

SPACE
CENTER
HOUSTON

20th Annual see



Space Exploration Educators Conference



Continuing The Dream
Saturday Session Booklet
February 8, 2014

Saturday February 8, 2014

7:15am	Doors open
8:00	Session 1 (90 min)
10:00	Session 2 (90 min)
11:30	Lunch
	Book Signing—Astronaut Jerry Ross
12:45	Session 3 (90 min)
2:30	Key note— TBA/door prizes
3:45	Dismiss/Certificates
4:15	Bus runs begin (Last run will be at 6:30pm)

Session Selection

Selecting your individual breakout sessions is easy! Just read through this conference booklet to see the selections for each time slot. Then, use the “Organize Your Sessions” form on page 10 to organize your sessions. Finally, go online and make your session selections at <http://www.spacecenterprogs.org/seec/start.asp> Sessions that are full will not appear. It’s that easy! **Just be sure to move quickly as some sessions fill up fast.** Breakout sessions include NASA tours as well as the hands-on sessions. Tours fill up especially fast, so please plan accordingly. **(All tours require closed-toe shoes)**

If a session is full, don’t worry. Check with the Conference Help Table when you arrive to see if there are openings or watch the “swap” board for the session ticket.

If you have any questions, please contact us by e-mail at SEEC@spacecenter.org.

Johnson Space Center Tours:

Mission Control Tour

Once the manned spacecraft have launched, Houston Mission Control takes over. Visit this secure location and see the rooms where history happened. You will be able to see both Historic Mission Control and ISS Control rooms.

Neutral Buoyancy Lab

Take a trip to the largest pool in the world 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!

Space Vehicle Mock-up Facility (SVMF)

Explore the training grounds for the astronauts. See full size mock-ups of the Space Station and Orion. It also includes several other small part task trainers and mockups.

Precision Air Bearing Floor (PABF)

The Precision Air Bearing Floor (PABF) is used for extravehicular activity (EVA) training, Intravehicular activity (IVA) training, and mass handling training. It is primarily a human factors training facility for microgravity operations. A major use is to train the astronauts in the importance of moving/doing things slowly in microgravity. It can demonstrate the validity of the three Newton's Laws of motion in microgravity.

Food Lab Tour

Yummy...Astronaut Food! Have you ever wondered how space food is prepared and packaged? Visit the food laboratory at Johnson Space Center and see first hand. Learn how nutritionists, dieticians, and engineers prepare food for flight.

Robotics Lab Tour

Space can be a dangerous place and there are corners that humans just can't reach. Come peek inside the robotics lab at Johnson Space Center and see what engineers have developed to aid the astronauts in construction and maintenance.

SAIL Tour

Shuttle Avionics Systems Laboratory: NASA's only facility for conducting full scale integrated flight hardware and software verification testing for all shuttle flights. The SAIL is a central facility where avionics and related flight hardware, flight software, flight procedures and associated ground support equipment are brought together for integration and mission verification testing.

IMPORTANT NOTICE!!! PLEASE READ CAREFULLY

- Your visit to the Johnson Space Center (JSC) is a special event. You will be entering 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 from their JSC 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, photography of individuals is discouraged without permission.

ATTENTION ALL NON-U.S. CITIZENS

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

<http://spacecenter.org/education-programs/teacher-programs/teachers-seec/>

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Saturday February 8, 2014

8:00AM – 9:30AM

ADC: Connecting Our Analog and Digital Worlds,
on Earth and in Space

Cancelled

Build a Closed Ecosystem for a Fish, Simulating ISS Living

Craig Wilson, Ph.D., USDA/HSINP & Texas A&M

Experience what it feels like to be an astronaut. Try experiments that allow students to collect data to study the importance of exercise for astronauts to maintain their musculoskeletal system in microgravity. Study and experience spatial disorientation. Teacher developed lessons.

Grades: K-12

Subject: Science, Physical Education and Health

Creating Digital Textbooks

Richard Healey, Space Education Adventures

Mike Grocott, Space Education Adventures

Digital textbooks have the power to greatly enhance the learning experience offered by the printed word alone, none more so than in space science and engineering! Presenters from the UK will show teachers how they can quickly and efficiently create and share their own text books using iBook Author.

Grades: 9-12 Subject: Science, Technology

Explore The History of Manned Space Flight

Jeri Brown, NASA Alumni 1964-1998

Your journey into space begins with a tour of Space Center Houston's Starship Gallery and Space Shuttle Mock-up. Trace the progression of America's Manned Space Flight with the actual Mercury "Faith 7" capsule flown by Gordon Cooper, the Gemini V Spacecraft piloted by Pete Conrad and Gordon Cooper, a Lunar Rover Training Vehicle, the Apollo 17 Command Module and the giant Skylab Trainer. Then, explore the Space Shuttle mock-up to find out if you have the right stuff!

Grades: K-12 Subject: History

Exploring Mars with MAVEN – Mars Atmosphere and Volatile Evolution Mission

Dave Schlichting, NASA - MAVEN Education

Ambassador, Eaglecrest HS

MAVEN (Mars Atmospheric and Volatile Evolution) is the next NASA mission to Mars. Learn about the mission objectives which will help to explain what happened to Mars liquid water. Participate in classroom activities on spectroscopy and magnetism that will help to answer this compelling question.

Grades: 6-12 Subject: Science, Math

Mars Student Imaging Project: Authentic Standards Based Research

Barbara Buckner, Triangle Coalition

Come experience The Mars Student Imaging Project. See how students can participate in standards-based inquiry learning while completing authentic scientific research on Mars. Find out how projects are peer reviewed and published. See the various activities available within the program and learn how to easily incorporate them into your classroom.

Grades: 6-12

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

Meet Mr. Moon

Tom Holcomb, Kansas Cosmosphere and Space Center

What is the Moon and why is it important? Meet Mister Moon who teaches the basics of lunar composition, cosmic position, and the Moon's relationship to the Earth and its people. There are two presentations, a hands-on activity, and a snack.

Grades: 3-5 Subject: Science, History

Never Too Early To Dream Big About Space (NEW)

Yolanda Galvez, Lester B. Pearson School Board

Martine DeZiel, Lester B. Pearson School Board

Never too early to dream about space with robotics and to dream big! Since the Canadian Arm is the ultimate robot we decided to use that to introduce LEGO WEDO and explore the theme of space with a variety of activities.

Grades: K-2

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

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Pasta Vehicles, Competition, and the Engineering Design Process

Janice Kibble, STEM Middle Academy

Looking for a little competition? Through NASA BEST videos and a Design Squad Challenge, learn about the Engineering Design Process. Working through the process, construct a vehicle completely from pasta! We'll race our vehicles and award prizes for distance.

Attendees will receive everything they need to conduct a classroom project or a whole school competition.

Grades: 6-8 Subject: Science

Saturn V and Rocket Park Tour

Travel by tram and take a look at our Mercury- Redstone and Little Joe II rockets. Explore the mighty Saturn V rocket that took astronauts to the moon at our own Rocket Park.

Grades: K-12

Take Flight With NASA Airborne Science

Michael Wilkinson, Ethical Culture Fieldston School

Come fly along with NASA research and interact with actual missions in real time! Learn about the NASA Airborne Research Mission Tools interface that allows classrooms to connect to real time data teams and online live chats with mission scientists, engineers, pilots and other classrooms around the world. Incorporate this NASA resource in your curriculum and take your students on inspiring adventures.

Grades: 3-12

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

10:00AM – 11:30AM

Easy Does it Marble Roller Coaster Activities (NEW)

Shields Templeton, Rockvale Elem School/ TN Tech STEM Trainer

Teachers will take on up to three challenges using copper insulation and tape to construct three different designs of roller coasters. The concepts of Potential and kinetic energy are the focus as well as mathematical calculations for speed. Do you have what it takes to meet the design challenge that awaits. Easy classroom activities for small budgets.

Grades: 3-8 Subjects: Science, Math

Explore The History of Manned Space Flight

Jeri Brown, NASA Alumni 1964-1998

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Grades: K-12 Subject: History

Exploring the Solar System

Gregory P. Kennedy, The NASTAR Center

Use hands-on activities to teach about the planets, comets, and asteroids. Content on NASA exploration missions is included. Perform an activity that illustrates the relative distances of the planets from the sun. Build a model that demonstrates the landing system of the Mars Pathfinder spacecraft using a paper parachute, balloons, and an egg. Explore the engineering method and challenges of building a planetary or Lunar Lander with the "Touchdown" activity. Construct a paper "puff rocket" of the Space Launch System.

Grades: K-12 Subject: Science, Technology

Flying Through Physical Science

Michelle Sedberry, Region 17 Education Service Center

Teach force and motion using flight. Learn how pushing forces and pulling forces interact to allow airplanes to fly by making gliders, rockets, and parachutes. This interactive session will help your students master the 3rd-5th grade standards on force and motion.

Grades: 3-5 Subjects: Science, Math

Hazards from Space: Space Debris and Asteroids

Nahum Melamed, The Aerospace Corporation

This is a one-hour STEM outreach talk that I give in local schools on space debris and on the impact threat posed by near Earth asteroids, followed by a 30 minutes hands-on demo of an interactive asteroid deflection mission design simulator developed for NASA.

Grades: 3-12 Subject: Science, Technology, Math

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It's Just A Phase: A Different Perspective on Lunar Phases

*Dodie Resendez, Region 4 Education Service Center
Tonya York, Region 4 Education Service Center*

Do your students struggle with moon phases? Looking for a new approach? Experience a 5E lesson featuring a lunar phase model that allows students to explore the Earth-sun-moon system "as viewed from space" and "as viewed from Earth." Participants will receive teacher and student pages as well as lesson materials.

Grades: 6-8 Subject: Science

Mission Cartoonist: Making Cross-Curricular Comics!

Dave McDonald, Independent Teaching Artist

Create fun and excitement in your classroom by leading a cross-curricular comics project! Participants leave this session with the skills and tools needed to instruct students in the development of original characters and creation of comics that successfully integrate science and language arts standards. NO art experience necessary!

Grades: 3-8

Subject: Science, Language Arts, Fine Arts, History

Saturn V and Rocket Park Tour

Travel by tram and take a look at our Mercury- Redstone and Little Joe II rockets. Explore the mighty Saturn V rocket that took astronauts to the moon at our own Rocket Park.

Grades: K-12 Subjects: History

There's More to Light than Meets the Eye

*Bev Ketron, iSPACE
Sharon Young, iSPACE*

Join in the fun as we shed "light" on the science of light! Discover the critical role light plays in space exploration, investigate properties of light and the electromagnetic spectrum with engaging activities, "see and hear" evidence of light beyond the visible spectrum, "make and take" a spectroscope, and more. Includes lessons and a door prize.

Grades: K-8

Subject: Science, Technology, Language Arts, Math

Using Astronomy to Create Rich Mathematical Problems

*Sandra Miller, Lamar HS
Stephanie Smith, Lamar HS*

One of the current waves in mathematics education is having students learn math through solving problems. This session will equip you with some space-oriented problem sets that you can use in your Algebra and Geometry classes as well as help you put together problem sets of your own.

Grades: 9-12 Subject: Math

Using NASA Museum Exhibits to Teach Human Spaceflight History

Sherre Boothman, Solar System Educator & Classroom Science Teacher

Laura Bajza, Lehman High School, Hays CISD

Using the museum section of the Space Center Houston and the Saturn V Rocket Park, we will conduct a walking tour of the history of human spaceflight. The materials will include a complete listing of all human spaceflights. The tour will focus on details of the spacecrafts used and highlights of explorations conducted by the crews. Along with session materials, participants will receive a DVD with details on each spacecraft flown by the USA with prepared units for Newton's Laws of Motion in science, and the birth of NASA from the Cold War in the 1950's-1970's for social studies classes. The future of human spaceflight will also be discussed.

Grades: 6-12

Subject: Science, Technology, History

12:45PM – 2:15PM

Amazing Hands-on Learning about our Universe

Megan Anders

This hands-on interactive session will give you an amazing month-long unit to fully immerse your scholars in learning about space and space exploration. The lessons are hands-on and developmentally appropriate.

Grades: K-5

Subjects: Science, Math, Reading, Social Studies, Geography

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An Eagle's Eye View of the Earth from Above

Dorinda Risenhoover, Oklahoma NASA Space Grant Consortium

April Boatright, Oklahoma NASA Space Grant Consortium
Soar above the Earth and view our world from a distance through this hands-on STEM-based remote sensing workshop! Activities will include creating 3-D topo maps, viewing the Earth using aerial and satellite imagery, and treasure hunting with a GPS. Participants will receive aerial and satellite images for their classrooms!

Grades: 3-8

Subject: Science, Technology, Social Studies

Explore The History of Manned Space Flight

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Grades: K-12

FABulous Crazy Action Contraptions NEW!

Betty Bigney, NEAT

Diane Sartore, NEAT/Pine Ridge High School

This session will introduce Engineering Design Challenges. EDCs make students think, a valuable commodity in all space exploration endeavors. Participants will design, build, and test three crazy, exciting contraptions as they learn about the Engineering Design Process.

Grades: K-2

Subject: Science, Math, Technology

Fluid Dynamics

Loren Lykins, Carlisle High School

Charla Jordan, Carlisle High School

Fluid Dynamics! Good demos, great labs, and spectacular paper airplanes...This is a hands on presentation, so get ready to have some fun. Instructions for demos and lab activities will be included along with web-sites for NASA extension activities.

Grades: K-12

Subject: Science

Mars Here We Come!

Leigh Schwarzel, Morrison Elementary

Nicole McKnelly, Pope John Paul II Catholic High School

Have you ever wondered what it would be like to explore Mars? How would you get there, what would you study, and how would you live? This session will utilize hands-on activities to give you the background needed to investigate these questions in your middle school classroom. Lesson plans included.

Grades: 3-5

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

Mars is STEMulating!

Jennifer Hudgins, NASA Kennedy Space Center ERC

Lynn Dotson, NASA Kennedy Space Center ERC

Designing a STEM unit can be difficult. Using NASA's resources, learn how to make learning engaging and interactive at the same time! NASA Education Specialists will lead participants through several hands-on, yet inexpensive, activities about exploring Mars. Remote sensing and survival on the Red Planet are two of the exciting activities planned.

Grades: K-12

Subject: Science, Technology, Math

Mars Rover Model Curriculum: Student Designed Projects for Space Exploration

Edgar Bering, University of Houston

Andrew J. Kapral, University of Houston

Put the Curiosity Rover in your classroom! We will describe the AIAA Educator Academy and one of its curricula, the Mars Rover Model Celebration. Participants will learn two activities. Use a flashlight and mirrors to explore the problems of Mars surface telemetry. Explore the problems of Mars surface telemetry. Explore how to simulate Mars surface studies in the classroom.

Grades: 3-8

Subject: Science, Language Arts, Math, Fine Arts

NASA'S Space Forensics: Solving Cosmic Mysteries with Crime Scene Narrative (NEW)

Sara Mitchell, Syneren Technologies & NASA Goddard Space Flight Center

Sara Eyerhmann, Syneren Technologies & NASA Goddard Space Flight Center

Solve the universe's greatest mysteries! Combine storytelling and science! NASA's Space Forensics project presents astronomy problem-solving scenarios that parallel crime scene forensics – explore exploding stars, hidden black holes, and more through engaging narratives and hands-on activities. Participants will depart with resources that can be immediately utilized in many different settings.

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Grades: K-12

STROCKETS-Launching Experimental Design

Sue Hare, iSPACE

Nancy Rogers, iSPACE

Straws + Rockets = STROCKETS and yeah, it actually is rocket science! Straw rockets provide a fun, engaging and inexpensive way to teach concepts of experimental design and the engineering process. Throughout this session, participants will choose independent and dependent variables with which to design and conduct experiments. Includes lessons and a door prize. Guaranteed to be a blast!

Grades: 3-8

Subject: Science, Technology, Math

8:00AM – 9:30AM

- ~~ADC: Connecting Our Analog and Digital Worlds, on Earth and in Space~~
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- Creating Digital Textbooks
- Explore The History of Manned Space Flight
- Exploring Mars with MAVEN – Mars Atmosphere and Volatile Evolution Mission
- Mars Student Imaging Project: Authentic Standards Based Research
- Meet Mr. Moon
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