

Thriving in space

Keith Lim finds out what it takes to become an astronaut

National Aeronautics and Space Administration (Nasa) astronaut Jeffrey N. Williams, 64, holds the record for the longest time spent in space by an American male. He clocked 534 days in space across four different spaceflights in 16 years.

Mr Williams gave a speech last month titled “What It Takes To Be An Astronaut” at the Singapore Institute of Technology.

He shared his experiences as an astronaut and the challenges he faced in space to a room of around 30 students.

After being selected as an astronaut in 1996 when he was 38 years old, he went on to participate in four space missions in 2000, 2006, 2010, and 2016.

Becoming such an accomplished astronaut, however, was not easy.

Nasa’s astronaut requirements are strict, and it was because of Mr Williams’ impressive portfolio – he has several degrees, including a Bachelor of Science degree in applied science and engineering, a Master of Science degree in aeronautical engineering, and a Master of Arts degree in national security and strategic studies – that he was selected. He also served as a military test pilot for more than 27 years.

And the challenges do not stop there. Becoming an astronaut requires certain characteristics.

Mr Williams said that they must be able to function and work in an extreme environment.

For instance, astronauts must endure being away from their loved ones for a long time.

A space expedition normally lasts six months, so they must be willing to sacrifice time with their family and friends.

Mr Williams also added that potential astronauts should not be afraid of heights or confined spaces.

Indeed, astronauts are about 400km above the Earth’s surface when working in the International Space Station and live



Mr Jeffrey N. Williams gave a talk at the Singapore Institute of Technology last month about his experiences as a Nasa astronaut. ST PHOTO: EUGENE GOH

with other crew members in a small place. This can be intimidating and uncomfortable for many people.

The US space agency also looks out for traits like leadership, teamwork, and communication in astronauts. This is because a space shuttle crew typically consists of five to seven astronauts, and so it is important that the astronauts look out for one another.

Besides strength of character, astronauts must also be in peak physical condition.

Mr Williams said: “Most of us are very disciplined in terms of physical exercise to stay in shape.”

Astronauts must exercise for two hours daily, from running on a treadmill to pedalling on a stationary bike. This is to prevent muscle atrophy, a process where muscle and bone break down in space due to microgravity, which is when there is very little gravity.

Furthermore, spacewalks, which Mr Williams said were “the hardest thing” he has done, require a strong body and mind.

Spacewalks refer to the act of astronauts leaving a vehicle in space to do activities such as repairing satellites or testing new equipment.

These activities usually last from five to eight hours. To prepare for them, astronauts train six to seven hours at one go for every hour they will spend on a spacewalk. Most training sessions are conducted in a large swimming pool known as the Neutral Buoyancy Laboratory.

Also, after a few hours into a spacewalk, astronauts may feel tired and have sore arms. This is due to the spacesuit being pressurised, so it takes great effort for astronauts to move their fingers and arms.

Despite the challenges, Mr Williams loves being an astronaut. For the devout Christian, seeing the grandeur of the cosmos reinforced his faith that a divine being had constructed such an awe-inspiring sight.

He said: “It reminds you of who the creator is, the infinite God.”

Sources: NYTimes, Nasa