actura

Senior 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

Version 3.3

Source: nasa.gov

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.

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.

Senior Space School

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

The comprehensive personal and leadership development program includes Dr Tony Wagner's *'Seven Survival Skills'* to truly empower students for changing times. Space School broadens the mind, cultivates drive and instils curiosity with the spirit of exploration.

Two weeks … *ignite your passion!*

Senior Space School is hallmarked as the MBA for Youth.
With greater program depth, students have incredible access to NASA. They visit areas rarely accessible by the public; and engage directly with NASA experts to design and plan their own space mission within a given budget. An immersive program that hones their individual leadership, project management, resource allocation, crisis management and team work skills.

Learning outcomes

- Application of management principles in innovative and complex environments
- Demonstrated STEM-skills in challenging projects
- Development of critical thinking and problem solving skills
- Effective collaborative team, setting and achieving targets
- Leadership skills including leading by influence
- Initiative and entrepreneurial mindset
- Curiosity and imagination
- Pursuit of personal values and long-term goals

Master transportable skills to become an innovative job creator.

Inspired locations and leaders

Senior Space School's unique senior program design incorporates 14-days of problem-based learning, case studies, creative development and management training presented in exceptional environments.

Students have the exclusive opportunity to talk and work directly with the experts – astronauts, engineers and scientists at NASA. They will learn about space, science and project management in technologically-advanced locations such as Johnson Space Center Houston, Challenger Learning Center and Rice University, turning this expedition into a once-in-a-lifetime experience.

Application of management principles

A balanced mix of challenging team projects, motivational courses, leadership training and cultural studies ensures that students are encouraged to develop their multidisciplinary skills. During this two-week mission students develop their business and management expertise leading a multimillion dollar project, test their problem-solving abilities during challenging Mars missions and work together in teams to foster collaborative learning.

Senior Space School provides a platform to encourage learning; and trained experts to support, inspire, motivate and enable students' personal growth.

Source: nasa.gov

Space and STEM action in Houston

VIP experience at Johnson Space Center

Expedition members have the opportunity to visit Johnson Space Center Houston, NASA's official visitors' centre and the centre for human spaceflight activities.

During an exclusive behind-the-scenes tour, students are taken deep into Johnson Space Center for an up close and personal visit to the current Mission Control used for communication with the International Space Station (ISS); and the Neutral Buoyancy Lab where astronauts train on an ISS replica. These areas of Johnson Space Center are rarely open to members of the public. Students see fascinating new technologies and speak to world class experts in fields of STEM, inspiring them to set and achieve big goals.

Meet astronauts at Johnson Space Center

An unforgettable experience awaits all Senior Space School expedition members. In personalised presentations, an exclusive lunch or dinner, they hear directly from guest speakers including astronauts, NASA scientists and engineers. Previous students had the honour of getting to know:

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

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

Mr Kenneth Cameron,
veteran of three space flights with over 561 hours in space








First row: Space Shuttle heat shield; David L. Cisco, Former NASA Technician for the Apollo program; VIP access to Orion Space Capsule at NASA Johnson Space Center.
Second row: Space Exploration Vehicle (SEV) at NASA Johnson Space Center; Astronaut presentation, Mr Chris Matty, NASA Human Exploration Research Analog (HERA) mission; Accessing the Shuttle Carrier Aircraft (SCA).
Third row: Heather Paul, Human Research Program, NASA; VIP access to the Apollo Program's Mission Control; International Space Station Mission Control.
Fourth row: Saturn V Rocket; NASA Robonaut; VIP access to see Astronaut Extravehicular Activity training in the Neutral Buoyancy Lab, NASA Johnson Space Center.

Space missions at Challenger Center

Stage One is set at Challenger Center for Space and Science Education where students take part in real life simulations and projects are focused on NASA's Mars mission. Students take on the roles of scientists and engineers and are trained in risk analysis and risk management. They must continue to build their skills in successful collaborative teamwork. Students gain knowledge from a series of expert lectures and presentations; then apply their newly acquired skills proposing innovative solutions to set challenges.

NASA project Mission to Mars

Stage Two sees students develop teamwork skills and an entrepreneurial mindset with this $600 million NASA exploration project. The challenge is to efficiently manage the budget; plan, build and launch rockets; invest in water purification and heat insulation; as well as construct a landing module and rover; and build a habitat to then live on Mars. Students compete against each other to arrive at the best solution. They must engage best practice project management within their teams while building their own curiosity and imagination to devise new applications from existing technologies.

XPrize pushes the limits

Stage Three is modelled on the global XPrize competition and is designed to push the limits of possibility. Students start-up their own companies as third-party civilian suppliers providing human and freight transportation to Mars. They must make the business viable, detail how to overcome technical and physical hurdles. Teams formally present their proposals to a panel of NASA experts, and are judged on their presented viability and creativity. Students develop their high order thinking, and skills in resource allocation, effective teamwork and project management.

Source: Rice University

RICE
Unconventional Wisdom

"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

Inspiring lectures

Expedition members are given the unique opportunity to attend exclusive lectures presented by some of the space aviation industry's top scientists and engineers.

These experts take pride in sharing their experience with Space School students to encourage early career development and an interest in STEM professions.

An impressive platform for some of these interactions is Rice University, known as *the Harvard of the South* and one of the top universities in the United States. Prior to attending their lecture a guided tour of the campus takes students to the stadium where President Kennedy gave his famous moon landing speech.

We thank all of our valued guest speakers from recent expeditions:

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

Professor Tayfun E. Tezduyar, Rice University Professor of Mechanical Engineering and NASA's leading parachute designer, encourages students to practice their leadership skills and make an immediate impact in achieving goals

Ms Heather Paul, NASA's lead engineer for the future spacesuit life support system design, a passionate educator and incredibly inspiring for the students

Mr David Cisco, former NASA Engineer on the Apollo program and Lunar Module Specialist, who holds degrees in both technology and business, encourages students to practice multidisciplinary skills to optimise their career opportunities

Ms Amber Gell, rocket scientist with a passion for human spaceflight and exploration, an aspiring astronaut who encourages students to always follow their dreams

*Motivational speakers selected for each expedition vary depending on availability

First row: VIP access into the AdAstra Rocket Company, plasma propulsion specialist; Scientist presentation, Dr Andrea Hanson, Manager - Exercise, Physiology & Countermeasures, NASA Johnson Space Center; Rover testing on Mars surface at NASA Johnson Space Center.
Second row: Engineer presentation, Ms Amber Gell, Orion Space Capsule Project Lead, Lockheed Martin; Challenger Center, space flight simulation; Astronaut presentation, Dr Leroy Chiao, former NASA astronaut and International Space Station Commander.
Third row: NBA game with the Houston Rockets; HASSE Xprize presentation; Xprize winners, award ceremony by Dr Andrew Meade, Fellow of the American Institute of Aeronautics and Astronautics.

Cultural studies

Senior Space School provides students with cultural insights, exposure to the best practices from around the world, and helps develop a global outlook.

Students are introduced to the local culture via a city tour, museum visits and participation in popular cultural events. Expedition members 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. No trip to the US is complete without a visit to the outlet malls, as luck would have it, Houston is home to the largest such mall in North America.

Motivation and personal development

The Space School program is built on a foundation of personal development; with rich context based application of business management principles that include the *'Seven Survival Skills'* by Harvard Professor Tony Wagner. Students learn to challenge themselves; developing skills from critical thinking and effective communication, right through to innovation and leadership. They are motivated to apply these skills throughout their expedition and in their everyday lives.

Together with the daily success themes, these survival skills form the backbone of the Senior Space School Program:

Critical thinking and problem solving
Collaboration across networks and leading by influence
Agility and adaptability
Initiative and entrepreneurship
Effective oral and written communication
Accessing and analysing information
Curiosity and imagination

Program itinerary*

WEEK A	
Day 1	A unique experience begins with Senior Space School! Students depart New Zealand for Houston, TX with a flight time of approximately 14-17 hours. On arrival into Houston, students check into 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 daily success themes and teambuilding activities. An inspiring start with a motivational, interactive presentation by a scientist or engineer, with plenty of question time. Then a visit to Space Lab to see the latest rocket technology.
Day 3	Each day the students are energised with the daily Dance, Morning Quiz and an interactive team presentation of the day's success theme. Today at the Challenger Learning Center students immerse in their first space mission training where they take on the role of scientist or flight engineer in complex simulations. The teams debrief in the evening to understand their success in risk management and team cooperation.
Day 4	XPrize Competition is an integral part of the coursework, this morning teams are briefed on the upcoming challenge. Team work is developed with the marshmallow challenge as students use some simple tools to create complex structures testing their engineering skills and innovative thinking.
Day 5	Space University begins, based at Johnson Space Center, NASA's headquarters. Over the coming days students participate in a series of exciting NASA courses that foster experiential learning. Course elements today include the design of rockets and landing parachutes; protective thermal heatshields and a Mars rover. In the evening students learn the history of space exploration with the Space Race I movie night.
Day 6	Space University progresses with teams testing their remote-controlled Mars Rovers in competition; and the design and build of a habitat for living on Mars. Teams learn how to incorporate arts, science and technology to invent individual and creative solutions. Movie night continues the space industry evolution with Space Race II.
Day 7	Space University challenges the students as they develop budgets for their own space missions; before learning about the astonishing field of NASA robotics. Students are briefed on the Robonaut technology and its inspiration for new applications, both in space and on earth.

WEEK B	
Day 8	Scuba diving at Space University engages the students' teamwork and problem-solving skills as they attempt to overcome the difficulties of working in a neutrally buoyant environment. This evening they meet a Scientist or Engineer for an inspiring and interactive presentation.
Day 9	Space University final day has the teams in their final Mars mission simulations, and presenting their USD$600m mission at NASA. After this NASA JSC course, students are awarded with their NASA certificates at an official graduation ceremony.
Day 10	A new high-tech environment inspires the students to think beyond space for application of their developing STEM-skills. Today students explore the TxRx Robotic lab, a remarkable prototyping facility. Followed by an exciting cultural experience attending a live NBA or MLB game, depending on the season.
Day 11	A challenging day ahead – the students demonstrate their creativity, project management, resource allocation and leadership skills during the XPrize Competition. Bringing together the knowledge and skills acquired during the program, teams present to a panel of NASA scientists and engineers. The group will then enjoy a recreational evening of shopping at the Outlet Mall before returning to the hotel.
Day 12	JSC VIP tour takes students behind the scenes with the ultimate VIP experience at Space Center Houston. During this exclusive tour students receive unprecedented access to real workings of NASA, including the Neutral Buoyancy Lab where astronauts train on a replica International Space Station (ISS); historic Mission Control that monitored the moon landings; new ISS Mission Control; and Space Vehicle Mock-up Facility.
Day 13	At Rice University students explore aviation's history and future; and visit the stadium where President Kennedy gave his famous speech about travelling to the moon. The group then attends a lecture by a leading engineer such as NASA's head parachute designer, Professor Tayfun E. Tezduyar. Students are in for a unique treat with a Dinner and presentation with an Astronaut. The ensuing graduation ceremony marks the completion of the Senior Space School program and students are awarded with their individual certificates.
Day 14	Expedition complete! With a transit time of approximately 14-17 hours students can 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.

Students and their families can rely on a 24-hour emergency support from US staff.

Actura's 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 Senior Space School Program. While general in nature, it does contain specific rules and advice.

By joining the Senior 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 the parents' account.

Source: nasa.gov

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.

"I loved the physical experience this tour offered – of showing me where STEM can take me; but I equally loved being surrounded by girls who thought like me and had similar mindsets and visions."

Jessica, year 12 St Margaret's School, Melbourne

"I learnt a lot about space and its helpfulness to the human race and how it helps with many other things. I think this was delivered well in Space School with activities and interesting guest speakers, I would definitely recommend this to my friends."

Rob, year 9 Haileybury College, Melbourne

"I have gained a lot of valuable knowledge and skills in teamwork, persistence, resilience, and working under time pressure. The experience has been challenging, however I have often been surprised at how much me and my team have been able to achieve."

Bridget, year 12 Ivanhoe Girls Grammar, Melbourne

"We had the opportunity to watch NASA's top scientists conduct work right in front of our eyes, and even had the chance to speak with some of them. I recommend Space School not only to student who are interested in space, but to all students who hope to broaden their horizons."

Wayne, University of California, Berkeley

"Space School has taught me that no matter how crazy your idea is, you should really speak it out because it takes radical ideas to succeed in the projects concerning fields never explored."

Klara, Singapore American School, Singapore

Testimonials from parents

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

"I am very happy with the experience my daughter had, she came back happy, and excited for the next stage of her life at university. Confident in the choice she made to undertake a double degree in Science (Major in Physics/Astrophysics) and Education."

Rebecca, year 12 parent, Catherine McAuley Westmead, Sydney

"The Space School was an extremely positive, enriching experience that surpassed my daughter's expectations. As a parent, I was very happy that I was able to provide this opportunity to my child."

Lisa, year 10 parent, Moreton Bay College, Brisbane

"This trip exceeded my expectations as I was slightly concerned how my daughter would cope being so far away from home and for such a long time, but she loved every minute of it and it has definitely shaped her motivation for what she would like to do in the future with her studies. Other than the obvious learning aspect she has also learnt resilience and independence, made new friends, and has a sense of confidence that she did not have prior to the trip."

Paula, year 10 parent, Moreton Bay College, Brisbane

FAQs

Who should consider to join the Senior 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 New Zealand 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 New Zealand 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 New Zealand 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 Senior Space School expedition and become part of this exciting adventure. For any questions, please contact us on 1300 303 402.

Actura New Zealand

Release Your Potential

Source: nasa.gov

Actura New Zealand Limited

Level 4, 17 Albert Street. Auckland CBD 1010 New Zealand

t: 0800 118 911
e: enquiries@actura.co.nz
w: actura.co.nz

facebook.com/acturanewzealand
twitter.com/ActuraNZ

AUCKLAND | SYDNEY | MELBOURNE | HOUSTON | TAIPEI

Version 3.3