



Living and Working in Space

A Pre-Visit Information Guide For Teachers

Meets RI GSEs: LS1(3-4)-2, PS3(3-4)-7, LS4 (5-6)-10, ESS2(5-6)-8

The International Space Station is the largest spacecraft ever built, assembled piece by piece in space! Students will experience what it's like to be an astronaut aboard the ISS as they try their hands at 'astronaut training' activities. They will also discover the effects of microgravity on the human body and find out how astronauts eat, sleep and work in space!

OBJECTIVES

- **'Meet me at the Station' video and the assembly of the ISS:**
What is the ISS? How is it being assembled in space? This video overview of the space station explains how the largest spacecraft ever built is being assembled through a series of launches and an international collaboration.
- **The human body in space:**
If everything is floating in space, how do astronauts eat, sleep, exercise, attend to their personal hygiene needs, etc...? Students explore the differences between their daily life on Earth, and a day in the life of an astronaut. Students also learn about the effects of the microgravity environment on the human body, including the muscles, bones, heart, and vestibular system.
- **Living and working in space investigation stations:**
Students will try 'astronaut training' activities at a series of investigation stations to gain a better understanding of what astronauts experience aboard the ISS. They will be challenged with tasks such as testing their reaction time, working in teams to use robotic arms, and much more!

ACTIVITIES

Teachers are encouraged to conduct pre-visit and post-visit classroom discussions and activities with their classes to make the most of their experience. NASA has created a student experiment design challenge called 'Kids in Microgravity', which encourages students to design experiments that could be performed in microgravity. Grade target is 5-8, but this could be adapted for younger grades. Go to:

http://www.nasa.gov/mission_pages/station/science/experiments/Kids_In_Micro-g.html#overview for more information.

HELPFUL VOCABULARY

FREEFALL- The condition of an object falling within a gravitational field.

GRAVITY- The force of attraction between all objects in the universe. Wherever there is mass, there is gravity.

MICROGRAVITY- An environment produced by freefall that alters the local effects of gravity and makes objects seem to be weightless and able to float.

ORBIT- The circular or elliptical path of a body around another body; to move in a circular or elliptical path around a body.

ROCKET- An engine that burns chemicals to produce hot gases that escape through a rear opening to propel a spaceship forward.

SPACE STATION- A large, man-made satellite orbiting the Earth with room on board for people to live and work.

VESTIBULAR SYSTEM- A group of organs, including the inner ear, which allow the body to sense its movement, as well as maintaining balance.

WEIGHT- The force with which objects are pulled toward Earth by gravity.

WEBSITES

Find out when the ISS will be visible from your location:

<http://spaceflight1.nasa.gov/realdata/sightings/>

NASA Space Station Home:

http://www.nasa.gov/mission_pages/station/main/index.html