Virtual Learning

Aerospace Engineering

The Hubble Space Telescope

April 23, 2020

Aerospace Engineering
Lesson: April 23, 2020

Objective/Learning Target:

Students will learn about the significance of the Hubble Space Telescope.

The Hubble Space Telescope

Bell Work:

How much do you think the Hubble Space Telescope weighs?

Let's Get Started:

Watch Videos:

- The Extraordinary Hubble Space Telescope
- The Hubble Space Telescope: Three Decades of Discovery

The Hubble Space Telescope

The Hubble Space Telescope (HST) is a telescope that was launched into low Earth orbit in 1990 and remains in operation to this day. It was not the first space telescope but it is one of the largest and most versatile. It is well known both as a vital research tool and as a public relations icon for astronomy.

The Hubble Space Telescope

In 1969, the National Academy of Sciences gave its approval for the Large Space Telescope (LST). After Neil Armstrong landed on the Moon in 1969, funding for NASA space programs began to dwindle, putting the LST program in jeopardy. The LST planners had to design the telescope with a tight budget. They considered a number of different downsizing measures, such as decreasing the size of the primary mirror, the number of scientific instruments, or the number of spare parts created and tests performed. Ultimately, the size of the main mirror was reduced from 120 inches to 94 inches.

The Hubble Space Telescope

To maintain the telescope, It was decided to conduct servicing missions in orbit instead of bringing the telescope back to Earth and repairing it on the ground. This would be a cheaper plan and easier on the budget. By 1985, the telescope was assembled and ready for launch.

In 1986 though, disaster struck. The Space Shuttle Challenger accident forced NASA to ground all space shuttles for two years. The HST Project used that time to make more improvements on the telescope. Solar panels were improved with new solar cell technology. The aft shroud (the end of the telescope that houses the science instruments) was modified to make instrument replacement easier. Computers and communication systems were upgraded.

The Hubble Space Telescope

On April 24, 1990, the space shuttle Discovery launched with the Hubble Space Telescope in its bay. The next day, Hubble was set into orbit, ready to look into the vast unknown of space, offering a glimpse at distant, unseen space yet to be described.

The Hubble Space Telescope

Telescope size:

Length: 43.5 feet

Weight: 24,500 lbs

Maximum diameter: 14 feet

Mission facts:

Launch: April 24, 1990, from space shuttle Discovery (STS-31)

Deployment: April 25, 1990

Servicing Mission 1: December 1993

Servicing Mission 2: February 1997

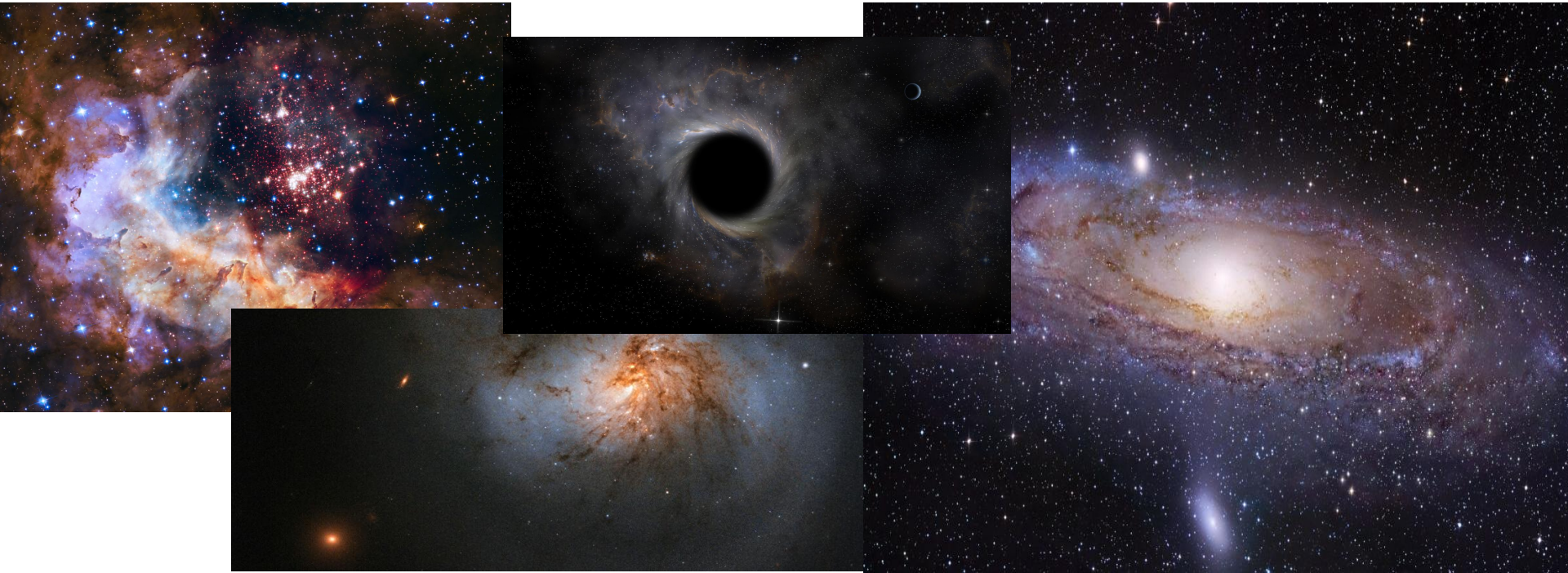
Servicing Mission 3A: December 1999

Servicing Mission 3B: February 2002

Servicing Mission 4: May 2009

The Hubble Space Telescope

Pictures Taken by the Hubble Telescope



The Hubble Space Telescope

Research the Hubble Space Telescope. Find 3 discoveries of the HST that you find the most interesting and write a quality paragraph over each.