ASTRONAUT

JOB DESCRIPTION

Astronauts are highly trained individuals who pilot spacecraft or carry out specialized missions in space. These may include launching or repairing satellites, or carrying out scientific experiments in low-gravity conditions. Astronauts are employed by national space agencies, and only a select few ever end up actually traveling into space, making this one of the world's most exclusive careers.

SALARY

Astronaut ★★★★★

INDUSTRY PROFILE

Very few openings—there have been just over 500 astronauts in total since space flight began • Highly competitive selection process • Many other opportunities in the growing space industry

CAREER PATHS

To be selected as an astronaut, you usually need to be a citizen of the country running a manned space program. You must be physically fit, and meet the space agency's height, weight, and age criteria. Almost all astronauts also hold degrees or higher qualifications in science or engineering, or are skilled and experienced jet pilots. You will undergo multiple rounds of interviews to determine if you are physically and psychologically suited to the role.

INSTRUCTOR Provides training in the skills required to fly and maintain a spacecraft. They use flight simulators to teach new astronauts how to deal with routine operations and potential emergencies.

JET PILOT You could begin your career by joining your country's military and specializing as a test pilot. You may then be able to apply to join a space program. Most space agencies will require you to hold a degree as a minimum qualification.

SCIENTIST OR ENGINEER You can apply to train as an astronaut if you have a degree—and preferably a postgraduate qualification—in science or engineering, plus flight-related work experience.

ASTRONAUT Basic astronaut training takes about two years. If selected for flight, you have a choice of roles, from fixing equipment in Earth's orbit to conducting research on a space station.

SKILLS GUIDE

- The ability to work well with crew members and the many staff who support missions on the ground.
- Creativity for solving unexpected and complex problems using limited resources.
- The flexibility to adapt to extreme environments and to deal with challenging living conditions.
- A logical and analytical approach when handling critical and challenging situations.
- The physical endurance to train for live missions, which can be hugely demanding.
- An eye for detail and constant vigilance to successfully complete missions in space.

COMMANDER OR PILOT Takes responsibility for the flight of the spacecraft, as well as the safety of the crew, and the overall success of a mission. They may also perform other duties, such as helping with onboard experiments or carrying out extravehicular activity, or space walks.

FLIGHT ENGINEER Does a variety of jobs on the mission including conducting scientific experiments under micro-gravity conditions, performing routine maintenance on board space stations, and operating robotic arms to accomplish external maintenance tasks.

AT A GLANCE

YOUR INTERESTS Space • Flight • Mathematics • Physics • Mechanical engineering • Electrical engineering • Materials science

ENTRY QUALIFICATIONS As a minimum, you need at least a degree in science or engineering, or extensive experience in flying fast jets.

LIFESTYLE Working hours are irregular. Training missions involve long periods away from home, and space flights can last many months.

LOCATION Astronauts often work in remote, high-security locations, and may have to travel widely for training purposes.

THE REALITIES Working hours are long and conditions are tough and dangerous. Extensive training is both physically and mentally challenging.

RELATED CAREERS

- **MECHANICAL ENGINEER** *see pp. 182–183*
- **ELECTRICAL ENGINEER** *see pp. 186–187*
- **AIR FORCE AIRMAN** *see pp. 232–233*
- **ASTROPHYSICIST** Studies the universe using sophisticated equipment, such as satellites and telescopes. Astrophysicists study planets, stars, and other space phenomena to build and test theories about the origins and workings of the universe.
- **SATELLITE ENGINEER** Designs and builds space satellites used for relaying electronic communication, monitoring Earth, or studying the universe. Also develops scientific instruments for satellites and other associated equipment needed on the ground.