**Unit Name: Meteorology Time Frame: Six Cycles (4 days each)**

**Author: Egg Harbor Township High School Science Department**

**UNIT**

Subject: **Science** Country: **USA**

Course/Grade: **College Prep Core Science/ 10-12** State/Group: **NJ**

School: **Egg Harbor Township High School**

**UNIT SUMMARY-** The purpose of this unit is to identify what causes climate locally and globally. The students will also look at the effect of storms. They will also identify the layers of the atmosphere and how the sun affects life on earth.

**UNIT RESOURCES-** Earth Science Textbook – Ch. 1 Nature of Science, Ch. 11 Atmosphere, Ch. 12 Meteorology, Ch. 13 Nature of Storms; Student Kept Binders; Laboratory Assignments; Media Center

**Internet Resource Links: Glencoe.com, NBCLearn videos**

 **STAGE ONE**

**GOALS AND STANDARDS-**

5.4.12.C.1-Model the interrelationships among the spheres in the Earth systems by creating a flow chart.

5.4.12.F.3- Explain variations in the global energy budget and hydrologic cycle at the local, regional, and global scales.

5.4.12.F.2- Explain how the climate in regions throughout the world is affected by seasonal weather patterns, as well as other factors, such as the addition of greenhouse gases to the atmosphere and proximity to mountain ranges and to the ocean.

5.4.12.F.1- Explain that it is warmer in summer and colder in winter for people in New Jersey because the intensity of sunlight is greater and the days are longer in summer than in winter. Connect these seasonal changes in sunlight to the tilt of Earth’s axis with respect to the plane of its orbit around the Sun.

The goal of this unit is for the students to realize that our planet is a dynamic system that is consistently changing.

**ENDURING UNDERSTANDINGS**

The big idea for this unit is that climate is a result of the interaction of a number of factors. The atmosphere is one of the most influential factors. Energy in the atmosphere can result in damaging storms. The misunderstanding coming into class may be that weather is only a result of local factors and not of global factors.

**ESSENTIAL QUESTIONS**

1. How is weather studied and analyzed?
2. How do the layers of the atmosphere affect the Earth’s surface?
3. How do storm systems form?

**KNOWLEDGE AND SKILLS**

**Content: Vocabulary-** Troposphere, Stratosphere, Mesosphere, Thermosphere, exosphere, dew point, Air pressure, Humidity, Fronts ,Radiation, Anemometer, Flood, Cumulus, Stratus, Cirrus, weather, climate, thermometer, barometer, Thunderstorm( 4 types), Tornado, stepped leader, return stroke, downburst, supercell, Fujita tornado intensity scale, eye , eyewall, Saffir- Simpson hurricane scale. storm surge, tropical cyclone, cold wave, drought, heat wave, windchill index, air mass, source region, Coriolis effect, jet stream, polar easterlies, prevailing westerlies, trade winds, Doppler effect, hygrometer, radiosonde, analog forecast, digital forecast, isobar, isotherm, station model, conduction, convection ,latent heat, saturation, temperature inversion, relative humidity, coalescence, condensation nucleus, precipitation, orographic lifting

**Skills:**

**Name the six layers of the atmosphere and determine how the temperature varies in each layer**

**Identify greenhouses gases and how this could affect the climate of the Earth**

**Identify how solar energy is absorbed by the atmosphere**

**Compare and contrast cold and warm air characteristics**

**Name the properties of the four types of clouds and how clouds are formed**

**Name the properties of cold fronts and properties of warm fronts.**

**Identify how major storms affect an area and how they are formed**

**Identify how weather systems are analyzed and measured**

**STAGE TWO**

**PERFORMANCE TASKS**

Design an experiment using the steps of the scientific method

Draw out layers of the atmosphere and complete lab on temperature change in the atmosphere

Read and analyze a weather map

Complete computer based weather predictions based off of current weather patterns

Build a model on a hurricane and identify the path of a tornado

Climates:

- biomes research project/ presentation

- Planet Earth Pole to Pole

Collection of air pollution particles

**OTHER EVIDENCE**

**-Test on Chapter 1, 11, 12 and 13**

**STAGE THREE**

**LEARNING PLAN**

 The students will use their notes given from the PowerPoint’s and the NBC Learn videos shown to first begin their knowledge of each topic in this unit. The students will use computer and paper based models to analyze weather patterns. Independently, the students will complete questions and vocabulary out of the book. The students will also use their weekly labs to add to their learning. The students will be monitored through the progression of this unit by daily “Do Now” questions as well as exit questions that will be graded, returned to the students and the correct answers explained. Students may need more time on understanding global weather patterns.

**Unit Name: Surface Processes on Earth Time Frame: Three Cycles (4 days each)**

**Author: Egg Harbor Township High School Science Department**

UNIT

Subject: **Science** Country: **USA**

Course/Grade: **College Prep Core Science/ 10-12** State/Group: **NJ**

School: **Egg Harbor Township High School**

**UNIT SUMMARY**- The purpose of this unit is to identify what causes the Earth’s surface to change. They will also explain how water moves on the Earth’s surface and how groundwater moves and is stored under the Earth’s surface.

**UNIT RESOURCES**- Earth Science Textbook –Ch.9 Surface water, Ch. 10 Groundwater; Student Kept Binders; Laboratory Assignments; Media Center

**Internet Resource Links: Glencoe.com, NBCLearn videos**

 STAGE ONE

**GOALS AND STANDARDS-**

5.4.12.C.1-Model the interrelationships among the spheres in the Earth systems by creating a flow chart.

5.4.12.F.3- Explain variations in the global energy budget and hydrologic cycle at the local, regional, and global scales.

The goal of this unit is for the students to realize that our planet is a dynamic system that is consistently changing.

**ENDURING UNDERSTANDINGS**

The big idea for this unit is that the Earth’s surface is changed by a variety of factors including gravity, wind, glaciers and water. Water moves not only on the Earth’s surface but underneath the ground and can be stored underneath the ground. The misunderstanding coming into class may be that the earth has not changed in appearance since it was formed when in reality it is continually changing.

**ESSENTIAL QUESTIONS**

1. What are factors that change the Earths surface?

2. How does groundwater form?

3. How is groundwater stored?

**KNOWLEDGE AND SKILLS**

**Content: Vocabulary**- chemical weathering, exfoliation, frost wedging, mechanical weathering, oxidation, weathering, deposition, erosion, gully erosion, rill erosion, residual soil, soil, soil horizon, soil profile, transported soil, avalanche, creep, landslide, mass movement, mudflow, slump, abrasion, deflation, dune, loess, ventifact, cirque, continental glacier, drumlin, esker, glacier, kame, kettle, moraine, outwash plain, valley glacier, bed load, discharge, divide, flood, floodplain, runoff, suspension, watershed, base level, delta, meander, rejuvenation, stream bank, stream channel, eutrophication, lake, wetland, aquiclude, aquifer, geyser, hot spring, infiltration, permeability, spring, water table, zone of aeration, zone of saturation, cave, karst topography, sinkhole, stalactite, stalagmite, artesian well, drawdown, recharge, well

**Skills:**

Identify what surface water is , how it moves and what forms on the Earth’s surface as a result of surface water movement

Name the stages of the water cycle and how water is stored in the ground.

Explain how water supply demands affect the human population on Earth

STAGE TWO

**PERFORMANCE TASKS**

Color me a watershed (project wet)

Common water (project wet)

Stream table

Draw out soil layers

Draw a diagram of the water cycle

Model the water cycle

Debate a case study of water pollution

Watch a video on Emperor Penguins

**OTHER EVIDENCE**

-Test on Chapter 7, 8, 9 and 10

STAGE THREE

**LEARNING PLAN**

 The students will use their notes given from the PowerPoint’s and the NBC Learn videos shown to first begin their knowledge of each topic in this unit. The students will use models to show how weathering and erosion affects the Earth’s surface. Also the students will use actual soil samples to identify the soil layers. Independently, the students will complete questions and vocabulary out of the book. The students will also use their weekly labs to add to their learning. The students will be monitored through the progression of this unit by daily “Do Now” questions as well as exit questions that will be graded, returned to the students and the correct answers explained. Students may need more time to focus on the Earth’s movement

**Unit Name: Composition of Earth Time Frame: Four Cycles (4 days each)**

**Author: Egg Harbor Township High School Science Department**

UNIT

Subject: **Science** Country: **USA**

Course/Grade: **College Prep Core Science/ 10-12** State/Group: **NJ**

School: **Egg Harbor Township High School**

**UNIT SUMMARY**- The purpose of this unit is to determine the differences among the different types of rocks on Earth as well as the uses for rocks and minerals.

**UNIT RESOURCES**- Earth Science Textbook – Ch. 4 Minerals Ch. 5 Igneous Rocks, Ch.6 Sedimentary and Metamorphic Rocks; Student Kept Binders; Laboratory Assignments; Media Center

**Internet Resource Links: Glencoe.com, NBCLearn videos**

 STAGE ONE

**GOALS AND STANDARDS-**

5.4.12.C.1-Model the interrelationships among the spheres in the Earth systems by creating a flow chart.

The goal of this unit is for the students to realize that our planet is a dynamic system that is consistently changing.

**ENDURING UNDERSTANDINGS**

The big idea for this unit is that there are 4 types of rocks that are composed of different types of minerals and that our planet is dynamic. The students should be able to list and identify different types of rocks and at least ten types of minerals. The misunderstanding coming into class may be that the earth has not changed in appearance since it was formed when in reality it is continually changing.

**ESSENTIAL QUESTIONS**

1. How are minerals used in everyday life?

2. How are igneous rocks formed?

3. Do preexisting rocks change form?

**KNOWLEDGE AND SKILLS**

**Content: Vocabulary-** cleavage, crystal, fracture, hardness, luster, mineral, specific gravity, streak, gem, ore, silicate, tetrahedron, Bowen’s reaction series, fractional crystallization, igneous rock, lava, partial melting, basaltic rock, extrusive rock, granitic rock, intrusive rock, kimberlite, pegmatite, porphyritic texture, texture, vesicular texture

**Skills**:

Define what a mineral is and how minerals form

Classify minerals passed on their properties

Identify different groups of minerals

Summarize igneous rock formations

Describe the composition of magma

Classify different types and textures of igneous rocks

Describe some uses of igneous rocks

Explain the process of lithification

Describe the types of clastic sedimentary rocks

Compare and contrast the different types and causes of metamorphism

Analyze the rock cycle

STAGE TWO

**PERFORMANCE TASKS**

Identifying rocks

Draw out the rock cycle

Model the rock cycle

**OTHER EVIDENCE**

-Test on Chapter 4,5,6

STAGE THREE

**LEARNING PLAN**

 The students will use their notes given from the PowerPoint’s and the NBC Learn videos shown to first begin their knowledge of each topic in this unit. The students will use the rock cycle to identify what types of rocks are found on Earth. Also the students will use actual minerals to identify the properties of minerals. Independently, the students will complete questions and vocabulary out of the book. The students will also use their weekly labs to add to their learning. The students will be monitored through the progression of this unit by daily “Do Now” questions as well as exit questions that will be graded, returned to the students and the correct answers explained. Students may need more time understand the process of igneous rock formation.

**Unit Name: The Dynamic Earth Time Frame: Four Cycles (4 days each)**

**Author: Egg Harbor Township High School Science Department**

UNIT

Subject: **Science** Country: **USA**

Course/Grade: **College Prep Core Science/ 10-12** State/Group: **NJ**

School: **Egg Harbor Township High School**

**UNIT SUMMARY**- The purpose of this unit is to determine how geologic activity affects the formation of the Earth and structures found on the Earth.

**UNIT RESOURCES**- Earth Science Textbook – Ch. 17 Plate Tectonics, Ch.18 Volcanism, Ch.19 Earthquakes; Student Kept Binders; Laboratory Assignments; Media Center

**Internet Resource Links: Glencoe.com, NBCLearn videos**

 STAGE ONE

**GOALS AND STANDARDS-**

5.4.12.C.1-Model the interrelationships among the spheres in the Earth systems by creating a flow chart.

5.4.12.D.1- Explain the mechanisms for plate motions using earthquake data, mathematics, and conceptual models.

5.4.12.D.2- Calculate the average rate of seafloor spreading using archived geomagnetic-reversals data.

The goal of this unit is for the students to realize that our planet is a dynamic system that is consistently changing.

**ENDURING UNDERSTANDINGS**

The big idea for this unit is that geologic activity usually occurs at plate boundaries. This then causes volcanoes to form as well as earthquakes to occur. Mountains also form from movements of tectonic plates. The misunderstanding coming into class may be that mountains were formed when the Earth was formed and also that no new mountain chains can form.

**ESSENTIAL QUESTIONS**

1. What happens at plate boundaries?

2. How do volcanoes form?

3. How do earthquakes form?

4. What causes mountains to form?

**KNOWLEDGE AND SKILLS**

**Content: Vocabulary**- continental drift, Pangaea, isochron, magnetic reversal, magnetometer, paleomagnetism, sea floor spreading, convergent boundary, divergent boundary, rift valley, subduction, tectonic plate, transform boundary, ridge push, slab pull, caldera, cinder cone, composite volcano, conduit, crater, fissure, flood basalt, hot spot, shield volcano, vent, volcanism, pyroclastic flow, tephra, viscosity, batholith, dike, laccolith, pluton, sill, stock, elastic deformation, epicenter, fault, focus, plastic deformation, primary wave, secondary wave, seismic wave, strain, stress, seismogram, seismometer, amplitude, magnitude, modified Mercalli scale, Richter scale, seismic gap, tsunami, isostasy, isostatic rebound, root, topography, compressive force, orogeny, fault- block mountain, plateau, uplifted mountain

**Skills:**

 Discuss what continental drift is and why it was not accepted at first as a theory

Summarize the evidence that the seafloor is spreading

Describe how Earth’s tectonic plates result in many geologic features

Explain the process of convection

Describe how plate tectonics influences the formation of volcanism

Identify the major part of a volcano

Explain how magma type influences volcanic activity

Distinguish among the three types of movements of faults

Describe how a seismometer works

Compare and contrast earthquake magnitude and intensity and the scales to measure each

Describe how Earth’s crust responds to the addition and removal of mass

STAGE TWO

**PERFORMANCE TASKS**

Making Straws Safe from the Shake- building structures that are earthquake ready

Case studies involving mountain ranges

Build a volcano

Modeling plate boundaries

Case study: Krakatoa

**OTHER EVIDENCE**

-Test on Chapter 17,18,19 and 20

STAGE THREE

**LEARNING PLAN**

 The students will use their notes given from the PowerPoint’s and the NBC Learn videos shown to first begin their knowledge of each topic in this unit. The students will use models to show how tectonic plates affect formations on the Earth’s surface. Independently, the students will complete questions and vocabulary out of the book. The students will also use their weekly labs to add to their learning. The students will be monitored through the progression of this unit by daily “Do Now” questions as well as exit questions that will be graded, returned to the students and the correct answers explained. Students may need more time to understand how mountains are formed.

**Unit Name: Geologic Time Time Frame:Three Cycles (4 days each)**

**Author: Egg Harbor Township High School Science Department**

UNIT

Subject: **Science** Country: **USA**

Course/Grade: **College Prep Core Science/ 10-12** State/Group: **NJ**

School: **Egg Harbor Township High School**

**UNIT SUMMARY**- The purpose of this unit is to have the students understand that over time change has occurred in the continents, the oceans and life itself. The students will gain the knowledge of how the Earth is studied from the beginning of time and what scientists use to put together a geologic time scale.

**UNIT RESOURCES**- Earth Science Textbook – Ch.21 Fossils and the Rock Record, Ch 22 The Precambrian Earth, Ch 23 The Paleozoic, Mesozoic, and Cenozoic Eras; Student Kept Binders; Laboratory Assignments; Media Center

**Internet Resource Links: Glencoe.com, NBCLearn videos**

 STAGE ONE

**GOALS AND STANDARDS-**

5.4.12.B.1- Trace the evolution of our atmosphere and relate the changes in rock types and life forms to the evolving atmosphere.

5.4.12.B.2- Correlate stratigraphic columns from various locations by using index fossils and other dating techniques.

5.4.12.B.3- Account for the evolution of species by citing specific absolute-dating evidence of fossil samples.

5.3.12.E.3- Provide a scientific explanation for the history of life on Earth using scientific evidence (e.g., fossil record, DNA, protein structures, etc.).

The goal of this unit is for the students to realize that our planet is a dynamic system that is consistently changing.

**ENDURING UNDERSTANDINGS**

The big idea for this unit is that scientists sue several methods to learn about Earth’s long history. The students will also then focus on the major time periods on the geologic time scale and what unique characteristics each era has that has led to present day life on earth. The students may have the misunderstanding that evolution of life over time has no evidence. They also may misunderstand that evolution is just a theory but a theory that withstood over time.

**ESSENTIAL QUESTIONS**

 1. How do we study past and extinct life forms?

2. How old is Planet Earth and has it ever changed?

**KNOWLEDGE AND SKILLS**

**Content: Vocabulary**- eon, epoch, era, geologic time scale, mass extinction, period, Precambrian, correlation, cross- cutting relationship, key bed, principle of inclusions, original horizontality, relative- age dating, superposition, unconformity, uniformitarianism, absolute age dating, dendrochronology, half- life, radioactive decay, radiocarbon dating, radiometric dating, varve, altered hard part, cast, evolution, index fossil, mineral replacement, mold, original preservation, trace fossil, asteroid, meteorite, zircon, Canadian shield, craton, differentiation, Laurentia, microcontinent, Precambrian shield, banded iron formation, cyanobacteria, red bed, stromatolite, amino acid, Ediacaran biota, eukaryote, prokaryote, Cambrian explosion, paleogeography, passive margin, regression, transgression, amniotic egg, iridium, phytoplankton, bipedal, Homo sapiens

**Skills:**

 Explain why scientists need a geologic time scale

Compare and Contrast dating methods

Define fossil formations and how fossils are used to interpret earth’s history

Describe evidence of the age of the Earth

Describe the formation of the atmosphere and the oceans

Describe experimental evidence of how life began on Earth

Summarize the changes in the Paleozoic life- forms

Identify possible causes of extinction of the dinosaurs

Explain how climate change affected life- forms during the Cenozoic

STAGE TWO

**PERFORMANCE TASKS**

Geologic timeline scale

Fossil identification

 Precambrian story book

Proterozoic Era

Dinosaur dig

**OTHER EVIDENCE**

-Test on Chapter 21, 22 and 23

STAGE THREE

**LEARNING PLAN**

 The students will use their notes given from the PowerPoint’s and the NBC Learn videos shown to first begin their knowledge of each topic in this unit. The students will use fossil from the fossil record to supplement their knowledge. They will also use a dinosaur dig to get a clear idea of how paleontologists perform their jobs. Independently, the students will complete questions and vocabulary out of the book. The students will also use their weekly labs to add to their learning. The students will be monitored through the progression of this unit by daily “Do Now” questions as well as exit questions that will be graded, returned to the students and the correct answers explained. The students will have a clear misunderstanding of the theory of evolution and will need time spent in class clearing up any misconceptions that they might have.

**Unit Name: Anatomy Time Frame: Ten Cycles (4 days each)**

**Author: Egg Harbor Township High School Science Department**

**UNIT**

Subject: **Science** Country: **USA**

Course/Grade: **College Prep Core Science/ 10-12** State/Group: **NJ**

School: **Egg Harbor Township High School**

**UNIT SUMMARY-** The purpose of this unit is to identify the structure and function of the human body as well as how the body maintains homeostasis. This unit will focus on the complex nature of the human body and how each system interacts with the other systems in the body.

**UNIT RESOURCES-** Biology Textbook Ch 30,31,32,33 and 35, Student Kept Binders, Laboratory Assignments, Media Center

**Internet Resource Links: Pearson.com, NBCLearn videos**

 **STAGE ONE**

**GOALS AND STANDARDS-**

5.3.12.A.1-Represent and explain the relationship between the structure and function of each class of complex molecules using a variety of models.

5.3.12.A.2-Demonstrate the properties and functions of enzymes by designing and carrying out an experiment.

5.3.12.A.6-Describe how a disease is the result of a malfunctioning system, organ, and cell, and relate this to possible treatment interventions (e.g., diabetes, cystic fibrosis, lactose intolerance).

The goal of this unit is for the students to understand that the human body is complex and has a specific structure and function and that the body needs to maintain homeostasis in order to function correctly.

**ENDURING UNDERSTANDINGS**

The big idea for this unit is that the human body is characterized by a specific organization and maintains homeostasis. The systems of the body that will be focused on in this unit are the digestive, nervous, skeletal, circulatory, and immune systems. Each organ in each system will be discussed and the function will be analyzed. The students may not know each organ in the human body and where it is located.

**ESSENTIAL QUESTIONS**

1. What are the anatomical and physiological properties of the human body?

**KNOWLEDGE AND SKILLS**

**Content: Vocabulary-** tissue, homeostasis, calorie, enzyme, senses, esophagus, mouth, stomach, small intestine, gallbladder, large intestine, liver, trachea, neurons, brain, spinal cord, axon, dendrite, muscle, bones, heart, vein, aorta, blood, antigens, antibodies, allergy

**Skills:**

Draw and label organs of the following systems: digestive, circulatory, respiratory, immune, skeletal, and nervous

Identify the four levels of organization in the human body

Label a neuron and how information is transmitted through the body

Identify how our senses work

Explain how movement can occur in the human body

Identify how the human body protects itself from disease

Explain how oxygen is moved through the body

Identify the four major blood types and who can donate to whom

**STAGE TWO**

**PERFORMANCE TASKS**

- Draw and label a foldable for the digestive system

- Use synthesized chemicals to show how food is digested in the body

- Complete a coloring of the different organs of the brain

- Draw and label all of the sense organs in the body

- Complete a lab on optical illusions

- Dissect an owl pellet and show comparisons between the human anatomy

- Label the bones in the human body

- Investigate a crime scene using evidence

- Identify which blood types cannot be mixed using a lab demonstration

- Watch and analyze the movie contagion and how the disease can be spread throughout the human population

- Complete case study on our immune system

**OTHER EVIDENCE**

* **Quiz on digestive system**
* **Test on the nervous system**
* **Quiz on the skeletal system**
* **Quiz on circulatory system**
* **Quiz on immune system**

**STAGE THREE**

**LEARNING PLAN**

 The students will use their notes given from the PowerPoint’s and the NBC Learn videos shown to first begin their knowledge of each topic in this unit. The students will use real life examples and synthesized chemicals to help show how the human body maintains its homeostasis. There will also be a study guide provided for the test and a quiz. The students will be monitored through the progression of this unit by daily “Do Now” questions as well as exit questions that will be graded, returned to the students and the correct answers explained. The students have in the past struggled with the amount of vocabulary in this unit so it will be broken down into smaller blocks so that it can be more easily retained

**Unit Name: Beyond Earth Time Frame: 10 Cycles (4 days each)**

**Author: Egg Harbor Township High School Science Department**

UNIT

Subject: **Science** Country: **USA**

Course/Grade: **College Prep Core Science/ 10-12** State/Group: **NJ**

School: **Egg Harbor Township High School**

**UNIT SUMMARY**- The purpose of this unit is to explore the dynamic system beyond Earth and the effects that celestial bodies have on the Earth. The topics that will be covered are the Sun-Moon- Earth system, the Solar System, Stars, Galaxies and how space is studied. At the end of this unit the students will identify that the Earth is one sole body in a complex and dynamic universe.

**UNIT RESOURCES**- Earth Science Textbook –Ch 27 The Sun-Earth-Moon System, Ch 28- Our Solar System, Ch 29 Stars, Ch 30 Galaxies and the Universe; Student Kept Binders; Laboratory Assignments; Media Center

**Internet Resource Links: Glencoe.com, NBCLearn videos**

 STAGE ONE

**GOALS AND STANDARDS-**

5.4.12.A.1-Explain how new evidence obtained using telescopes (e.g., the phases of Venus or the moons of Jupiter) allowed 17th-century astronomers to displace the geocentric model of the universe.

5.4.12.A.2-Collect, analyze, and critique evidence that supports the theory that Earth and the rest of the solar system formed from a nebular cloud of dust and gas 4.6 billion years ago.

5.4.12.A.3-Analyze an H-R diagram and explain the life cycle of stars of different masses using simple stellar models.

5.4.12.A.4-Analyze simulated and/or real data to estimate the number of stars in our galaxy and the number of galaxies in our universe.

5.4.12.A.5-Critique evidence for the theory that the universe evolved as it expanded from a single point 13.7 billion years ago.

5.4.12.A.6-Argue, citing evidence (e.g., Hubble Diagram), the theory of an expanding universe.

This unit will begin the students’ knowledge of the earth and the universe and how it is all interconnected.

**ENDURING UNDERSTANDINGS**

The big idea for this unit is that using the laws of motion and gravitation, astronomers can understand the orbits and the properties of the planets and other objects in the solar system. The students should be able to explain how the solar system is formed, compare and contrast the characteristics of the inner and outer planets, and distinguish between planets and other objects in the universe. They will also develop an understanding of the ways in which space is studied. The students may come into class with a preconceived notion of the size of space and may believe that the Milky Way Galaxy is the only galaxy in the universe. They may also not understand what a star is and how it is formed.

**ESSENTIAL QUESTIONS**

1. How does the interaction of the sun, moon and earth affect our planet?

2. What are the biggest differences between the inner planets and the outer planets?

3. How are other objects in our universe formed?

4. How do astronomers study space?

**KNOWLEDGE AND SKILLS**

**Content: Vocabulary-** electromagnetic spectrum, interferometry, reflecting telescope, refracting telescope, albedo, ejecta, highland, impact crater,mare, ray, regolith, rille, apogee, perigee, ecliptic plane, equinox, lunar eclipse, solar eclipse, solstice, astronomical unit, eccentricity, ellipse, retrograde motion, scarp, terrestrial planet, belt, gas giant planet, comet, dwarf planet, Kuiper belt, meteor, meteorite, meteoroid, meteor shower, corona, fission, fusion, chromosphere, photosphere, prominence, solar flare, solar wind, sunspot, constellation, black hole, nebula, supernova, Big Bang Theory, halo, dark matter, cosmology, variable star

**Skills:**

 -Draw out a picture of a solar eclipse and a lunar eclipse. Include where the umbra and penumbra would be.

-Write the changes in dates for our seasons and what causes seasons on our planet.

-Name and describe all 8 planets. ( ex. Which is the hottest, which one has rings etc.) and put the planets in order starting with the one closest to the sun.

-Name all of the famous astronomers learned about and their contribution to astronomy

-Name what ancient astronomers thought the universe revolved around and how they benefited from studying space.

-Name all of the phases of the moon

-Name the layers of the suns atmosphere and their characteristics.

-Name the life cycle of a star.

-Describe moon theory and the Big Bang Theory

-Identify the number of tides and on Earth and how they are affected by space

STAGE TWO

**PERFORMANCE TASKS**

First Men On the Moon

Scale model of the solar system

Solar system brochure

Calculating the energy output of the Sun

Researching the stars

Rockets

Sky high costs- are they worth it? Debate space funding

Completely draw the phases of the moon

Use the Star Lab to identify constellations and what the constellations represent

Complete a poem using vocabulary terms from this section

Make a cosmic timeline the length of the classroom

Determine the validity of astrological readings based on the zodiac sign

Use pictures to determine how we have made in improvements in studying space.

Make a foldable on the life cycle of a star and in the computer lab research a star

**OTHER EVIDENCE**

-Test on Chapter 27,28,29 and 30

STAGE THREE

**LEARNING PLAN**

 The students will use their notes given from the PowerPoint’s and the NBC Learn videos shown to first begin their knowledge of each topic in this unit. The unit will broken down into the four sub categories- sun, moon and earth interactions, inner and outer planets, stars and galaxies and the study of space. The subcategories will be presented in the order above. The students making their own drawings for the phases of the moon, layers of the suns atmosphere, life cycle of a star and the cosmic timeline will be hands on and will help the students on the tests. The research projects will ask the students to think outside the box in terms of developing new ideas of the scope of space and this will help the students on the assessments. Independently, the students will complete questions and vocabulary out of the book. The students will also use their weekly labs to add to their learning. The students will be monitored through the progression of this unit by daily “Do Now” questions as well as exit questions that will be graded, returned to the students and the correct answers explained. The end project of the rocket launch will further help students to understand the physics behind astronomy.