

## Science Syllabus-8th grade

### **First Quarter**

#### **Week 1: Laboratory Safety Procedures and Equipment**

- Identify the tools and procedures needed to test the design features of a prototype (**Take home STEM project 1 assigned.**)

Standard: SPI 0807.T/E.1 (last years standards)

*Parents may access standards at the Tennessee State Science website [Tennessee Academic Standards for Science](#)*

#### **Week 2-4: Scientific Method**

- Develop a model to generate data for ongoing testing and modification of an electromagnet a generator, and a motor such that an optimal design can be achieved.
- Research and communicate information to describe how data from technologies provide information about objects in the solar system and universe.

Standard: 8.ETS1.1 & 8.ETS1.2

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#### **Week 5-7: Life Science**

- Develop a scientific explanation of how natural selection plays a role in determining the survival of a species in a changing environment.
- Analyze evidence form geology, paleontology, and comparative anatomy to support that specific phenotypes within a population can increase the probability of survival of that species and lead to adaptation.
- Construct an explanation of addressing similarities and differences of the anatomical structures and genetic information between extinct organisms using evidence of common ancestry and patterns between taxa.

Standard: 8.LS4.4, 8.LS4.3, 8.LS4.2

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#### **Week 7-9: Life Science**

- Obtain, evaluate, and communicate information about the technologies that have changed the way human use artificial selection to influence the inheritance of desired traits in other organisms.

- Analyze and interpret data to support the assertion that rapid or gradual geographic changes lead to drastic population changes and extinction events.
- Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change in life forms throughout Earth's history.
- Describe the relationship between the processes and forces that create igneous, sedimentary, and metamorphic rocks.

**(Take home STEM project 1 will be due.)**

Standard: 8.LS4.5 8.LS4.1 & 8.ESS2.1 8.ESS2.3

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## **Second Quarter**

### **Week 1-4 Earth's System**

- Describe the relationship between the processes and forces that create igneous, sedimentary, and metamorphic rocks.
- Evaluate data collected from seismographs to create a model of Earth's structure.
- Construct a scientific explanation using data that explains the gradual process of plate tectonics
- Gather and evaluate evidence that energy from the earth's interior drives convection cycles within the asthenosphere which creates changes within the lithosphere including plate movements, plate boundaries, and seafloor spreading.

**(Take home STEM project 2 assigned.)**

Standard: 8.ESS2.3, 8.ESS2.2, 8.ESS2.5, 8.ESS2.4

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### **Week 4-6 Earth and Human Activity**

- Interpret data to explain the Earth's mineral, fossil fuel, and groundwater resources are unevenly distributed as a result of geologic processes.
- Collect data, map, and describe patterns in the locations of volcanoes and earthquakes related to tectonic plate boundaries, interactions, and hotspots.

Standard: 8.ESS3.1, 8.ESS3.2

*Parents may access standards at the Tennessee State Science website [Tennessee Academic Standards for Science](#)*

### **Week 6-9 Motion and Stability: Forces and Interactions**

- Create a demonstration of an object in motion and describe the position, force and direction of the object.
- Plan and conduct an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.
- Evaluate and interpret that for every force exerted on an object there is an equal force exerted in the opposite direction.

**(Take home STEM project 2 will be due.)**

Standard: 8.PS2.3, 8.PS2.4, 8.PS2.5

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### **Third Quarter**

#### **Week 1-2 Earth's place in the Universe**

- Research, analyze, and communicate that the universe began with a period of rapid expansion using evidence from the motion of galaxies and composition of stars.
- Explain the role of gravity in the formation of our sun and planets.

**(Take home STEM project 3 will be assigned.)**

Standard: 8.ESS1.1, 8.ESS1.2

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#### **Week 3: Engineering Design**

- Research and communicate information to describe how data form technologies provide information about objects in the solar system and universe.

Standard: 8.ETS1.2

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#### **Week 4-6: Motion and Stability: Forces and Interactions**

- Conduct an investigation to provide evidence that exist between objects exerting forces on each other even though the objects are not in contact.
- Design and conduct investigations depicting the relationship between magnetism and electricity in electromagnets, generators, and electrical motors, emphasizing the factors that increase or diminish the electric current and the magnetic field strength.

Standard: 8.PS2.2, PS2.1

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### **Week 7-9: Waves and Their Applications**

- Develop a model to generate data for ongoing testing and modification of an electromagnet a generator, and a motor such that an optimal design can be achieved.
- Develop and use models to represent the basic properties of waves including frequency, amplitude, wavelength, and speed.

**(Take home STEM project 3 will be due.)**

Standard: 8.ETS1.1, 8.PS4.1

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### **Fourth Quarter**

#### **Week 1-3: Waves and Their Application**

- Compare and contrast mechanical waves and electromagnetic waves based on refraction, reflection, transmission, absorption, and their behavior through a vacuum and/or various media.
- Evaluate the role that waves play in different communication systems.

**(Take home STEM project 4 will be assigned.)**

Standard 8.PS4.2 8.PS4.3

*Parents may access standards at the Tennessee State Science website [Tennessee Academic Standards for Science](#)*

#### **Week 4-9: Review/TCAP/Enrichment**

**(Take home STEM project 4 will be due Week 8.)**

*Parents may access teaching materials to go along with standards through [ck-12.org](#) (where a version of 7th and 8th grade TN Science textbook is located) and through google classroom via Schoology.*