

## New York State Science Learning Standards Stars: The Powerhouses of the Universe

### 4th Grade

#### *Disciplinary Core Ideas:*

- PS4.B: Electromagnetic Radiation
- PS4.C: Information Technologies and Instrumentation

#### *Crosscutting Concepts:*

- Similarities and differences in patterns can be used to sort and classify natural (4-PS4-1)
- Knowledge of relevant scientific concepts and research findings is important in engineering. (4-PS4-3)

### 5th Grade

- **5-ESS1-1.** Support an argument that the differences in the apparent brightness of the Sun compared to other stars is due to their relative distances from Earth.

#### *Disciplinary Core Ideas:*

- ESS1.A: The Universe and its Stars

#### *Crosscutting Concepts:*

- Natural objects exist from the very small to the immensely large. (5-PS1-4, 5-ESS1-1)
- Science assumes consistent patterns in natural systems. (5-PS1-2)

### Middle School

- **MS-PS2-4.** Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects and the distance between them.
- **MS-ESS1-2.** Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.

#### *Disciplinary Core Ideas:*

- PS1.A: Structure and Properties of Matter
- PS2.B: Types of Interactions
- PS4.B: Electromagnetic Radiation
- PS4.C: Information Technologies and Instrumentation
- ESS1.A: The Universe and its Stars

#### *Crosscutting Concepts:*

- Patterns
- Cause and Effect
- Scale, Proportion, and Quantity
- Interdependence of Science, Engineering, and Technology
- Science is a Human Endeavor
- Scientific Knowledge Assumes an Order and Consistency in Natural Systems



## High School

- **HS-ESS1-1.** Develop a model based on evidence to illustrate the life span of the Sun and the role of nuclear fusion in the Sun's core to release energy that eventually reaches Earth in the form of radiation.
- **HS-ESS1-3.** Communicate scientific ideas about the way stars, over their life cycle, produce elements.

### *Disciplinary Core Ideas:*

- PS1.A: Structure and Properties of Matter
- PS4.B: Electromagnetic Radiation
- ESS1.A: The Universe and its Stars

### *Crosscutting Concepts:*

- Patterns
- Energy and Matter
- Scale, Proportion, and Quantity
- Stability and Change
- Interdependence of Science, Engineering, and Technology
- Scientific Knowledge Assumes an Order and Consistency in Natural Systems