

PHSN 101: Fundamentals of Physical Science

Fall 2016

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Help Session: Th 12-1pm @ OC 4512

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Help Session: W 10:30-11:30am @ www.cccconfer.org

<http://blackboard.miracosta.edu>

[Blackboard](#) is your first source for information!

Intelligence, ability, and talent are NOT fixed!

Required Materials

Colored ABCD card
EVERY CLASS!

The Sciences: An Integrated Approach, Trefil & Hazen © 2013 John Wiley & Sons, Inc., ISBN: 9781118185261 (but any format will do, e.g. 9781118130353 or 9781118545454)

reliable internet access

email, checked regularly

appropriate commitment

an open mind...

Hmmmm...

- What is science?
- What forces exist in this universe?
- How do atoms combine to form new materials?
- Why do planets wander slowly across the sky?
- Why is it easier to make an omelet from an egg than to make an egg from an omelet?
- What is magnetism?
- What is color?
- Why are there so many different kinds of materials in the world?
- How do we determine the ages of fossils?
- What causes seasons?
- What are stars?
- Are there planets around other stars?
- How many galaxies are there?
- How do we know what is inside the Earth?
- So, about this greenhouse effect...

An introduction to the physical world around us.

This course introduces the nonscientist to fundamental topics in physics, chemistry, earth science, and astronomy while emphasizing the nature and processes of physical science. While the course emphasizes primarily *qualitative* comprehension, the sciences utilize the language of mathematics so *quantitative* reasoning is sometimes required. I hope to convey to you some of the excitement and satisfaction that scientists derive from investigating the physical world around us while simultaneously inspiring you to do the same.

You cannot teach a man; you can only help him to find it within himself.

Galileo said this hundreds of years ago. Socrates knew it thousands of years ago. Research shows that humans must construct their own knowledge: *cognitive conflict and rigorous intellectual discourse are required to elevate your understanding*. As facilitator, I will guide you through carefully designed intellectually engaging learning sequences that elicit your preconceptions, confront conflicting ideas, and resolve issues. Successful students help each other become metacognitive and develop their critical reasoning abilities, quantitative literacy, evidence-based problem-solving skills, and communication skills by practicing regularly. **It is not what I do that matters; it is what you do. Ultimately, you are responsible for your own level of preparation, engagement, and mastery.**

Policies

- **Late/Make-up Work:** None, for any reason. There are safeguards built in; see the grading scale. Successful students plan accordingly.
- **Preparation & Attendance:** Mandatory. Lecture alone is insufficient for developing a robust understanding, so our active learning environment is an opportunity to work towards mastery. You will complete textbook readings and watch video lectures prior to attending class. Then, by engaging earnestly with your peers in class, you will develop a more expert-like understanding. Successful students have all materials, are prepared, timely, and participate fully in all aspects of the course. Others lose participation points.
- **Collaboration:** Necessary. Refer to above course philosophy and previous bullet point.
- **Help:** In person and online sessions are open to all students (see above). Earn bonus points for participating in sessions after your first one. Appointments are also available.
- **Class Etiquette:** Focus! Any disruption of the learning environment may result in your removal from class and possibly disciplinary action. See MiraCosta [BP 5500](#), [AP 5500](#), [AP 5520](#), and the [college catalog](#). All electronic devices will be silent and out of sight. Anyone in violation loses participation points.
- **Academic Integrity:** Required. Your work must be unique and original, even after collaborating. Any form of academic dishonesty may result in the maximum possible penalties. See MiraCosta [BP 5500](#), [AP 5500](#), [BP 5505](#), [AP 5505](#), [AP 5520](#), and the [college catalog](#).
- **Note-Taking & Recording Devices:** Recording is explicitly prohibited. *Taking notes* is a skill you are expected to develop in a general education course (\neq copying).
- **Response Time:** Expect return emails within 48 hours, *excluding weekends and holidays*.

Special Accommodations

A student with a verified disability may be entitled to appropriate academic accommodations. Contact the [Disabled Students Program and Services Office](#) at 760.795.6658.

Workloads for College Courses

You should expect to spend a minimum of two hours per week outside of class for each unit of credit attempted (full term courses).

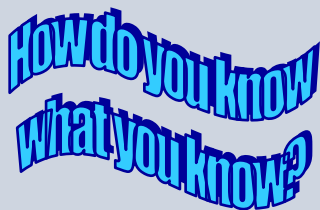
Overall %	Grade
≥ 90	A
80 – 89	B
70 – 79	C
60 – 69	D
≤ 59	F

Learning Objectives:

- Analyze experimental data to determine correlations between independent and dependent variables and construct justifiable cause and effect explanations for those correlations.
- Determine the forces acting on a system of objects then predict the objects' motions, based on Newton's laws and gravitation.
- Predict and explain the basic chemical and physical properties of an element, based on its atomic structure and position on the periodic table.

Overarching Goals:

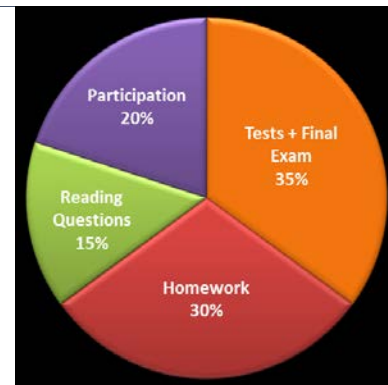
- Witness, appreciate, and employ the nature and process that is science through the eyes of our physical universe.
- Appreciate the practicality and relevance of the sciences to your everyday life.
- Comprehend the main ideas and develop the "big picture".
- Develop critical reading, thinking, and problem-solving skills useful in a variety of situations.
- Foster a lifelong interest in the sciences and relevant current events.



Stargazing Opportunities
[MiraCosta Astronomy](#) holds free public star parties during regular semesters. See the [website](#) or call 760.757.2121 x6201.

I do not give grades; you earn your grade.

Everyone starts with a zero. Your grade is based on your absolute score; there is no curve. It is in your best interest to help each other learn the science. Incompletes can only result from "incomplete academic work for unforeseeable, emergency, and justifiable reasons." See the [college catalog](#) for more information.



- Participation (20%)** – Some activities will be graded primarily on your level of preparation and engagement. Some may be timed.
- Reading Questions (15%)** – Multiple-choice reading questions (RQs) are required prior to most class meetings (see the course calendar on [Blackboard](#)). They are electronic only (on [Blackboard](#)) and due 30 minutes before class starts on each due date. Each set is untimed and allows two attempts but you must finish each time you start. The higher of the two attempts per set contributes to your grade. Reading assignments are for the text [SIA 7e](#). *In addition to reading assignments you will watch video lectures as assigned and come to class prepared to ask questions, participate in discussions, and otherwise work collaboratively on a variety of activities.*

The Syllabus Quiz is an attendance requirement online in [Blackboard](#): you will be dropped if you do not complete it before its deadline.

- Homework (30%)** – *Significant emphasis is placed on assessing how well you explain your reasoning, both verbally and in writing. Successful students master this skill.* You will greatly benefit from working outside of class to ensure you fully understand the reasoning that leads to correct answers. Any activity not finished in class is homework, deserving of a significant amount of out-of-class study time. Many find that working with assistance during help sessions is extremely useful in preparing for exams. *You are expected to work through all activities assigned in sequence with the flow of topics in the course* (see the course calendar on [Blackboard](#)). Prior to each of the tests you will turn in a "portfolio" of your 10 best assignments from that test's material. They will be graded using the rubrics posted on [Blackboard](#) and the final score of each portfolio scaled out of 25 points. **Some activities are PDF "fillin" forms that require using Adobe Reader outside of a web browser. Opening the files inside of a web browser and/or using other PDF handlers will not produce the required results!** A few assignments are not included in the portfolios and have separate due dates in the course calendar, e.g. discussion board posts, Planet Hunters, and Galaxy Zoo.

- Scaled Participation and Homework** – Both the "Participation" and "Homework" portions of your grade will be scaled as indicated at right. This can alleviate an occasional low score and/or a missed assignment but will not make up for substantial deficits. **Note that this does not apply to your overall course grade.**
- Tests + Final Exam (35%)** – There will be five regular tests, each over material covered since the previous one; *the fifth test is during the final exam period* (see course schedule and calendar on [Blackboard](#)). The cumulative final exam is online only and timed (110 minutes). You are allowed one *handwritten* 8-1/2" × 11" cheat sheet (final exam only) and this score may be used to replace one of the five regular tests. All tests may include various question types (e.g. multiple-choice, short answer, mathematical problems, etc.).

Score (%)	Scaled
≥ 86.0	A
74.0 – 85.9	B
62.0 – 73.9	C
50.0 – 61.9	D
≤ 49.9	F

Important Dates

Your responsibility!

22 Aug	First day of classes (full term)
26 Aug	Last day to add this course
02 Sept	Last day to drop w/no record and be eligible for refund
23 Sept	Last day to file for P/NP
18 Nov	Last day to drop with a W
12-15 Dec	Final Exams
17 Dec	End of term