

SEEC

Space Exploration Educators Conference

OUR DESTINATION BEYOND

FEATURING



FRIDAY SESSION BOOKLET 2018

SPACE
CENTER
HOUSTON

SEEC 2018 GENERAL AGENDA

Wednesday, Jan. 31

2 – 5 p.m. Early bird check-in
Tour the Destination Moon exhibit

Thursday, Feb. 1

7:15 a.m. Check-in begins at Space Center Houston
7:30 a.m. SEEC 101 (A must for all new attendees to SEEC) in the Mission Briefing Center
8:15 a.m. Welcome address and keynote speaker in Space Center - TBA
9:45 – 11:15 a.m. First session (90 min)
11:15 a.m. – 12:15 p.m. Lunch 1 buffet in Astronaut Gallery / NASA and vendor booths in Events Building/Les Johnson book signing at SpaceTrader
11:30 a.m. – 12:15 p.m. * Space Exploration Educator Crews Harmony and Quest overview (45 min)
12:15 – 1:15 p.m. Lunch 2 buffet in Astronaut Gallery / NASA and vendor booths in Events Building
12:30 – 1:15 p.m. * Space Exploration Educator Crew Tranquility overview (45 min)
1:30 – 3 p.m. Second session (90 min)
3:30 – 5 p.m. Third session (90 min)
5:30 – 6:30 p.m. Afternoon Keynote - TBA
6:15 p.m. Dismiss (bus runs begin to hotels)

Friday, Feb. 2

7:30 a.m. Doors open for conference
8 – 9 a.m. Keynote – TBA
9:30-11:00 a.m. First session (90 min)
11 a.m. – 12 p.m. Lunch 1 buffet in Astronaut Gallery / NASA and vendor booths in Events Building
11:15 a.m. – 12 p.m. * Space Exploration Educator Crews Destiny and Starliner overview (45 min)
12 – 1 p.m. Lunch 2 buffet in Astronaut Gallery / NASA and vendor booths in Events Building
12:15 – 1 p.m. Space Exploration Educator Crew Unity overview (45 min)
1:15 – 2:45 p.m. Second session (90 min)
3:15 – 4:45 p.m. Third session (90 min)
4:45 p.m. Dismiss (bus run begins)
7 – 11 p.m. Banquet, includes dinner and dancing to a live band

Saturday, Feb. 3

7:30 a.m. Doors open for conference
8:00 – 9:30 a.m. First session (90 min)
10 – 11:30 p.m. Second session (90 min)
11:30 a.m. – 12:30 p.m. Lunch 1 buffet in Astronaut Gallery
12:30 – 1:30 p.m. Lunch 2 buffet in Astronaut Gallery
1:45 – 3:15 p.m. Third session (90 min)
3:30 – 4:30 p.m. Featured Speaker in Space Center Theater – Gene Kranz
4:30 p.m. Dismiss, pick up certificates in Zero-G Diner
5:00 p.m. Conference Help Desk closes
7 p.m. Space Center Houston closes

Times and events subject to change

*** See Crew page for information on presentation and regions**



Session Selection

All attendees need to select sessions no later than one week prior to SEEC.

Sessions may be selected from the listings in the conference booklet. NASA tours as well as the hands-on sessions are included in the listings for selection. Please note that the tours fill up quickly. Also, **closed toe shoes are required on all tours!** Session cards will be issued and must be presented to gain access to all sessions. Sign up for sessions at: <http://www.spacecenterprogs.org/seec/seecLogin.aspx>

If a session is full, check with the Conference Help Desk when you arrive to see if there are openings. You can also check session "swap" board located next to the Conference Help Desk for the session ticket.

If you have any questions, please contact us at SEEC@spacecenter.org.

Tips for session success:

- Bring your own device (laptop or tablet) – Many sessions use technology for the session.
- Get to your session on time.
- If your session is at the Gilruth or requires you to take a bus to get to it, make sure you arrive at the bus loading area 10 minutes prior to the session start time.
- Bring a light jacket. Many of our rooms get a little chilly.

Tour Information

Important! Please read carefully.

Your visit to NASA Johnson Space Center is a special event. You will enter working facilities subject to strict safety and security policies. Please follow the direction of your host escort at all times.

It is essential that all members of the group stay together and not venture away from their NASA escort. Wandering into restricted areas constitutes a security violation and could result in the termination of your visit.

Your visit will require walking and standing for extended periods and may involve climbing several flights of stairs. Guests should wear comfortable, flat, fully enclosed shoes (**no high heels, sandals, flip-flops, slides, mules, Crocs, etc.**) during their visit. We also recommend that guests wear slacks (instead of shorts or skirts) as an additional safety precaution.

Cameras are welcome in all facilities unless instructed otherwise. However, flash photography and photography of individuals is not permitted.

Attention all non-U.S. citizens

If you are not a U.S. citizen, you must fill out a NASA JSC Security Form in order to attend the NASA tours. Please go to the [SEEC website](#) for more information and to download the form.



Session descriptions Friday, Feb. 2, 2018

Friday 9:30 – 11 a.m.

Keynote breakout session: Space Exploration and Human Physiology

Phyllis Friello: Space Center Houston

Liz Warren, Associate ISS Program Scientist: CASIS

This is a breakout session building on the morning keynote address. Dr. Warren will share her expertise on the effects of changing gravity fields and other challenges on human physiology. To facilitate transfer to the classroom, participants will have the opportunity to build illustrative models for use in their lessons and the community.

Grade level: 6-12

Subjects: Science, Math, Technology

Aviation STEM: A look into the NEW Lone Star Flight Museum

Kenneth Morris: Lone Star Flight Museum

Exclusive educator tour of the new Lone Star Flight Museum at Ellington Airport! Come fly simulators while learning how science, technology, engineering and mathematics have evolved and affected travel and humanity. Experience the Aviation Learning Center, only the 2nd like it in the world! All classes are aligned with TEKS and designed to provide interactive and engaging comprehensive S.T.E.M. learning.

Grade level: K-12

Subjects: Science, Math, Technology, Language Arts, Social Studies

Blast Off with NASA BEST Next Generation Engineering Design Challenge

Susan Kohler: NASA Glenn Research Center

Teaching Force and Motion has never been so much fun. NASA's BEST Next Generation Engineering Design Challenge will take propulsion to a new level. Participants will complete the Green Propellant Infusion Mission Challenge by designing and building a simple spacecraft and "green" spacecraft propellant.

Grade level: 6-12

Subjects: Science, Math, Technology

Destination beyond Science: Radical Martian Collaboration of STEM and Literacy

Lauren Parker: Fort Worth Academy & SEEC Crew

Kathy Uhr: Fort Worth Academy

Come experience a summer reading assignment turned into an immersive team building, STEM and literacy experience, all surrounding the classroom edition of *The Martian*. Participate in activities including a Breakout Edu experience, shelter construction and anomaly response.

Leave with plans to implement the unit with your classes.

Grade level: 6-8

Subjects: Science, Technology, Language Arts

Engaging students: Using Big Data, VR and AR

Mike Grocott: Institute for Research in Schools/SEA

Richard Healey: Space Education Adventures

Mike and Richard will use large data sets from Cosmic detectors on the ISS to show participants how pupils can engage in active research. The session will then look at various AR and VR applications to engage pupils in learning.

Grade level: 9-12

Subjects: Science, Math, Technology

Getting Started with 3D printing

Sam Pedrotty: RocketED, LLC

Tori Willis: RocketED, LLC

3D printers allow you to create anything you can imagine with the push of a button, and now you can get them for less than \$1000. In this session, you'll learn how to pick, use, and troubleshoot 3D printers.

Grade level: K-12

Subjects: Science, Math, Technology

Junior Botball in Microgravity

Kellie Taylor: Galileo STEM Academy

Gina Kwid: Galileo STEM Academy

Participants will learn about the Galileo STEM Academy's use of Junior Botball robotics in NASA's Microgravity University for Educators project. In addition, participants will learn to code in C++ to complete challenges with a Junior Botball robot. Attendees will be amazed at what they will be able to accomplish with the robot all while using C++ programming language.

Grade level: 3-5

Subjects: Science, Math, Technology



Friday 9:30 – 11 a.m. Cont.

NASA STEAM in Your Classroom

Leslie Garrison: NASA Goddard Space flight Center

During this session, educators will have the opportunity to explore NASA's unique STEAM lessons and activities related to magnetic fields, the sun and the solar system. Participants will practice STEAM through the use of hands-on demonstrations and activities from NASA curriculum guides. This session also includes NASA education and innovation using Virtual Reality (VR) Goggles and 3D printers.

Grade level: K-5

Subjects: Science, Math, Technology, Language Arts, Fine Arts, Social Studies, History

Open the Door!

Cammie Newmyer: Math that Makes Sense

Teachers, open the door for your students to enter into STEM fields by increasing math understanding. Teaching math made simple! Learn the "easy" way to teach those math concepts that students constantly struggle with. You will leave this session with proven, creative, hands-on, and immediately applicable methods of teaching math concepts, including fractions, number properties, number sets, combining negative and positive numbers, graphing lines, absolute value, solving equations, trigonometry, graphing functions, geometric dimensions and more! Attend this session and be a hero to your talented young scientists by destroying the mathematical roadblocks to their future.

Grade level: K-12

Subject: Math

Race to Launch into the October Sky

Teresa Kelm: Connelly Elementary

Jeanine Wolf: ESC Region 12

Shari Thompson: McGregor High School

Lisa Cisneros: ESC Region 12

Launch your students into a unit that will enrich your space studies. Participants will build and launch a rocket within a gamified framework while reading the history of space travel, journaling rocket construction, preparing a final report, developing a budget and calculating speed, velocity and trajectory for an accurate landing.

Grade level: 3-8

Subjects: Science, Math, Technology, Language Arts, Fine Arts, Social Studies, History

Space Station Explorers: Welcome to the ISS

Samantha Thorstensen: CASIS (Center for the Advancement of Science in Space)

Learn six different lessons all packaged into a STEM kit that will introduce your students to the International Space Station and deepen their understanding. Discover how to become a CASIS teacher ambassador! Lots of giveaways and maybe you can win a ISS STEM Kit of your own!

Grade Level: K-8

Subjects: All

Squishy Circuits

Janice Katz: Davenport School of the Arts/ Steam Powered Learning

Jason Katz: STEAM Powered Learning

Participate in an example of how to integrate the "A" (Arts) in STEAM. Participants will learn about basic circuits and how to teach them in a fun and engaging activity called "Squishy Circuits." They are easily integrated into any topic of study (such as space).

Grade level: K-2

Subjects: Science, Technology

The Albert Einstein Distinguished Educator Fellowship Panel

Daniel Newmyer: Space Center Houston

This program provides a unique opportunity for accomplished K-12 educators in the fields of science, technology, engineering, and mathematics (STEM) to serve in the national education arena. Fellows spend eleven months working in a Federal agency or in a U.S. Congressional office, bringing their extensive knowledge and experience in the classroom to education programs and/or education policy efforts.

Grade levels: K-12

Subjects: All

The History of Spacesuits

Gary Kitmacher: Johnson Space Center

Based on a recent presentation to the JSC Engineering Directorate Spacesuit Knowledge Capture series by the presenter, this presentation looks at how pressure suits evolved from suits originally designed for deep water diving, and flight suits designed for high altitude in WWI. Basic principles of physics, chemistry and engineering will be presented, along with the history of human



Friday 9:30 – 11a.m. Cont.

understanding of the space environment and the need for spacesuits. Considerable research will be reviewed on the history of high altitude suits prior to the space age and how these resulted in the Mercury, Gemini, Apollo, and Shuttle/ISS suits. The history of Russian suits will also be briefly reviewed.

Grade level: K-12

Subjects: Science, Technology, Physical Education

The Most Powerful Rocket Ever Built!

Jeff Herold: Arizona Science Center

Norm Chaffee: Former NASA Engineer

Norman Chaffee, retired NASA engineer, has given tours of the famous Saturn V rocket at the Johnson Space Center for years. This is your chance to hear the history of the largest rocket ever built, by one of the men who designed it!

Grade level: 6-12

Subjects: Science, Technology

The Why, When and Where of the Webb Space Telescope

Harry LaForge: Hoffman Pilot Center

Robert Radnich: Meadville, PA Senior High School

This workshop will develop and explain the science that will be nourished when the James Webb Space Telescope becomes operational, probably later in 2018. Participants will explore the unique location and electromagnetic realm of study that the Webb will investigate.

Grade level: 6-12

Subjects: Science, Technology

Using Story to Reach Your Students: A Trip to Mars

Steven Smith: NASA EPCD

Culturally Responsive Teaching is all about using reaching students where they are. In this session, NASA Education Specialist Steven C. Smith will share the importance of story, yours and your students', in really connecting students to STEM content. Come ready for hands on activities, sharing, and reflection.

Grade level: K-12

Subjects: Science, Math, Technology, Language Arts, Fine Arts, Social Studies, History

Tours

Tours take place in working NASA facilities and are subject to change or cancellation at any time.

Space Vehicle Mock-up Facility (SVMF)

Explore the training grounds for the astronauts. See full-sized mock-ups of the Space Station and Orion.

Mission Control

Once the manned spacecraft have launched, Houston's Mission Control takes over. Visit this secure location and see the rooms where history happened. You will see the former Mission control room for the shuttle which now is the ISS Control room.

The Planetary Analog Test Site (aka Rock Yard)

Tour the area that provides a large multi-acre test area which simulates general features of the lunar and Martian surface terrain environment consisting of various slopes, grades, simulated craters and strewn rock field.

NASA Robotics in Bldg. 9

Explore the latest Robotic designs at JSC from Robonaut 2 to Valkyrie and more.

Friday 11:15 a.m. – 12 p.m.

SEEC Crew Overview: Destiny Crew

Crew Members: Jodie Guillen, Jeff Herold, Diego Martinez, Lisa Mitchell, Michelle Mohrweis, and Terri Mynatt

Crew Destiny represents the great western US. Please join this session and hear about Crew Destiny's amazing year in space and leave equipped with information and inspiration!

Representing: Western Alaska, Arizona, California, New Mexico, and Oregon

SEEC Crew Overview: Starliner Crew

Phyllis Friello, Karen Kingrea, Debbie Reynolds, Deborah Elliott, Barbara Gruber, Betty Jo Moore

The "Year in Space" has brought on a whole new meaning in the education world. Space educators from around the United States have collaborated and engaged students and adults of all ages in rigorous, but exciting, challenges. Taking trips to Belize to learn more about ecology, STEM nights with more than a hundred people in attendance, taking on new jobs in the space education industry to



help teachers with curriculum, and planning out-of-this-world lessons and projects for students are just a few of the wonderful things the Starliner Crew has explored. Come and engage yourself as the Starliner Crew shares their "Year in Space" through different types of media. They will be sharing their own unique stories and resources about how they as educators challenged themselves and others within the "Year in Space."
Representing: Mid Atlantic MD, North Carolina, Western Pennsylvania, Virginia

Friday 12:15 – 1 p.m.

SEEC Crew Overview: Unity Crew

Crew Members: *Amanda Blough, Amy Fetterhoff, Renee Gamba, Maya Ghosh, Nathan Tubbs, Michael Wilkinson*

The members of Team Unity will present a panel discussion where they will examine the common focus areas each of them have endeavored to impact this year. Although they represent a variety of educational settings, they have each gained valuable experience in how to better impact their communities and inspire future explorers. They will consider how they have taken risks, attempted to "think outside the box," and tried new things as they have sought to take the message of space exploration to their students, fellow teachers, and neighbors.

Representing: Northeast New Jersey, Pennsylvania, Rhode Island

Friday 1:15 – 2:45 p.m.

Astronaut Dive Training Double session

Craig Shannon, NBL Dive Master

Train like astronauts in this exciting session! You will participate in underwater training exercises using SCUBA gear in a local indoor pool. No previous experience necessary. Bring a swimsuit and towel. (T-shirts not required but helpful) Additional \$40 charge for this session. (If registering for this session, pay online first.)

Grade level: K-12

Subjects: All

NOTE: This is a double session. You will need to sign up for it for the next time slot also.

Aviation STEM: A Look into the NEW Lone Star Flight Museum

Kenneth Morris: Lone Star Flight Museum

Exclusive educator tour of the new Lone Star Flight Museum at Ellington Airport! Come fly simulators while learning how science, technology, engineering and mathematics have evolved and affected travel and humanity. Experience the Aviation Learning Center, only the 2nd like it in the world! All classes are aligned with TEKS and designed to provide interactive and engaging comprehensive S.T.E.M. learning.

Grade level: K-12

Subjects: Science, Math, Technology, Language Arts, Social Studies

Civil Air Patrol Flights over Houston Double session

Susan Mallett: Civil Air Patrol National HQ

Debbie Dahl: Civil Air Patrol

Civil Air Patrol TX Wing Pilots and Flight Team.

Come fly with Civil Air Patrol on a flight over Houston in a prop airplane. Any K-12 educators who are U.S. Citizens can take this flight. Bring your camera and enjoy the flight! You must contact ae@capnhq.gov to register membership with CAP after you register with SEEC for this double session.

Grade level: K-12

Subjects: Science, Math, Technology

NOTE: This is a double session, you will need to sign up for it for the next time slot also.

Copernican Mathematics: Bringing Astronomy into Your Math Class

Sandra Miller: Lamar High School

Stephanie Smith: Eules Junior High School

The Copernican Revolution could not have occurred without mathematics, particularly the work done by Copernicus and Kepler. How long is Mars' year? How far away is Mars? Take home some "real(ly-out-of-this-) world" resources and problems for Algebra and Geometry. Important: Please have access to a scientific calculator.

Grade level: 9-12

Subjects: Science, Math, History

Decision Mars

Mark Wright: JSC NASA

Deb Derham: JSC NASA

Be a part of NASA's Journey to Mars. Join NASA Johnson Space Center Education Specialists to develop a unique

Friday 1:15 – 2:45 p.m. Cont.

mission to Mars. In this session, presenters will introduce project and inquiry based learning concepts from the High School Aerospace Scholars (HAS) program, and discuss its application to the engineering design process.

Grade level: 6-12

Subjects: Science, Math, Technology

Living and Working on the ISS together!

Brian Ewenson: Executive Director, Spaceport Sheboygan (Sheboygan, Wisconsin, USA)

Brian Jackson: Teacher, Rockyview School District (Airdrie, Alberta, Canada)

More than 50 Expeditions with astronauts from sixteen nations have lived and worked aboard the International Space Station. In this hands-on/minds-on presentation, you will learn the history of space stations and how crews are selected, trained and operate this laboratory and home in space. You will go home with resources on the space station structure, expedition photos and patches, and many giveaways including patches, Canadian money with the Canadarm and more! Learn about cultures and languages used in this international endeavour!

Grade level: K-12

Subjects: Science, Math, Technology, Language Arts, Social Studies, History

Mars, MAVEN and Planetary Magnetism

Angela Grove-Price: MAVEN Ambassador/Solar System Ambassador

Wes Bannister: Forth Worth ISD

Participants will be introduced to the Brief History of the Exploration of Mars and Introduction to the Mars MAVEN mission gathering data on Mars Atmosphere. Participants will experience hands on activities for magnetism to better understand the data collected by MAVEN, including "Mapping Magnetic Fields," "Planetary Magnetism," Space Weather, Solar Wind, Coronal Mass Ejection's, and atmospheric loss activities that are in the NASA Planetary Magnetism Teaching Guide. Participants will receive all Planetary Magnetism activities, including the teacher and student lab guides in addition to the presentations on the MAVEN Mission and Magnetism. Presenter will also provide lab and classroom management set-up ideas and support.

Grade level: K-12

Subjects: Science

Martians of Tomorrow

Jennifer Becerra: Tje Scobee Education Center Challenger Center at San Antonio College

Celina Terrones: Challenger Center San Antonio College

Angela Turner, LaVernia ISD Instructional Technology Coordinator

The Martians of Tomorrow are currently in your classrooms. Engage your Martians through hands-on STEM activities on rocketry, coding and geology. Experience Mars through a VR rocket launch and walk on the Mars surface. Interact with a Mars Exploration timeline and more. Be the fuel to your Martian explorers' future!

Grade level: K-8

Subjects: Math, Science, Technology

Microgravity Master Builder

Dennis Stocker: NASA Glenn Research Center

Nancy Hall: NASA Glenn Research Center

Are you a Master Builder? Using a popular construction toy, face NASA's challenge and create contraptions that will respond to an apparent loss of gravity! Discover your inner designer ... and the microgravity within your classroom!

Grade level: 6-12

Subjects: Science, Math, Technology

Microgravity University for Educators Presents: Space Farm to Table – Growing Plants in Microgravity

Crystal Del Rossa: JSC Education - NASA STEM Pathways Activities- Consortium for Education

Mike McGlone: NASA STEM Pathways Activities - Consortium for Education (NSPACE)

How do plants grow in space? Learn about NASA's Microgravity University for Educators and experience hands-on, NGSS aligned lessons on how to simulate the growth of plants in microgravity on Earth. Key topics will include microgravity effects on plant homeostasis, plant tropisms, transpiration rates, mitosis, water's properties & wavelengths of light needed for space travel.

Grade level: K-12

Subjects: Science, Math



Friday 1:15 – 2:45 p.m. Cont.

MissionX: Train like an Astronaut

Michael Wilkinson: Fieldston Lower School

Stephanie Gozdzwieski: Fieldston Lower School

Join this session and "train like an astronaut"! See how presenters have integrated physical education, math and science in the 4th grade to learn about teamwork, mental and physical health and nutrition. Learn how you can join MissionX and experience some of the activities presenters use with their students.

Grade level: K-12

Subjects: Science, Technology, PE

NASA Teacher in Training

Becky Busby, Educator

Come learn how to implement NASA lessons, resources, and curriculum that will make your STEM curriculum stand out. Participants will also get to participate in fun hands-on stations that can be used to incorporate space education using easily accessed materials and resources. Participants will design personal space patches, build and launch a straw rocket, code a micro robot, and train like an astronaut using simulated space gloves. This class will give you the chance to jumpstart your space curriculum and help your students experience STEM education!

Grade level: K-5

Subjects: Science, Math, Technology

Red Rover, Red Rover, Send Classroom Fun Right Over!

Molly Nipper: Bendwood School- Spring Branch ISD, NASA Network of States, MAVEN Educator Ambassador

Polly Osei: Bendwood School- Spring Branch ISD, NASA Network of States

Keep your students engaged in this face-paced NASA STEM Earth/Space Science lesson. Catch your students' attention while they learn about landforms and processes in a lesson on how life may exist on Mars, knowing how land processes are similar to Earth's! Have your students jump out of their seats when they see the Curiosity rover with iPad application Spacecraft 3D. Also, stretch your students' prefrontal cortex using the Engineering Design Process to plan and build a Mars Rover. Observe force & motion in action! Get ready for the races!

Grade level: 3-8

Subjects: Math, Science, Technology

Space Crafts

Carol Pagel: Royal Early Childhood Center

Emily Madeley: San Marcos CISD

Are your kids fascinated by space? Thinking of ways to include the "A" in STEAM? Come play with us! Express big space concepts through tactile and kinesthetic activities.

Grade level: K-5

Subjects: Science, Fine Arts, Physical Education

Sphero 101: Rolling, Coding and Beyond

Jill Gilford: Year 2018

Michael Tothe: Cranbrook Institute of Science

Take your lessons beyond the textbook with Sphero robots. Presenters will guide you through the process of learning the basics up through programming it to solve a maze, as well as a few advanced lesson options. This is designed for educators who are new to Spheros or who want a refresher at integrating them into the classroom.

Grade level: K-8

Subjects: Science, Math

STEM Served Family-Style: Improving Attitudes and Achievement

Sara Mitchell: CRESST/UMCP & NASA Goddard Sarah

Eyermann: CRESST/UMCP & NASA Goddard

Support STEM success through "family PD"! Engaging families in a comfortable environment forges important connections between adults, children, and learning that continues beyond your program. This session explores the impacts of family STEM programming, introduces NASA family learning resources and engages participants in activities that bring the whole family together.

Grade level: 3-12

Subject: Science

Using Astronaut & Satellite Imagery to Compare Planetary Landforms

Paige Graff: Jacobs, NASA JSC

Suzanne Foxworth: Jacobs, NASA JSC

Compare landforms on Earth, Mars, and Pluto by participating in a powerful and engaging hands-on activity using astronaut and satellite imagery. A scientist working on the Curiosity (MSL) Mission will also share the latest and greatest highlights from the exploration of Mars.

Grade level: K-12

Subjects: Science, Math, Technology, Language Arts



Friday 1:15 – 2:45 p.m. Cont.

Wonders of the Universe: Multi-age, STEAM Exploration for Pre K-1st Grades

Jeanne Smith: Lakewood Montessori School

Brittany Board: Educator

Travel the universe with your youngest students through a prepared environment ready for independent exploration. Fill your classroom with art, music, movement, language, science and laughter! Learn meteor smashing lessons, planet rotation art, exploding paint supernovas, streaking comets and working astronauts. Begin the journey with hands-on, minds-on work.

Grade level: k-2 Subjects: Science, Math, Technology, Language Arts, Fine Arts

Tours

Tours take place in working NASA facilities and are subject to change or cancellation at any time.

Neutral Buoyancy Lab – Observation Deck

Take a trip to the pool where astronauts practice for their spacewalks—the NBL. This facility is the underwater training facility for the astronauts and your chance to see state-of-the-art training—the next best thing to space!

Participants will be taken onto the floor area of the pool.

Neutral Buoyancy Lab – Visitors' Gallery

Take a trip to the pool where astronauts practice for their spacewalks—the NBL. View the facility from above the pool area where you will get a good scope of the size. This facility is the underwater training facility for the astronauts. Your chance to see state-of-the-art training—the next best thing to space!

the next best thing to space!

Friday 3:15 – 4:45 p.m.

500 Years of Flight: A Hands-on Approach

Greg Kennedy: NASTAR Center

This hands-on workshop presents an activities-based curriculum that outlines the history of flight from Leonardo da Vinci to NASA's Journey to Mars. Through the use of hands-on activities, history comes alive to engage students. Participants will construct models of da Vinci's parachute, the Space Shuttle and the Space Launch System.

Grade level: 3-12

Subjects: Science, Math, Technology, Social Studies, History

Astronaut Dive Training Double session cont.

Craig Shannon: NBL Dive Master

Train like astronauts in this exciting session! You will participate in underwater training exercises using SCUBA gear in a local indoor pool. No previous experience necessary. Bring a swimsuit and towel. (T-shirts not required but helpful)

Additional \$40 charge for this session. (If registering for this session, pay online first.) This session is not available to select online. We will add you to it once you have paid online. Leave the time slot open on your session selection.

Grade level: K-12

Subjects: All

NOTE: This is a double session, you will need to sign up for it for the next time slot also

Aviation STEM: A look into the NEW Lone Star Flight Museum

Kenneth Morris: Lone Star Flight Museum

Exclusive educator tour of the new Lone Star Flight Museum at Ellington Airport! Come fly simulators while learning how science, technology, engineering and mathematics have evolved and affected travel and humanity. Experience the Aviation Learning Center, only the 2nd like it in the world! All classes are aligned with TEKS and designed to provide interactive and engaging comprehensive S.T.E.M. learning.

Grade level: K-12

Subjects: Science, Math, Technology, Language Arts, Social Studies

Bring Astronaut Training Into Your Classroom

Stacy Welch: JSC Education

Astronauts spend years training for their space missions. Johnson Space Center (JSC) is home to two microgravity training facilities – Neutral Buoyancy Laboratory and the Space Vehicle Mock-up Facility. JSC's STEM on Station team will show case two new educator guides that will help you bring the science and math behind the micro-gravity training into your classroom.

Grade level: 6-12

Subjects: Science, Math



Friday 3:15 – 4:45 p.m. Cont.

Civil Air Patrol K-6 ACE Program

Sue Mercer: Civil Air Patrol National HQ

Ginny Smith: Civil Air Patrol

Learn how you can become a face of ace with Civil Air Patrol's free Aerospace Connections in Education program. Each K-6 grade-level-specific curriculum guide includes 21 aerospace-themed academic, character education and physical fitness lessons and a class set of educational student manipulative items. Be a Face of ACE!

Grade level: K-6

Subjects: Science, Math, Technology, Language Arts, Fine Arts, Social Studies, PE

Elementary STEAM Club

Linda Frantz: Putnam City Schools

Straw rockets, stomp rockets, satellites, galaxy painting, and missions to Mars! Don't have time to do all of this during your busy elementary school day? Host an after-school STEAM club! Receive hands-on activities and suggestions for establishing your own club for students who want to learn more about STEAM!

Grade level: K-5

Subjects: Science, Math, Technology, Language Arts, Fine Arts, History

Get Electrolyzed on the ISS!

Matt Wallace: JSC Education

Astronauts require a continuous supply of oxygen aboard the ISS. How do they do it? Prepare to get electrolyzed! Come simulate the Oxygen Generator System (OGS), which converts water from a urine, wastewater and condensation into hydrogen and oxygen through electrolysis. Even learn about more STEM on Station lesson resources!

Grade level: 6-8

Subjects: Science

NASA GLOBE: PBL for STEM Educators: The Scoop on Soil

Susan Kohler: NASA (Glenn Research Center)

Explore the NASA GLOBE resources including teacher guides, protocols, field study, citizen science, storybooks and related STEM activities designed for grades K-12. In this session, participants will complete the "Just Passing

Through" activity. GLOBE activities engage students in learning that is relevant to their everyday lives.

Grade level: 6-12

Subjects: Science, Math, Technology

NASA Solar System Exploration: Let's Discover New Frontiers!

Paige Graff: Jacobs, NASA JSC

Suzanne Foxworth: Jacobs, NASA JSC

Join this hands-on activity session and learn about NASA's Discovery and New Frontier missions: Stardust, Genesis, OSIRIS-REx and more! You'll also use what you learn to design your own future Solar System exploration mission.

Grade level: 3-12

Subjects: Science, Math, Technology

Orbiting Astronomical Observatory & Hubble Space Telescope: Study of UV Satellites

Candy Torres: Technorican

Understanding the Universe took a major step forward when space telescopes came into use. The Orbiting Astronomical Observatory series is the first successful space observatory. The Hubble Space Telescope is related through its ultraviolet wavelength studies. Presenter uses 3D models and other materials from personal experience with satellite operations.

Grade level: 6-12

Subjects: Science, Math, Technology, Fine Arts, History

SEEC Reach

Phyllis Friello, Space Center Houston

Jerry Woodfill, NASA Johnson Space Center

How have you been affected by SEEC? Inspired? Challenged? Motivated? Have you forged new collaborations? In celebrating the 25th anniversary of SCH, and in anticipation of next year's 25th anniversary of SEEC, we want to hear from you! Jerry Woodfill, Apollo 11 and 13 engineer and Phyllis Friello, SCH education manager, will lead a presentation and discussion on the impact of SEEC and Space Center Houston on space exploration and education! Included will be the screening of the "Apizaco," a finalist from NASA/Rice Cine-Space film contest for the Film best depicting "The Benefits of Space to Humanity." Following the short film, participants will have the chance to be a part of our film project and record their thoughts and comments on the benefits or spin-offs of SEEC and Space Center Houston.



Friday 3:15 – 4:45 p.m. Cont.

Grade Level: K-12

Subject: NA

Shifted Robotics: Using Sphero to teach about Mars!

Ashley Smith: Cranbrook Schools

Michael Toth: Cranbrook Schools

Jeff Herold: Arizona Science Center

Attendees will learn how to use Spheros to demonstrate the difficulties engineers face when exploring Mars. You will learn the basics of operating and coding a Sphero and use it to explore a Mars-like terrain. The real challenge comes when you can't see the Sphero, just like on Mars.

Grade level: 3-12

Subjects: Science, Math, Technology, History

Students in Microgravity: Taking Ideas to Launch

Kathleen Fredette: iLEAD Schools Development

Carie Lemack: DreamUp

This session provides educators with tools and confidence needed to launch a student-authored experiment to space. Participants will explore a framework, rubrics and activities that can be adapted for the needs of each educator's group of young people, with the end goal of inspiring and empowering the next generation of explorers.

Grade level: K-12

Subjects: Science, Language Arts

STEM at Space Center Houston

Rachael Hale: SCH

Alice Walker: SCH

Holly Christie: SCH

Explore all the engaging STEM activities that Space Center Houston's Educational programs has to offer for your classroom or organization. Take home some activities you can use.

Grade level: K-12

Subjects: Science, Math, Technology

Teaching Extraordinary Students Lessons in Aerospace

Diego Martinez: Delphian Schools

The Teaching Extraordinary Students Lessons in Aerospace (TESLA) Checklist helped win the 2013 Alan Shepard Award. This is a tool that any educators can use to assist in managing their classrooms more efficiently.

This tool can help reduce grading overload, boredom, lesson planning and differentiation adjustments. This tool can also increase ability, fun in teaching, individualization for each learner and responsibility for one's education.

Grade level: 9-12

Subjects: not listed

What's a Gas Giant? Differences between the States of Matter

Carah Bararick: Space Foundation

Keith Barger: Space Foundation

In this lesson, the basics of 3 of the states of matter will be covered as well as how they relate to our planets. Attendees will become scientists and observe using 4 of the senses (listening, seeing, hearing, and touching). The first set of observations will be solid rocks to learn about the terrestrial planets. The second observation will be with various bubbles to learn about gases and Jovian planets. Attendees will be use various methods of bubble blowing, build their own bubble wand, and learn a few songs to reiterate the concepts covered.

Grade level: K-5

Subject: Science

Wind as Fluid and Truss structure (JAXA)

Yuji Kanda: Misato Technological High School

Masako Nozaki: Higashiasakawa Elementary School

Discover how students in Japan are taught about the behavior of wind as fluid and the mechanism of the truss structure from two teachers in Japan.

Grade level: K-12

Subjects: Science, Fine Arts

Your Earth Is Changing: We're On It!

Margart Baguio: Texas Space Grant Consortium & UT Center for Space Research

Rebecca Moreland: Highland Middle School

Joyce Hill: Highland Middle School

NASA uses the vantage point of space to increase our understanding of our home planet, improve lives, and safeguard our future. Use earth observing satellite data while making topographic maps and playing the rock cycle game. Analyze: will your hometown be an ocean city? Hands-on, fun, interactive!

Grade level: 6-8

Subject: Science



Friday 3:15 – 4:45 p.m. Cont.

Tours

Tours take place in working NASA facilities and are subject to change or cancellation at any time.

Space Vehicle Mock-up Facility (SVMF)

Explore the training grounds for the astronauts. See full-sized mock-ups of the Space Station and Orion.

Mission Control

Once the manned spacecraft have launched, Houston's Mission Control takes over. Visit this secure location and see the rooms where history happened. You will see the former Mission Control room for the shuttle, which now is the ISS Control room.

The Planetary Analog Test Site (aka Rock Yard)

Tour the area that provides a large multi-acre test area which simulates general features of the lunar and Martian surface terrain environment consisting of various slopes, grades, simulated craters and strewn rock field.

NASA Robotics in Bldg. 9

Explore the latest Robotic designs at JSC from Robonaut 2 to Valkyrie and more.



Session Descriptions Friday, Feb. 2, 2018

8 – 9 a.m.

- Keynote – TBA

9:30 – 11:00 a.m.

- Space Exploration and Human Physiology
- Aviation STEM
- Blast Off with NASA BEST Next Generation Engineering Design Challenge
- Destination beyond Science: Radical Martian Collaboration of STEM and Literacy
- Engaging Students: Using Big Data, VR and AR
- Getting Started with 3D Printing
- Junior Botball in Microgravity
- NASA STEAM in Your Classroom
- Open the Door!
- Race to Launch into the October Sky
- Space Station Explorers: Welcome to the ISS
- Squishy Circuits
- The Albert Einstein Distinguished Educator Fellowship Panel
- The History of Spacesuits
- The Most Powerful Rocket Ever Built!
- The Why, When and Where of the Webb space Telescope
- Using Story to Reach Your Students: A Trip to Mars

Tours

- Space Vehicle Mock-up Facility (SVMF)
- Mission Control
- The Planetary Analog Test Site (aka Rock Yard)
- NASA Robotics in Bldg. 9

11 a.m. – 1 p.m.

- 11 a.m. – 12 p.m. Lunch 1
- 11:15 a.m. – 12 p.m. SEEC Crew Overview: Destiny
- 11:30 a.m. – 12:15 p.m. SEEC Crew overview: Starliner
- 12 – 1 p.m. Lunch 2
- 12:15 – 1 p.m. SEEC Crew overview: Unity

1:15 – 2:45 p.m.

- Aviation STEM
- Astronaut Dive Training (Dive Session) *Double session*
- Civil Air Patrol Flights Over Houston *Double session*
- Copernican Mathematics: Bringing Astronomy into Your Math Class
- Decision Mars
- Living and Working on the ISS Together!
- Mars, MAVEN and Planetary Magnetism
- Martians of Tomorrow
- Microgravity Master Builder

- Microgravity University for Educators Presents: Space Farm to Table – Growing Plants in Microgravity
- MissionX: Train Like an Astronaut
- NASA Teacher in Training
- Red Rover, Red Rover, Send Classroom Fun Right Over!
- Space Crafts
- Sphero 101: Rolling, Coding and Beyond
- STEM Served Family-Style: Improving Attitudes and Achievement
- Using Astronaut & Satellite Imagery to Compare Planetary Landforms
- Wonders of the Universe: Multi-Age, STEAM Exploration for Pre K-1st Grades

Tours

- Neutral Buoyancy Lab – Observation Deck
- Neutral Buoyancy Lab – Visitors' Gallery

3:15 – 4:45 p.m.

- 500 Years of Flight: A Hands-on Approach
- Astronaut Dive Training (Dive Session) *Double session cont.*
- Aviation STEM
- Bring Astronaut Training into Your Classroom
- CAP Flights over Houston *Double session cont.*
- Civil Air Patrol K-6 ACE Program
- Elementary STEAM Club
- Get Electrolyzed on the ISS!
- NASA GLOBE: PBL for STEM Educators: The Scoop on Soil
- NASA Solar System Exploration: Let's Discover New Frontiers!
- Orbiting Astronomical Observatory & Hubble Space Telescope: Study of UV Satellites
- SEEC Reach
- Shifted Robotics: Using Sphero to teach about Mars!
- Students in Microgravity: Taking Ideas to Launch
- Teaching Extraordinary Students Lessons in Aerospace
- STEM at Space Center Houston
- What's a Gas Giant? Differences between the States of Matter
- Wind as fluid and Truss structure (JAXA)
- Your Earth Is Changing: We're On It!

Tours

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