

INTERNATIONAL SPACE STATION

⇒ For years, and for various reasons, people have dreamed of having a permanent space station in orbit around Earth. For some, space stations are a place to do cutting edge scientific research in an environment that can not be matched on Earth. For others, space stations are a place for business, where unique materials can be manufactured in better forms than on Earth. Still others dream of space stations as staging points for expeditions to the planets and stars, as tourist attractions, or even as new cities and colonies that could relieve an overpopulated planet.

⇒ Whatever the dream, space stations are not that far off. The United States and Russia have had orbiting space stations since 1971 and are now cooperating with other nations to build the International Space Station, a place that will maintain a permanent human presence in space and will be a little “city in space” orbiting 250 miles above the Earth.

⇒ The assembly of the ISS in orbit began in 1998. The completion is scheduled in 2006. When completed, the ISS will be able to house up to seven astronauts.

⇒ To sustain a permanent environment in outer space where people can live and work, the ISS must be able to provide atmosphere control and supply, water recycling, temperature control, food supply, waste removal, fire protection, propulsion, talk with ground-based flight controllers, navigation, electrical power, computers to coordinate and handle information, resupply (methods of getting new supplies and removing waste) and finally emergency escape route.

⇒ If a crew member has a serious injury or illness, he or she will need to get back to Earth as soon as possible. The whole crew of the space station might have to evacuate in the case of a serious fire, or some other life-threatening damage to the station. So there has to be a way to escape the station quickly. A capsule will always be docked at the ISS, capable of carrying two people in a medical emergency, or three people in other emergencies. NASA is also designing and building a crew-return vehicle for emergency use, which will be capable of transporting seven people to the surface.

⇒ What about living and working aboard the ISS?.....

⇒ In a typical workday, crewmembers will spend 14 hours working and exercising, 1.5 hours preparing and eating meals, and 8.5 hours sleeping. Even simple routine tasks challenge when everything floats weightlessly about.

⇒ Sleeping in space is quite different from sleeping on Earth. Instead of a bed, you have a wall-mounted sleeping bag that you slip into and zip up. The bag is also equipped with arm restraints to prevent your arms from floating above your head while you sleep.

⇒ While stations such as Mir have been equipped with a shower, most astronauts take sponge baths using washcloths or moistened towelettes. This reduces the amount of water consumed. Each astronaut will also have a personal hygiene kit with a toothbrush, toothpaste,

shampoo, razor and other basic toiletries.

⇒ Come mealtime, astronauts will have a special dining galley. Space food just keeps getting better-and more like food we enjoy here on Earth. The space station is equipped with water, microwave ovens, and refrigerators. Interestingly, astronauts get to select their menus approximately five months before their flight.

⇒ The crew must exercise every day, because in the absence of gravity, muscles, bones and hearts weaken if not kept active. Space scientists have developed special exercise apparatus, which are so efficient that they now are being copied for use in exercise centres on Earth.

⇒ Once the ISS is completed, work will involve maintaining the station (fixing broken equipment, repairing structures, etc.) and conducting scientific experiments and observations.

⇒ Working in weightlessness, or microgravity, is very different from what we are used to. For example, you do not have to worry about floating off of your chair, or having the things on your desk float away. Many places at ISS will have restraints to keep the astronauts and equipment from floating away. And astronauts will have to use handholds mounted on the walls of the station to keep themselves stable as they move around.

⇒ Crews do need to have leisure time. What can you do with free time on the ISS? You can read, play games or e-mail your friends. However, most astronauts say that what they like to do most is look out the window at the Earth below.

⇒ The idea that people other than highly trained astronauts would someday live and work in space has long fascinated science fiction fans. Today, it interests professional space scientists and engineers as well. As it seems, we may build larger and better space stations that would enable us to live and work in space, and the dreams may become reality.