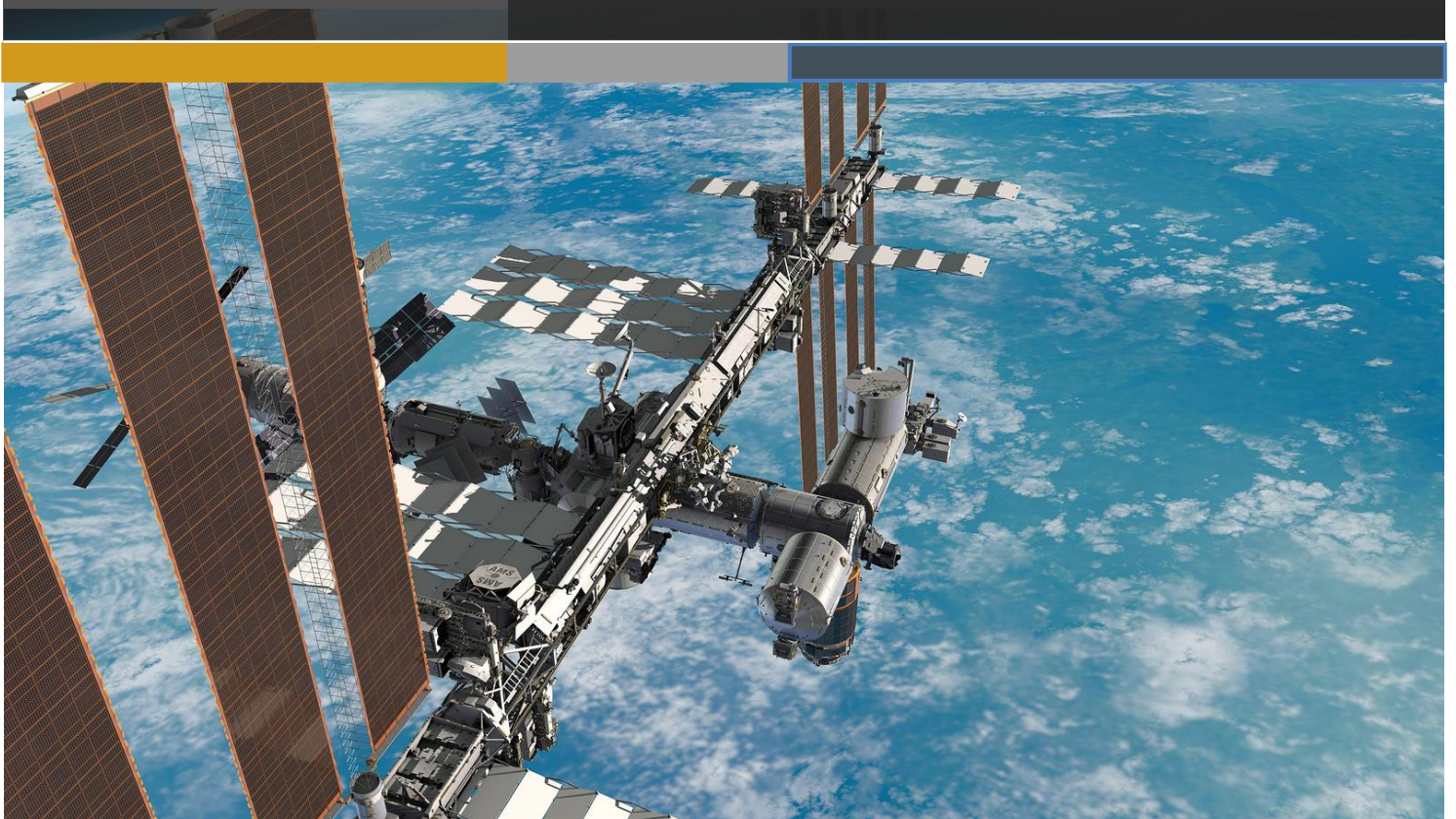


ISS Program

QUEST INSTITUTE
for QUALITY EDUCATION





International Space Station (ISS):

A microgravity laboratory in which an international crew of six people live and work while traveling at a speed of five miles per second, orbiting Earth every 90 minutes. Easy to spot in the night sky as the brightest object in the night after the moon.

The ISS has been continuously occupied since November 2000. In that time, more than 200 people from 15 countries have visited.

Quest Institute:

A foundation providing a multi-national collaboration, much like the International Space Station, of schools and community organizations with a united goal of initiating and guiding youth to a future in space science, technology, and engineering.

The ISS Program is involved in the extremely expensive and risky business of space exploration - inside the ISS with micro computer-controlled experiments.

S C I E N C E	T E C H N O L O G Y	E N G I N E E R I N G	M A T H E M A T I C S
<ul style="list-style-type: none"> Discovery Process Hypothesis Experiment Observable Physical Evidence Systematic Organized Study 	<ul style="list-style-type: none"> Machine Embedded Knowledge Computer Programming Microprocessors Intelligent Automation 	<ul style="list-style-type: none"> Structure Design and Build Merged Science Ideas and Technology Solutions Apply Function to System 	<ul style="list-style-type: none"> Ordered Information Problem Solving Methods Calculation Logic Data Manipulation

Space Exploration: Defining and solving scientific problems in the microgravity environment

Figure 1: Space Science experiments are an extraordinary tool to introduce and strengthen students' abilities in science, technology, engineering, and math.

“While each ISS partner has distinct agency goals for research conducted, a unified goal exists to extend the knowledge gleaned to benefit all humankind.” - NASA



New – 3 Levels of Participation

Level 1 (Beta) – Base Platform, Data Analytics, Curriculum, Training and Support

Level 2 (Beta) – Level 1 + experiment uploaded to the International Space Station

Level 3 – Hardware, Software, and one-week Mentor Training with 24x7 support to fly a custom experiment to the ISS

The International Space Station (ISS) Program provides students with the opportunity to ask questions, develop hypothesis-derived experiments, obtain supporting evidence, analyze data, and identify solutions or explanations.

The History

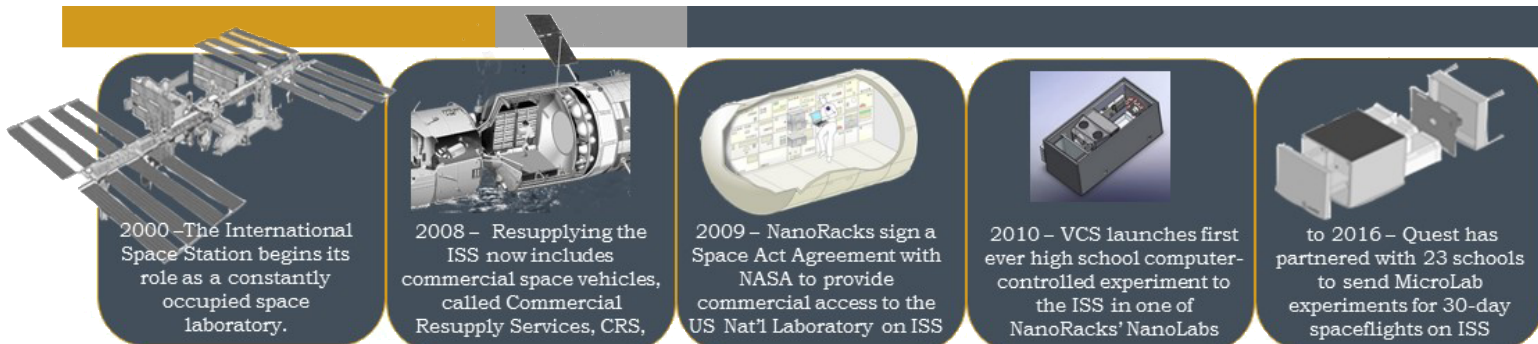
Quest Institute is forging a unique path with youth around the world by continuing its journey to space aboard the International Space Station (ISS). As the very first program to have a high school run a computer-controlled experiment on ISS, and for the sixth consecutive year, Quest Institute is engaging students to construct experiments to be executed in a microgravity environment. From the beginning of the program in 2010, 775 students from 23 schools have participated in this unique learning experience. Among the 74 experiments that have been launched, some examples include studying plant growth, measuring radiation profiles aboard the ISS, studying the behavior of ant colonies, analyzing bacteria growth, and the first ever (for even NASA) plating metal in space. Quest Institute has mentored schools and organizations around the globe from the continental US and Hawaii, to Finland and Indonesia.

The Vision

Quest Institute believes that all youth should have access to a motivating STEM education curriculum. With a successful start to Space Science, Quest Institute is working to broaden the reach of the ISS Program by lowering the technical skill and resource requirements needed to fly an experiment on the International Space Station. In a move to address a larger range of skill requirement, Quest Institute is adding two new levels in addition to the Level 3 Program.



“In the areas of human health, innovative technology, education, and observations of Earth from space, there are already demonstrated benefits to people back on Earth. Lives have been saved, station-generated images assist with disaster relief, new materials improve products, and education programs inspire future scientists, engineers and space explorers.” -NASA



Space Experiments Impact and Benefit Humanity

Research on the ISS includes Earth, space, physical, and biological sciences.

In addition to encouraging students to discover the exciting field of science and technology, experiments on the International Space Station effect humanity in many different ways.

- Vaccines have been identified due to the aggressive nature of growth in the microgravity environment.
- Medicines have been discovered as a result of the accelerated growth of crystals in the reduced gravity of space.
- Ironically, new water purification systems have been discovered, out of necessity for the space life of astronauts, that have a profound effect on drought-stricken and dry lands on Earth.

Experiments on the International Space Station matter.

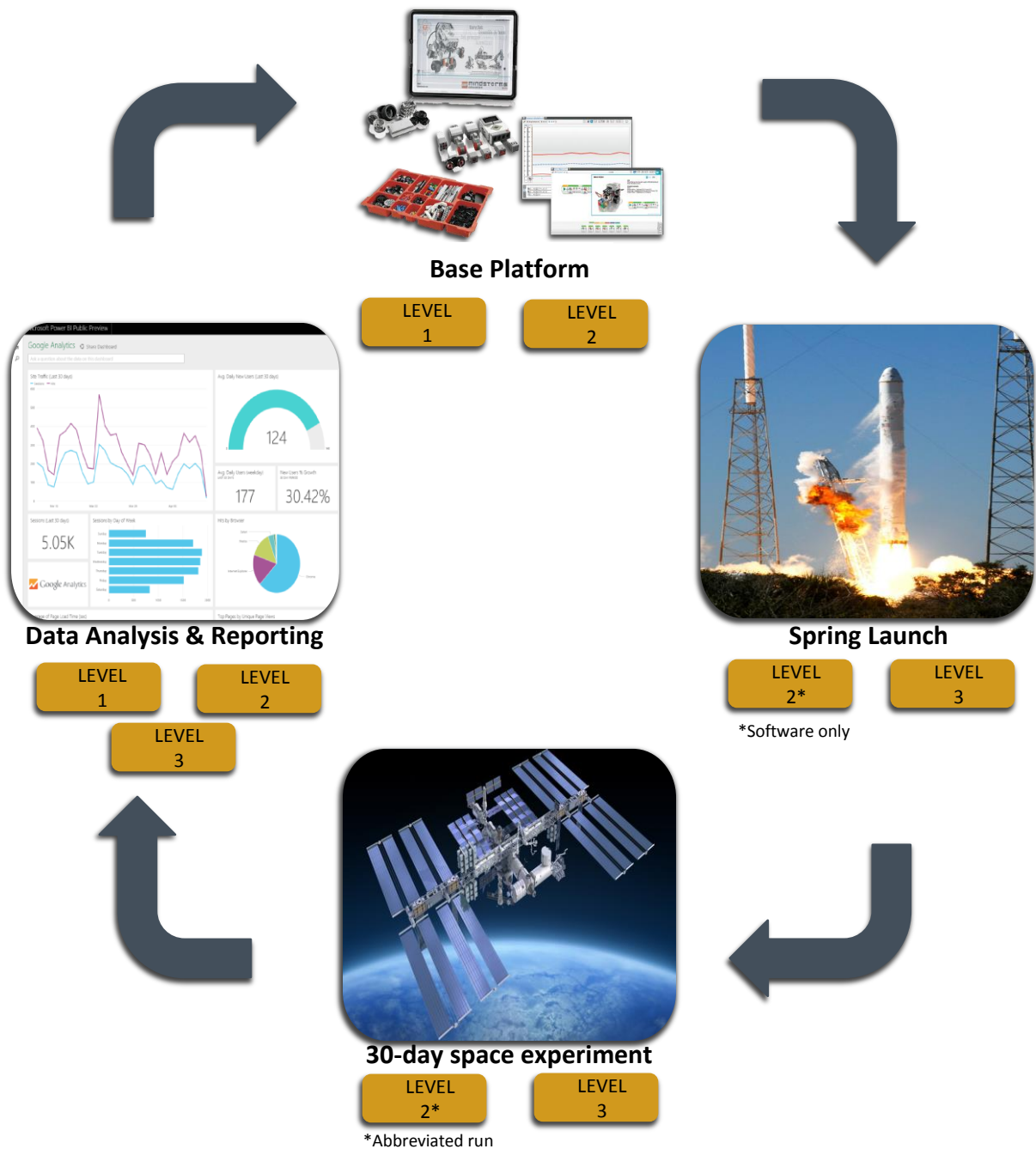
Definition of “Template” in New BETA Levels

One exciting aspect to the Beta Levels is a new concept called ‘templates’. Quest Institute, in collaboration with Level 2 partners will create a ‘template’, a hardware module that will be flown on the ISS. Once the template has been established, Level 1 and Level 2 partners will then build a replica of the template and develop software for their experiment. Over time, there will be multiple templates for partners to choose from.

LEVEL 1: The ground unit base platform will be modeled after the template design. The software developed will run on the ground unit and partners will have data analysis and reporting capability. Level 1 partners are invited to participate in monthly webinars during the course of the program.

LEVEL 2: Partners will collaborate with Quest Institute in the creation of the Beta template. The software developed by Level 2 partners will be loaded and run onboard the hardware module on the ISS. Partners will have data analysis and reporting capability as well as access to other Level 2 partners’ data. Monthly webinars will be held with the Level 2 partners during the course of the program.

Path to Space



QUEST INSTITUTE

for QUALITY EDUCATION

ISS Program Comparison	Level 1 – Beta Ground	Level 2 – Beta Share	Level 3 – Classic Fly
Available 2016	✓	✓	✓
Motivating Hands-on STEM Education	✓	✓	✓
Reporting & Data Analysis	✓	✓	✓
Training	Curriculum Provided Optional Monthly Webinars	2-Day Training Curriculum Provided Design Collaboration Meetings & Monthly Webinars	4-day Mentor Summer Workshop Checkpoint Meetings
Elementary Students Targeted	✓	✓	
Junior High Students Targeted	✓	✓	
High School/University Students Targeted	✓	✓	✓
Operates in Space		✓ Software	✓
Time Commitment	Approx. 2hr/wk	Approx. 4hrs/wk	Approx. 5hrs/wk
Programming	Introductory	Introductory	Advanced
Group Size	4-10	4-10	8-12
Platform	Windows 10 IoT Lego Mindstorm EV3	Windows 10 IoT Lego Mindstorm EV3	Proprietary Mix
Mentor Requirements	Any Teacher (STEM Mentor Recommended)	STEM Teacher (Robotics Mentor Recommended)	1 Technology & 1 Engineering Mentor Required
Facility Requirements	Flat tables and space to move around	Flat tables and space to move around	Flexible, spacious lab, flat tables and basic tools
NASA & NanoRacks Documentation			✓
Basic Fees	Contact Quest Institute	Contact Quest Institute	Contact Quest Institute

What's in the Beta Program Package?



BASE PLATFORM

DATA ANALYTICS



CURRICULUM

TRAINING AND SUPPORT



BETA ISS PARTNERS

Who should become a Partner?

Anyone interested in STEM education and leading today's youth to a future in science or engineering.

What does it take to become a Partner?

- Funding
- Motivated Students
- Lab Space
- Willing Mentors
- Dedication for a 9-month school calendar year
- Conference calls and scheduled check-ins for Level 2

What program should we participate in?

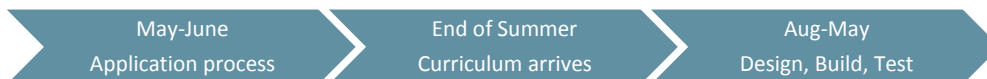
Use the level selection assistant to determine the right program for your students.

ELEMENTARY or JR HIGH	1 Mentor STEM recommended	LEVEL 1
	1 STEM Mentor Robotics recommended	LEVEL 2

HIGH SCHOOL or COLLEGE	1 Mentor STEM recommended	LEVEL 1
	1 STEM Mentor Robotics recommended	LEVEL 2
	1 STEM Mentor and 1 Engineering Mentor Required	LEVEL 3

TIMELINE

Level One



Level Two



Level Three





Quest Institute

100 Skyway Drive
San Jose, CA

info@questforspace.com

