



IT'S ROCKET SCIENCE

STEM INCURSION PROGRAM OVERVIEW

It's Rocket Science Adventures create **learning pathways** to meet the outcomes of the Australian Curriculum. Using flight and space science as a launch pad for learning, our **aviation and aerospace industry professionals** use a practical, experiment based format that will help your students to be active and engaged—and to create **machines that actually fly**.

Year level	Program	Description
Prep/Foundation	Make it Move 	Be a rocket scientist for the day, exploring the properties and movement of flying objects. Students will make a simple bottle rocket then use their senses to compare the push and pull forces used to move flying objects to see what flies higher, faster or further. Watch their excitement take off as their rocket is launched 60 metres into the air! <i>Curriculum: PC On the Move; C2C Move It, Move It</i>
Year 1	Living Things in Space 	Create your very own habitat for growing plants on another planet. Students will explore the conditions needed for living things to grow and learn fun facts about food grown in space. They will experiment with their own bean seed in a bag which will have to survive a rocket launch and journey before sprouting in its new destination. Your classroom will become a mini greenhouse to monitor plant growth and discover how plants are vital for sustainable existence. <i>Curriculum: PC Schoolyard Safari; C2C Living Adventure</i>
Year 2	Push and Pull Parachutes 	Discover the fast-moving fun of air transport and understand how push and pull forces make things fly. Students will explore the factors that affect an object's movement through air, then conduct a class parachute experiment to understand how the parachute affects the movement of an object of different weights when dropped. <i>Curriculum: PC Physical Science - Push Pull; C2C Toy Factory</i>
Year 3	Sustainable Space 	Sustainable Space is an engineering, sustainability and recycling challenge. Students will investigate the suitability of materials and components to build and test a sustainable flying vehicle using the reduce, reuse and recycle concept. Discovering the methods of space transport from the past and present, they will explore the environmental impact of space junk and why sustainable space exploration using renewable energy will be essential for shaping the growth of future communities and habitats. <i>Curriculum: C2C Design and Technologies</i>
Composite: Prep/Foundation - Year 3	Go For Launch 	Students will be rocket scientists for the day, exploring the science behind rockets and flight. Using recycled and repurposed items, make a simple bottle rocket before squeezing the trigger to extraordinary excitement as their rocket is launched 60 metres! <i>Curriculum: PC On the Move, Physical Science - Push Pull; C2C Move It, Move It; Design and Technologies</i>
Composite: Prep/Foundation - Year 3	Aviation Explorers 	Experience imagination-fueled flights in a real-life aircraft with an airport set up at your location. Develop an understanding of basic aerodynamics, properties of air and discover how and why things move. Students will experiment with these concepts by creating their own simple flying machine, a foam glider. *SE Qld only <i>Curriculum: PC On the Move, Physical Science - Push Pull; C2C Move It, Move It</i>

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Year 4	Flying Forces 	Using the power of air, this gravity-defying unit will have students explore the interaction of forces, direction of motion and gravity, with effects of friction when exerted on vehicles that fly. Students will conduct a fair test investigation and experience the extraordinary fun of rocket science to build, launch and measure the thrust (push) force on each launch of their bottle rocket. Discover the principles of basic aerodynamics, flight trajectories and propulsion (energy) with real flying bottle rockets. <i>Curriculum: C2C Fast Forces</i>
Year 5	My Place in Space 	Explore the science that overcame enormous challenges to help man walk on the moon. Find out how space missions past and present contributed to scientific understanding of our place in the universe. Students will consider the advances in technology made from space exploration and discuss the future of space junk, sustainable tourism and interplanetary travel. They will experience the spectacular fun of rocket science and launch their own space mission through this STEM investigation. <i>Curriculum: PC Earth's Place in Space</i>
Year 6	Watt are the Chances? 	Discover the spectacular energy transformations involved in motion and flight. Students will be introduced to the sources of energy, energy efficiency, renewable fuels and will explore the potential energy sources possible for space travel. They will construct and test a bottle rocket to see energy conversion in action, at the same time conducting a probability and chance experiment. <i>Curriculum: PC Essential Energy</i>
Year 4-6	Go For Altitude 	Space science in action! Explore the science behind rockets and flight to discover how forces, the laws of motion and gravity interact. Students will use fair testing to analyse the altitude performance of their rocket. Will it fly higher than 60m? <i>Curriculum: C2C Fast Forces</i>
Year 7	Physics, Forces & Flight 	Daily life is shaped by forces and motion. Introduce physics to your students and explore how the types of forces affect the motion of a simple flying machine. Using scaled instruments, investigate and analyse the forces that affect the altitude performance of your rocket.
Year 10	Speed & Velocity Challenge	Develop students' understanding of speed and velocity. They will learn how speed, mass, G-force and energy affect aerospace design and apply this knowledge to their rocket design, testing variables to produce the fastest flight.
Years 7-10	Junk Pile Engineers 	A design solution project to creatively extend your students' skills and knowledge with absolute freedom to create a stable rocket of their own design. Students must modify their rockets between flights, examining variables to optimise their design to achieve the greatest flight distance.
Years 7-10	Astro Egg 	The egg drop experiment has been launched out of this world! Students build a water rocket booster and parachute to keep their 'astronaut' safe, but the challenge is for Astro Egg to survive the G-force of launch, shock of booster separation and return safely to earth. His life depends on you!
Years 7-10	Advanced Rocketry Challenge 	Rockets are the oldest form of self-contained vehicles in existence, evolving from simple tubes filled with black powder into engineering wonders capable of launching a spacecraft off the earth's atmosphere. Investigate the science and physics behind rocket flight and the exchange of thermal energy. Students will then construct and launch their own chemical-fueled model rocket! Participants will take home a reusable model rocket. <i>*Additional costs will apply for resources in this workshop.</i>

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MAXIMISING VALUE FROM YOUR STEM INCURSION

At its simplest, an It's Rocket Science Adventures incursion will inspire your students to think about flight and space, using fair testing principles to make things fly, for real. We come to you with everything done for a hands-on incursion that will engage and excite your science fanatics, your skeptics and everyone in between.

At its most valuable, our incursions play a pivotal role in creating learning pathways to the essential outcomes of the Australian Curriculum. We'll provide resources to make incorporating our incursions in your teaching plans easy, with ideas, links and worksheets for whole units of learning that continue beyond the last rocket launch.

It's Rocket Science incursions are specifically designed for all ages and abilities. They're safe and spectacular. We provide all the relevant Risk Assessment, Blue Card and Working With Children Checks. And best of all, our facilitators are aviation and aerospace industry professionals, with more than 25 years' experience in the field, so we know our stuff.

BEFORE THE INCURSION

What we do

- ❑ Complete and send risk assessment documents.
- ❑ Send through learning pathway documents, including extension ideas and how to incorporate our incursion into a whole unit of learning.
- ❑ Bring all materials for the workshop - lesson resources, rocket launch system, bottles, fins and nose cones.

What you need to do

- ❑ Book your school oval and inform your PE teacher (remind them on the day too, just in case).
- ❑ Share learning pathways and resources with other teachers participating in the incursion (or we can do that too!).

LEARNING PATHWAYS

It's Rocket Science incursions are not intended as a show that will grab their attention and soon be forgotten about. We get every student involved in making age-appropriate predictions, fair testing and experimenting with their learning to create connections that will be remembered and applied back in the classroom. Our extension resources will help you to create learning pathways and continue to meet the achievement standards of the curriculum, long after we've packed up our launch kit for the day.



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ON THE DAY

In general, our incursions follow a simple format, with some variations depending on your selected program and if it's a 60 or 90 minute incursion. Here's a sample 60 minute format:

- Introduction and concept overview (including AV presentation)
- 10 mins - CLASSROOM
- Material setup, rocket design and build
- 15 minutes - CLASSROOM
- Rocket launch safety briefing
- 5 minutes - CLASSROOM
- Relocate to oval and review of safety briefing
- 5 minutes - OVAL
- Rocket launches, fair testing and data recording if applicable
- 20 minutes - OVAL
- Data review and wrap up
- 5 minutes - OVAL

TO ENGAGE MISSION: Email your preferred date, number of students and program name/s to bookings@itsrocketscience.com.au



1 HOUR | 30 STUDENTS MAX PER SESSION

\$12*

/per student

*Price excludes GST. Minimum rates apply.
Additional travel fee may apply to your service location.
Full Terms & Conditions available at www.itsrocketscience.com.au

1.5 HOURS | 30 STUDENTS MAX PER SESSION

\$15*

/per student

*Price excludes GST. Minimum rates apply.
Additional travel fee may apply to your service location.
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