

Physical Science

Instructor: Vicki Dincher vdincher@comcast.net

Course Goal: Following this course, students will be well prepared to succeed in future high school or pre-AP science courses, specifically biology, chemistry and physics.

Web-ex Lectures/Discussions: When live, these will be held **Wed. 3:30 PM–4:30 PM EST**. Other course lectures will be recorded and available for students to playback at their convenience. Regular Skype “office hours” will be listed after classes begin (survey of student time zones will determine the actual office hours)

Course Description: Science is a way of knowing, a process for gaining knowledge and understanding of the natural world. This class places emphasis on concept understanding and analysis, discovering the natural world around us and how things work. The course is designed to continue the investigation of the physical sciences begun in earlier grades. The course will build a rich knowledge base to provide a foundation for the continued study of science. The investigations will be approached in a qualitative and quantitative manner in keeping with the developing mathematical skills of the students. The curriculum will integrate the following topics from both chemistry and physics:

- Structure of atoms
- Structure and properties of matter
- Motions and forces
- Conservation of energy, matter and charge

This course is:

- Open to students in 8th-9th grade (advanced 7th graders will be considered)
- For students who are ready to begin working toward college level reading
- 34 weeks with coursework beginning the last week of August

To apply, request a student application from the instructor

Lab Activities: Inquiry is the central theme in physical science. It is an integral part of the learning experience and will be used in both traditional class problems and laboratory work. The essence of the inquiry process is to ask questions that stimulate students to think critically and to formulate their own questions. Observing, classifying, using numbers, plotting graphs, measuring, inferring, predicting, formulating models, interpreting data, hypothesizing, and experimenting all help students to build knowledge and communicate what they have learned. Inquiry is the application of creative thinking to new and unfamiliar situations. Students should learn to design solutions to problems that interest them. This will be accomplished in a variety of ways, but approximately ten hands-on experiments will complement the core concepts studied. These experiments can be completed at home (adult supervision is advised). Most use household materials, but some will also include online investigations to engage in the modern world of scientific research, examine several specimen dissections, and analyze detailed microscopic studies (microscopes strongly recommended, but not required). Suppliers for materials required for experiments not using common household materials will be provided with the course syllabus.

Scientific Writing: A vital skill required for success in college science courses is effective scientific writing. To that end, instruction in the process of writing a formal lab report will be introduced in this course.

Communications: Course instruction occurs through e-mail, the website and my contribution to the forums. I also post podcasts and short video clips explaining course concepts as needed. Each year more interactive technology is added. I am available to students through g-chat and Skype by appointment and at regular “office hours”.

Technical needs: Broadband, high speed Internet and an e-mail account that accepts large files. Weekly assignments are downloaded as PDF files from the website.

Time Commitment: The qualified student will spend 5-7 hours per week on this class. This accounts for reading the assigned texts, answering multiple-choice questions, writing short essays and discussing class work and reading assignments with others in the forums.

Class Meeting Time: Students do not "meet" at a scheduled time, but all homework is due via e-mail by Tuesday evenings, midnight EST. I update the website syllabus and send out weekly class updates via e-mail on Wednesdays.

Qualifications: Vicki has an MS in biology (2008) with my BS from the University of Pittsburgh (major biology, minor math). She has experience teaching at both the high school and community college level. From 1995-present, Vicki has been teaching biology and physics classes (both first year and AP levels) at several home school co-ops.

Course Priorities: The number one priority of this course is to prepare the student to successfully complete future high school science courses. The number two priority is to expand the student’s appreciation for the amazing complexity and wonder of our physical world

Major Projects: One science fair project will be completed for this course in a topic that interests the student and preapproved by the instructor.

Required Texts: Physical Science: Concepts in Action by Wyssession, Frank & Yancopoulos; published by Pearson Prentice Hall (2004). ISBN: 0-13-069988-8

Who should apply: Students should be in 7th, 8th or 9th grade.

To apply or ask a question regarding this class, email Vicki Dincher at vdincher@comcast.net