PACIFIC AMERICAN SCHOOL

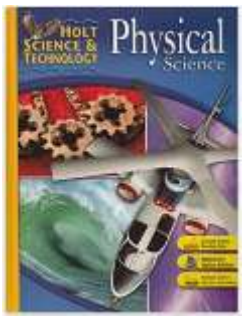
MS Physical Science 2021~2022

Tue & Fri 8:00~9:25, Wed 8:00~8:45. Room S203.

Ms. Liu

Course Description

Welcome to the wonderful world of science! In this year-long course, students will learn about natural phenomena in physics and chemistry through readings, posters, models, puzzles, and labs. Concepts are emphasized, and students are introduced to the scientific method of inquiry.



Primary Textbook and Required Materials

1. *Physical Science. Holt Science and Technology,* 2007. ISBN: 978-0030462283
2. Pencil, eraser, loose-leaf paper and graphing paper, folder, and stapler.
3. Calculator

Objectives

- Science is the study of the natural world as well as a method of thinking.
- Understanding leads to appreciation.
- Concepts are emphasized.
- Understand how to *apply* math. Did you know calculus and physics were developed concurrently?
- Always wonder "why?" and try to find the answer. Could you derive the formulas from big ideas instead of memorizing them? How could you apply science?
- Intuition is key.
- Enjoy!

Standards

The learning objectives for this course are based on the Next Generation Science Standards and Science Content Standards for California Public Schools

- Explore and analyze the world using scientific methods.
- Recognize how science and technology are related and how they affect humans and the environment.
- Understand the properties of matter, motion and forces, and conservation of energy.
- Understand the atom, the arrangement of elements in the periodic table, and chemical reactions.
- Understand sound and light waves.

- Understand the fundamentals of electromagnetism and how they are used in our daily lives.

Classroom Behavior Expectations

Failure to comply with the policies may result in parent conferences and/or Administrative referral. Please refer to the Student Handbook for existing guidelines.

1. Be prepared at the bell. Stationary, books, calculator, and homework should be out and ready.
2. Remain in your assigned seat and stay on task. Do not sleep in class or speak out of turn.
3. No laptops, cell phones, or another course's material during class.
4. Raise your hand before speaking. Speak English. Respectfully listen while others are speaking. Be courteous to classmates, faculty and staff at all times.
5. Restrooms are to be used before and after class. If a student needs to leave class, he/she must have permission. Stay in the classroom during breaks.
6. Students are not allowed in lab rooms when teachers are not present.
7. Keep your work area neat and tidy. Pack up your books and stationery, remove eraser crumbs from the tabletops, and push your chair in before leaving your desk. Do not write on the tables.
8. Walk, do not run, in the lab area. Follow directions and ask permission before using classroom equipment.
9. Clean up your lab station before leaving.
10. I am happy to help answer questions outside of class, but please gather your questions in a list beforehand and make an appointment. Also, it's best not to ask teachers during their lunch break.
11. Please keep track of pencils/pens/erasers, and use your own. There is a lost and found box.

Course Requirements

1. Preview vocabulary for each chapter.
2. Before starting an experiment, complete a pre-lab including your question, hypothesis, procedure, and chart set-up for data collection.
3. Students are expected to take notes during class, review notes at home, and read the textbook.
4. Keep an agenda book recording assignment due dates, listed on the board and class website.
5. In case of absence, students are responsible for checking the class website for announcements and new assignments, as well as reviewing a classmate's lecture notes. Missing work must be turned in within one week of the student's return.
6. An unexcused absence on a test day will result in a loss of 7 points in the make-up test. To be excused from the late test penalty, a note from the doctor or parent/guardian explaining a valid reason for absence is required on the day of return.
7. Homework should be turned in on time, at the start of class. Late work will not be accepted, or will be penalized.
8. Academic honesty is expected of all students. Homework must be completed independently.

Grading(Category percents are subject to change.)

Homework 25%

- At the start of each class, have your packets turned to the homework page due on that day. A completion check mark will be given, which will count for punctuality homework credit.
- At the end of the chapter/unit, the packet will be collected. Completeness and neatness are graded, not just the correct answer. When asked to "explain" or "describe", please do not give one-word answers. Explain concepts clearly, showing formulas or diagrams when necessary.

- Include SI units**.**
- Write your name on your packets and keep them neatly in your science folder. Lost packets will have a penalty of -10 points.

Class Work 20%
Labs 15%
Tests and Projects 25%

- Tests cover 1~2 chapters. Calculators may not be shared.
- Review vocabulary, formulas, and concepts in notes.
- If homework is done carefully, understanding should be shown for similar questions on the test. The best way to prepare for tests is to pay attention, complete homework honestly, ask questions, and review vocabulary and the study guide before test day.
- We will be testing in another room, one student per table. I will show you your seat.
- Only a pencil, pen, eraser/white-out, bare calculator without the shell/cover, and your test paper are allowed on your table. No clutter, no pencil boxes, no folders, etc.
- Cell phones must be put away. They may not be used as calculators. If I find a phone, you will automatically be deducted 10 points, especially if hidden in your pocket, sleeve, or pencil box.
- Projects, posters, and presentations may count as 1 test grade.

Class Participation 15%

- Homework is checked for completion at the start of each class.
- This score will be affected by noncompliance with classroom behavior expectations, such as arriving to class late or unprepared, sleeping during or disrupting the lesson. Speak English on campus.

Bonus Points- available on homework and exams

Course Outline

I. Introduction to Matter: Chapters 1~4 (4 weeks)
II. Forces and Motion: Chapters 5~7 (6 weeks)
III. Work, Machines, and Energy: Chapters 8~10 (6 weeks)
IV. Electromagnetism: Chapters 17~19 (6 weeks)
V. Waves, Sound, Light: Chapters 20~23 (4 weeks)
VI. Atom: Chapters 11~12 (2 weeks)
VII. Introduction to Chemistry: Chapters 13~16 (6 weeks)

Lab Report Format

1. Include your name and the names of your partners.
2. Title

3. Objective/Question – What is the goal of this lab? This should be clear and concise.
4. Hypothesis – Make an educated guess to answer your question. Include background information with cited references.
5. Independent, Dependent, and Controlled Variables –
    a. Independent variables are manipulated, input conditions that affect the outcome of your experiment.
    b. Dependent variables are responding, output conditions that you measure.
    c. Controlled variables are other factors that could affect your measurements. You need to control them so that your data is not biased.
6. Procedure – Provide step-by-step instructions on how you conducted your experiment so that others can replicate your results. Labeled diagrams and pictures should be included.
7. Data – Measurements should be recorded neatly in tables, charts, and graphs. Be sure to indicate SI units.
8. Analysis – This is a very important part of the lab report.
    - Explain your observations using scientific principles. If calculations are included, clearly show what formulas you are using and references if necessary. Do your results support your hypothesis? Why or why not?
    - Were there any errors? How could you improve your procedure to prevent them next time?
9. Conclusion – Briefly summarize the lab's goal and how your results support or contradict your hypothesis. How could your results benefit society? What further research could be done on the topic?