

CURRICULUM OVERVIEW

Earth Science



Table of Contents

EARTH SCIENCE COURSE OVERVIEW	1
UNIT 1: ORIGIN OF THE EARTH	1
UNIT 2: HISTORY OF THE EARTH.....	2
UNIT 3: DYNAMIC STRUCTURE OF EARTH	2
UNIT 4: FORCES AND FEATURES OF EARTH.....	2
UNIT 5: FEATURES OF EARTH’S CRUST	3
UNIT 6: SEMESTER REVIEW AND EXAM	3
UNIT 7: SHAPING EARTH’S CRUST	3
UNIT 8: EARTH’S WATER	3
UNIT 9: EARTH’S ATMOSPHERE	4
UNIT 10: EARTH’S WEATHER AND CLIMATE.....	4
UNIT 11: ASTRONOMY.....	4
UNIT 12: SEMESTER REVIEW AND EXAM	5
UNIT 13: FINAL EXAM.....	5

Earth Science Course Overview

Earth Science is a basic science course intended to further explore the designs and patterns of our planet. This course covers such areas as the origin, history, and structure of the earth. It also covers forces that cause change on the earth and features of the earth including the crust, water, atmosphere, weather, and climate. Earth science wraps up with astronomy and a study of all the planets, the solar system, and galaxies. The course strives to teach that each feature of the earth interacts with the others in many critical ways, and the study of these relationships is important to humanity.

Students at this level should show development in their understanding of scientific inquiry. Some of the units contain experiments and projects that seek to develop meaning and to actively engage the student. The continued exposure to science concepts and scientific inquiry will serve to improve the students' skill and understanding.

- **Origin of the Earth:** Students will explore the theories of the origin of the universe and the Earth.
- **History of the Earth:** Students will explore methods for determining the age of the Earth and its geologic history.
- **Dynamic Structure of Earth:** Students will explore the changes and cycles constantly affecting the Earth.
- **Forces and Features of Earth:** Students will learn about the forces at work on the Earth, such as earthquakes and volcanoes and how to use maps.
- **Features of Earth's Crust:** Students will learn about rocks, minerals and other resources.
- **Shaping Earth's Crust:** Students will explore the forces that shape the Earth's crust, such as weathering and erosion, and other constructive and destructive forces.
- **Earth's Water:** Students will explore the water cycle and the different bodies of water on the Earth.
- **Earth's Atmosphere:** Students will explore the make-up of the Earth's atmosphere and the impact of humans on the atmosphere.
- **Earth's Weather and Climate:** Students will explore weather and climate and how to measure and predict weather.
- **Astronomy:** Students will explore the solar system and other celestial bodies in the universe.

Unit 1: Origin of the Earth	
Assignments	
Earth Science	1. Course Overview
	2. Introduction to Earth Science
	3. Scientific Method
	4. Lab Safety
	5. Project: Research a Career
	6. Experiment: Measuring in Science
	7. Competing Perspectives
	8. Science Weighs In
	9. Project: Doppler Effect
	10. Quiz 1: An Introduction
	11. A Sequence of Events
	12. Planetary Motion
	13. Ability to Orbit
	14. Project: Newton's Law
	15. Quiz 2: Motion of Planets
	16. A Unique Planet
	17. Project: Earth Comparisons
	18. Quiz 3: Earth, a Unique Planet
	19. Special Project*
	20. Review
	21. Test
	22. Alternate Test*
	23. Glossary and Credits

Unit 2: History of the Earth		
Earth Science	Assignments	
	1. Determining Earth's Age	10. Project: Before, During, and After a Mass Extinction
	2. Relative Dating	11. Paleoclimatic Changes
	3. Project: Relative Dating	12. Quiz 2: Study of Earth's History
	4. Absolute Dating	13. Special Project*
	5. Quiz 1: History of Life on Earth	14. Review
	6. Geologic Time	15. Test
	7. Project: The Clock of Eons	16. Alternate Test*
	8. Mass Extinctions	17. Glossary and Credits
	9. Fossils	

Unit 3: Dynamic Structure of Earth		
Earth Science	Assignments	
	1. Layers of the Earth	13. Geochemical Cycles: Cycles of Earth Materials
	2. Earth's Structure	14. Biochemical Cycles: Cycles of Life Materials
	3. Project: Building a Model of the Earth	15. Project: The Story of the Spheres
	4. Earth's Cooling and Tectonics	16. Flow of Energy in Ecosystems
	5. Continental Drift	17. Project: Flow of Energy
	6. Plate Tectonics	18. Quiz 2: Earth's Dynamic External Structure
	7. Project: Mantle Convection	19. Special Project*
	8. Plate Boundaries	20. Review
	9. Project: Plate Boundaries	21. Test
	10. Quiz 1: Earth's Dynamic Internal Structure	22. Alternate Test*
	11. The Spheres of Earth	23. Glossary and Credits
	12. Project: Sphere Interaction Lab	

Unit 4: Forces and Features of Earth		
Earth Science	Assignments	
	1. Force of Earthquakes	12. Quiz 2: Volcanoes
	2. Measuring The Force of Earthquakes	13. Using Geologic Maps
	3. Features of Earthquakes	14. Using Topographic Maps
	4. Project: Earthquake Features Lab	15. Project: Mapping
	5. Project: Scientific Tools of the 21 st Century	16. Project: Create a Topographic Map*
	6. Quiz 1: Earthquakes	17. Quiz 3: Identifying Features of Earth
	7. Force of Volcanoes	18. Special Project*
	8. Impact of Volcanoes	19. Review
	9. Prediction of Volcanoes	20. Test
	10. Features of Volcanoes	21. Alternate Test*
	11. Project: Volcanic Features Lab	22. Glossary and Credits

Earth Science	Unit 6: Semester Review and Exam			
	Assignments			
	1.	Review (1)	4.	Alternate Exam- Form A*
	2.	Review (2)	5.	Alternate Exam- Form B*
	3.	Exam		

Unit 8: Earth's Water	
Assignments	
1. The Water Cycle	13. Ocean Water
2. Project: Water Purification	14. Project: Ocean Temperature
3. Water Basics	15. Experiment: Fresh Water vs. Saltwater
4. Water Distribution	16. Waves and Tides
5. Project: Water Conservation	17. Currents
6. Quiz 1: The Basics of Water	18. Quiz 3: Saltwater
7. Groundwater	19. Special Project*
8. Experiment: Porosity and Permeability	20. Review
9. Lakes and Rivers	21. Test
10. Glaciers and Ice Caps	22. Alternate Test*
11. Quiz 2: Fresh Water	23. Glossary and Credits
12. Eustatic Sea Levels	

Unit 9: Earth's Atmosphere**Assignments**

Earth Science

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| 1. Evolution of the Atmosphere | 14. Air Pollution |
| 2. Project: Evolution of the Atmosphere | 15. Project: Climate and Energy |
| 3. Structure of the Atmosphere | 16. Nature and Human Activity |
| 4. Project: Layers of the Atmosphere | 17. Human Impact on the Earth |
| 5. Quiz 1: Layers of the Atmosphere | 18. Project: Greenhouse Effect |
| 6. Atmospheric Cycles | 19. Project: Human Impact on Climate Change |
| 7. Solar Interaction | 20. Quiz 3: Human Relationship |
| 8. Project: Solar Energy | 21. Special Project* |
| 9. Alternate Project: Temperature* | 22. Review |
| 10. Air Pressure and Winds | 23. Test |
| 11. Project: Air Circulation | 24. Alternate Test* |
| 12. Alternate Project: Barometers* | 25. Glossary and Credits |
| 13. Quiz 2: Earth-Sun Relationships | |

Unit 10: Earth's Weather and Climate**Assignments**

Earth Science

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|---------------------------------------|---|
| 1. Weather and Climate | 12. Project: Research Your Climate |
| 2. Project: Weather or Climate? | 13. Quiz 2: Causes of Weather and Climate |
| 3. Clouds and Precipitation | 14. Weird Weather |
| 4. Project: Clouds and Weather | 15. Measuring Weather |
| 5. Project: Clouds and Rain* | 16. Project: Predict the Weather |
| 6. Air Masses and Fronts | 17. Quiz 3: Predicting Weather |
| 7. Quiz 1: Weather Factors of the Sky | 18. Special Project* |
| 8. Solar Power | 19. Review |
| 9. Project: Control the Weather | 20. Test |
| 10. Geographical Effects | 21. Alternate Test* |
| 11. Climate Regulation and Change | 22. Glossary and Credits |

Unit 11: Astronomy**Assignments**

Earth Science

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| 1. The Earth's Place in the Solar System | 13. Quiz 2: Stars |
| 2. Protoplanet Formation | 14. Galaxies |
| 3. The Earth's Orbit and Seasons | 15. Project: Identifying Galaxies |
| 4. Nebular Disk Model | 16. Future Exploration |
| 5. Project: Scale of the Solar System | 17. Extra-Solar Planets |
| 6. The Moon | 18. Project: Evaluating Growth |
| 7. Quiz 1: Solar System | 19. Quiz 3: Galaxies and Further Exploration |
| 8. Characteristics of Stars | 20. Special Project* |
| 9. Structure of the Sun | 21. Review |
| 10. Star Life Cycle | 22. Test |
| 11. Stellar Evolution | 23. Alternate Test* |
| 12. Project: Life Histories of Stars | 24. Glossary and Credits |

Earth Science	Unit 12: Semester Review and Exam	
	Assignments	
	1. Review (1) 2. Review (2) 3. Exam	4. Alternate Exam - Form A* 5. Alternate Exam - Form B*

Earth Science	Unit 13: Final Exam	
	Assignments	
	1. Final Exam 2. Alternate Final Exam- Form A	3. Alternate Final Exam-Form B

(*) Indicates alternative assignment