



## 7<sup>th</sup> Grade Science

The essential skills and knowledge for this Davis School district course focuses on the integration of science and engineering practices, cross cutting concepts, and disciplinary core ideas to produce a STEM focused environment.

### Forces are Interactions Between Matter

- a. **Carry out an investigation** which provides evidence that a change in an objects motion is dependent on the mass of the object and the sum of the forces acting on it.
- b. Apply Newton's Third Law to **design a solution** to a problem involving the motion of two colliding objects in a system.
- c. **Construct a model** using observational evidence to describe the nature of fields existing between objects that exert forces on each other even though the objects are not in contact.
- d. **Collect and analyze data** to determine the factors that affect the strength of electric and magnetic forces.
- e. **Engage in argument from evidence** to support the claim that gravitational interactions within a system are attractive and dependent upon the masses of interacting objects.

### Changes to Earth Over Time

- f. **Develop a model** of the rock cycle to describe the relationship between energy flow and matter cycling that create igneous, sedimentary, and metamorphic rocks.
- g. **Construct an explanation** based on evidence for how processes have changed Earth's surface at varying time and spatial scales.
- h. **Ask questions** to **identify** constraints of specific geologic hazards and evaluate competing design solutions for maintaining the stability of human engineered structures, such as homes, roads, and bridges.
- i. **Develop and use a scale model** of the matter in the Earths interior to demonstrate how differences in density and chemical composition cause the formation of the crust, mantle, and core.
- j. **Ask questions and analyze and interpret data** about the patterns between plate tectonics and the occurrence of earthquakes and volcanoes, continental and ocean floor features, and the distribution of rocks and fossils.
- k. **Make an argument from evidence** for how the geologic time scale shows the age and history of Earth.



## Structure and Function of Life

- l. **Plan and carry out an investigation** that provides evidence that the basic structures of living things are cells.
- m. **Develop and use a model** to describe the function of a cell in living systems and the way parts of cells contribute to cell function.
- n. **Construct an explanation** using evidence to explain how body systems have various levels of organization.

## Reproduction and Inheritance

- a. **Develop and use a model** to explain the effects that different types of reproduction have on genetic variation, including asexual and sexual reproduction.
- b. **Obtain, evaluate, and communicate** information about specific animal and plant adaptations and structures that affect the probability of successful reproduction.
- c. **Develop and use a model** to describe why genetic mutations may result in harmful, beneficial, or neutral effects to the structure and function of the organism.
- d. **Obtain, evaluate, and communicate** information about the technologies that have changed the way humans affect the inheritance of desired traits in organisms.

## Changes in Species Over Time

- a. **Construct an explanation** that describes how the genetic variation of traits in a population can affect some individual's probability of surviving and reproducing in a specific environment.
- b. **Analyze and interpret data** for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth, under the assumption that natural laws operate today as in the past.
- c. **Construct explanations** that describe the patterns of body structure similarities and differences between modern organisms, and between ancient and modern organisms, to infer possible evolutionary relationships.
- d. **Analyze data** to compare patterns in the embryological development across multiple species to identify similarities and differences not evident in the fully formed anatomy.