Noble Planetarium Classroom Companion

Cosmic Mashups: Gravity, Galaxies and Suppermassive Black Holes

Length: 25 minutes
Grade level: 6-12

SHOW OVERVIEW

Find out how the collisions of galaxies can activate the most massive and extreme objects in our universe: Supermassive black holes!

EXTENSION IDEAS FOR TEACHERS:

Milky Way Location Map – Students identify the location of our Sun within the Milky Way galaxy and compare its size to other stars.
Gravity Demonstration – Students observe a model showing how gravity influences the motion of objects in space, including stars and galaxies.
Electromagnetic Spectrum Sort – Students sort examples of electromagnetic waves such as visible light, radio waves, and infrared to understand how scientists study distant objects in space.
Black Hole Simulation – Students model how gravity pulls objects toward a black hole using a hands-on demonstration or visual model.
Galaxy Types Sort – Students sort images of spiral, elliptical, and irregular galaxies to identify patterns in galaxy structure.
Scale of the Universe Model – Students create a visual representation comparing the sizes of stars, galaxies, and black holes.
Light Investigation Activity – Students explore how different types of light help scientists gather information about objects that are too far away to visit.

PROGRAM TEKS

6.11(B) understand that gravity is the force that governs the motion of our solar system

8.8(A) describe components of the universe, including stars, nebulae, and galaxies, and use models such as the Hertzsprung-Russell diagram for classification

8.8(B) recognize that the Sun is a medium-sized star located in a spiral arm of the Milky Way galaxy and that the Sun is many thousands of times closer to Earth than any other star

8.8(C) identify how different wavelengths of the electromagnetic spectrum such as visible light and radio waves are used to gain information about components in the universe

Critical Thinking Questions:

Ask students, *"Based on what you learned in the show, how does gravity influence the motion of galaxies and stars?"*
Ask students, *"Based on what you learned in the show, what happens when galaxies collide?"*
Ask students, *"Based on what you learned in the show, what makes supermassive black holes some of the most extreme objects in the universe?"*
Ask students, *"Based on what you learned in the show, how do scientists classify different types of stars?"*
Ask students, *"Based on what you learned in the show, how do scientists use different wavelengths of light to study distant objects in space?"*