

PISCATAWAY TOWNSHIP SCHOOLS  
COURSE SYLLABUS

Course Title: **Conceptual Physics**

Textbook: Holt Physics, Serway and Faughn (available upon request)

Teacher: Mr. Evan Shenkler

732-981-0700 ext. 7189

[eshenkler@pway.org](mailto:eshenkler@pway.org)

Extra help days: Mondays, Wednesdays and Thursdays after school; other times by appointment.

I am generally available every day after school.

Course Description: **Conceptual Physics** is a 6 credit, full year course for students in grades 11 and 12. This course is designed for students desiring exposure to major physics topics with less math rigor than the standard "academic" physics curriculum. This functional Physics course will give students an understanding of the physical laws and their applicability to our daily lives. The class targets students who have taken Algebra I and have earned a grade of C or better; students who experience difficulty in math, students not majoring in science in college and students not pursuing college enrollment. Essential mathematical concepts will be reviewed and explained. The following Physics topics will be addressed: concepts of motion and classical mechanics, energy forms, wave mechanics, optics, light and electricity.

Course Schedule: Scope and Sequence	
Approximate Time Frame	Topic
Marking Period 1 September through November	<p><b>Topics:</b> Measurement, Vectors, Graphic Analysis, Kinematics</p> <p><b>Specific Content:</b>                      Definition of Physics                      Units and Dimensions                      Data collection, significant figures                      Graphic representation and addition of vector quantities.                      Vector Resolution                      Using trigonometric functions to resolve and add vectors.                      How to graph lab data to identify mathematical relationships.                      How to identify and express constant velocity and acceleration.                      How to express and identify distance-time and velocity-time relationships graphically.                      Galileo's study of free fall acceleration-the acceleration due to gravity.                      The equations of motion.</p>
Marking Period Two November through January	<p><b>Topics:</b> Dynamics, Projectile Motion/Circular Motion, Impulse and Momentum</p> <p><b>Specific Content:</b>                      Newton's Laws of Motion.                      Describing motion in a curved path: application of both kinematics and dynamics.                      Kinematics and dynamics of rotating objects.                      The impulse-momentum theorem.                      Collisions and the law of conservation of momentum.</p>

Second Semester	
Marking Period Three February through April	<p><b>Topics:</b> Work and Energy, Heat, Waves and Sound, Light and Reflection</p> <p><b>Specific Content:</b>  Definition of work.  Simple Machines.  The work-energy theorem.  Gravitational potential energy, linear kinetic energy,  The Law of Conservation of mechanical energy.  Non-mechanical forms of energy.  Thermal energy, heat, and temperature.  Specific heats and latent heats; calorimetry.  Wave properties.  Wave behaviors: rectilinear propagation, reflection, refraction,  diffraction, and interference.  The electromagnetic spectrum.  The speed of light.  The Law of Reflection and mirror optics.</p>
Marking Period Four April through June	<p><b>Topics:</b> Refraction and Lenses, Interference and Diffraction, Electric Forces and Fields, Electrical Energy and Potential Difference, Electrical Current and Resistance, Electrical Circuits</p> <p><b>Specific Content:</b>  Snell's Law.  Lens Optics  Young's Law  The wavelength of light.  Coulomb's Law  Static Electricity  Electrical potential energy at different points in a field.  The volt.  The ampere.  Ohm's Law.  Drawing circuit diagrams.  Series and parallel circuits.</p>

**Materials Needed:**

- Textbook

**The following will be needed every class:**

- A Three ring binder (Absolutely key!)
- A spiral notebook
- A scientific calculator (Note: Phones cannot be used. Sharing is not permitted for quizzes and tests.)
- Pencils, pens, Colored pencils or pens and a highlighter

**Computer access and Web Resources:**

Students will need access to a computer to complete assignments and access web resources in and beyond the classroom. Students can access computers outside the classroom at various locations within the school during homeroom and after school. Students can also access computers at the public library.

**Class Rules**

Why have rules?

Everybody in this class can learn Physics. If you put in the effort, you will succeed! However, there are rules that must be followed so that everyone has the opportunity to succeed. These rules are supplemental to regular school rules in the handbook.

- 1) Safety First: Everyone should leave school with the same number of eyes, ears, hands, etc., that they came with. Willful violation of safety rules will not be tolerated. No horse play!
- 2) Respect your fellow classmates: Everyone is here to learn in a climate of mutual respect. Disrespect directed at others will not be tolerated. Please leave your personal arguments at the door.
- 3) Please be on time for class. I know you may be rushed to get to class, but the most important part of class is the first five minutes. Please respect my time, and I will respect yours. If you have difficulty making it to class on time for a legitimate reason, please come see me. If you are late, make sure you have a pass. School policy for lateness will be strictly enforced. *You have been warned!*
- 4) If you are absent, it is YOUR responsibility to find out what was missed and make it up. All missing grades will be shown on Genesis. *There are no excuses for missing work!*
- 5) Always be prepared for class: You MUST bring each of the following to class **every day**, unless instructed otherwise:
  - A Three-ring binder
  - Pen or pencil, colored pencils
  - A scientific calculator!**Having these items every day will be part of your grade. There will be checks. These things will NOT be supplied for tests and quizzes. You cannot use your phone! You cannot share
- 6) Tests and quizzes are based on the information received through textbook readings, lab work, or class discussions. **It is imperative that you take notes during class.**
- 7) You are responsible for all material covered every day. Therefore, **you can expect a quiz at any time.**
- 8) Class participation is extremely important. For everyone. Speak up!
- 9) Only one student will be allowed to use the bathroom at one time. No one will be allowed to leave class in the first or last five minutes of the period. YOUR CELL PHONE WILL BE YOUR BATHROOM PASS. Just leave it in the "Cell Phone Caddy" on my desk before you leave, and pick it up when you return. If one is already there, you may not go. Make sure you bring the hall pass with you. The pass must be filled out before leaving. If you don't have a cell phone, you will have to bring a note from home or go during a different class. Too frequent use or too long an absence may result in loss of hall pass privilege or a cut.
- 10) LEARN from each other. THINK for yourself. Only data from group work should be identical not reports. Know the meaning of *plagiarism*.
- 11) Do not cut my class. Do not cheat. Do not lie. Ever! I take it as a personal insult. Just don't do it.
- 12) Stay together during fire and evacuation drills. Also, ABSOLUTELY no talking or cell phone use during lockdown drills! You don't know that it's a drill. I will write it up.
- 13) Keep all book-bags and purses under your desk.
- 14) The Rules are fluid. If you find any of these rules disagreeable, or if you have any additional rules you wish to propose, we can discuss it. Ultimately, final decision about the rules will be up to Mr. Shenkler.
- 15) **MOST IMPORTANT:** PLEASE, PLEASE, PLEASE see me for extra help if you are lost, struggling, confused, befuddled, etc. It shows me that you are a serious student, concerned about learning, and that goes a long way. If you are planning on staying for extra help, please let me know in advance. DO NOT SUFFER IN SILENCE! I ENJOY WHAT I DO AND I AM HERE TO HELP YOU!

### **Regarding Safety in the laboratory:**

- When asked, you must wear safety goggles.
- Personal apparel should be appropriate for lab work.
- Know what you are doing.
- Know the proper fire drill procedures and the locations of the fire exits and the emergency equipment.
- Report all accidents to the instructor, no matter how minor.
- Use extra caution when working with electrical equipment, hot plates or other heating devices.
- Keep the work area clean and neat.

### **Absences and Assignment Deadlines**

The class is based on in class group investigation. Absences should be avoided at all costs. Sometimes an absence is unavoidable. Students are then required to investigate the missed material on their own time.

Meeting deadlines is an important demonstration of responsibility. Students are encouraged to hand in all assignments when due. However, some assignments will be accepted late for reduced credit.

- If absent on an assignment due date, the assignment due date is extended by the number of consecutive days missed per school policy. Students missing only “test day”. Should be prepared to take the test on the first day of return.
- Missed quizzes, labs and tests must be made up within 1 week.
- Homework is not accepted after the date checked.
- Lab reports and projects will be accepted late but at reduced credit of 10% per week late. (20% after 7 calendar days late, etc.). All assignments after 1 week late require a note from home upon submission for grading. No assignment will be accepted after 2 weeks or the announced last due date for the assignment or marking period.

### **Grading Distribution for each marking period:**

Students will be assessed on a variety of assignment (labs, projects homework, class work), exams (tests and quizzes), and class participation. Each graded assignment will have points assigned. A student’s grade for the marking period is determined by the percentage of points earned /points available within a particular category. While an individual marking period may vary, the target point weights for each category is given below.

- Class Participation / Prime time assignments/ Do Nows/ Class preparedness (calculator, pencil, notebook) Homework 5%
- Quizzes: 30% (A quiz is planned for the end of each 5 class cycle unless a test is scheduled. )
- Tests: 40% (Approximately three to four will be administered every marking period)
- Labs: 25% (Approximately four major labs will be assigned every marking period)
- Projects: Projects when assigned will be assigned within Lab or Test categories.
- Extra credit assignments are available relating to physics in our daily lives, current events or science careers.

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- Missed quizzes must be made up within 1 week.
- Homework is not accepted after the date checked.
- Lab reports and projects will be accepted late but at reduced credit of 10% per week late. (20% after 7 calendar days late, etc.). All assignments after 1 week late require a note from home upon submission for grading. No assignment will be accepted after the announced last due date for the marking period.

# Please return form for HW grade.

Please note email address is very important!!!

Student Name: \_\_\_\_\_ Class Period \_\_\_\_\_

I have read and understand the syllabus for Conceptual Physics.

\_\_\_\_\_  
Student name printed

\_\_\_\_\_  
Student signature

\_\_\_\_\_  
Parent/guardian name printed

\_\_\_\_\_  
Parent/guardian signature

	Please mark preferred number during school hours	Parent/Guardian Information Name	Student Information If different from parent/guardian
Home phone number			
Work phone number			
Cell phone number			
Email address			

Does student wear glasses/ contacts?  
\_\_\_\_\_

Does student have Asthma or Allergies?  
\_\_\_\_\_

### For the students:

What do you like most about science?  
\_\_\_\_\_

Why did you sign up for physics?  
\_\_\_\_\_

Complete the sentence:

In physics class I hope to  
\_\_\_\_\_

What extra-curricular activities are you involved in? (Jobs, sports, clubs, etc.)? \_\_\_\_\_  
\_\_\_\_\_

What are you planning on doing after you graduate from high school?  
\_\_\_\_\_

What are you planning on doing for a career?  
\_\_\_\_\_

Please share any additional information you feel pertinent to this science class:  
\_\_\_\_\_  
\_\_\_\_\_

**I am glad you are in my class and I am looking forward to helping you achieve your goals.**

Sincerely,

*Mr. Shenkler*