

MATERIAL COVERED:

The Earth Science 11 course is divided into four major parts:

1. Astronomy
 - Stars and Galaxies
 - The Sun and Solar System
 - Planets and the Solar System
 - Earth's Moon
2. Earth's Materials and Geological Time
 - Atoms to Minerals
 - Rocks
 - Resources and the Environment
 - Studying the Past
3. Internal Processes and Plate Tectonic Theory
 - Plate Tectonics
 - Volcanoes
 - Earthquakes
 - Mountain Building
4. Surface Processes and the Hydrosphere
 - Atmosphere
 - Water in the Atmosphere
 - Weathering, Soil, and Erosion
 - The Water Planet

TEXTBOOK:

The course uses the following text: *Earth Science (2003 Edition, ISBN 0-618-11550-1)*

NOTEBOOK:

Your notebook should be neatly organized, as this will help you study for tests. Label the unit and topic headings clearly at the top of each page. Answer questions fully, so that the information makes sense and can be used later for studying. Show which page number the information comes from so you can look it up again easily.

EVALUATION:

This course works on a mastery system. You must pass the mastery tests in each unit to the 80% level before you can go on. In addition, there are cumulative tests from time to time. These are tests you can take only once, so studying before them is essential to doing well. Your final mark for the course is based 60% on mastery tests and 40% on cumulative tests.

GOAL

The goal of this unit is to become familiar with selected characteristics of stars.

OBJECTIVES

While completing this unit you will:

1. Learn why constellations move in the night sky.
2. Learn what an astronomical unit is.
3. Investigate the physical properties of stars and their magnitudes.
4. Learn about the differences between giants, super giants, and dwarf stars.
5. Investigate the Hertzsprung-Russell Diagram and how it relates to the life stages of a star.
6. Determine where stars come from.
7. Learn how red giants, dwarfs, and supernovas are formed.
8. Learn what galaxies are and their types.
9. Investigate the origin of the universe.

WHAT TO DO IN THIS UNIT

1. Ask your teacher for the Unit 1 Worksheet.
2. In the textbook, read Chapter 28, *Stars and Galaxies*, starting on p. 610.
3. Pay particular attention to the Key Idea at the beginning of each section in the chapter. You should also define the Key Vocabulary terms found at the beginning of each chapter section. The vocabulary is found in **bold** through out the chapter.
4. Answer the questions in the Unit 1 Worksheet. This will help you organize and understand what you have read.
5. When you are ready, ask your teacher for the Unit 1 Test. Remember, you must get 80% to pass, so studying hard is essential.

GOAL

The goal of this unit is to learn about the sun and the solar system

OBJECTIVES

While completing this unit you will:

1. Determine how big and how hot the sun is.
2. Investigate the composition of the sun's surface.
3. Learn what sunspots are.
4. Learn what solar flares, magnetic storms and the solar wind are.
5. Determine the source of the sun's energy.
6. Investigate the makeup of our solar system.
7. Learn how to recognize planets.

WHAT TO DO IN THIS UNIT

1. Ask your teacher for the Unit 2 Worksheet.
2. In the textbook, read Chapter 26, *The Sun and the Solar System*, starting on p. 570.
3. Pay particular attention to the Key Idea at the beginning of each section in the chapter. You should also define the Key Vocabulary terms found at the beginning of each chapter section. The vocabulary is found in **bold** through out the chapter.
4. Answer the questions in the Unit 2 Worksheet. This will help you organize and understand what you have read.
5. When you are ready, ask your teacher for the Unit 2 Test. Remember, you must get 80% to pass, so studying hard is essential.

GOAL

The goal of this unit is to learn about the planets and our solar system.

OBJECTIVES

While completing this unit you will:

1. Determine how planets are divided into two groups.
2. Investigate the planet Mercury.
3. Investigate the planet Venus.
4. Investigate the planet Mars.
5. Investigate the planet Jupiter.
6. Investigate the planet Saturn.
7. Investigate the planets Uranus, Neptune, and Pluto.
8. Learn about the many planetary moons.
9. Learn about planetary rings.
10. Investigate comets, asteroids, meteors and meteoroids.

WHAT TO DO IN THIS UNIT

1. Ask your teacher for the Unit 3 Worksheet.
2. In the textbook, read Chapter 27, *The Planets and the Solar System*, starting on p. 586.
3. Pay particular attention to the Key Idea at the beginning of each section in the chapter. You should also define the Key Vocabulary terms found at the beginning of each chapter section. The vocabulary is found in **bold** through out the chapter.
4. Answer the questions in the Unit 3 Worksheet. This will help you organize and understand what you have read.
5. When you are ready, ask your teacher for the Unit 3 Test. Remember, you must get 80% to pass, so studying hard is essential.

GOAL

The goal of this unit is to investigate characteristics of earth's moon.

OBJECTIVES

While completing this unit you will:

1. Compare selected characteristics of the moon and the earth.
2. Investigate the differences between the front and back side of the moon.
3. Learn how the lunar landscape was formed.
4. Investigate erosion on the moon.
5. Learn about lunar maria, mountains, craters, rays, and rilles.

WHAT TO DO IN THIS UNIT

1. Ask your teacher for the Unit 4 Worksheet.
2. In the textbook, read Chapter 25, *Earth's Moon*, starting on p. 554.
3. Pay particular attention to the Key Idea at the beginning of each section in the chapter. You should also define the Key Vocabulary terms found at the beginning of each chapter section. The vocabulary is found in **bold** through out the chapter.
4. Answer the questions in the Unit 4 Worksheet. This will help you organize and understand what you have read.
5. When you are ready, ask your teacher for the Unit 4 Test. Remember, you must get 80% to pass, so studying hard is essential.
6. Go over your notes, tests, and worksheets from Units 1 - 4. When you are ready, ask your teacher for Cumulative Test #1 on Space. This test can only be written once, so good preparation is essential to do well.

GOAL

The goal of this unit is to learn about the composition and structure of minerals, and how to identify minerals and mineral groups.

OBJECTIVES

While completing this unit you will:

1. Learn what minerals are and how they form.
2. Investigate the structure of minerals and how the crystal structure affects their physical properties.
3. Identify minerals by their physical and chemical properties.
4. Describe the properties of various mineral groups, including silicates, carbonates, and oxides and sulfides.

WHAT TO DO IN THIS UNIT

1. Ask your teacher for the Unit 5 Worksheet.
2. In the textbook, read Chapter 5, *Atoms to Minerals* starting with Chapter 5.2 on p. 96–97. **Don't do the rest of Chapter 5.2, and don't do Chapter 5.1!**
3. Pay particular attention to the Key Idea at the beginning of each section in the chapter. You should also define the Key Vocabulary terms found at the beginning of each chapter section. The vocabulary is found in **bold** through out the chapter.
4. Answer the questions in the Unit 5 Worksheet. This will help you organize and understand what you have read.
5. When you are ready, ask your teacher for the Unit 5 Test. Remember, you must get 80% to pass, so studying hard is essential.

GOAL

The goal of this unit is to learn about rock formation on earth.

OBJECTIVES

While completing this unit you will:

1. Learn the differences between the three families of rocks.
2. Learn how to recognize igneous rocks and investigate how they are formed.
3. Learn how to recognize sedimentary rocks and investigate how they are formed.
4. Learn how to recognize metamorphic rocks and investigate how they are formed.
6. Learn about the rock cycle.

WHAT TO DO IN THIS UNIT

1. Ask your teacher for the Unit 6 Worksheet.
2. In the textbook, read Chapter 6, *Rocks*, starting on p. 116.
3. Pay particular attention to the Key Idea at the beginning of each section in the chapter. You should also define the Key Vocabulary terms found at the beginning of each chapter section. The vocabulary is found in **bold** through out the chapter.
4. Answer the questions in the Unit 6 Worksheet. This will help you organize and understand what you have read.
5. When you are ready, ask your teacher for the Unit 6 Test. Remember, you must get 80% to pass, so studying hard is essential.

GOAL

The goal of this unit is to learn about renewable and non-renewable resources, their exploitation, and the affect this has on the environment.

OBJECTIVES

While completing this unit you will:

1. Determine the difference between renewable and non-renewable resources.
2. Understand what effect supply and demand has on the availability of mineral resources.
3. Investigate various types of renewable and nonrenewable energy resources.
4. Learn about environmental risks and disadvantages associated with exploiting nonrenewable resources.
5. Understand how conservation and recycling can benefit both us and the environment.

WHAT TO DO IN THIS UNIT

1. Ask your teacher for the Unit 7 Worksheet.
2. In the textbook, read Chapter 7, *Resources and the Environment*, starting on p. 142.
3. Pay particular attention to the Key Idea at the beginning of each section in the chapter. You should also define the Key Vocabulary terms found at the beginning of each chapter section. The vocabulary is found in **bold** through out the chapter.
4. Answer the questions in the Unit 7 Worksheet. This will help you organize and understand what you have read.
5. When you are ready, ask your teacher for the Unit 7 Test. Remember, you must get 80% to pass, so studying hard is essential.

GOAL

The goal of this unit is to learn about Earth's materials and geologic time.

OBJECTIVES

While completing this unit you will:

1. Investigate using fossils as measurements of relative time.
2. Discover how index fossils are used by geologists.
3. Investigate the difference between absolute and relative time.
4. Learn about the major events in Earth's geologic timetable.
5. Learn about the laws of relative time.
6. Learn how radioactivity is used to measure age.
7. Learn about other methods of dating such as radiocarbon, tree rings, and varves.

WHAT TO DO IN THIS UNIT

1. Ask your teacher for the Unit 8 Worksheet.
2. In the textbook, read Chapter 29, *Studying the Past*, starting on p. 646, then read Chapter 30.1, *Views of the Earth's Past*, starting on p. 664.
3. Pay particular attention to the Key Idea at the beginning of each section in the chapter. You should also define the Key Vocabulary terms found at the beginning of each chapter section. The vocabulary is found in **bold** through out the chapter.
4. Answer the questions in the Unit 8 Worksheet. This will help you organize and understand what you have read.
5. When you are ready, ask your teacher for the Unit 8 Test. Remember, you must get 80% to pass, so studying hard is essential.
6. Go over your notes, tests, and worksheets from Units 5 - 8. When you are ready, ask your teacher for Cumulative Test #2 on Earth's History. This test can only be written once, so good preparation is essential to do well.

GOAL

The goal of this unit is to investigate plate tectonics.

OBJECTIVES

While completing this unit you will:

1. Investigate how large pieces of the Earth's crust move in an action called plate tectonics.
2. Learn how thick the plates are.
3. Learn why the plates move.
4. Investigate the evidence for the theory of plate tectonics.
5. Discover where earthquakes and volcanoes cluster around the earth.
6. Learn how the magnetic polarity of igneous rocks supports the plate tectonics theory.
7. Learn how heat flow and sea floor elevation support the plate tectonics theory.
8. Learn about the four types of plate boundaries: diverging, sliding, converging, and subducting.

WHAT TO DO IN THIS UNIT

1. Ask your teacher for the Unit 9 Worksheet.
2. In the textbook, read Chapter 8, *Plate Tectonics*, starting on p. 170.
3. Pay particular attention to the Key Idea at the beginning of each section in the chapter. You should also define the Key Vocabulary terms found at the beginning of each chapter section. The vocabulary is found in **bold** through out the chapter.
4. Answer the questions in the Unit 9 Worksheet. This will help you organize and understand what you have read.
5. When you are ready, ask your teacher for the Unit 9 Test. Remember, you must get 80% to pass, so studying hard is essential.

GOAL

The goal of this unit is to learn about the characteristics of volcanoes.

OBJECTIVES

While completing this unit you will:

1. Learn about the types and chemical make-up of magma.
2. Learn how magma reaches the surface.
3. Investigate the gases trapped in magma.
4. Learn about the types of lava.
5. Learn about the names for fragments of lava.
6. Investigate the different types of volcanic eruptions.
7. Learn about volcanic hot spots.

WHAT TO DO IN THIS UNIT

1. Ask your teacher for the Unit 10 Worksheet.
2. In the textbook, read Chapter 9, *Volcanoes*, starting on p. 192.
3. Pay particular attention to the Key Idea at the beginning of each section in the chapter. You should also define the Key Vocabulary terms found at the beginning of each chapter section. The vocabulary is found in **bold** through out the chapter.
4. Answer the questions in the Unit 10 Worksheet. This will help you organize and understand what you have read.
5. When you are ready, ask your teacher for the Unit 10 Test. Remember, you must get 80% to pass, so studying hard is essential.

GOAL

The goal of this unit is to investigate the causes and characteristics of earthquakes.

OBJECTIVES

While completing this unit you will:

1. Learn what an earthquake is.
2. Investigate the causes of earthquakes.
3. Discover at what depths earthquakes occur.
4. Learn about the waves which earthquakes produce.
5. Investigate how seismographs record earthquake waves.
6. Learn how to determine the distance to the epicentre of the quake.
7. Learn how to locate the epicentre of the quake.
8. Investigate how an earthquake's magnitude is measured.

WHAT TO DO IN THIS UNIT

1. Ask your teacher for the Unit 11 Worksheet.
2. In the textbook, read Chapter 10, *Earthquakes*, starting on p. 212.
3. Pay particular attention to the Key Idea at the beginning of each section in the chapter. You should also define the Key Vocabulary terms found at the beginning of each chapter section. The vocabulary is found in **bold** through out the chapter.
4. Answer the questions in the Unit 11 Worksheet. This will help you organize and understand what you have read.
5. When you are ready, ask your teacher for the Unit 11 Test. Remember, you must get 80% to pass, so studying hard is essential.

GOAL

The goal of this unit is to learn about the processes involved in mountain building.

OBJECTIVES

While completing this unit you will:

1. Investigate active and passive continental margins.
2. Learn what happens when continents and oceans collide.
3. Learn what happens when two continents collide.
4. Learn about faults, folds, volcanoes, uplifting, tilting, and overturning as features of mountains.

WHAT TO DO IN THIS UNIT

1. Ask your teacher for the Unit 12 Worksheet.
2. In the textbook, read Chapter 11, *Mountain Building*, starting on p. 234.
3. Pay particular attention to the Key Idea at the beginning of each section in the chapter. You should also define the Key Vocabulary terms found at the beginning of each chapter section. The vocabulary is found in **bold** through out the chapter.
4. Answer the questions in the Unit 12 Worksheet. This will help you organize and understand what you have read.
5. When you are ready, ask your teacher for the Unit 12 Test. Remember, you must get 80% to pass, so studying hard is essential.
6. Go over your notes, tests, and worksheets from Units 9 - 12. When you are ready, ask your teacher for Cumulative Test #3 on the Dynamic Earth. This test can only be written once, so good preparation is essential to do well.

GOAL

The goal of this unit is to investigate weathering, soils and erosion.

OBJECTIVES

While completing this unit you will:

1. Learn what weathering and erosion are.
2. Investigate the different types of weathering.
3. Learn about the different types of mechanical weathering.
4. Investigate chemical weathering.
5. Learn which minerals and rocks resist weathering the most.
6. Learn about the rate that weathering happens.
7. Investigate rapid and slow mass movements caused by weathering and erosion.

WHAT TO DO IN THIS UNIT

1. Ask your teacher for the Unit 13 Worksheet.
2. In the textbook, read Chapter 12, *Weathering, Soil, and Erosion*, starting on p. 256.
3. Pay particular attention to the Key Idea at the beginning of each section in the chapter. You should also define the Key Vocabulary terms found at the beginning of each chapter section. The vocabulary is found in **bold** through out the chapter.
4. Answer the questions in the Unit 13 Worksheet. This will help you organize and understand what you have read.
5. When you are ready, ask your teacher for the Unit 13 Test. Remember, you must get 80% to pass, so studying hard is essential.

GOAL

The goal of this unit is to investigate the Earth's atmosphere.

OBJECTIVES

While completing this unit you will:

1. Learn about the composition of the atmosphere and how it remains fairly constant.
2. Understand how gases move continually between the various parts of the Earth system.
3. Investigate how the recycling of atmospheric materials is a delicate balance.
4. Learn how the energy of the sun heats the atmosphere and the Earth's surface.
5. Describe the many factors that affect how much solar energy the Earth's surface absorbs.
6. Understand how human activities affect the atmosphere.

WHAT TO DO IN THIS UNIT

1. Ask your teacher for the Unit 14 Worksheet.
2. In the textbook, read Chapter 17, *Atmosphere*, starting on p. 364.
3. Pay particular attention to the Key Idea at the beginning of each section in the chapter. You should also define the Key Vocabulary terms found at the beginning of each chapter section. The vocabulary is found in **bold** through out the chapter.
4. Answer the questions in the Unit 14 Worksheet. This will help you organize and understand what you have read.
5. When you are ready, ask your teacher for the Unit 14 Test. Remember, you must get 80% to pass, so studying hard is essential.

GOAL

The goal of this unit is to investigate water in the Earth's atmosphere.

OBJECTIVES

While completing this unit you will:

1. Learn how water exists in the atmosphere, and what affects the amount there.
2. Describe the three basic forms of clouds and how their shape reflects how the air is moving.
3. Understand how precipitation forms and grows in clouds.
4. Learn why precipitation falls where it does.

WHAT TO DO IN THIS UNIT

1. Ask your teacher for the Unit 15 Worksheet.
2. In the textbook, read Chapter 18, *Water in the Atmosphere*, starting on p. 388.
3. Pay particular attention to the Key Idea at the beginning of each section in the chapter. You should also define the Key Vocabulary terms found at the beginning of each chapter section. The vocabulary is found in **bold** through out the chapter.
4. Answer the questions in the Unit 15 Worksheet. This will help you organize and understand what you have read.
5. When you are ready, ask your teacher for the Unit 15 Test. Remember, you must get 80% to pass, so studying hard is essential.

GOAL

The goal of this unit is to investigate the Earth's oceans.

OBJECTIVES

While completing this unit you will:

1. Describe the unique chemical properties of water and how this affects the Earth's oceans.
2. Understand how the density of water changes with temperature.
3. Understand why water has polarity.
4. Understand why aqueous solutions have different properties than pure water.
5. Investigate the ocean properties of salinity and temperature.
6. Learn about the diversity of life found in the Earth's oceans.

WHAT TO DO IN THIS UNIT

1. Ask your teacher for the Unit 16 Worksheet.
2. In the textbook, read Chapter 22, *The Water Planet*, starting with Section 22.2 on p. 492. Don't do Section 22.1.
3. Pay particular attention to the Key Idea at the beginning of each section in the chapter. You should also define the Key Vocabulary terms found at the beginning of each chapter section. The vocabulary is found in **bold** through out the chapter.
4. Answer the questions in the Unit 16 Worksheet. This will help you organize and understand what you have read.
5. When you are ready, ask your teacher for the Unit 16 Test. Remember, you must get 80% to pass, so studying hard is essential.
6. Go over your notes, tests, and worksheets from Units 13 - 16. When you are ready, ask your teacher for Cumulative Test #4 on Earth's Changing Surface. This test can only be written once, so good preparation is essential to do well.

Congratulations! You've finished Earth Science 11!