

# Unit 4: Earth and Space

Content Area: **Science**  
Course(s): **Fundamentals of Science**  
Time Period: **4th Marking Period**  
Length: **10 Weeks**  
Status: **Published**

## Unit Overview

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This unit starts with the inside of the Earth and works its way out into the universe answering questions for the kids from what the Earth is made of to what happens at the end of a star's life.

## Transfer

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Students will have a better understanding of natural disasters, weather, and stars that they see all the time. As we relate these new concepts to the world around them, they will absorb this knowledge by seeing what they are learning everyday.

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For more information, read the following article by Grant Wiggins.

[http://www.authenticeducation.org/ae\\_bigideas/article.lasso?artid=60](http://www.authenticeducation.org/ae_bigideas/article.lasso?artid=60)

## Meaning

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## Understandings

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- 1) Students will understand how forces inside the Earth can affect our planet in many ways.
- 2) Students will be able to watch a weather report and understand what the meteorologist is talking about and why weather works the way it does.
- 3) Students will understand how our solar system is laid out and how it formed.
- 4) Students will understand the life cycle of a star.

## **Essential Questions**

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- 1) What the heck would you see and feel if you were able to dig to the center of the Earth?
- 2) How do Earthquakes and Volcanoes form and why are they so stinking mean?
- 3) I watch the weather to see if it is going to rain, but what the heck is all the other stuff that guy is talking about?
- 4) If I got in a spaceship to take a tour of our solar system what would I see?
- 5) I know what the life cycle of a person or animal is, but what about something as big and far away as a star? I didn't even think it was alive!!!

## **Application of Knowledge and Skill**

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- 1) Students will be able to construct a model of tectonic plate movement.
- 2) Students will be able to predict the weather themselves by looking at radar and other data, as well better understand what a weatherman is talking about.

## **Students will know...**

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- 1) Students will know the four layers of the Earth and the facts about them.
- 2) Students will know the three types of plates boundaries and what could form at them.
- 3) Students will know how earthquakes and volcanoes form and the facts about each.
- 4) Students will know the three types of rocks and be able to identify them (If time permits)
- 5) Students will know the major components of weather on this planets and how they affect our lives.
- 6) Students will know the layout of solar system and how it formed.
- 7) Students will know about the life cycle of a star.

## **Students will be skilled at...**

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- 1) Predicting weather patterns based on what they have learned.

2) Organizing data into compartments to make it easier for studying (foldables).

## **Academic Vocabulary**

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Academic Vocabulary      Application Vocabulary

Lithosphere	Divergent
Fault	Convergent
Tectonic Plate	Transform
Earthquake	Primary
Surface Wave	Secondary
Volcano	Release
Vent	Rise
Subduction	Sink
Richter Scale	Light Speed
Seismology	Life Cycle
Seismograph	Tilt
Weather	
Pressure	
Humidity	
Dew Point	
Precipitation	
Cloud	
Front	
Air Mass	
Astronomical Unit	
Light Year	
Asteroid	
Meteor	
Meteorite	
Star	
Nebula	

## **Learning Goal 1**

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SWBAT describe how processes within the Earth change the make-up of our planet.

### Proficiency Scale

- SWBAT describe how processes within the Earth change the make-up of our planet.

SCI.HS-ESS1-5

Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks.

SCI.HS-ESS1-1	Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation.
SCI.HS-ESS2-3	Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection.
SCI.HS-ESS1-2	Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe.
SCI.HS-ESS2-1	Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.

## **Target 1**

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SWBAT Describe the four layers of the Earth

- SWBAT Describe the four layers of the Earth

## **Target 2**

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SWBAT describe the three types of plate boundaries and what could form at each.

- SWBAT describe the three types of plate boundaries and what could form at each.

## **Target 3**

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SWBAT Describe how earthquakes and volcanoes form and all the facts that go along with them.

- SWBAT Describe How Earthquakes and Volcanoes form and all the facts that go along with them.

## **Target 4**

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SWBAT Describe the three different types of rocks along with identifying them in a lab setting.

- SWBAT Describe the three different types of rocks along with identifying them in a lab setting.

## **Learning Goal 2**

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SWBAT describe weather and all that comes with it, along with explaining what causes the four seasons.

### Proficiency Scales

- SWBAT describe weather and all that comes with it, along with explaining what causes the four seasons.

SCI.HS-ESS3-5	Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems.
SCI.HS-ESS2-4	Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate.
SCI.HS-ESS2-2	Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.

### **Target 1**

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SWBAT Describe the main components of weather such as temperature, pressure, humidity, fronts, precipitation, clouds, and the water cycle.

- SWBAT Describe the main components of weather such as temperature, pressure, humidity, fronts, precipitation, clouds, and the water cycle.

### **Target 2**

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SWBAT film their own weather show covering all the major concepts that were discussed in class.

- SWBAT film their own weather show covering all the major concepts that were discussed in class.

### **Learning Goal 3**

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SWBAT describe the make-up of our Solar System and the life cycle of a star.

#### Proficiency Scale

- SWBAT describe the make-up of our Solar System and the life cycle of a star.

SCI.HS-ESS1-2	Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe.
SCI.HS-ESS1-1	Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation.

### **Target 1**

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SWBAT Describe how our Solar System formed and the general make up of our solar system.

- SWBAT Describe how our Solar System formed and the general make up of our solar system.

### **Target 2**

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SWBAT Describe the Big Bang Theory and other theories of the Universe's beginning.

- SWBAT Describe the Big Bang Theory and other possible sources of our universe.

### **Target 3**

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SWBAT Describe the life cycle of a star.

- SWBAT Describe the life cycle of a star.

### **Formative Assessment and Performance Opportunities**

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Lab Reports

Worksheets

PowerPoints with Notes

Homework and Classwork Activities

Group Activities

In Class Discussion

Do Nows and Closures

Class Polling

Observation

### **Summative Assessment**

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Unit Assessment will be created collaboratively and used for every student in the course. In addition, there will be other assessments in the form of lab reports, pen and paper tests, and quizzes. Common Assessment is administered through LinkIt.

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### **Accommodations/Modifications**

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- Access to additional videos, graphic organizers and flow charts to help visualization of content.
- All instruction, labs, activities, and assessments will be modified and enhanced to adhere to individual student's IEPs and 504s. As well differentiated classroom management strategies will be utilized as to adhere to these students individual plans as well.

## Unit Resources

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Teacher generated PowerPoints, Notes, Labs and Worksheets

Textbooks

Resource Books

Internet Resources

Computer Based Activities

Projector

Smart Board

Calculators

## 21st Century Life and Careers

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CRP.K-12.CRP1	Act as a responsible and contributing citizen and employee.
CRP.K-12.CRP2.1	Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.
CRP.K-12.CRP4.1	Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.
CRP.K-12.CRP5.1	Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organization, and the environment. They are aware of and utilize new technologies, understandings, procedures, materials, and regulations affecting the nature of their work as it relates to the impact on the social condition, the environment and the profitability of the organization.
CRP.K-12.CRP6.1	Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest

value. They seek new methods, practices, and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.

CRP.K-12.CRP7.1

Career-ready individuals are discerning in accepting and using new information to make decisions, change practices or inform strategies. They use reliable research process to search for new information. They evaluate the validity of sources when considering the use and adoption of external information or practices in their workplace situation.

CRP.K-12.CRP10.1

Career-ready individuals take personal ownership of their own education and career goals, and they regularly act on a plan to attain these goals. They understand their own career interests, preferences, goals, and requirements. They have perspective regarding the pathways available to them and the time, effort, experience and other requirements to pursue each, including a path of entrepreneurship. They recognize the value of each step in the education and experiential process, and they recognize that nearly all career paths require ongoing education and experience. They seek counselors, mentors, and other experts to assist in the planning and execution of career and personal goals.

CRP.K-12.CRP12.1

Career-ready individuals positively contribute to every team, whether formal or informal. They apply an awareness of cultural difference to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.