the policy described in the student handbook.

## TEACHER:

- **Communication Strategy:**

- Students are encouraged to communicate any problems they may be having with class content, projects, etc. to the teacher. Students are encouraged to check their grades on the portal frequently to maintain an understanding of what their grade is.
- Parents are encouraged to email or call the instructor with any questions or concerns at any time.
- I am open to feedback. Please contact me if you have any questions or concerns or if you notice any struggles that your child may be encountering.
- Best way to reach me is by email.

**Email Address:**            [adam.howard@knoxschools.org](mailto:adam.howard@knoxschools.org)

**Phone Number:**        **(865) 689-9130**

- **Intervention Strategy:**

- Tutoring will be available through the Pilot Center. When the center opens hours will be announced and posted in the classroom.
- Additional tutoring opportunities are available from other math department instructors.
- You may also email me questions about homework.





## Physics Laboratory Safety Rules

- *The Physics laboratory is to be used for serious work.*
- *Do not perform unauthorized experiments in the lab. Always obtain your instructor's permission.*
- *Use the safety equipment provided for you. Know the location of the fire extinguisher, safety shower, fire blanket, and first aid kit. Always wear your safety glasses!*
- *Report any accident, injury, or incorrect procedure to your instructor immediately.*
- *Electricity and Electronics Safety:*
  - *Electricity can Kill! If you want to be around long enough to enjoy experimenting with electronics, **always** treat electricity with the respect it deserves.*
  - *Capacitors can store a charge for a considerable time after the power to them has been switched off. This charge can be **dangerous**! A large electrolytic capacitor charged to only 5 or 10 volts can melt the tip of a screwdriver placed across its terminals. High voltage capacitors like those used in television sets and photoflash units can store a **lethal** charge! **Never** touch the leads of such a capacitor. At the very least, the jolt can throw you across the room!*
  - *Soldering precautions:*
    - *A hot soldering iron can burn a finger or even start a fire. Use Care!*
    - *Unplug the iron when you're not using it.*
    - *Be sure the power cord is not where you can trip over it.*
- *LASER Safety:*
  - *Students should not look into the laser or stare at bright mirror-like reflections of the laser beam.*
  - *Take off any jewelry or watches that might reflect the beam.*
  - *If a beam must travel a long distance keep it close to the ground or overhead so that it does not cross walkways at eye level.*
  - *Always plug the laser into a grounded outlet.*