

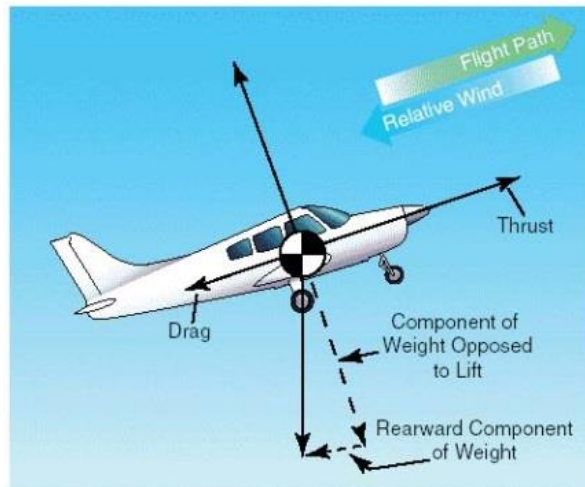


## Conceptual Physics Providence Extension Program 2021/ 2022

### To the Parents

Greetings, I am quite pleased to be your student's tutor for Conceptual Physics for the 2021/ 2022 academic year at PEP. I am looking forward to a rigorous, yet engaging year, as we navigate our way through Newtonian mechanics, atomic structure, light, sound, optics, and other topics of glorious mechanical interest.

Since this class is conceptual in both name and nature, it does not mean we are stepping away from a quantitative analysis of physical phenomena. Please make sure your children's pre-Algebra skills are strong before they go to class; they should know how to rearrange simple equations to solve for a single variable. As an example, if using the equation for force in the form of  $F = ma$ , if provided values for both *force* ( $F$ ) and *acceleration* ( $a$ ), your child should know how to rearrange the equation to solve for  $m$  (mass). The rearranged equation would be  $m = F/a$ .



It will be your child's responsibility to stay on top of reading, videos, and assignments, since classroom time will not be prioritized on introducing topics, but rather on demonstrations, laboratories, simulations, graphing and manipulating equations. They will need to come to class prepared. Physics, as a course, is very conducive to hands-on activities and demonstrations, and I would rather spend time on more of these activities and covering the most difficult of concepts than on introducing and teaching the basics of each topic (this is a "flipped" course format).

### To the Student

I have put together a detailed pacing guide to facilitate your learning and success. Please download this from the class website and follow carefully, checking off items as you complete them. In addition to this aid, there are three main keys to success you should consider.

**Excellent time management.** A rigorous, introductory physics course can be a rewarding experience *if* you manage your time wisely. As already mentioned, on the class website you should find a *Weekly Pacing Schedule* for Quarter 1 intended to assist you in your time management. Please follow this carefully, as outlined. The importance of excellent time management cannot be overstated: physics is not a subject that one can "cram" for; since its content is very abstract and conceptual – it has to be absorbed slowly. You simply cannot neglect five days of study and hope to catch it all up in one day – you will despise the course if you use this strategy.



**Learn relationally.** What can make physics so difficult student tries to learn the ideas, concepts and facts in a Long-term retention of material is instead facilitated relates any new concepts they are learning with *things know*, in doing the student develops higher-order and will have longer-term retention of the material.



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The higher-order cognitive skills you have the potential to develop in this course will serve you in many areas of your life – in particular, college. Rote memorization is considered a lower-order cognitive skill, and is a very ineffective learning strategy. Please think, mull over, contemplate, argue with yourself, quiz yourself, rethink, recalculate – this is what it takes for mastery.

***Come to class prepared.*** There is absolutely no way you will fully appreciate physics if you do not make an attempt to understand the material on your own – start with the videos, and try to solve problems. If you can teach yourself the basic content, we can reserve class time for the difficult applications of that content, along with laboratories, simulations, and demonstrations.

### **Course Materials**

- √ *Physics – A First Course, second edition* – Tom Hsu, PhD.
- √ Binder (about 2-inch ring capacity) and college-ruled paper for taking notes
- √ About 20 dividers for each chapter covered in textbook
- √ Internet access for watching YouTube videos and simulations/ interactives as assigned.
- √ Printer paper and a functional printer for printing out chapter worksheets, exams, etc.

### **Grading**

You will receive a letter grade at the conclusion of each quarter. Please study for an “A,” as there is nothing worse than studying for a course with the only goal of “passing.” Your total course grade will be based upon your performance in these key areas, as follows:

Chapter Tests – 35%

Weekly In-class Quizzes – 15%

Homework Assignments (Chapter Worksheets) – 25%

Laboratory Participation/ Interactives/ Skill & Practice Assignments – 25%

### ***Chapter Tests***

You will have a chapter test *about* every two to three weeks. These tests are to be closed-book, closed-note unless specified. You will complete these at home *under the supervision of a parent*. Please allow yourself only 60 minutes for each test. Completed tests are to be signed by parents where indicated and placed in sealed envelopes with your parent’s signature over the seal. No exceptions - I will not accept tests that are not in sealed and signed envelopes.

### ***Weekly In-class Quizzes***

Once a week, on Thursdays at the beginning of class, I will give you a quiz on your reading/ video for the day, and perhaps over content we covered in the classes prior. You will have about five to ten minutes to complete these quizzes.

### ***Chapter Worksheets***

These will be graded on completion, neatness and grammar. Write very legibly whenever you answer questions. You should also use excellent grammar whenever possible, which means writing answers in complete sentences. Do make sure you or parents check answers against the keys provided, circling those that are wrong, and correct those.

### ***Laboratory Participation/ Interactives/ Skill & Practice***

You will get the most out of lab reading the entire experiment, completing pre-lab questions (when assigned) before class. You will be working in groups for many labs, thus part of being a good partner is coming to the lab session well prepared. While using interactives and simulations from *The Physics Classroom* - many will have worksheets that will need to be completed. Make sure you print out and bring to class labs and *Skill & Practice* assignments when indicated.

## **Class Participation/ Citizenship**

Since PEP is a Christian organization, it is very important that you conduct yourselves as fine young, Christian men and women. This involves being engaged during the lecture, asking and answering questions respectfully, and always coming prepared for discussion and laboratory.

There is to be no texting in class at all, no earbuds, no watching YouTube, or catching up on sports. If your parents have to get a hold of you for an emergency, that is fine, but you are not to text anyone else. Universities do not put up with this conduct at all.

## **Late Homework Policy**

All assignments are due at the beginning of class. Assignments turned in one PEP day late will receive a 20% penalty; two days late, a 50% penalty. As an example, if an assignment was due on a Tuesday, and is turned in on Thursday, the 20% penalty applies; if that same assignment is turned in two PEP days late - the following Tuesday, it will receive a 50% penalty. Assignments will not be accepted after two PEP days.

## **Excused Absences**

If for some reason you have to miss class, please make sure your parents email me. It will be your responsibility to make up any quizzes or assignments missed – I will not pursue you in this manner. Any missed work will be accepted the following PEP day after your absence without penalty. After that, the late work policy above will be enacted. *If you need a quiz, please email me immediately so I can send you an electronic copy of the quiz you can take at home.*

## **Course Pre-requisites**

Pre-Algebra, algebraically solving for a single variable, knowing how to use a calculator

Please bring to every class:

- √ Physics textbook by Tom Hsu
- √ Binder and paper, writing utensils
- √ scientific calculator (need not be graphing)
- √ homework assignments and tests (on days they are due)
- √ printed out *Skill & Practice*, labs, *Physics Classroom*, and other assignments

## **Organizational Materials**

I have prepared the following materials to keep you organized throughout the course of the year:

- (1) *Weekly Pacing Schedule* – this is for you to tack to your cork-board at home, so you can see at a glance, what assignments are due during a given week of the quarter.
- (2) *Check-off List of Things to Do* on the Weebly webpage – by Friday afternoons, I will update the Weebly webpage, summarizing the week's lessons, along with a preview for the next week.

Please read this syllabus very carefully as both you and I are bound to the terms of it (with some special exceptions, when and where noted during class).

You may contact me anytime if you have questions about the content of the course. I may be reached by email at [peplabrat@gmail.com](mailto:peplabrat@gmail.com); allow 24 hours for a response.

I look forward to a wonderful year in our exploration of conceptual physics. God be glorified for coming up with such an amazing system of micro- and macro- mechanics! Creation truly does tell a story of how brilliant our Creator is.