



**DR. DONALD  
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# NASA ASTRONAUT

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# Q & A

### **What factors influenced you to choose this career path?**

I always liked the idea of exploring and going places that nobody has been to before and to see things that no human eye has ever seen before. When I was only six years old I watched the first American astronaut launch into space at my school. From that moment on I was hooked. I too wanted to travel into space, orbit the Earth, and possibly land on the moon or on Mars one day. When I was in high school Neil Armstrong became the first human to step onto the moon. Watching that first moonwalk in 1969 and the others that followed only reinforced my strong desire to become an astronaut myself. I really wanted to go to the moon and see the Earth as a small blue ball floating in the blackness and void of space.

### **What kind of education, training or background does your job require?**

NASA requires that astronaut applicants have a four-year university degree in the maths, sciences, engineering, or medical fields, but many applicants go on and get an advanced degree to make yourself more competitive. In 2017 NASA selected a group of 12 new astronauts from a total of 18,000 applications. So many people apply to become an astronaut, but few





end up getting selected. Knowing how competitive the astronaut selection process was, I wanted to do everything in my power to make myself a strong candidate. I earned a masters and doctorate degree in engineering. I learned to fly and earned my private pilots license. I taught a university course and learned to skydive to further enhance my background. After university, I took a job with an organization called AT&T Bell Laboratories doing research work on materials used in electronic devices and was awarded two patents for my inventions. In summary, NASA looks for individuals with excellent broad technical backgrounds and good teamwork and communication skills. And typically the more education and technical training you have, the greater the chance of being selected to be an astronaut.

**What do you do? What are the duties/functions/responsibilities of your job?**

I was an astronaut with NASA for 17 years and during that time I spent a total of only 44 days in space during my four Space

Shuttle missions. So much of my time as an astronaut was spent here on Earth, training for my flights and working various technical jobs that supports your fellow astronauts on their missions. I trained full time nearly four years for my first mission aboard Space Shuttle Columbia in July 1994 and trained one to two years for my other missions.

We trained in Space Shuttle simulators learning all the procedures we might need to perform in space, we trained underwater learning how to work in heavy spacesuits in preparations for doing a spacewalk, we trained in high-performance jets, we experienced brief moments of zero-gravity aboard NASA's parabolic aircraft, and I spent many, many hours on my own studying at home. Every day of astronaut training was different, and every day was a lot of fun!

I also worked many technical jobs when I wasn't assigned to a flight and most of these jobs supported my colleagues who were in training for flights. I worked as a CapCom in Mission Control, speaking to the astronauts who were up in space. I worked on NASA safety panels,

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making sure that each Space Shuttle or Space Station mission that we flew was safe to do so. I also worked at the cosmonaut training center in Star City, Russia, as the NASA manager overseeing the training in Russia for astronauts preparing to fly to the International Space Station. Each of the technical jobs that I was assigned to had its own rewards and challenges, and each one was important to help guarantee mission success.

**What part of this job do you personally find most satisfying?**

The best part of being an astronaut for me was flying in space. That's about as exciting and as much fun as it gets. After all the years of preparation and training, to finally launch aboard the Space Shuttle and successfully complete all the

objectives of your mission was incredibly rewarding. And as a bonus, I was able to spend many hours in front of the windows looking back at our planet from 300 kilometers above during my 692 orbits of the Earth. Seeing our planet from this unique vantage point was a life-changing experience for me and forever changed how I view our planet and how I view my place on Earth.

**What has been the greatest challenge you have faced in your career to date?**

One of the greatest challenges was just learning the vast amount of information that I needed to learn, and making sure I didn't forget any of it along the way. Making mistakes or forgetting something in space can be very costly which is why we typically trained for 4-5 years before we flew our first mission to space. As I mentioned earlier, I lived over in Star City, Russia, for a total of two years and had to learn to speak Russian. This was a major effort and required thousands of hours of studying and practice in order to be able to communicate with my cosmonaut colleagues.

**What are the major qualifications for success in this occupation?**

Besides having a strong technical background with advanced degrees in the maths, sciences, and the medical field, strong communication and teamwork skills are vitally important. In space, astronaut crews rely on one another to successfully accomplish the goals of the mission. My life and mission success depend on my crew members doing their job correctly, and their lives depends on me doing my job correctly. It is a total team effort where it is important for all crew members to work together effectively and to work closely with the team in Mission Control who help support the mission and watch out for the astronauts' safety.

**What particular skills or talents are essential to be effective in your job?**

To be an astronaut it is important to be self-motivated and to be a hard worker. During my 17 years as an astronaut, it was vitally important to be able to multi-task, which means working on a few different things at the same time.

**What advice would you offer learners who are interested in pursuing this career path?**

Work hard every day and always do your best in all subjects. And never give up along the way. From dreaming of being an astronaut when I was six years old, I finally launched into space for the first time when I was then 39. It took a long time and a lot of hard work and determination, but in the end it was all worth it.

**What is the future of the field in terms of new and expanding opportunities?**

There are many incredible future missions that NASA is working on with some amazing opportunities. NASA is designing and building a new series of rockets called the Space Launch System (SLS). These will be the biggest and most powerful rockets ever built and will give us the capability to send astronauts back to the moon, to explore the asteroids, and land astronauts on the surface of Mars and return them back to Earth. Missions to Mars are probably 20 years or so in the future as we develop the spacesuits, habitats for Mars, and various technologies needed for these missions. What this means is that the astronauts that will eventually be the first to land on Mars twenty years from now are the learners in our classrooms today. Which is why, we need them all working hard in school doing their absolute best so that they will be ready and prepared to undertake these exciting exploration missions in the future.

**What educational preparation would you recommend for someone who wants to advance in this field?**

My best recommendation would be to earn a bachelor degree in some technical area in the maths, sciences or engineering, and stay in university longer to earn a masters and doctorate degree. The more education you can get, the more it will benefit you in the future.

**Who would you say has been the most help in your career? How did they help you?**

The early NASA astronauts who I watched launch into space and walk on the moon as a young boy were so inspirational for me. Astronauts like John Glenn (first American to orbit the Earth) and Neil Armstrong (first human on the moon) were both from my home state of Ohio

here in the United States. Watching them fly in space and explore the unknown motivated me to do my best in order to try and follow in their footsteps one day.

**How can I evaluate whether or not I have the necessary skills for a position such as yours?**

Ask yourself if you like to explore, if you like working with teams of people and if you are willing to take a risk sometimes and get out of your "comfort zone". Do you like taking on big challenges? Do you enjoy working hard to accomplish a goal? Are you patient? If the answer is "yes" to most of these, then being an astronaut might just be the career for you. I have met many of the 550 people that have traveled to space since humans first left the planet in 1961. None of them ever mentioned that they regretted their career choice. It's difficult to do and takes a long time and a lot of preparation, but it is so rewarding and worth the effort to get the opportunity to leave the Earth and explore space!

**Can you suggest some ways a learner could obtain this necessary experience?**

I recommend that learners work hard in school every single day and that they work hard in ALL their subjects. Not just in the maths and sciences, but also music, art, gym, language, and all other subjects. Try to be the best that you can be in everything that you work on.

**What exactly does the word 'success' mean to you?**

Success to me means that I accomplished a goal that I set for myself. Success doesn't come easy and involves a lot of time, effort, and preparation. Success also means learning from your failures. NASA had one of their moon landing missions in 1970 go terribly wrong when there was an explosion in one of their oxygen tanks aboard their spacecraft when they were about halfway to the moon. They canceled the moon landing and only due to the dedicated efforts of the team in Mission Control back on Earth, the three astronauts safely returned back to Earth and back to their families. The mission was called Apollo 13 and it is known within NASA as a "successful failure". Even though they didn't land on the moon, we learned that through teamwork we could overcome a life-threatening accident and we returned our astronauts back home safely. Accomplishing this goal was a great success for NASA! 🌕