STEM STUDY TOURS
TRAVEL WITH PURPOSE

Tour: **Texas Space STEM**
Destination: NASA's Johnson Space Center, Houston, Texas
Specialization: Science, Math, Engineering, Physics & Design
Itinerary: 7-days/6-nights in destination
Availability: Year-round excluding major holidays; Sunday departures

TEXAS SPACE STEM
Johnson Space Center, Houston, Texas

Day		Morning		Afternoon		Evening
1	Sun	Travel to Houston, Texas; transfer to Hotel and check-in			Welcome, Safety & Orientation Meeting	Welcome Dinner
2	Mon	NASA Tram Tour - Space Vehicle Mock-Up Facility & Orion Mission Control	Rocket Presentation & Construction		Thermal Tile & Cryogenics; Swing Test & Safety	Dinner & I-Fly Physics Class with 2 Jumps
3	Tues	Thermal Tile & Cryogenics Challenge	SCUBA Session & Underwater Robotics Challenge at Williams Pool			Local Dinner & Baybrook Mall
4	Wed	NASA Guest Speaker Presentation	VEX Robotics & VEX End Effector Build Challenge	Coding Challenge & Competition	Mars Yard End Effector Competition	Dinner & Bowling
5	Thur	Rocket Safety / Rocket Launch / Rocket Park Tour / Rocket Debrief	Mars Habitat Presentation	Mars Habitat Challenge & Presentations		Pizza & Cinema Night
6	Fri	Independence Plaza Tour & Starship Gallery Tour	Astronaut Presentation	Graduation & Awards Presentation	Free Time	Dinner & the Kemah Boardwalk
7	Sat	Free time until departure	Depart Houston for Home			



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

SPORT, SKI & SCUBA

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THE ARTS ACADEMY

HISTORY HITCH
History, Language & Culture Tours

OVERVIEW: Students participating in Texas Space STEM will experience a **5-day engineering mission to land a rover on the surface of Mars**. The entire program will take place at Space Center Houston while evenings will be at local restaurants. Students will analyze rock samples with a reflectance spectrometer, loft a rock sample into Martian orbit and return it back to Earth in a rocket of their own design, participate in a cryogenics challenge and more. All the time, working within a NASA budget; knowing that funds or supplies for your 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, communication, adaptation to unexpected problems, the drive to be successful, and most important, the ability to have fun through STEM exploration.

Day 1

Dinner. If arriving to the hotel after 8 PM, you will be provided a boxed sandwich meal.

Houston.... As the USA's fourth-largest city (7+ million in the metro area), 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 established itself as a commercial center. Oil, discovered in 1901, cotton and real estate became the foundation 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.

Houston is a multicultural city and 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. And in 1958, President Lyndon Johnson, a Texan, located the National Aeronautics and Space Administration (NASA) here.

Houston is a beast of a place, choked with rings of highways and high on humidity. Despite this, its sheer energy and relentless Texas pride lends major appeal. For visitors, its well-endowed museums, highly regarded performing arts scene, and vibrant nightlife mean there's always something to do. www.visithoustontexas.com

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. 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.
- ✓ 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 & Rodeo. The largest rodeo in the world attracts more than 1.8 million visitors each year.
- ✓ Houston is home to the Texas Medical Center, 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.
- ✓ 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 Texas Space STEM will generally arrive in Houston in the late afternoon. After check-in, we'll have our Welcome, Safety & Orientation Meeting followed by a local dinner. If arriving at the hotel after 8 PM, groups will be able to enjoy a boxed sandwich meal. You'll want to get a great night's rest this evening because tomorrow, it's full STEAM ahead!

Sample Hotel – Springhill Suites Houston NASA / Webster - Just 3-miles from the Johnson Space Center, 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. Amenities include free high-speed internet access, cable television, hair dryers, in-room coffee maker, mini-fridges and microwaves, business center, guest laundry, small outdoor pool, sundry shop and meeting rooms.



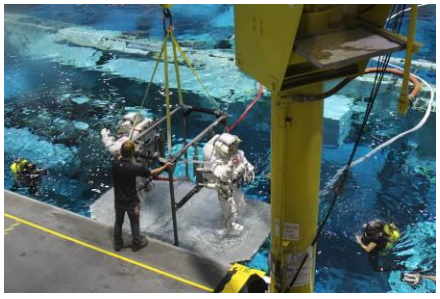
All breakfasts will be served at your hotel. This property has a great location, allowing you to easily walk to the cinema, the Main Event and local eateries.

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 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.'

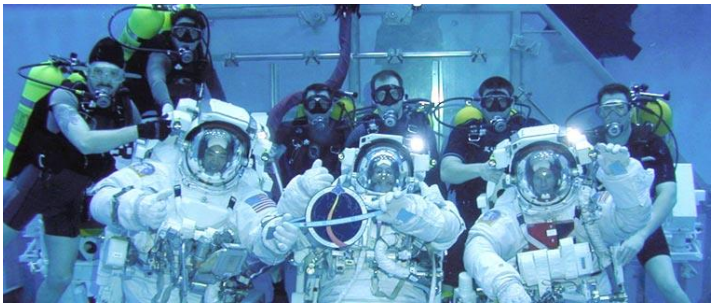
The center, originally known as the Manned Spacecraft Center, was constructed on land donated by Rice University and opened in 1963. On February 19, 1973, the center was renamed in honor of the late U.S. president and Texas native, Lyndon B. Johnson. JSC is one of ten major NASA field centers.


Johnson Space Center has its origins in legislation shepherded by then-US Senator Lyndon Johnson in 1958. 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 and 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 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 onboard the spacecraft plus directs all space shuttle missions and activities aboard the International Space Station. From the moment a spacecraft clears its launch tower until it lands back on earth, it is in the hands of Mission Control. 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. The Apollo Mission Control Center, a National Historical Monument, can be found in building 30.

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 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^3) 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” created in 1994. www.spacecenter.org

OUR PROGRAM – AGES 15 to 18

Ever dreamed of being an astronaut? Have you 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 for a true taste of space exploration!

Our Texas Space STEM is a week-long program allowing students to work together in conquering space and engineering objectives. At times, other schools may also be visiting and it’s a wonderful opportunity to meet new STEM students from around the globe. Texas Space STEM is a challenging 5-day program promoting teamwork, problem solving, communication and engineering solutions to space-related situations. It is designed to develop and improve critical thinking skills, fiscal responsibility, creativity and the drive to be successful.

Immersing students in authentic learning opportunities tied to NASA missions, Texas Space STEM & “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’s Johnson Space Center. Try your hand at microgravity astronaut training through SCUBA under expert guidance in a training pool. The program culminates with a graduation ceremony celebrating the students’ accomplishments.

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.



Texas Space STEM includes the following "Space University" programs:

- ✓ Hands-on, engineering-based activities and data collection technology integration for real-world analysis
- ✓ Behind-the-scenes access including tours of astronaut training and work facilities like the Rocket Park
- ✓ 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
- ✓ Graduation ceremony and certificates

Please note that although activities are shown on the initial page as a weekly snapshot, activities are subject to change and are also weather-dependent.

Our NASA program will run Monday through Friday, from 08:30 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.

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 the airport and hopefully, take away memories that will last a lifetime!

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Current Project & Program Descriptions

(SUBJECT TO CHANGE)

MARS OR BUST

Participants will have the option to design and build a one or two-stage rocket based on the team goals for their mission. Crews will launch their rockets to determine who has a successful launch and the highest altitude. Launch sites 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, 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 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 and 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's the world's only shuttle mounted on an SCA and the only one allowing the public to enter.

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 moon rocks and flown spacecraft while learning about the history of space flight.

GRADUATION

Celebrate your students' achievements at a graduation ceremony surrounded by one of the world's most comprehensive collections of space suits in the Astronaut Gallery. To commemorate the special experience, students will receive certificates.

Current Evening Activities

(SUBJECT TO CHANGE)

BOWLING NIGHT AT THE MAIN EVENT
I-FLY STEM CLASS WITH 1 JUMP PER PERSON (Indoor Skydiving)
CINEMA NIGHT (Pay on own for selected movie option)
BAYBROOK MALL – SHOPPING & EXPLORATION
THE KEMAH BOARDWALK (Amusement rides at extra cost)

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EXTENDED TRAVEL OPTIONS

For our groups traveling from afar that wish to spend more time in Texas, we are happy to offer extended itineraries to include:

San Antonio & Austin:

Day		Morning		Afternoon		Evening
7	Sat	Check-out of hotel; depart Houston for San Antonio		Hotel Check-in & Refresh	Exploration and dinner on San Antonio's River Walk with Evening River Cruise	
8	Sun	Texas Culture & History Exploration - The Alamo & Battlefield Tour, Lunch at Mi Tierra & Shopping at the Mexican Market, The Institute of Texan Cultures visit with Guide				Texas BBQ Dinner
9	Mon	Travel to Austin, Texas (1.5-hours); check into hotel	University of Texas - Campus Tour	Texas State Capitol Tour	Exploration and dinner on Austin's Sixth Street	
10	Tues	Depart Austin for home				

Dallas & Fort Worth:

Day		Morning	Afternoon		Evening
7	Sat	Check-out of hotel; depart Houston for Dallas - Fort Worth	Perot Museum of Nature & Science with Master Class		Hotel Check-In & Dinner
8	Sun	AT&T Cowboy Stadium - STEM & Tech Stadium Tour	Dallas Sightseeing Walking Tour	JFK Historical Tour & 6th Floor Museum at Dealey Plaza	Medieval Times Dinner Show
9	Mon	The Herd: Stockyards Heritage Historical Walking Tour, Herd Demonstration, Texas Cowboy Hall of Fame & Cowtown Cattlepen Maze	Texas Motor Speedway Guided Raceway Tour		Farewell Dinner
10	Tues	Depart Dallas-Fort Worth, Texas for home			

We are also happy to add on destinations outside of Texas including California, New York and others. Simply let us know what suits you!

TEXAS SPACE STEM – HOUSTON, USA

Minimum Booking Numbers:

20 students
Ages 15 - 18
Please let us know if under 20 pupils and we may be able to make special considerations for your group. An independent program is available for students ages 11 – 14 although it requires a "group" booking. If you are planning on bringing of mix of age ranges, please ensure you have minimum numbers for each program.

What's Included:

Round-trip flights or motorcoach transfers
6-nights' accommodation in Houston
Breakfasts, lunches & dinners starting with dinner on your night of arrival and ending with breakfast on your day of departure
Airport transfers and transportation as shown on itinerary
5-Day NASA Johnson Space Center Master Class Series at Space Center Houston with programming as shown in Itinerary
Graduation Ceremony with Certificate Presentation
Evening entertainment plan as shown above (subject to change)
Personal Tour Director
24-hour emergency cover

What's Not Included:

Fully comprehensive insurance (mandatory)
Transfers to/from home airport
Transportation for activities not shown in the itinerary
Cinema tickets and amusement park rides at Kemah Boardwalk
Cost of visas, full or collective passports
Cost of inoculations or medication required for travel
Sightseeing / Entertainment options not shown in Itinerary
Hotel incidental deposits & bills – meals, mini-bar items, recreation charges, purchases billed to room, etc.
Any gratuities – drivers, hotel services, area guides, tour ambassador

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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