**How to succeed in Physics by trying hard.**

**Preparation for this Course**

If you did well in middle school physical science, you will probably learn the concepts of this course faster than those who have not because you will be familiar with the language of physics. Also helpful will be the state of your mathematics preparation – if your mathematics ability is better than most, you will pick up the mathematical aspects of physics faster. If you find that your math skills are poor, do not hesitate to seek help from a teacher or tutor as soon as possible.

**Learning to Learn**

Each of us has a preferred learning style and a preferred means of learning. Understanding your own style will help you focus on aspects of physics that may give you difficulty and to use those components of the course that will help you overcome the difficulty. Obviously, you will want to spend more time on those aspects that give you the most trouble. If you learn best by hearing, lectures will be very important. If you learn by explaining, then working with other students will be useful to you. If solving problems is difficult for you, spend more time learning how to solve problems. In addition, it is important to understand and develop good study habits. Perhaps the most important thing you can do for yourself is to set aside adequate, regularly scheduled, study time in a distraction-free environment.

**Answer the following questions for yourself:**

* Am I able to use fundamental mathematical concepts from algebra, geometry and trigonometry? (If not, plan a program of review.)
* In similar courses, what activity has given me the most trouble? (Spend more time on this area.) What has been the easiest for me? (Do this first; it will help to build you confidence.)
* Do I understand the material better if I read the book before or after the lecture? (You may learn best by skimming the material, going to lecture, then undertaking an in-depth reading.)
* Do I spend adequate time studying physics? (A rule of thumb for a class like this is to devote, on average, 2.5 to 3 hours per week out of class. Sometimes more, sometimes less depending on what is being focused on that week.)
* Do I study physics every day? (Spread your time over the whole week! Do not do things last minute.) At what time of the day am I at my best for studying physics? (Pick a specific time and make it a habit.)
* Do I work in a quiet place where I can maintain my focus? (Distractions will break your routine and cause you to miss important points.)

**Working with Others**

Scientists or engineers seldom work in isolation from one another, but rather work co-operatively. You will learn more physics and have more fun doing it if you work with other students. You may wish to form your own study group with members of your class. Between three and five members is best. Use email to keep in touch with each other and ask question about the day’s lecture or the upcoming assignments. Your study group is an excellent resource when reviewing for a test or exam.

**Lectures and Taking Notes**

An important component of any college or university course is the lecture. In physics, this is especially important because professors will frequently do demonstrations of physical principles and work example problems on the board. These are learning activities that will help you to understand the basic principles of physics. Your teacher will do the same. **Don’t miss lectures**, but if you do, ask a friend or member of your study group to provide you with notes and let you know what happened.

Take your class notes in outline form and fill in the details later. It can be very difficult to take word for word notes, so just write down the key ideas. Diagrams should be sketched quickly, with the details added later. After class, edit your notes, filling in any gaps or omissions and noting things you need to study further. Refer to the textbook by page, equation number or section number.

Make sure you ask questions in class or see your teacher before or after school. Remember that the only "dumb" question is one that is not asked.

**Using Your Textbook**

The district paid a lot of money for that textbook – so don’t just carry it around – ***use it!*** All modern textbooks have been designed to be as interesting as possible and with many kinds of learning aids incorporated in them. In addition to reading the assigned sections of the text, be sure to work through all the examples, filling in any missing steps and making note of things you don’t understand. At the end of each chapter there is usually a series of non-mathematical exercises designed to test your understanding of the concepts covered in the chapter - try these regularly. Get help right away with the concepts that confuse you!

**Tests and Examinations**

Taking a test is stressful, but if you feel adequately prepared and are well rested, your stress will be lessened. Preparing for a test is a continual process; it begins the moment the last test is completed. You should immediately go over the test and understand any mistakes you made. If you worked a problem and made substantial errors, try this: take a piece of paper and divide it down the middle with a line from top to bottom. In one column, write the proper solution to the problem. In the other column, write what you did and why. Also write why your solution was incorrect, if you know. If you are uncertain as to why you made your mistake and how to avoid it again, talk to your teacher. Physics continually builds on fundamental ideas and it is important to correct any misunderstandings immediately. **Warning:** While cramming at the last minute may get you through the *present* test, you will not adequately retain the concepts for use on the *next* test.

**This Class**

One of the purposes of this course is to prepare you for a rigorous college or university experience. The long-term goal is to do well in your college classes. They are only two years away. Start you preparation now! I will do everything I can to help you, but the responsibility is on your shoulders.