



Fantastic Forces covers a broad range of themes relating to physical science and earth science. These themes align with Georgia Standards of Excellence. Following are some key correlations between the exhibit and curriculum standards by activity.

Please contact us at [JustForEducators@FernbankMuseum.org](mailto:JustForEducators@FernbankMuseum.org) if we can help you integrate Fantastic Forces into your curriculum.

## Physical Science

### Defying Gravity: Bernoulli Principle

Concepts and Standards:

- S4P3. Obtain, evaluate, and communicate information about the relationship between balanced and unbalanced forces.
- SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.
- SP2. Obtain, evaluate, and communicate information about how forces affect the motion of objects.

### Take to the Sky: Forces of Flight

Concepts and Standards:

- S4P3. Obtain, evaluate, and communicate information about the relationship between balanced and unbalanced forces.

### Blast Off: Thrust

Concepts and Standards:

- S4P3. Obtain, evaluate, and communicate information about the relationship between balanced and unbalanced forces.
- S8P2. Obtain, evaluate, and communicate information about the law of conservation of energy to develop arguments that energy can transform from one form to another within a system.
- SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.
- SP1. Obtain, evaluate, and communicate information about the relationship between distance, displacement, speed, velocity, and acceleration as functions of time.

### Spin Out: Centripetal Force

Concepts and Standards:

- S4P3. Obtain, evaluate, and communicate information about the relationship between balanced and unbalanced forces.
- SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.

- SP2. Obtain, evaluate, and communicate information about how forces affect the motion of objects.

### **Tug of War: Levers**

Concepts and Standards:

- S4P3. Obtain, evaluate, and communicate information about the relationship between balanced and unbalanced forces.
- SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.

### **Pull Yourself Up: Pulleys**

Concepts and Standards:

- S4P3. Obtain, evaluate, and communicate information about the relationship between balanced and unbalanced forces.
- SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.

### **Up, Up and Away: Aerodynamics**

Concepts and Standards:

- S4P3. Obtain, evaluate, and communicate information about the relationship between balanced and unbalanced forces.
- S8P2. Obtain, evaluate, and communicate information about the law of conservation of energy to develop arguments that energy can transform from one form to another within a system.
- SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.

### **Into the Vortex: Planetary Orbits**

Concepts and Standards:

- S4P3. Obtain, evaluate, and communicate information about the relationship between balanced and unbalanced forces.
- S6E1. Obtain, evaluate, and communicate information about current scientific views of the universe and how those views evolved.
- S8P5. Obtain, evaluate, and communicate information about gravity, electricity, and magnetism as major forces acting in nature.
- SPS8. Obtain, evaluate, and communicate information to explain the relationships among force, mass, and motion.
- SP2. Obtain, evaluate, and communicate information about how forces affect the motion of objects.

## **Earth Science**

### **Twist it Up: Tornadoes**

Concepts and Standards:

- S4E4. Obtain, evaluate, and communicate information to predict weather events and infer weather patterns using weather charts/maps and collected weather data.
- S6E4. Obtain, evaluate, and communicate information about how the sun, land, and water affect climate and weather.
- SES5. Obtain, evaluate, and communicate information to investigate the interaction of solar energy and Earth's systems to produce weather and climate.

### **Explosive Earth: Volcanoes**

#### Concepts and Standards:

- S5E1. Obtain, evaluate, and communicate information to identify surface features on the Earth caused by constructive and/or destructive processes.
- S6E5. Obtain, evaluate, and communicate information to show how Earth's surface is formed.
- SES2. Obtain, evaluate, and communicate information to understand how plate tectonics creates certain geologic features, landforms, Earth materials, and geologic hazards.

#### **Shake it Up: Earthquakes**

##### Concepts and Standards:

- S5E1. Obtain, evaluate, and communicate information to identify surface features on the Earth caused by constructive and/or destructive processes.
- S6E5. Obtain, evaluate, and communicate information to show how Earth's surface is formed.
- SES2. Obtain, evaluate, and communicate information to understand how plate tectonics creates certain geologic features, landforms, Earth materials, and geologic hazards.

#### **Sinking Feeling: Liquefaction**

##### Concepts and Standards:

- S5E1. Obtain, evaluate, and communicate information to identify surface features on the Earth caused by constructive and/or destructive processes.
- S8P1. Obtain, evaluate, and communicate information about the structure and properties of matter.
- SES2. Obtain, evaluate, and communicate information to understand how plate tectonics creates certain geologic features, landforms, Earth materials, and geologic hazards.
- SES3. Obtain, evaluate, and communicate information to explore the actions of water, wind, ice, and gravity as they relate to landscape change.

#### **Super Charged: Lightning**

##### Concepts and Standards:

- S5P2. Obtain, evaluate, and communicate information to investigate electricity.
- S8P1. Obtain, evaluate, and communicate information about the structure and properties of matter.
- S8P5. Obtain, evaluate, and communicate information about gravity, electricity, and magnetism as major forces acting in nature.
- SES5. Obtain, evaluate, and communicate information to investigate the interaction of solar energy and Earth's systems to produce weather and climate.

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