

**SPACE
CENTER**
HOUSTON

20th Annual
see 
Space Exploration Educators Conference



Continuing The Dream
Friday Session Booklet
February 7, 2014

Friday February 7, 2014

7:15am	Check-in
8:00	Keynote– Former Astronaut Jerry Ross
10:00	Session 1 (90 min)
11:30	Lunch– O-g
11:30-12:15	Jerry Ross Book Signing
12:45	Session 2 (90 min)
2:45	Session 3 (90 min)
4:45	Dismiss (Bus Run Begins)
7:15-11:45	Banquet (bus will make hotel loops)
8:00am-2:45pm	JSC Innovation/ Exhibitors booths (Plaza)

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/>

Follow us on Facebook

<https://www.facebook.com/groups/SEECATSCH/>

Friday February 7, 2014

10:00AM – 11:30AM

A Little Bit of NASA Fun

Michael Wilkinson, Ethical Culture Fieldston School

The newly released little Bits NASA kit supports the exploration of Earth and Space science and the electromagnetic spectrum. Join us in this workshop to experience the play, exploration, and making that make STEAM fun. Activities include Energy Sensing, Orbits, Wave Propagation and Behaviors, Stars, Long Distance Communications and Planetary Exploration.

Grades: 3-12

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

Angry Bird Physics

Terry Conaway, Clear Creek ISD

Julie Edwards, Clear Creek ISD

Use Angry Birds to demonstrate Newton's Laws of Physics while integrating the Engineering Design Process.

Grades: 6-8 Subject: Science, Technology, Math

Art and the Cosmic Connection

Whitney Cobb, McREL

Shari Asplund, NASA Discovery Program/JPL

NASA spacecraft are visiting the planets, moons and small bodies of our solar system, capturing images of otherworldly features that beg to be explored! Using the elements of art, learners of all ages begin to understand and interpret the features on these distant objects, creating dynamic art in the process.

Grades: K-12 Subject: Science

Basic Robotics in a Budget

Javier Montiel, Brazosport ISD, Monterrey Institute of Technology and Higher Education

David Garcia, Monterrey Institute of Technology and Higher Education

Robotics enthusiasts! Learn the basics of robotics with kinesthetic group dynamics that will explain complex robotic tasks. Design student challenges using design technology, materials analysis, and geometry. Understand the dynamics of DIY teacher budget-friendly robots for your students, where to gather materials, and how to motivate students. Get your hands dirty by designing, cutting, soldering and testing. Win door prizes to help start up your robotic adventure.

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

Boldly Go Where Few Teachers Have Gone Before

David Davisson, Longfellow Middle School

Jane Lynn Squires, Central Appalachian Astronomy Club

Join us for a look at space exploration using different kinds of telescopes. Find out which kind would work best for you and your students to discover the cosmos. A lucky winner will go home with a free Galileo telescope.

Grades: 6-12 Subject: Science, Technology, Math

Build a Life-Sized Space Station Module (NEW)

Brian Krauklis, Katy ISD

Ryan Krauklis, Houston Community College

Tired of teaching in that same old classroom day after day? Have your class become engineers and build a space station module that can fit an entire class and you can start teaching from space. Borrow the gym for a few days and you can make your own school space station complete with connecting modules. Its fun, easy to do, and flexible to fit your needs!

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

Engineering 101: Designing a Rover

Christy Garvin, Vaughan ES

Kat Woodring, CPO Science

As NASA makes plans to explore Asteroids, the Moon, and Mars, astronauts will need a mode of transportation to investigate their surfaces. Engineer, design, and test a model of the next generation "lunar buggy" that astronauts will use to explore. Teach students the engineering design process, scientific inquiry methods, and several math concepts.

Grades: 3-8 Subject: Science, Technology, Math

Engineering for Middle School

Suzanne Foxworth, NASA, JSC

Maria Chambers, NASA, JSC

Engineering Design for middle school students made easy! Join in the design process and challenge your students like NASA engineers. Hands-on activities are the way to spark that student excitement. Bring your imagination and get ready to have some fun!

Grades: 6-8 Subject: Science, Technology, Math

Friday February 7, 2014

Houston: We Are Go for Exploration

Heather Paul, NASA Crew and Thermal Systems Division

Capturing the imagination of future explorers, this presentation and activity takes the audience on a journey through spaceflight history. The interactive event highlights past, current and future technologies that are important for crewed exploration missions, including space suits. Presenters will share details on the challenges of engineering, design, and testing. Participants will learn how to properly pack a space suit life support system with our activity, "Packing the PLSS." Participants will also learn how to request engineers from our fantastic team to present to their students and inspire the next generation of space explorers.

Grades: 6-8 Subject: Science

Imagine Rockets

Chris Welborn, Pima Air & Space Museum

Nora Rankin, Pima Air & Space Museum

Come play with our rockets! Experiments using simple rockets will be used to demonstrate team cooperation, basic statistical math skills including graphing, and experiment organization. Activities demonstrate action-reaction and the effects of gravity on objects in flight. Participants will receive materials for these and other activities.

Grades: 9-12 Subject: Science, Technology, Math

Inspiring our Students Through Technology:

Creating Lessons for iDevices

Jennifer Crow, North Zulch ISD

So you received iPads, now what? Where do you find apps? How exactly are you supposed to use them in your existing curriculum? Grab your iPad as we look at ways to discover apps and incorporate these devices into your classroom. Participants are asked to bring a copy of (or have access to) their classroom curriculum.

Grades: K-5 Subject: Science, Technology

Kindernauts

Daniel Malerbo, Carnegie Science Center

Excite and involve your youngest students in manned and robotic space exploration. Discover the right hands-on activities that will introduce them to the solar system and concepts of gravity and microgravity. Introduce young learners to robotic spacecraft, the space shuttle and the ISS. Handouts and door prizes provided.

Grades: K-2

Subject: Science, Technology, Language, Math, Physical Education and Health, History

NanoRacks LLC, Houston Facility Tour (NEW)

Want to send your students' projects into space? NanoRacks has created low-cost opportunities for students to send their experiments to the U.S. National Lab within the International Space Station. Teachers will learn about the three main types of STEM opportunities offered to students by NanoRacks, a company devoted to allowing new users, from students to researchers, to conduct research, design experiments, tinker, make mistakes, and maybe realize wonderful breakthroughs in low-earth orbit and beyond.

Grades: 3-12 Subjects: Science

Science on Flying, Falling, Spinning, Twirling

Katsuichiro Arimizu, Higashi Izumi Elementary School

Junko Fujibayashi, Ogaki Ehigasi Elementary School

Two teachers from Japan will demonstrate how Japanese traditional toys and flying seeds help us understand the principles of flight and stability and explain how they help us in advancing our aeronautical endeavors.

Grades: K-12 Subject: Science

Speed Dating with the Digital Learning Network

Patricia Moore, NASA's Digital Learning Network – JSC

Michael Hare, NASA's Digital Learning Network – JSC

Do you have a webcam and high-speed internet? That is all you need to virtually connect with the NASA Digital Learning Network (DLN). During this session you will learn how to download web-conferencing software, integrate a webcam and microphone and connect to NASA's DLN. Session participants will virtually connect with all 10 NASA centers Speed Dating style and experience first-hand how this free resource can be integrated into curriculum.

Grades: K-12 Subject: Science, Technology

Tours:

Space Vehicle Mock-up Facility (SVMF)

Robotics Lab Tour

Food Lab Tour

Precision Air Bearing Floor (PABF)

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12:45PM – 2:15PM

Alien Genetics- Have You Been Contacted?

*Lauren Parker, Solar System Ambassador
Jayma Koval, Solar System Ambassador*

Have you been contacted by aliens? Come find out and learn how your students can apply knowledge of genetic traits to answer this question for themselves as well. We will then connect this knowledge to the actual research being done in the search for extraterrestrial life!

Grades: 6-8 Subject: Science

Cause, Effect, Cause, Effect, Cause, Effect: POP!

*Amanda Ewenson, Northside ISD
Jennifer Baker, Northside ISD*

Finding clever solutions to simple problems helps students stretch their thinking and demonstrate creativity. It also helps them to get interested in STEM careers where this type of thinking is essential. Come join us to build a Rube Goldberg machine. Make a marble roll down a shoot, turn a crank, knock down dominoes, or whatever your group designs to accomplish a simple task.

Grades: 3-5 Subject: Science, Math, Language Arts

Citizen Science and Citizen Space Exploration

*Edward Wright, Citizens in Space
Maureen Adams, Citizens in Space*

Citizens in Space has purchased 10 flights on the XCOR Lynx spacecraft. We are seeking 100 citizen-science experiments and 10 citizen astronauts to fly as payload operators. Find out how you, or your students, can get involved.

Grades K-12 Subject: Science, Technology

Climate Classification and Climate Change

*Lynne Hehr, Arkansas NASA ERC and STEM Center for Math
John Hehr, University of Arkansas, Geoscience*

One of the Earth's most important global connectors is climate. Explore the Koppen Climatic Classification from plant distribution/ecotone boundaries to temperature/precipitation categories that define climatic regions. Learn how to classify your region and compare to other regions around the world. Ideas/methods for simple data collection are provided.

Grades: 3-12 Subject: Science

Exploration Then and Now

Elaine Lapka, NASA Educator Resource Center

Challenge your students to investigate, discover, and analyze Survival and four themes (Transportation, Settlement, Water, and Human Needs) to develop their own understanding of why we explore and how 21st century explorers will compare with 17th century explorers. These activities are aligned with national standards for Science, Math, History, Geography, and Health.

Grades: 5-12 Subjects: Cross Curriculum

How to Make a Microgravity Drop Tower for your Classroom

*Nancy R. Hall, NASA Glenn Research Center
Richard DeLombard, Mr. Microgravity LTD*

An ISS astronaut "floating" is not a mystery. Learn about microgravity and free fall. Use a simple but effective drop tower to observe microgravity in action for several science experiments. Find out how easy it is to make a drop tower.

Grades: 6-12 Subject: Science, Technology

ISS CONSTRUCTION SIMULATION (Dive Session) (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 \$35 charge for this session. NOTE: This is a **double session** and is not available for registration online! (If you wish to register for this session you **MUST** pay online first. Once you have paid, your name will be added to the diving session list. Remember to leave the following time slot open on your session selection.)

Grades k-12

Mass & Earth & Playing Pro Baseball...on Pluto

*Christine Hurst, West Ranch HS
Ron Manalastas, West Ranch HS*

Calculate the mass of earth and gravity on other planets. Two hands-on activities use smart-phones to record data which will be displayed for all to see. This lesson incorporates technological collaborative integration and can be paperless.

Grades: 9-12 Subject: Science, Technology, Math

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Objects In The Sky (NEW)

*Margaret Baguio, Texas Space Grant Consortium
Susana Ramirez, Pharr-San Juan-Alamo ISD*

I see the Moon, Sun, and Stars! Participants will leave with hands-on activities to encourage young students to learn about objects in the night sky including the Sun; observing, illustrating and describing the Moon, and identifying star patterns. Make and take foldables and sentence STEM starters.

Grades: k-2 Subjects: Science

Our Eyes in Space: Revealing Black Holes

*Pamela Whiffen, NASA Educator Ambassador
Douglas Howard, Dunbar School*

Space-Based Telescopes detect radiation billions of times more energetic than the light visible to the human eye. Seeing through their eyes lets us explore the most fascinating objects in our Universe including super massive black holes, active galaxies, and the astonishing power of gamma ray bursts. Participants will receive a NASA CD-ROM.

Grades: 6-12 Subject: Science

Quadrilaterals in Space

*William C. Luke, Central Texas College
Gregory P. Luke, Temple HS*

Using no scissors, glue or tape, construct a rocket using a single sheet of square paper (regular quadrilateral). Determine the rocket fuel formula using an effervescent tablet, choice of liquid (soda, water) and liquid temperature (cold, warm). Launch the rocket using a film canister, rocket fuel, and tape. Bring the data alive using the TI Inspire CX calculator and the Navigator system.

*Grades: 6-12
Subject: Science, Technology, Language Arts, Math*

Return to the Moon in your Classroom!

*Suzanne Foxworth, NASA, JSC
Maria Chambers, NASA, JSC*

Learn about the Moon and your students' role in the future of space exploration. Packed full of hands on activities, handouts, curriculum on CD, and door prizes. Participate in a variety of Moon exploration activities.

*Grades: 3-8
Subject: Science, Technology, History*

Transforming Students into Earth/Planetary Scientists by Modeling Scientific Practices (Double Session)

Paige V. Graff, Jacobs JETS @ NASA Johnson Space Center

Experience an introductory research activity that will transform your students into Earth and planetary scientists. This all-inclusive NASA activity provides you with all the data/resources you need to successfully engage your students with scientific practices including requesting new data from astronauts on the ISS.

(Remember to leave the following time slot open on your session selection.)

Grades: 6-8 Subject: Science, Language Arts, Math

Voyage from Home; Cook up a Comet

Anita Salinas, Environmental Studies Center, Mobile Public Schools

Explore the MESSENGER mission and preK-12 space science lessons. Elementary students take a "Voyage from Home" and explore our place in the solar system with The Cat in the Hat. Secondary students "Cook up a Comet," examining components of the early universe and how Earth has come to be.

Grades: K-12 Subject: Science, Language Arts

Wing, Strings, and Flying things

Angelo Cassaburri, NASA/JSC Ed Branch

Build and fly sled kites, rotor motors, and foam plate gliders from scale drawings using inexpensive, locally obtainable materials. Learn the basic principles of flight. Conduct scientific experiments with the four forces of flight (lift, thrust, gravity, and drag). Activities include reading selections, vocabulary lists, and aeronautical board games.

*Grades: K-5
Subjects: Science, Technology, Language Arts, Math*

Tours:

Mission Control Tour
Neutral Buoyancy Lab
SAIL Tour

Friday February 7, 2014

2:45PM – 4:15PM

Affordable Astrophotography in Schools (NEW)

David O'Dell, Austin ISD, Anderson High School

"Affordable Astrophotography in Schools" - this presentation is two-fold and for all schools, even those without a telescope or camera. You will first learn how to help students produce magazine quality digital astrophotos using freely available AVISTACK software. Making pretty pictures is cool, but as science educators we need to teach them how to make accurate measurements! I will therefore show you how to bring out their quantitative side as we measure planetary /solar / lunar surface features of their astrophotos using Image J.

Grades: 6-8

Subjects: Science, Math, Technology

Areology and Remote Sensing on Mars

Don Becker, ScienceTime Consulting

Michelle Reynolds, ScienceTime Consulting

How can we figure out what is on Mars without setting foot on the Red Planet? Samples from Curiosity and satellite images can provide amazing information to increase our knowledge. In this workshop we will simulate geologic core sampling and remote sensing to give an accurate view of this neighboring planet.

Grades: 6-8

Subject: Science

Everything but the Kitchen Sink! Teaching the Civil Air Patrol ACE Program

Barb Gosney, St. Thomas Episcopal Parish School

Use the CAP's ACE program which covers aerospace education, character education, and STEM standards. Learn about grant opportunities. Free curriculum and give-aways!

Grades: K-12

Subject: Science, Technology, Language Arts, Math, Fine Arts, Social Studies, History, Physical Education and Health

Folding Your Way to Success

Stacey Karpowicz-Boring, Clear Creek ISD-Clear Springs HS

Amanda L. Rodriguez, Clear Creek ISD-Clear Springs HS

Learn new ways to engage your student using Hands on Foldables in the style of Dinah Zike. We will give you specific foldables to use in Geometry and Algebra 2. These foldables could be utilized for both note-taking or project assessments. FUN! Hands On!

Grades: 9-12

The Great Connection

Alice Walker, Space Center Houston

What is the "Great" Connection between academic achievement and emotional literacy? This is the question that we will explore with a gallery walk of issues, study Space Center Houston's proven research methodology (Social, Emotional Learning) and demonstrate with interactive activities such as rocketry, space food, electromagnetic spectrum, and robotics. Come join in on our lively discussions that will allow you to release ineffective practices, relate to your 21st century learner with cutting edge science and technology methods and reflect on your current teaching and learning style. Leave this workshop prepared to teach to the "whole child" for academic as well as emotional success.

Grades: K-12

Subject: Science, Technology, Math

Living and Working Together on the ISS!

Brian Ewenson, Professional Speaker, Aerospace Education

The ISS is a world class laboratory where astronauts from 16 nations work together with a common vision for the future. Learn the history and development of the ISS as astronauts are selected, trained and fly onboard the ISS. Many hands-on activities and demos that are easily used in your classroom at little or no cost. Each attendee will receive a CD with ISS photos, crew and mission photos, historical and technical development websites, and activity guides for K-12.

Grades: K-12

Subject: Science, Technology, Language Arts, Math, Physical Education and Health, Social Studies, History

Mars: The Planet That Once Was & Is

Sherre Boothman, MAVEN Educator Ambassador

Celena Miller, MAVEN Educator Ambassador

We will explore the MAVEN mission to Mars that launched in the fall of 2013 and is on its way to Mars! This mission will explore the atmosphere of Mars and its sporadic magnetic fields that emerge from numerous rock formations from its orbit around Mars. The activities will focus on magnetism and the role of space weather and the lack of a planetary magnetic field are playing in the slow loss of atmosphere Mars seems to be experiencing. We will also consider how what we learn from MAVEN could be used to study similar dynamics on other planets. Graphic hand-outs on Mars and the mission will be included with a DVD of activities related to Mars and the MAVEN mission.

Grades: 6-12

Subject: Science

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Missions to Discovery

*Daniel J. Loewen, Fresno county Office of Education
Veronica Seyl, NASA*

Mission selection and preparation requires multiple NASA centers and professional expertise. Discover how this multidisciplinary professional learning community engages to form an exploratory mission. Learn strategies to model this endeavor in your classroom and school. Hands-on activities with rovers and wind tunnels will bring the math and science alive.

Grades: 6-8 Subject: Science, Technology, Math

Mission Solar System with the EDP!

*Lynne Hehr, Arkansas NASA ERC and STEM Center for Math
John Hehr, University of Arkansas, Geoscience*

Launch into space exploration with these space-based, hands-on engineering challenges designed for school and afterschool programs. Engage in engineering and NASA's exploration of the solar system with fun, relevant ways to apply STEM concepts and skills. Think like NASA engineers and apply creative problem-solving skills while sparking interest in engineering and space-science careers. NASA Design Squad Nation Solar System teacher guide provided.

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

Real Students Meet Real Research (The ISS Way!)

*Angela M. Krause-Kuchta, Orion's Quest/ Menomonie H.S.
Tom Drummond, Orion's Quest*

Experience how your students can participate in actual space-based research being conducted on ISS. Students learn about NASA scientists and their research. Then they analyze down-linked photos and videos to collect data, evaluate results, and share results with the principal investigator.

Grades: 6-12 Subject: Science, Technology, Math

Satellites from Start to Finish the Fun Way!

Jeff Kaloostian, T.R. Robinson HS

Teachers need to have a "big picture connected" to present the spectrum satellite missions. This lesson provides a connected spectrum of satellite knowledge from an overview of satellite subsystems all the way to "building" the selected satellite. Adding the very intense space animation software, STK, and the hands-on building segment of the lesson provides teachers and students an interactive lesson generating interest and excitement. The session will provide a novel method of developing young engineer and technician minds needed to develop our future space missions and present the spectrum satellite missions. *Grades: 9-12*

Subject: Science, Technology, Math, History

To the Moon and Back

*Amanda Blough, Corpus Christi Catholic School
Amy Fetterhough, Corpus Christi Catholic School*

Educators will be exposed to geological terms related to Earth and Moon rocks through inquiry-based lessons using readily available items. Poster sized moon maps will be used to compare Moon and Earth features. Google Moon will be incorporated throughout the session. Laptops are encouraged. All resources are classroom ready.

Grades: 3-5 Subject: Science, Technology

What's the Matter U-Mass, Matter, Space, and So Much More

*Laura Teatsworth, Houston Independent School District
Nikki Skinner, Houston Independent School District
Charlotte West, Houston Independent School District*

Exploring matter, mass, and gravity with yummy hands-on activities for primary elementary students. We also show journaling, foldables, and claims-evidence-reasoning skills as described in the Next Generation Science Standards (NGSS). Join the "Teachers on the Loose."

Grades: K-5 Subject: Science, Language Arts, Math

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