

## AP-B Physics

### AY 2013-2014

Welcome to AP-B Physics. This is a trigonometry based physics course for high school students planning to pursue technical or professional degrees in college. For students who successfully complete this course and make a sufficient score on the AP-B examination, the course will provide college credit that will:

- 1) meet the 8 hour lab science core degree requirement at Texas Public Universities;
- 2) meet the trigonometry physics degree requirement for life science and pre-professional majors including (pre-medical, pre-dental, pre-pharmacy, pre-veterinarian, etc.).

Students planning to pursue degrees in physical science based subjects including physics, engineering, chemistry, mathematics, geophysics, etc. must take a more advanced physics class, University Physics (Calculus based physics sequence), to meet their degree requirements. University Physics is required for admission to medical school in Medical Physics and either required or recommended for admission to MD programs at more prestigious medical schools. For these students, this course will not count from science degree credit, but will:

- 1) meet the required background prerequisite for admission to University Physics;
- 2) count for degree credit as an elective with suitable AP score provided an elective exists in the student's degree plan.

As a student in this course, it is assumed that you are a serious and mature individual capable of taking responsibility and will be treated as such. I will expect you to come to class ready to participate in the learning activities and to behave in a manner that adds rather than detracts from the learning process for other students in the course.

**Delivery:** This class is being taught cooperatively as a flipped class between Tarleton State University and your local high school as a hybrid course using ITV (Interactive Television), web, and local instruction resources.

**Flipped Course:** This class is being taught as a flipped course. In a traditional university course (pre-2000's), students listen to a faculty member lecture in a large auditorium while the student took notes. The student would then go home and read their notes and their textbook to try and understand what the instructor was communicating before attempting their homework and other outside class assignments. Class lectures are known to be an inefficient and ineffective instruction technique in physics for most students, but until recent technology advances it was one of the few methods available and it is possible to teach several hundred kids in a class which reduces cost. In a flipped class, lecturing and note taking are done outside of class via pre-taped videos and web resources. Students are provided note outlines to ensure the student gets good

notes while videos can be stopped and played at the speed needed by the student. This allows the limited and precious class time is spent interacting with your instructor discussing the material, working problems, and doing hands-on activities to develop a deeper understanding of the material. Homework is submitted and graded electronically to provide the student with immediate feedback and to allow them to rework the problems till they master the concepts. The student may then be asked to show how they worked the problem in class with follow up questions being posed by the instructor or class discussions about more efficient ways of attacking the problem.

### **In-Class Activities:**

Monday, Wednesday & Friday: You will be working with their local instructor performing labs and other hands-on activities or having their knowledge assessed through tests.

Tuesday & Thursday: Dr. Daniel Marble will be holding class discussions on activities previously performed by you and discussing new physics concepts via ITV.

### **Out-of-Class Activities:**

You are expected to read your assigned textbook as well as filing out your class notes by watching the assigned video. You will also be provided with Logger Pro software through the school's site license in case they need to finish a particular lab at home.

To accommodate schedules for students involved in different curricular activities as well as different Internet access, assignments are posted a week in advanced so that students can manage their time accordingly.

**Textbook:** Physics 6<sup>th</sup> Edition by Giancoli – This is a very good textbook and is used for UIL Science.

Reading a physics textbook is different from reading History, English, or other non-mathematical subject. Ten pages of physics is about the most a student can read in a night and still master the required material!! You must work through each page of the textbook using paper and pencil until you can reproduce the concepts and solve the example problems when asked. Physics is not a memory course. It is a logic course much like playing chess. You have to understand the concepts and be able to apply math to solve the problems rather than memorizing formulas if you are to be successful. Thus, you should try and read small sections of material over many evenings rather than trying to cover a lot of material in one night. Write down any questions over the material that you have and bring them to class. You will be asked questions over the reading in class and even asked to come to the board to work problems.

**Course Website:** You are expected to check the course website daily. The course website provides you with handouts, videos, and class notes necessary for successful completion of the course.

A weekly schedule of all student assignments along is available on the course website at: <http://www.tarleton.edu/physics/APPhysicsB/index.html>

**Online Homework:** Homework will be collected and graded electronically through the webassign homework system. Student can access webassign at [www.webassign.com](http://www.webassign.com)

The student will logon using the institution code **tarleton.tx** and a username and password that will be provided to you by your instructor. Once the student has logged into Webassign, they should print out their assignments and put them into their binder. The student should then work out each problem clearly on paper (no more than two problems per page) showing their reasoning on each step. Once the student believes they have solved the problem, they will enter their answers into Webassign where they will be instantly graded. The student may rework any incorrect problems and resubmit their new answers for up to 50 submissions or until the due date. Start your homework assignments when they are assigned and not the night they are due so that you can complete them before they are due and ask questions if you get stuck. The cost of using Webassign, textbook cost, and other aspects of this course have been generously covered through a grant by the Sid Richardson Foundation.

Student written solutions should be placed in the student's physics binder with the problem set. The student's binder will be collected randomly throughout the year and the problems graded on technique.

**Logger Pro:** Logger Pro is a software package that enables students to model real world problems using video analysis as well providing tools to graph and analyze data. We will use Logger Pro to perform a wide range of lab and other activities in the classroom. You also have free access to Logger Pro on your home computer as part of your school's site license in case you need to finish an assignment at home instead of coming in after class.

**Contact Information:**

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**Academic Help:** Feel free to contact me through Webassign if you are having trouble on a homework problem. I get more than a hundred emails a day so using Webassign will ensure your email doesn't get lost. If you need me to look at your work, you can scan it and send it as a Pdf attachment by email to [marble@tarleton.edu](mailto:marble@tarleton.edu). I also have a Skype account which can be used to contact me when I am online. You also have your local high school instructor as a source of information as well as your textbook and a wide range of videos on the class website.