



Virtual Learning

Aerospace Engineering

Career Exploration - Astronaut

April 17, 2020



Aerospace Engineering

Lesson: April 17, 2020

Objective/Learning Target:

Students will learn about the career of an astronaut and what requirements are needed to become an astronaut.



Bell Work:

What do you think are the requirements for someone to become an astronaut?



Let's Get Started:

Watch Videos:

- [What It Takes To Become An Astronaut](#)
- [How Can I Be An Astronaut?](#)



Definitions You Need to Know:

Astronaut - a person who is trained to travel in a spacecraft.

Aeronautics - an all-encompassing term that describes the design and production, operation, support and servicing of all types of aircraft.

NASA's goal in the next few decades is to have humans stepping onto the surface of Mars. However, before that, NASA's Artemis program will land the first woman and the next man on the Moon by 2024. The Orion spacecraft atop the Space Launch System (SLS) rocket will carry humans into space for missions to the Moon and eventually to Mars.

As NASA continues to expand their exploration in our solar system, they will need more than the current number of active astronauts to crew spacecraft that will be going on multiple deep-space missions.



History of Astronaut Selection

The military selected the first astronauts in 1959. They were military personnel who had experience flying jet aircrafts and had a background in engineering. Another requirement was that they also had to be shorter than 5 feet 11 inches. This was so they would be able to fit in the Mercury spacecraft.

In addition to flight and engineering expertise, NASA also required scientific knowledge and the ability to apply it. So, in 1964, they began looking for scientists to be astronauts. One of the qualifications NASA looked for back then, was for scientist-astronauts to have a doctorate in medicine, engineering, physics, chemistry or biology.



What Does It Take To Be An Astronaut?

Astronaut requirements have changed with over the years. Today applicants must meet the following qualifications:

- Be a U.S. citizen
- Possess a master's degree in a STEM field, (engineering, biological science, physical science, computer science or mathematics, from an accredited institution.) The master's degree requirement can also be met by:
 - Two years (36 semester hours or 54 quarter hours) of work toward a doctoral program in a related science, technology, engineering or math field.
 - A completed Doctor of Medicine or Doctor of Osteopathic Medicine degree.



What Does It Take To Be An Astronaut?

- Have at least two years of related professional experience obtained after you have completed your degree **or** at least 1,000 hours pilot-in-command time on jet aircraft.
- Be able to pass the NASA long-duration flight astronaut physical.
- Completion of a nationally recognized test pilot school program.
- Astronaut candidates **must** also have soft skills in leadership, teamwork and communications.

NASA's Astronaut Selection Board reviews the applications and assesses each candidate's qualifications. The board will then invite a small group of the most highly qualified candidates for interviews at NASA's Johnson Space Center in Houston, Texas.

Of the ones interviewed, only about half are invited back for a second interview. NASA then selects the new astronaut candidates from that group. They report for training at Johnson Space Center and spend the next two years learning basic astronaut skills. These skills include spacewalking, operating the space station, flying T-38 jet planes and controlling a robotic arm.



Astronaut Understanding

Use the internet to research the following questions:

1. Description of the occupation including main duties and responsibilities.
2. What are the education and training requirements for the occupation?
3. List other required qualifications such as licensing, certifications, etc.
4. What field of Engineering works closely with astronauts?
5. List the name of one person that you know of who is in an astronaut.