Course: 6th Grade **Course Code: 2002040** **Quarter: 2**

RESOURCES **COMMON CORE** **SCIENCE CENTER** **SYLLABUS**

Topic of Study: Types of Forces (***Fusion Units #5 & #2)***

Bodies of Knowledge: Physical Science

Big Ideas: 1 The Practice of Science; **2** Characteristics of Scientific Knowledge; **3** The Role of Theories, Laws, Hypotheses, and Models **13**: Forces and Changes in Motion **6**: Earth Structures

Essential Questions: How does motion change? **(5-3)** What causes motion? **(5-4)** How do objects move under the influence of gravity? **(5-5)** How does weathering change Earth's surface? **(2-1)** How does water change Earth's surface? **(2-2)** How do wind, ice, and gravity change Earth's surface? **(2-3)** How do landforms relate to Florida's geology? **(2-4)**

Vocabulary: force, net force, inertia, gravity, free fall, orbit, weathering, physical weathering, chemical weathering, abrasion, oxidation, acid precipitation, erosion, deposition, floodplain, delta, alluvial fan, groundwater, shoreline, beach, sandbar, barrier island, dune, loess, glacier, glacial drift, creep, rockfall, landslide, mudflow, mountain, river, lake, coastline

Common Inquiry Labs:

- **SC.6.P.13.3**-First Law of Skateboarding: Lab Manuel p.267 (5-4)
- **SC.6.P.13.1/13.2**-Falling Water: Lab Manuel p.285 (5-5)
- **SC.6.E.6.1**-Mechanical Weathering: Lab Manuel p.57 (2-1)
- **SC.6.E.6.1**-Moving Sediment: Lab Manual p.64 (2-2)
- **SC.6.E.6.1**-Exploring Stream Erosion and Deposition: Lab Manuel p.88 (2-2)
- **SC.6.E.6.1/6.2**-Beach Erosion: Lab Manuel p.97 (2-2)

	Technology Links:	
Lab Assistance: *Scientific Methods Skills* *Writing in the Sciences* *Cooperative Learning Activities*	**Science Links:** *Vocabulary Strategies* *Graphic Organizers and Reading Strategies* *Fold Notes* *Rubrics and Integrated Assessments* *Test Taking Strategies*	**Science Fair Assistance:** *Math in Science* *Planning for Science Fair and Competitions* *Lessons for Substitutes*

Teacher's Links to Online Guides:

Above Level On Level Below Level

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NGSSS	Outline of Content	Targets
SC.6.P.13.1: Investigate and describe types of forces including contact forces and forces acting at a distance, such as electrical, magnetic, and gravitational. **Cognitive Complexity: Moderate (5-4,5)** **SC.6.P.13.3:** Investigate and describe that an unbalanced force acting on an object changes its speed, or direction of motion, or both. **Cognitive Complexity: Moderate (5-4)**	**Unit 5 Lesson 4 (P.13.1, P.13.3)** **Introduction to Force** 1. A force is a push or a pull. 2.Contact Forces A. Friction B. Buoyant force C. Tension D. Compression E. Air resistance 3. Non-Contact Forces A. Electrical force B. Magnetic force C. Gravity **Balance and Forces** 1. The net force acting on any object is the combination of all the forces acting on that object. **Laws of Motion** 1. Isaac Newton developed three laws that, taken together, explain how and why objects move as they do.	• Explore how various surfaces affect the friction of pulling an object during an inquiry activity. • Evaluate forces acting on different objects and surfaces during an inquiry activity. • Investigate the friction encountered by a ball rolling across a grassy field and other surfaces during an inquiry activity. • Identify different types of friction and how they play a role in different sports using a graphic organizer. • Interpret how buoyant forces act on vessels and objects on water analyzing a video or images. • Describe and show how electric charges exert forces on each other. • Compare how lightning and static electricity are related. • Describe and illustrate the directional forces of magnets. • Compare and contrast contact and non-contact forces and give examples for each. • Identify friction in everyday situations. • Design an experiment that demonstrates the different properties of gravity. • Describe unbalance forces using a graphic organizer.
SC.6.P.13.2: Explore the law of gravity by recognizing that every object exerts gravitational force on every other object and that the force depends on how much mass the objects have and how far apart they are. **Cognitive Complexity: Low (5-5)**	**Unit 5 Lesson 5 (P.13.1, P.13.2)** **Gravity** 1. Masses attract each other. **Law of Universal Gravitation** 1. Gravity depends on mass and distance. **Orbits** 1. Gravity keeps objects in orbit.	• Identify gravity as the force that causes objects to fall to Earth. (II, • Investigate how different spheres fall at different rates due to air resistance during an inquiry activity. (II, III) • Distinguish between air resistance and gravity.

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NGSSS	Content	Target
SC.6.E.6.1 Describe and give examples of ways in which Earth's surface is built up and torn down by physical and chemical weathering, erosion, and deposition. **Cognitive Complexity: Moderate (2-1,2,3)** **SC.6.E.6.2** Recognize that there are a variety of different landforms on Earth's surface such as coastlines, dunes, rivers, mountains, glaciers, deltas, and lakes and relate these landforms as they apply to Florida. **Cognitive Complexity: Moderate (2-2,3,4)**	**Unit 2 Lesson 1 (E.6.1)** **Weathering** 1. Weathering is a process that breaks down rock materials. **Physical Weathering** 1. Physical weathering is the breakdown of rock through motion, force, and other physical processes. **Chemical Weathering** 1. Chemical weathering is the process by which rocks break down as a result of chemical reactions. **Unit 2 Lesson 2 (E.6.1, E.6.2)** **Erosion and Deposition** 1. Erosion and deposition change Earth's surface. 2. There are several agents that cause erosion and deposition. **Erosion and Deposition by Streams** 1. These conditions produce faster erosion: faster flow, steeper slopes, greater discharge of water. 2. These conditions produces faster deposition: slower flow, more shallow slopes, less discharge of water. **Formation of Landforms by Streams** 1. Some landforms result from stream erosion. 2. Other landforms result from stream deposition. **Erosion and Deposition by Groundwater, Waves, and Currents** 1. Groundwater erosion can change the land. 2. Waves and currents can cause shoreline changes and land formations. **Unit 2 Lesson 3 (E.6.1, E.6.2)** **Erosion and Deposition by Wind** 1. Wind causes erosion and deposition. **Erosion and Deposition by Ice** 1. Ice expands and scrapes land, causing erosion. 2. Ice pushes along sediment, causing deposition. **Erosion and Deposition by Gravity** 1. Gravity causes erosion and deposition by pulling down on loose materials.	• Compare and contrast physical and chemical weathering during an inquiry activity. • Investigate the role physical weathering plays in shaping/reshaping the earth during an inquiry activity. • Investigate the role chemical weathering plays in shaping/reshaping the earth during an inquiry activity. • Differentiate between erosion and deposition. • Explain how the agents of erosion work. • Provide an explanation of how weathering and erosion helps in the formation of soil shape/reshape earth (landslide). • Investigate local landforms that were developed as a result of erosion and deposition. • Explain how glacial erosion contributes to the formation of large lakes. • Differentiate between the different types of landforms in Florida.

	Unit 2 Lesson 4 (E.6.2) **Mountains and Glaciers** 1. Mountains are elevated areas that form when Earth's crust deforms. 2. Glaciers are moving masses of ice that can change the landscape. **Lakes, Rivers, and Deltas** 1. A lake is a body of water surrounded by land. 2. A river is a wide stream of fresh water that flows into a larger body of water. 3. A delta is a fan-shaped mass of material deposited at the mouth of a river or stream. **Coastlines and Dunes** 1. Coastlines are the boundary between land and a body of water. 2. Dunes are mounds of sand deposited by the wind.	