

actura



Junior Space School  
An International Study Program

INFORMATION KIT



To our students ...

Every expedition starts with a dream, an idea, a first step  
and the urge to explore.

*Dare to dream big*

The Actura Team





# Contents

<b>The future .....</b>	<b>3</b>
<b>About us .....</b>	<b>4</b>
<b>Junior Space School .....</b>	<b>5</b>
Learning Outcomes .....	5
<b>STEM and space action in Houston .....</b>	<b>7</b>
Come face to face with astronauts at Johnson Space Center.....	7
Witness history at Rice University.....	9
Forensics Analysis Education Center .....	9
Dissect a shark at Texas A&M University....	9
Motivation and Personal Development....	11
<b>Astronaut Training in Huntsville.....</b>	<b>13</b>
U.S. Space & Rocket Center.....	13
Run the space missions.....	14
Train like the experts .....	14
<b>Program itinerary .....</b>	<b>16</b>
<b>Safety and support .....</b>	<b>19</b>
Actura Group Managers and Tour Assistants.....	19
Medical support .....	19
Actura US Support.....	20
Medical form .....	20
Travel and Medical Insurance .....	20
<b>Code of Conduct.....</b>	<b>21</b>
<b>Testimonials from past students.....</b>	<b>23</b>
<b>Testimonials from parents .....</b>	<b>23</b>
<b>Frequently Asked Questions .....</b>	<b>27</b>
<b>Get in touch.....</b>	<b>29</b>



INSPIRATIONAL SPEAKERS



THE REAL DEAL



GREAT TEAMS

*JUNIOR SPACE SCHOOL - COME AND JOIN US*



TRAIN LIKE AN ASTRONAUT



HANDS-ON SCIENCE



ACTION AND FUN

# The future

In today's ever-advancing world, we are living at the speed of science.

Recognising the challenges facing young students today, Actura's vision is to *empower youth for future success*. The pace of change in society over the next 30 years will outpace the change we have experienced in the last five thousand years.

- An expected 50% of current jobs will disappear;
- Over 50% of jobs in the next 20 years do not exist today;
- 75% of the fastest growing occupations require STEM-related skills.

Students can be at the forefront of this exciting era. These students will have an average of four careers and 17 different jobs in their lifetime. It is so important that they learn and master critical transportable skills to successfully navigate the fast-changing landscape shaped by automation, robotic, artificial intelligence, globalisation and collaboration. Empowered with the critical STEM related skill sets, students will not only become the capable and competitive job seekers, most importantly, they will become the innovative job creators.

Today, New Zealand students have an opportunity to get ahead, to learn and apply these skills at Space School, an immersive international study program designed to inspire a new generation of STEM-skilled leaders.

*Master transportable skills to become  
an innovative job creator.*

# Actura *Empower Youth for Future Success*

Established in Australia since 2014 with offices around the world including in Auckland; Actura provides the leading STEAM learning solution spanning from in-class and out of class environments.

Our FlipRobot range provides the ultimate robotic STEAM learning solution for the in-class environment. The key offerings are centred around CASE curriculum, FlipRobot learning kits, and comprehensive cloud based learning environments.

The Space School International Study program aims to deliver the once in a life time, best STEM experience in the most inspiring organisation, NASA. Offering enriched STEM activities, inspiring leadership and personal developments. The program has empowered over 8,000 students worldwide in the past 14 years.

At Actura, our vision is to empower youth for their future success. Built on the foundation of the 'Seven Survival Skills', by empowering youth to develop and master the critical STEAM related transportable skill sets, the students will become the innovative and successful job creators.

# Junior Space School

Actura is proud to present the Junior Space School International Study Program. Students learn and apply critical skills in highly immersive and inspiring STEM activities at NASA.

The inspired personal and leadership development programs include Dr Tony Wagner's 'Seven Survival Skills' and Sean Covey's 'Seven Habits of Highly Effective Teens' to truly empower students for changing times. Space School broadens the mind, cultivates drive and instils curiosity with the spirit of exploration.

Two weeks ... two states ... *ignite your passion!*

**Junior Space School** is astronaut training for youth and is an engaging hands-on adventure. During this 14-day expedition to Houston, TX and Huntsville AL, students learn about space travel, the development of space-related technology and are lead through several simulated missions. This program is focused on providing relevance to, and inspiring passion for STEM through exposure to space and broader 'earth' science exploration.

## Learning Outcomes

- Development of critical thinking and problem solving skills
- Skills in goal setting and project planning to set and achieve targets
- Effectiveness in collaborative teamwork
- Application of STEM in challenging space missions
- Greater initiative, responsibility and leadership through influence
- Curiosity and imagination
- Pursuit of personal values and long-term goals



# STEM and space action in Houston

## Come face to face with astronauts at Johnson Space Center, Houston

Expedition members have a unique opportunity to meet experts – astronauts, engineers and scientists at NASA – to learn about science in exciting environments. Johnson Space Center Houston, is NASA’s centre for human spaceflight activities. While exploring the wonders of space exploration in facilities such as the Astronaut Training Center, Rocket Center and the Mission Control Center, students learn about past and future endeavours of the American manned space flight program.

An unforgettable experience awaits all Junior Space School expedition members. They hear directly from guest speakers including astronauts, NASA scientists and engineers during personalised presentations and special event lunches.

We thank all of our valued guest speakers from recent Junior Space School expeditions, including:

**Dr Leroy Chiao**, former NASA Astronaut and ISS Commander, former Special Adviser to the White House

**Mr Clayton Anderson**, former NASA Astronaut 166 days in space

**Dr Andrea Hanson**, NASA JSC Engineer and Senior Scientist for Exercise Physiology

**Prof David Alexander**, Professor Physics and Astronomy professor and Director of the Rice Space Institute

**Mr David Cisco**, Engineer, technician for NASA Apollo mission

**Mr Roland Nedelkovich** Senior Technical Engineer and NASA Silver Snoopy recipient, awarded by NASA astronauts for outstanding achievement related to human flight safety



Source: Rice University



*"I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to the earth. No single space project in this period will be more impressive to mankind, or more important for the long-range exploration of space."*

- President Kennedy, Rice University Campus, 12 September 1962

## **Witness history**

Known for its close collaboration with NASA, Rice University also holds a prestigious reputation as one of the top universities in the United States. Space School students participate in a guided tour of the university, grounds and view the stadium where President Kennedy gave his famous moon landing speech.

## **Forensics analysis**

Guided by medical experts, students use lab equipment for experiments rarely available in New Zealand schools. They will learn about forensic science with DNA analysis and have some fun taking on the role of a crime lab investigator to piece together a murder case.

## **Dissect a shark in a university lab**

Students have the unique opportunity to dissect a shark and are taught marine biology, shark ecology and conservation prior to performing a supervised dissection.

## **Experience energy**

Visit the Weiss Energy Hall and learn about the developments in global energy supply at the Houston Museum of Natural Science.

## **Team work, critical thinking, problem solving**

Learning can be fun, especially when you are at NASA. With a strong emphasis on team work, every step of the way the students are encouraged to think and solve problems in a collaborative team. The varied, challenging activities encourage critical thinking and improve problem-solving capabilities.



Source: nasa.gov

## Back your team at NBA or MLB

While in the USA, students are encouraged to take part in some uniquely American experiences. They have the opportunity to attend either a Major League Baseball (MLB) or a National Basketball Association (NBA) game, both of which provide an inspiring sense of scale and excitement.

The MLB is one of the four most popular major sport leagues in North America. It has the highest season attendance of any league in the world with 74 million spectators annually. The Houston Astros is the state's team.

The National Basketball Association (NBA) is the preeminent professional basketball league in North America and is widely considered to be the premier professional basketball league in the world. Local team, the Houston Rockets are rising fast in power rankings.

## Motivation and Personal Development

The Space School program is built on a foundation of personal development; students learn and apply the '*Seven Habits of Highly Effective Teens*' by Sean Covey.

These habits are the backbone of Junior Space School. In interactive sessions, students are encouraged to incorporate the learning into their daily personal and school life:

Be proactive  
Start with the end in mind  
Put first things first  
Think win-win  
Seek first to understand, then to be understood  
Synergise  
Sharpen the saw



# Astronaut Training in Huntsville

An exciting week at the U.S. Space & Rocket Center (USSRC), Huntsville, where students experience the thrill and challenges astronauts face during their training for NASA space missions.

Teamwork, critical thinking and crisis management are required during two true to life space mission simulations and focus is vital when students train on the Multi-Axis Trainer, 5 Degrees of Freedom or the 1/6 Gravity Chair.

Engaging group projects include the design of a lunar base model, heatshield and a two-stage rocket. Guided by USSRC-certified crew trainers and their Actura-certified Group Managers, these projects promote creativity and imagination.

## **U.S. Space & Rocket Center**

A truly amazing facility, USSRC has one of the largest collections of spaceflight training equipment and artefacts in the world. USSRC provides students with a huge range of rich content, exhibits, and once-in-a-lifetime interactive activities to inspire and generate interest in space, science, mathematics, and the latest technology.

Junior Space School students have the full astronaut experience while staying on-site at the space habitat in Huntsville.

## Run the space missions

Students immerse in realistic simulations, performing their very own space missions. By taking on various roles as flight commander, mission control or a space crew member, students feel the excitement but must apply calm thinking, leadership and teamwork skills. Throughout the challenge, students are encouraged to think independently and propose innovative solutions to problems they encounter.

## Train like the experts

### 5 Degrees of Freedom Chair

The 5DF was a vital piece of training equipment used by the astronauts of the Gemini and Apollo programs. It allowed them to train in a frictionless environment and gain the critical skills to perform tasks and vital repairs during their missions. Students will use the trainer to learn how astronauts move in five different directions: forward, backwards, roll, yaw, side-to-side and pitch.

### Manned Manoeuvring Unit (MMU)

This equipment allows astronauts to perform untethered Extra Vehicular Activity (EVA) spacewalks at a distance from the space vehicle to perform repairs, satellite retrieval and other activities. Students will use the MMU trainer to simulate the frictionless micro-gravity environment that exists outside the space vehicle.

Students will train like astronauts when they pilot the MMU to practice the 5 degrees of freedom.

### **1/6 Gravity Chair**

The 1/6<sup>th</sup> Gravity Chair simulates the moon's gravitational pull, which is 1/6<sup>th</sup> that of Earth's:  
body weight on the moon = 1/6 of the body weight on earth.

Students will learn to adopt the three key movements introduced by the Apollo astronauts to efficiently walk on the lunar surface: the bunny hop, side-to-side and a slow motion jog. It's a challenge to move forward instead of up and down and staying in control will take some effort.

### **Multi-Axis Trainer (MAT)**

Another vital piece of training equipment for today's astronauts, the MAT simulates the disorientation an astronaut would feel during a tumble spin, which can occur on re-entry to the earth's atmosphere.

Students strap in and hold on as the MAT spins on three separate axes at once! They will need to focus to maintain their sense of balance and direction.

# Program itinerary\*

## WEEK A: HOUSTON

Day 1	A unique experience begins with Junior Space School! Students depart New Zealand for Houston, TX with a flight time of approximately 14-17 hours. On arrival into Houston, students check in to their hotel for an initial brief and well-earned rest in readiness for an exciting program.
Day 2	The scene is set on the first morning in Houston with the official Opening Ceremony, an introduction to the 7 Habits and teambuilding activities. During an afternoon at Rice University, the students visit the stadium where President Kennedy gave his famous speech about travelling to the moon.
Day 3	Each day the students are energised with the energising dance, Morning Quiz and an engaging presentation of the daily Habit sets the right mindset for each day's activities. Students visit the Texas Medical Education Center and Health Museum to conduct challenging DNA and forensic analysis at the Cell Lab and solve a mystery case at CSI's <i>Body of Evidence</i> . In the evening students learn the history of space exploration with the Space Race I movie night.
Day 4	Following the morning activities the expedition sets off to explore the vast facilities of Johnson Space Center, NASA's headquarters. Students visit Starship Gallery, Apollo Mission Control, Saturn V Rocket and various exhibitions. Movie night continues the space industry evolution with Space Race II.
Day 5	Morning activities are more involved as groups present the Habits with a focus on application in daily life. Students are introduced to marine biology. The first session discusses marine ecology and conservation before students undertake their own shark dissection. The group will then enjoy a recreational evening of shopping at the Outlet Mall before returning to the hotel.
Day 6	Morning activities first thing, then an early return to NASA's Johnson Space Centre. Students will tour the Astronaut Training Complex and Outer Space Academy, then attend an exclusive lunch or dinner with an astronaut. Following the inspiring presentation, they have the chance to ask questions and talk directly to the astronaut.
Day 7	On the last day in Houston, students are in for a special treat. Another motivational and interactive presentation by a scientist or engineer, with plenty of question time. Followed by an exciting cultural experience attending a live NBA or MLB game, depending on the season.

## WEEK B: HUNTSVILLE

**Day 8** Goodbye Houston, Hello Huntsville! The group departs the hotel to travel to their next destination, the U.S. Space & Rocket Center (USSRC) in Huntsville, Alabama. Students check in to the onsite accommodation, meet their crew trainer and tour the Center's facilities.

**Day 9** After breakfast students get straight into astronaut training at USSRC. They learn about the Mercury, Gemini and Apollo Space Programs, design their own mission patch and are briefed on their own upcoming mission. For their next challenge, they head outdoors for a lot of fun; the Area51 teamwork and leadership training course expands their critical thinking and problem-solving skills. Later in the day, students receive guidance to begin constructing their own rockets and attend a presentation on Living in Space.

**Day 10** A morning tour and activities in Rocket Park, before students are immersed in their own Apollo Mission. This has them taking on roles, working as a team, and performing tasks to simulate a real space mission. A chance to try the Space Shot trainer simulates the feeling of rocketing into space beyond the earth's gravitational pull; and scaling the climbing wall, they can imagine they are making their way up the 22km to the summit of Mars' Olympus Mons.

**Day 11** Rocket construction and testing ready for launch tomorrow. Students will view Saturn V, the most powerful rocket ever launched and used in the Apollo 11 mission, which landed man on the moon for the first time. Teams experience first-hand how to work in a neutral buoyancy environment with a complex pool-based team activity. Then, they take a tumble in the Multi-Axis Trainer, designed to simulate disorientation on re-entry into the earth's atmosphere.

**Day 12** Today students demonstrate their knowledge, teamwork and leadership skills during their lunar base presentation and their Bravo space mission. They will fine tune, test and then launch their rockets. They have fun with the Manned Manoeuvring Unit, simulating the frictionless environment of outer space, and the 1/6<sup>th</sup> gravity chair to master a moon walk.

**Day 13** The final expedition day. Today students attend the official graduation ceremony and are awarded with the Space School and USSRC certificates. Students then depart USSRC and head to Huntsville airport for the journey home to New Zealand.

**Day 14** Expedition completed! With a transit time of approximately 14-17 hours students have time to reflect on their adventure and are farewelled with a closing ceremony at the airport when the group arrives back to New Zealand.

\*Proposed itinerary – program is subject to change, and weeks A and B are interchangeable.



Source: nasa.gov

# Safety and support

## **Actura Group Managers and Tour Assistants**

All Actura Group Managers are diligently selected, then trained and certified under the Actura standard.

The extensive training ensures Actura Group Managers support students and create an environment where activities are meaningful, inspiring and challenging for every student. Parents and students meet their Group Managers during the Preparation Day in the lead up to departure, giving them a chance to socialise and form a bond of trust before travelling.

Each Group is joined on expedition in the US by an Actura-certified Tour Assistant who supports the delivery of the program.

## **Medical support**

All Actura Group Managers are first aid qualified. Fast and professional medical support is provided in Houston by doctors of Houston Medical Center and Houston Hospital. In Huntsville, Registered Nurses are on site at USSRC and have further support from the local hospital if required.

In both destinations, students and their families can rely on a 24-hour emergency support from US staff.

## **Actura US Support**

In addition to Actura Group Managers and Tour Assistants who accompany the students throughout their expedition, Actura's highly experienced local US support team offer emergency back up and onsite support if required.

## **Medical form**

All students must complete the Space School medical forms as part of their preparation process. To best address any safety concerns and minimise risks in the planning and delivery of the program, it is crucial that all information is accurate and complete.

We recommend all students consult their doctor for up-to-date advice on travelling with existing medical conditions.

## **Travel and Medical Insurance**

As part of Actura's risk management protocol, a group insurance policy is issued to cover all participants for the duration of the expedition. Our insurer is a leading provider of travel insurance and emergency assistance. Upon completion of all expedition documents, comprehensive cover is offered for injury or illness, theft of valuables, damage to baggage, and cancellations or travel interruptions under the policy terms.

The standard Comprehensive Cover is based on a \$0 excess. Alterations to the policy or extensions of cover beyond the program dates are available but may incur an extra cost.

# Code of Conduct

The following Code of Conduct is a guide for students' behaviour while on the Junior Space School Program. While general in nature, it does contain specific rules and advice.

By joining the Junior Space School International Study Program, students and parents acknowledge their acceptance of this Code of Conduct, including but not limited to:

- Students must actively participate and follow the program's daily itinerary and activities.
- Program attendance is compulsory.
- Students should demonstrate a proper manner and attitude while participating in the program.
- Students must not travel within the local area alone, or with other students.
- Any possession or use of, or involvement with illicit drugs, cigarettes or alcohol is strictly forbidden.
- Students must not commit any criminal offence.
- Access to improper web sites or display of improper material is strictly forbidden.
- Students must not injure/assault, threaten to injure/assault other students or any other person.
- Students must not drive a vehicle, or travel on a motorbike.
- Hitchhiking is strictly forbidden.
- The Actura Group Manager must approve all activities outside of the scheduled activities.
- Students must not go out after dinner unless accompanied by an Actura Group Manager, Tour Assistant or Staff, or unless prior written consent has been given by the Actura Group Manager.
- Students must not visit nightclubs/licensed bars of any kind.
- Partying in the hotel room is strictly forbidden.

**Failure to adhere to the above rules may result in a student being asked to leave the program, or sent home at the earliest convenience with costs incurred to parents' account.**

*Empower youth for future success*



# Testimonials from past students

*A once in a lifetime experience!*

Through Space School Actura has developed alumni from all over the world. This elite group includes students who have gone on to attend prestigious colleges and universities such as Stanford and Princeton University and who have started successful careers in science, engineering, mathematics and other STEM-fields.

*"There is too much to say about what I have learned. There was so much I learnt about space, robots, sharks, mission control and so much more. I loved every second of this experience and it has been the best experience of my life so far."*

Samantha, year 8 St Margaret's School, Melbourne

*"I learned many things at Space School both about NASA and space and healthy habits, teamwork, leadership, initiative and problem solving. All with the help and support of my TA, GM and the accompanying teachers."*

Caitlyn, year 7 Merici College, Canberra

*"I had a lot of chances to experiment with leading - what to do and what not to do - that really helped me to grow as a person."*

James, year 7 Knox Grammar School, Sydney

*"Before coming to Space School I was very nervous, however I am very happy that I went. The guest speakers (especially Dr Hanson) were very inspiring and motivational. I enjoyed working with new people and making new friends throughout the trip. Overall I have become more motivated to study hard and to reassure myself that it is okay if I don't know what I want to be yet."*

Charlotte, year 7 Loreto Mandeville Hall, Melbourne

*"My experience at Space School allowed me to learn more about space, myself and others. It challenged my thinking and made me explore ideas outside of the box. It also gave me opportunities to meet and bond with girls in other year groups. Overall it was an incredible experience."*

Kaytlyn, year 8 Abbotsleigh, Sydney

*"I have had such an amazing time, I have learnt so much here and have done things I thought I could and would have never done without this trip. I learnt a lot about space and that I can follow my dreams even if I don't know what that means yet."*

Caitlin, year 8 Loreto Mandeville Hall, Melbourne

*"I had an amazing experience at Space School. I learnt so much about space, robotics, marine life and the future goals of NASA. I also learnt a lot about myself and how to make friends. I love how well my group has become friends so easily. I also loved my group manager and I enjoyed our group leaders."*

Lauren, year 7 Abbotsleigh, Sydney

# Testimonials from parents

Parents from leading schools overwhelmingly recommend Actura's delivery of the Space School Program.

*"Fantastic inspirational and well organised program.  
A once in a lifetime, life changing experience."*

Cassandra, year 7 parent, Barker College, Sydney

*"The standard of care and professionalism was outstanding. I had every confidence that my daughter was being well cared for and the educational element was of the highest order."*

Michelle, year 8 parent, Canberra Girls' Grammar School, Canberra

*"This is the only international program our daughter will be going on in her high school years. It exceeded all our expectations and provided a real-life experience that I doubt any other school program could match. Students that are STEM minded need to seriously consider this space school."*

Louise, year 9 parent, Ivanhoe Girls' Grammar, Melbourne

*"The whole program has been wonderful. The Facebook updates whilst the boys were away, the experiences our sons engaged in, the supervision and the opportunities they were given were all amazing. Thank you so much. I would highly recommend the program to anyone."*

Allison, year 8 parent, Barker College, Sydney



Source: [nasa.gov](https://www.nasa.gov)

# FAQs

## **Who should consider joining the Junior Space School International Study Program?**

Students who are looking for an exciting motivational study program to develop their skills in critical thinking and problem solving, team work, curiosity and imagination. Students who are keen to broaden their horizons with an international experience while having fun and making new friends. Students who are interested in pursuing a science or non-science career path.

## **Who will be responsible for students while in the US?**

Actura Group Managers guide and support students throughout the duration of the program. All Actura Group Managers are diligently selected, then trained and certified under the Actura standard. They all have first aid qualifications, working with children and police checks. Actura-certified Tour Assistants join each group in the US to assist in the delivery of the course. An accompanying teacher travels with each group to assist with student care and guidance.

## **Do I need to arrange my own flight and insurance?**

All travel and insurance is organised and made available by Actura to provide comprehensive risk management, group airfare tickets and group travel/medical insurance.

## **Is there a refund policy?**

The refund policy including applicable time frames is detailed in the student agreement. For further details and terms and conditions, please refer to the contract.

### **Will I need much spending money?**

All meals, accommodation and transport during the expedition are covered in the program cost. Students will only need pocket money for occasional treats, personal items and for the purchase of souvenir items or postcards.

### **If I cannot join this time, is the program available in the future?**

Actura aims to build long term relationships with schools to offer Space School international study program. This hopefully brings opportunity for future expeditions however the frequency cannot be guaranteed. Program costs may vary due to exchange rate fluctuations and program content modifications.

### **Do I need to apply for a visa to the USA?**

New Zealand is one of the countries currently participating in the USA Visa Waiver Program (VWP). This program allows citizens of nominated countries to travel to the United States for tourism or business for up to 90 days without having to obtain a special visa. Students with New Zealand citizenship are required to obtain a travel authorisation prior to travel to the United States; obtained online through the Electronic System for Travel Authorization (ESTA), administered by the Department of Homeland Security. Visit <https://esta.cbp.dhs.gov/esta>, a fee of USD\$14 applies.

For all students who are nationals of countries not participating in the Visa Waiver Program, Actura will provide relevant supporting information to assist with the USA Visa application.

# Get in touch

We always look forward to hearing from our alumni about how much they enjoyed their experience at Space School.

Equally, we look forward to hearing from you telling us why you want to join this amazing expedition.

Submit your interest now to secure a spot on the next Junior Space School expedition and become part of this exciting adventure. For any questions, please contact us on 0800 118 911.

Actura New Zealand

*Release Your Potential*



Source: [nasa.gov](https://www.nasa.gov)



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