

Applied Earth Science

Course Syllabus



Supervising Teacher

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Course Description:

This course is only open to students by faculty approval. This course meets the graduation requirement for a laboratory science course. This course meets the graduation requirement for a laboratory science course. Earth Science focuses on the study of Earth and space. The topics covered include astronomy, earth structure, the scientific method, the solar system, earthquakes, volcanoes, fossils, rocks, and minerals, the study of Earth's surface, climate and weather, weathering, erosion, water resources, the atmosphere, weather, climate, and man's impact on the Earth.

Required Textbook:

*PCI Earth and Space Science Student Textbook
PCI Earth and Space Science Teacher Binder*

Recommended Supplemental Materials or Software:

*PCI Earth and Space Science Student Activity Journal
Software downloaded that will allow you to view .swf and .wmv files (I recommend irfanview.)*

Supplies or Equipment:

Small amounts of supplies that are easily obtained will be needed to complete labs. Refer to the teacher binder and the moodle course for specific lists.

Course Evaluation:

A. Semester Examination: 12% of semester grade

A comprehensive semester examination will be given during exam week each semester. Semester examinations will be given by a supervising instructor at a previously agreed upon location, most often a resource center. Practice quizzes, study guides, a list of lecture topics and times and other resources to help students better prepare for the examination can be found on the moodle site for this course.

B. Home Participation and Portfolio: 60% of grade

Home participation is to be determined by the home teacher. The participation may include, but is not limited to, textbook activities, quizzes, unit tests, projects, oral reports, or research papers. Grades for home participation will be submitted to the contact teacher each quarter for inclusion on the student's report card. A portfolio of student work which may include copies of some of the laboratories will be presented to the contact teacher once per semester.

C. Laboratory Expectations: 28% of grade

Students are expected to complete four (4) labs per semester as indicated in the moodle course page. All laboratories must be completed only by the student and a full experiment write-up/report must be submitted to the supervising instructor on anchor due dates.

End of Course Assessment:

Since this course is required for high school graduation in the state of Idaho, an assessment piece is required. *A comprehensive examination will be given each semester, in addition to required laboratories and the student portfolio. The exam and lab grades will be averaged as described above and will account for 40% of the final semester grade. This assessment grade will appear on the student's report card, and be entered at the end of each semester by the instructor.*

Pacing Guide

The topics and standards for this course have been divided between the two semesters.

Semester 1(Fall)	Semester 2 (Spring)
Chapter 1: Three Layers of Earth	Chapter 6: Ecosystems
Chapter 2: Materials and Rocks	Chapter 7: Pollution and Destruction
Chapter 3: Weathering, Erosion and Soil	Chapter 8: The Solar System
Chapter 4: The Atmosphere	Chapter 9: The Earth and Its Moon
Chapter 5: Water	

Additional Information from the Instructor:

Upon successful completion of earth science, the student will be able to:

- *Identify the three layers of the earth: core, mantle, and crust.*
- *Explain and understand the theory of plate tectonics.*
- *Explain the different ways tectonic plates move and the results of that movement.*
- *Identify the parts and types of volcanoes as well as where they form.*
- *Explain how and where earthquakes form.*
- *Categorize, identify, and classify minerals using their six properties.*
- *Explain the rock cycle and how rocks form and change.*
- *Understand that crystals make minerals using their six properties.*
- *Identify and describe the three types of rocks.*
- *Demonstrate an understanding of how rock layers and fossils can be used to date rocks.*
- *Understand that weathering changes the earth's surface and is a major part of the rock cycle.*
- *Understand that erosion changes the earth's surface and is a major part of the rock cycle.*
- *Describe the layers of soil and how soil is created.*
- *Describe the oxygen and carbon dioxide cycle and the nitrogen cycle.*
- *Explain the greenhouse effect.*
- *Explain how clouds form and identify the three main types of clouds.*
- *Identify and explain attributes of the atmosphere like precipitation, humidity and weather.*
- *Define climate and identify the earth's climate zones.*
- *Explain the process and function of the water cycle.*
- *Identify the types, sources, and properties of freshwater and saltwater.*
- *Explain how temperature and salinity create and maintain ocean currents.*
- *Identify land, marine and freshwater ecosystems and their attributes.*
- *Understand how humans impact the earth.*
- *Identify examples of land, air, and water pollution and describe their causes and preventions.*
- *Explain how reducing, reusing, and recycling benefit the environment and give examples of how to do each.*
- *Identify the sun, the planets, and other bodies that make up the solar system.*
- *Define the words "orbit," "rotation," and "revolution," and explain how they relate to the solar system.*
- *Explain the role of the sun in the solar system.*
- *Explain how the movement of the earth causes days, nights, years, and seasons.*
- *Describe the phases of the moon and explain how its location in relation to the sun and the earth causes these phases.*

- Explain how solar and lunar eclipses occur.
- Explain the influence of the moon’s gravity on the earth, including high and low tides.
- Describe the projects and explorations that had been designed to study our solar system, our galaxy, and what lies beyond.

I-DEA Student Honor Code:

With any form of valid proof of dishonesty with regard to student work or testing, the instructor may elect from a range of actions. Academic dishonesty could lead to a zero grade for the assignment or even failure for the entire course following consultation between the instructor, Secondary Supervisor, and Director.

All students must adhere to the **Honor Code:**

“On my honor, I will maintain the highest possible standards of honesty, integrity and personal responsibility. This means I will not lie, cheat or steal, and as a member of this academic community, I am committed to creating an environment of respect and mutual trust.”

IDAHO CONTENT STANDARDS: EARTH SCIENCE

Standard 1: Nature of Science

Goals:	Objectives						
Goal 1.1: Understand Systems, Order, and Organization	8-9.ES.1.1.1 Explain the scientific meaning of system, order, and organization.			8-9.ES.1.1.2 Apply the concepts of order and organization to a given system.			
Goal 1.2: Understand Concepts and Processes of Evidence, Models, and Explanations	8-9.ES.1.2.1 Use observations and data as evidence on which to base scientific explanations.		8-9.ES.1.2.2 Develop models to explain concepts or systems.		8-9.ES.1.2.3 Develop scientific explanations based on knowledge, logic, and analysis.		
Goal 1.3: Understand Constancy, Change, and Measurement	8-9.ES.1.3.1 Measure changes that can occur in and among systems.		8-9.ES.1.3.2 Analyze changes that can occur in and among systems.		8-9.ES.1.3.3 Measure and calculate using the metric system.		
Goal 1.6: Understand Scientific Inquiry and Develop Critical Thinking Skills	8-9.ES.1.6.1 Identify questions and concepts that guide scientific investigations.	8-9.ES.1.6.2 Utilize the components of scientific problem solving to design, conduct, and communicate results of investigations	8-9.ES.1.6.3 Use appropriate technology and mathematics to make investigations.	8-9.ES.1.6.4 Formulate scientific explanations and models using logic and evidence.	8-9.ES.1.6.5 Analyze alternative explanations and models.	8-9.ES.1.6.6 Communicate and defend a scientific argument.	8-9.ES.1.6.7 Explain the differences among observations, hypotheses, and theories.
Goal 1.8: Understand Technical Communication	8-9.ES.1.8.1 Analyze technical writing, graphs, charts, and diagrams.						

Standard 4: Earth and Space Systems

Goals:	Objectives		
Goal 4.1: Understand Scientific Theories of Origin and Subsequent Changes in the Universe and Earth Systems	8-9.ES.4.1.1 Explain the current scientific theory that suggests that the solar system formed from a nebular cloud of dust and gas.	8-9.ES.4.1.2 Identify methods used to estimate geologic time.	8-9.ES.4.1.3 Show how interactions among the solid earth, oceans, atmosphere, and organisms have changed the earth system over time.
Goal 4.2: Understand the Geo-chemical Cycles and Energy in the Earth System	8-9.ES.4.2.1 Explain the internal and external energy sources of the earth.		

Standard 5: Personal and Social Perspectives; Technology

Goals:	Objectives		
Goal 5.1: Understand Common Environmental Quality Issues, Both Natural and Human Induced	8-9.ES.5.1.1 Analyze environmental issues such as water and air quality, hazardous waste, and depletion of natural resources.		
Goal 5.2: Understand the Relationship between Science and Technology	8-9.ES.5.2.1 Explain how science advances technology.	8-9.ES.5.2.2 Explain how technology advances science.	8-9.ES.5.2.3 Explain how science and technology are pursued for different purposes.
Goal 5.3: Understand the Importance of Natural Resources and the Need to Manage and Conserve Them	8-9.ES.5.3.1 Describe the difference between renewable and nonrenewable resources. (656.03a)		