

Physical Science Syllabus - Physics

Mr. Thomas Schulz
2011 - 2012 School Year

Text: Science Spectrum, Physical Science, by Holt, Rinehart, Winston, 2004
WLHS Physical Science Lab Manual, © 2009, revised 2011

Purpose: The purpose of this course is to learn man's scientific interpretation of God's creation from a scriptural viewpoint, especially as it relates to the tools of science, matter, the laws of motion, and forms of energy. Students will have a basic scientific background in physics that will equip them so they are able to function well in other WLHS science classes as well as in our changing world.

Course Materials: Please bring the following items to class each day:

- Your textbook
- A notebook or loose-leaf paper for recording daily notes
- A binder containing your Lab Manual
- A pen or pencil
- A highlighter
- Student Planner
- Calculator

In addition, a pocket folder or binder will be useful for keeping handouts, worksheets, and returned quizzes and tests. Colored pencils will be useful for the many graphs that will be constructed.

Classroom Expectations: What are your goals in life? How do you plan on accomplishing them? My expectations are that you will want to be smarter tomorrow than you are today. I will be helping you to do that, but we need to work together. First and foremost, appreciate your capabilities as gifts from God. Second, be a high performer – do not settle for just getting by. I have high expectations for each of you. This is how we will do this as a team:

1. TO GOD BE THE GLORY! That means, do everything with God at your side.
2. RESPECT – your classmates, your teacher, your Savior at all times. I will treat you as the Christian person that you are; I expect you to conduct yourselves as such. So, be non-selfish, listen, observe, participate, arrive on time, be an active learner physically and emotionally each and every day.
3. NO SHORTCUTS! When things get tough and you have lots of homework, and it is difficult to understand physical science, it would be great if there was an 'Easy' button to press and make it go away, but there isn't. Sorry. Just do the work! Please ask for help if you need it.
4. NO EXCUSES! Rather, be a solution finder.
5. Other Rules – have a fun time, but understand the limits so we have orderliness in our classroom:
 - Do not be disruptive or disrespectful to me or to your fellow classmates.
 - No eating, drinking, or potty breaks; if you must chew gum, then it needs to be as a human being and no one around you should be aware of it, especially me.
 - Stay in your seats unless told otherwise.
 - Abide by all lab safety rules at all times.

Tardiness: Physical Science class begins when the tone completes its sound. I expect that at that time you will be seated, have your materials ready, and be prepared to learn and participate in class. The student handbook (your planner) provides information concerning tardiness to school and to class and its consequences.

Grading and Assessments: A variety of assessments will be given to evaluate your learning. The main kinds of assessments will be tests, quizzes, lab reports, homework, and class and group participation. During the semester, you will have the opportunity to work on a couple of large individual projects. These projects will involve demonstrations of devices to the class.

Grades will be determined on the number of points you achieve for each activity or assessment. Numerical scores will indicate the number correct out of the total number possible. You are expected to complete all assignments on time. **“On time” means at the beginning of the class on the day that the assignment is due.** The highest possible grade for a late assignment will be fifty percent of the total possible. You will receive a ‘0’ for any work that is not turned in. For excused absences, you have 1 day for each missed day to make up the work. For example, absent on Monday, Friday’s assignment, originally due Monday is now due on Tuesday, Monday’s new assignment is due on Wednesday. **You are responsible for turning in work, for getting missed assignments from me, and for reminding me of your absences on the day of your return to school.**

No extra credit: You are expected to learn the regular material presented during class and extra work is just that - extra, over and above the normal workload. I do not normally have extra credit projects available. Completing all the work on time and doing the best of your God-given abilities will ensure fair grades.

Cheating – (both giving and receiving) and plagiarism are not tolerated and are subject to disciplinary action. Refer to the Student Planner for more information and consequences.

Grades will be posted to the PASS system at least once per week.

Grading Percentages by Assessment type:

Tests.....	35%
Projects.....	25%
Lab Reports	20%
Quizzes	10%
Homework and Participation.....	10%

Lab Partners: Each student will have one or two lab partners. Lab partners must work together to complete the lab exercises as well as the lab reports. Most reports are individual efforts. Sometimes you and your partner will turn in one report. In these instances, each partner will receive the same grade on the report, so it is necessary to be responsible for your partner as well as yourself. A number of labs take the entire class period so time management, cooperation, and diligence are required to complete the work.

Course Outline: We will study the following units in the order listed. The time frame of each unit may vary somewhat, but we will attempt to complete everything shown here. Generally, we will have tests at the conclusion of each Chapter rather than unit tests. There is at least one lab for each chapter.

Unit 1: Basics - Science, Measurement, and Safety

Textbook: pp. 2 - 31 and 828 - 841; 3 - 4 weeks

Scientific Method, How to Measure, Lab Equipment, Safety, SI Units and Conversions, Significant Figures, Scientific Notation, Graphing and Displaying Data.

(If this is a 2nd Semester course, then this unit will be a review and be only 2-3 weeks)

Unit 2: Motion and Forces

Textbook: pp. 316 - 371; 4 - 5 weeks

Motion, Velocity, Acceleration, Forces, Newton's Three Laws, Projectiles, Downhill Racer Project.

Unit 3: Energy, Work, Heat, Temperature

Textbook: pp. 376 - 449; 5 - 6 weeks

Machines, Mechanical Advantage, Balloon Popper Project, Kinetic and Potential Energy, Heat, Work, Temperature, Thermal Energy

***Unit 4: Waves, Light, and Sound**

Textbook: pp. 452 - 523; 2 - 3 weeks

Electromagnetic Spectrum, Light, Sound, Mirrors, Lenses.

***Unit 5: Electricity**

Textbook: pp. 528 - 557; 1 - 2 weeks

Static Electricity, Circuits, Schematic diagrams, Ohm's Law, Current, Voltage, Resistance.

**Note: Due to the time constraints of one semester, Units 4 and 5 are considered optional units and will likely not be covered in full. Concepts of waves, light, and electricity will most likely only be introduced at a general and basic level.*

Course Outcomes: The student will be able to:

- Recognize how God designed all the matter of the universe;
- Recognize God's order in how matter moves and interacts;
- Apply the principles of the scientific method of problem solving using written and oral research and laboratory reports;
- Perform experiments to understand how and why matter interacts the way it does;
- Develop thinking skills needed in problem solving;
- Use scientific and mathematical procedures to relate how forces, motion, energy, mechanical advantage, waves, and electricity affect matter;
- Demonstrate scientific knowledge by making measurements in the SI system, by constructing models and machines, and showing skill in using scientific equipment;

- Analyze scientific data and interpret results;
- Read and construct graphs for representing and analyzing data, and
- Show a basic understanding of scientific processes as preparation for other WLHS science classes.

Questions: I am available for assistance outside of class; the best time is after school. If there are any questions about the course, or if you don't understand something, you or your parents are urged to call me at (414) 453-4567, ext. 2221. You may also contact me at home prior to 10 pm. at (414) 463-2478.

My email address is: <tom.schulz@wlhs.org>. I check email at least once each weekday and will respond promptly.

I have a webpage on the WLHS Science Department website. Assignments and daily topics may be viewed or printed from this site. The web address is: <<http://schulz.wiscoscience.com/>>.

In addition, students who need extra help or a tutor are encouraged to use the Extended Learning Center (ELC) during their study halls.

Physical Science is a class where you may learn about many of the wonders of God's creation. The earth exhibits the glory of God. I look forward to helping you learn about science and to have fun while we explore the matter and energy of creation together.