



**An international annual STEM study event**  
**Johnson Space Center, Houston, Texas, USA**  
**February 19 – 25, 2023; 7-days / 6-nights**

| Mission to Mars - Johnson Space Center, Houston, Texas |         |   |   |   |                                    |                              |
|--|---------|---|---|---|------------------------------------|------------------------------|
| Day  | Morning |   | Afternoon                                       |   | Evening                            |                              |
| 1  | Sun     | Fly to Houston; Check into Hotel; Welcome & Safety Meeting; Dinner on Own |   |   |                                    |                              |
| 2  | Mon     | Tram Tour - Space Vehicle Mock-Up Facility & Orion Mission Control        | Rocket Presentation & Construction              | Thermal Tile & Cryogenics; Swing Test & Safety                | Pizza at Hotel                     |                              |
| 3  | Tues    | Thermal Tile & Cryogenics Challenge / Silvermoon                          | Natural Buoyancy Lab Tour                       | SCUBA Session & Underwater Robotics Challenge / Williams Pool | Dinner & Movie Night               |                              |
| 4  | Wed     | NASA Guest Speaker Presentation   | VEX Robotics & VEX End Effector Build Challenge | Coding Challenge & Competition                                | Mars Yard End Effector Competition | Dinner & Baybrook Mall       |
| 5  | Thur    | Rocket Safety / Rocket Launch / Rocket Park Tour / Rocket Debrief         | Mars Habitat Presentation                       | Mars Habitat Challenge & Presentations                        |                                    | Dinner & Bowling             |
| 6  | Fri     | Independence Plaza Tour   | Brunch with an Astronaut & Presentation         | Starship Gallery Tour   | Graduation & Awards Presentation   | Dinner & The Kemah Boardwalk |
| 7  | Sat     | Free Time   |   | Depart Houston  |                                    |                              |

As with all sample itineraries, please be aware that this is an “example” of a schedule and that the activities included may be variable dependent upon dates, weather, special requests and other factors. Itineraries will be confirmed prior to travel.



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**OVERVIEW:** Mission to Mars is devoted to the educational study of Science, Technology, Engineering & Math by students ages 15 to 18. In this special event, pupils will come together to experience a **5-day engineering mission** to land a rover on the surface of Mars. All the time, working within a NASA budget; knowing that funds or supplies for projects may be decreased at any time due to budget cuts, safety regulations, or any other experience representative of the real NASA world.

**SKILLS REQUIRED:** Teamwork, problem solving, fiscal responsibility, communications, adaption to unexpected problems, the drive to be successful, and most important, the ability to have fun through science, technology, engineering and mathematics!

**A GROUP EVENT:** This is a group event and means that all elements are shared among all participants. This includes transportation, evening activities, classroom time and more. It is a wonderful chance for young ladies and gentlemen to come together to share cultures and experiences. We understand that not all schools want to participate in a shared event. If you would rather have your own dedicated tour just for your students, simply let us know. We are happy to serve your school at any time as an individual group on a non-event week provided you meet minimum group numbers and when space is available.

### Day 1

Due to varied arrival times, groups are 'on their own' for meals on this day. Once your flight times are known, if you would like us to assist you in booking a dinner on this evening, simply let us know and we will be happy to set this up on your behalf.



*Houston....* A sprawl of concrete and superhighway? Intense summer heat? Yes - Houston has some of that. But the USA's fourth-largest city (5 million in the metro area) is also a multicultural, zoning-free hodgepodge where in one strip mall there might be a Vietnamese grocery, a Venezuelan empanada stand and a big-beef meat market. Eat at great ethnic restaurants or shop in arts-and-antique neighborhoods. See world-class paintings and funky folk car parades. Then just down the road a bit you can walk the beaches of



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Galveston Island and visit the astronauts at Space Center Houston. Often described as a "sprawling Texas town," the greater Houston area covers more ground than any other major city in America.

Houston is a city whose very existence has always depended on wild speculation and boom-and-bust excess. Founded on a muddy mire in 1837 by two real estate-booster brothers from New York – their dream was to establish it as the capital of the new Republic of Texas – Houston was soon superseded by the more promising site of Austin, even while somehow establishing itself as a commercial center. Oil, discovered in 1901, became the foundation, along with cotton and real estate, of vast private fortunes, and over the next century wildly wealthy philanthropists poured cash into swanky galleries and showpiece skyscrapers. Locally produced oil and gas products exported from the Houston Ship Channel have long fueled the city.



In 1958, President Lyndon Johnson (a Texan) located the National Aeronautics and Space Administration (NASA) here. Houston is also a multicultural city home to some of the nation's largest Asian, Arab and Latin American populations. But its culture is not limited to diverse population — it also boasts a world class symphony and theater district that includes a full-time ballet company and opera.

Houston is a beast of a place, choked with rings of highways and high on humidity. Despite this, its sheer energy, its relentless Texas pride, and above all, its refusal to take itself totally seriously, lends it no small appeal. For visitors, its well-endowed museums, highly regarded performing arts scene, and decent nightlife mean there is always something to do.

### *Did you know?*

- ✓ Houston is the fourth most populous city in the nation (trailing only New York, Los Angeles and Chicago), and is the largest in the southern USA.
- ✓ If Houston were an independent nation, it would rank as the world's 30th largest economy.
- ✓ Houstonians eat out more than residents of any other city. While here you can choose to indulge in one of the more than 11,000 restaurants ranging from award-winning and upscale to memorable deli shops.
- ✓ More than 90 languages are spoken throughout the Houston area.
- ✓ Houston is home to the Houston Livestock Show and Rodeo. The largest rodeo in the world, it attracts more than 1.8 million visitors each year.
- ✓ Houston has among the youngest populations in the USA.
- ✓ Houston is home to the Texas Medical Centre, the largest medical center in the world, with a local economic impact of \$10 billion. More than 52,000 people work within its facilities, which encompass 21 million square feet. Altogether 4.8 million patients visit them each year.
- ✓ When comparing Houston's economy to a national economy, only 21 countries other than the United States have a gross domestic product exceeding Houston's regional gross area product.

- ✓ Home to more than 5,000 energy related firms, Houston is considered by many as the Energy Capital of the world.
- ✓ The Port of Houston is the tenth largest port in the world.

Groups participating in 'MISSION TO MARS will generally arrive in Houston in the late afternoon. Upon arrival, your motorcoach will be awaiting your school to transport you to your hotel.

**Sample Hotel – Springhill Suites Houston NASA / Webster** - Just three miles from the Johnson Space Center (NASA headquarters and home to Johnson Engineering, and the Space Hub research facility), the Springhill Suites hotel provides easy access to several attractions nearby. All rooms contain two queen beds plus a pull-out sofa sleeper. Students will sleep quad occupancy; staff will sleep double occupancy. Room amenities include free high-speed internet access, cable television, hair dryers, in-room coffee maker, mini-fridges and microwaves, and voicemail. Hotel amenities include elevators, business centre, guest laundry, indoor corridors, small outdoor pool, sundry shop and meeting rooms. [SPRINGHILL SUITES](#)



After check-in, we'll have our Welcome, Safety & Orientation Meeting. Dinner is on own however we are happy to help you pre-book/pre-pay a dinner option prior to travel. We recommend McAllister's Deli which is located within easy walking distance of the hotel.



Groups will want to get a great night's rest because tomorrow, its full steam ahead with STEM discovery!

**Days 2 through 6**  
Breakfast, Lunch & Dinner

Rise and shine Houston! Today is the day we delve into STEM projects at Johnson Space Center.



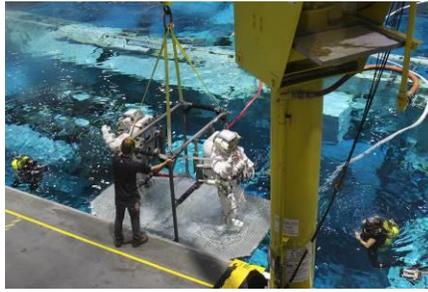
**Johnson Space Center** – The Lyndon B. Johnson Space Center (JSC) is the National Aeronautics and Space Administration's (NASA's) center for human spaceflight training, research and flight control. The center consists of a complex of 100 buildings constructed on 1,620 acres (656 ha) in Houston, Texas. Johnson Space Center is home to the United States Astronaut Corps and is responsible for training astronauts from both the U.S. and its international partners. It is often popularly referred to by its central function, 'Mission Control.'

The center, originally known as the Manned Spacecraft Center, was constructed on land donated by Rice University and opened in 1963. On February 19, 1973, the center was renamed in honor of the late U.S. president and Texas native, Lyndon B. Johnson. JSC is one of ten major NASA field centers.



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Johnson Space Center has its origins in legislation shepherded to enactment in 1958 by then-US Senator Lyndon Johnson. After President John F Kennedy made the goal in 1961 to put a man on the Moon by the end of the decade, the Space Task Force was formed to lead the Apollo Project. The group would need test facilities and research laboratories suitable to mount an expedition to the moon. In July 1961, NASA Administrator James Webb headed the site selection team. Requirements for the new site included the availability of water transport and an all-weather airport, proximity to a major telecommunications network, availability of established industrial workers and contractor support, an available supply of water, a mild climate permitting year-round outdoor work and a culturally attractive community. Houston was selected and announced in September 1961. Construction of the center began in April 1962 and the facility was officially opened for business in September 1963. When opened, the 1,620-acre (660 ha) facility was originally designated the Manned Spacecraft Center (MSC) and was to be the primary center for U.S. space missions involving astronauts.



The center's Mission Control Center has been the operational center of every American human space mission since Gemini IV. The control center manages all activity on board the spacecraft and directs all space shuttle missions. Mission Control Center was constructed in 1962. By 1965, JSC was fully operational and has been responsible for coordinating and monitoring every crewed NASA mission since the Gemini Project.

In addition to housing NASA's astronaut operations, JSC is also the site of the former Lunar Receiving Laboratory, where the first astronauts returning from the moon were quarantined, and where the majority of lunar samples are stored. The center's Landing and Recovery Division operated MV Retriever in the Gulf of Mexico for Gemini and Apollo astronauts to practice water egress after splashdown.

The Johnson Space Center is home to Mission Control Center, the NASA control center that coordinates and monitors all human spaceflight for the United States. MCC directs all Space Shuttle missions and activities aboard the International Space Station. The Apollo Mission Control Center, a National Historical Monument, can be found in building 30. From the moment a spacecraft clears its launch tower until it lands back on earth, it is in the hands of Mission Control. The Mission Control Center houses several Flight Control Rooms, from which Flight Controllers coordinate and monitor the spaceflights. The rooms have many computer resources to monitor, command and communicate with spacecraft. When a mission is underway the rooms are staffed around the clock.



The center also handles most of the planning and training of the US astronaut corps and houses training facilities such as the Sonny Carter Training Facility and the Neutral Buoyancy Laboratory, which is a critical component in the training of astronauts for spacewalks. The Neutral Buoyancy Laboratory provides a controlled neutral buoyancy environment a very large pool containing about 6.2 million US gallons (23,000 m<sup>3</sup>) of water where astronauts train to practice extra-vehicular activity tasks while attempting to simulate zero-g conditions. The facility provides pre-flight training in becoming familiar with crew activities and with the dynamics of body motion under weightless conditions.

The visitor's center of Johnson Space Center is "Space Center Houston."



*Ever dreamed of being an astronaut? Wondered what it takes to travel and live on Mars? Do you want to engineer your own robotic rover and launch a rocket? Come behind the scenes at NASA's Johnson Space Center for the ultimate educational experience and get a taste of space exploration!*

*Mission to Mars is our space event for co-ed pupils, bringing together students from around the world to work together in conquering space and engineering objectives. It's a challenging 5-day program designed to develop and improve critical thinking skills, fiscal responsibility, creativity and the drive to be successful.*

*Will you make the cut? There is only one way to know.*

*Immersing students in authentic learning opportunities tied to NASA missions, our Mission to Mars team & "Space U" offer a high level of STEM topics applied to real world and space-related experiences. Students will discover areas such as robotics, rocketry, thermal protection systems and space habitats. Get inspired as you come together to engineer solutions to space challenges, collaborate to find solutions and go behind-the-scenes at NASA Johnson Space Center and the Neutral Buoyancy Laboratory, the world's largest underwater training facility. The program culminates with a graduation ceremony celebrating the students' accomplishments and an exclusive Brunch with an Astronaut.*

This will be your home for the next five days. Each day we will have the opportunity to work with scientists, specialists and astronauts to learn and study in this world-renowned facility. We will be working and competing on PROJECT WORK for Engineering, Physics, Space Science and Design objectives. Teachers are encouraged to participate.



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## Mission to Mars event week includes:

- ✓ Hands-on, engineering-based activities and data collection technology integration for real-world analysis
- ✓ Behind-the-scenes access including tours of actual astronaut training and work facilities, such as Rocket Park and the Neutral Buoyancy Laboratory
- ✓ Interactive, project-based learning that includes sustainable habitat construction, robot retrieval mission and programming, multi-stage rocket design and launch, underwater “astronaut training,” collaborative teaming and global awareness development
- ✓ Hear from guest speakers about what it takes to work at NASA and the projects that prepare humans for space exploration
- ✓ Brunch with an Astronaut
- ✓ Graduation ceremony and certificates

Please understand, activities are subject to change without notice due to weather or unforeseen circumstances.

## Project & Program Descriptions

**MARS OR BUST** - Participants will have the option to design and build a one or two stage rocket build based on the team goals for their mission. Crew’s will launch their rockets the following day to determine who has a successful launch and the highest the altitude. Launch site and may vary based on weather conditions.

**BRING THE HEAT** - Students will design, construct and test a thermal heat shield to be able to withstand temperatures up to 1,000° Fahrenheit (538° Celsius). This exercise simulates the effects on the space capsule heat shield during entry into the Martian atmosphere.



**CRYOGENICS TESTING** - Can you protect your astronaut from the cold conditions on Mars? Design and build a cryo-capsule to protect your astronauts from extreme temperatures of -321° Fahrenheit (-196° Celsius)

**WORKING IN WEIGHTLESSNESS** - Working with licensed dive instructors in a local indoor swimming pool, participants will learn the techniques taught to astronauts as part of their preparation for performing tasks in microgravity. After which students will construct a mock-up airlock and perform other essential tasks similar to those developed by NASA.



**ROVING ROBOTICS** - Students must decide how to engineer a robotic rover based on a given set of parameters and tasks that the rover must accomplish on Mars. They begin with a budget, price list for supplies and then are given varying real-world criteria to design, construct then test their rovers. The rovers will be put to the test by collecting rock samples and executing student designed coding programs to maneuver on Mars.

**LIVING ON MARS** - What's it like living in space? How do astronauts get enough clean water and air? What happens if something goes wrong? Are there alternate sources of energy? How do astronauts communicate and work with peoples from different cultures? Students will participate in SIM (simulated) scenarios, build their own habitat that sustains core areas of life while maintaining cultural and global awareness.



**NASA EXCLUSIVES: BEHIND-THE-SCENES REALITY TOURS** - Students will tour NASA Johnson Space Center with stops at historic Apollo era Mission Control, Neutral Buoyancy Laboratory and the Space Vehicle Mockup Facility including its full-size training modules of the International Space Station. See rockets up-close that were used in early space exploration. Experience the shuttle replica Independence atop the historic Boeing 747 shuttle carrier aircraft.



**INDEPENDENCE PLAZA** - Get a rare glimpse into the shuttle program with a tour of Houston's international landmark exhibit Independence Plaza. Students will go inside the high-fidelity shuttle replica Independence, mounted on top of the historic and original NASA 905 shuttle carrier aircraft, and then explore the giant plane. It is the world's only shuttle mounted on an SCA and the only one allowing the public to enter both.

**STARSHIP GALLERY** - Starship Gallery at Space Center Houston is home to multiple flown spacecraft and national treasures. Get an up-close look at some of the most amazing artifacts that trace the progression of human space exploration. Students will see and touch real moon rocks and flown spacecraft while learning about the history of space flight.

**BRUNCH WITH AN ASTRONAUT** - Dine with a NASA astronaut and hear their first-hand stories about space exploration. Ask questions about their mission experience and learn what it takes to become an astronaut.



**GRADUATION** - Celebrate your students' achievements at Space Center U® graduation surrounded by one of the world's most comprehensive collections of space suits in our Astronaut Gallery. To commemorate the special experience, students will receive Space Center U certificates and medals.

Our NASA program will run Monday through Friday, from 08:00 to 16:00, then extend on in the late afternoons so students have a chance to check-out all the exhibits in the center. Lunches will be at the Zero-G Diner and are included in your package. In the evenings, please know that we encourage you to participate in our evening event program. If you opt to do something different, please let your Event Ambassador know once you arrive in Houston. They will be able to assist you in achieving best rates for added transportation and extra requirements.



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## What does an “event week” include?

- Your group will be mixed with other schools for daily programming and challenges. This means you will be broken up into smaller groups, selected and placed by the NASA team after arrival in Texas, with each group composed of students from every school participating that week. Teachers will also be broken into the groups. This allows for fun collaboration allowing you to meet and work with pupils and staff from other areas and nationalities.
- You will utilize shared transportation. All transfers, with the exception of some airport transfers, will be shared amongst all those participating in the event. There is never any assigned seating in any transportation vehicle, so you decide how you want your students to load. All event transfer times are ‘set’ so if you desire a time change, please ask us and we can inquire if an early/late pick-up may be possible and if so, if it will impact rate structures.
- Your evening meals and activities will be for all participants in the event week. For dinners, at times we may stagger arrivals, but the meals will be run collectively and on the same evenings for everyone. Anytime we are not participating in programming at the Space Center, such as meals and evening activities, you are welcome to sit in your friendship groups.
- When participating in this event, transportation is provided to and from the Space Center daily, plus to the Neutral Buoyancy Lab and the Williams Pool, as well as to select dinners and activities. If you wish to add on an activity (such as I-Fly indoor skydiving, Galveston Pier excursion, shopping and more), please just let us know as we will need to cost in additional transportation for you over and above what is included for the event. We are pleased to offer a wide range of additional activities and also additional city break add-ons so let us know your needs!
- As an event participant, your group will be accompanied by an Event Ambassador who will be with you at all times in Texas. They are there to assist in any way they can, please let us know how we may best serve you.

## **Day 7**

*Breakfast (dependent upon flight time)*

Good morning Houston! This morning we’ll start to say goodbye to this wonderful city. We will wave to our new friends as we leave for home and hopefully, take away memories that will last a lifetime.



# Added Activity Options

Want to add an extra day or two in Houston? If so, below are some suggested activities. Also, many international schools like to book our 10-day trip which includes the highlights of San Antonio & Austin after your week in Houston. Let us know how we may serve you!

Pricing is generally based on a minimum of 20 pupils and subject to availability. Please also understand that transportation and meal costs will also need to be included.

[Armand Bayou Nature Center - Reptiles and Trails, Canoeing & Night Hikes](#)

[Bryan Museum – Galveston](#)

[Downtown Aquarium](#)

[Galveston Island - Service Projects](#)

[Galveston Island State Park – Ranger Environmental Education](#)

[George Ranch Historical Park](#)

[Historic Pleasure Pier - Galveston](#)

[Houston Food Bank – Volunteer Service Project](#)

[Houston Museum of Natural Science](#)

[Houston Zoo](#)

[I-Fly Houston - Wind Tunnel Sky Diving + Physics Class](#)

[Lone Star Flight Museum](#)

[Museum of Fine Arts Houston](#)

[Re:3D, Inc – Facility Tour](#)

[Rice University – Campus Tour](#)

[San Jacinto Battleship & Battleground State Historic Site – Monument & Museum](#)

[Schlitterbahn Galveston Island Water Park](#)

[Texas Seaport Museum – Galveston](#)

[The Health Museum](#)

[TopGolf Houston](#)



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# MISSION OF MARS



|                                 |   |
|---------------------------------|---|
| <b>Event:</b>                   | <b>MISSION TO MARS</b> – Space Center Houston   |
| <b>Minimum Booking Numbers:</b> | 10 co-ed, male or female students   |
| <b>Applicable Ages:</b>         | Ages <u>15 to 18</u>  |
| <b>What's Included:</b>         | Round-trip flights or motorcoach transfers<br>6-nights' hotel accommodation<br>Breakfasts, lunches & dinners daily starting with breakfast on Day 2 and ending with Breakfast on Day 7<br>Airport transfers and group transportation to and from the Space Center plus noted evening activities<br>5-Day NASA Johnson Space Center Master Class Series at Space Center Houston<br>Brunch with an Astronaut<br>Graduation Ceremony with Certificate Presentation<br>Evening Entertainment including activities such as Kemah Boardwalk, bowling, shopping and more<br>Personal Event Ambassador<br>Assorted Event Gear<br>Fund-a-Forest: A tree is planted in the name of each guest<br>Dollar\$ For Scholars: \$2 donation in the name of each guest<br>24-hour emergency cover |
| <b>What's Not Included:</b>     | Fully comprehensive insurance (mandatory)<br>Transfers to/from home airport<br>Transportation for activities not shown in the itinerary<br>Meals on arrival day; meals other than breakfast on departure day<br>Cost of visas, full or collective passports if traveling internationally<br>Cost of inoculations or medication required for travel<br>Sightseeing / Entertainment Options not shown in Itinerary<br>Hotel incidental deposits & bills – meals, mini-bar items, recreation charges, purchases billed to room, etc.<br>Any gratuities – coach drivers, hotel services, area guides, event ambassadors   |

As always, our staff are always available to you to answer any questions you may have regarding programming. If we may serve you in any way, please do not hesitate to contact us.



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