

Space Center Houston's 11th Annual Space Exploration Educators Conference

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*Come Touch the Future and
Join an Extraordinary Group
of Teachers*

February 3rd - 5th, 2005

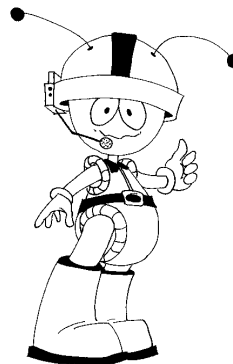
SCHEDULE OF EVENTS

Thursday, February 3, 2005

10:00 Early Bird Check-in Begins, Tour Space Center Houston
12:00—5:00 Extended Length Sessions Begin
6:30—9:30 Reception, Magical Entertainment Provided by Paul Driscoll

Friday, February 4, 2005

7:00—7:30 Check-in & Continental Breakfast
7:30—7:45 Opening Addresses/Welcome
7:45—10:00 Key Note Address
Peter Diamandis, Chairman
X-Prize Foundation
10:30—11:45 Breakout Sessions
12:00—1:00 Lunch
1:15—5:30 Breakout Sessions
7:15—12:00 Banquet/Dinner Dance



Saturday, February 5, 2005

7:30—8:00 Continental Breakfast
8:00—9:00 Key Note Address—*To Be Announced*
9:15—12:00 Breakout Sessions
12:00—1:00 Lunch
1:15—4:00 Breakout Sessions
4:15—5:00 Key Note Address—*To Be Announced*
5:00—5:30 Door Prizes/Closing
5:45—7:00 Free time to tour Space Center Houston and shop

*Please check www.spacecenter.org/seec.html for updates on speakers.
Due to the demands on astronauts, some speakers may be forced to cancel at the last minute.*

CONFERENCE HIGHLIGHTS

- ◆ Top Scientists and educators from across the United States and Canada.
- ◆ Exciting materials to inspire your students and enhance your classroom.
- ◆ Astronauts and Engineers currently working on space exploration.
- ◆ Mingle with fellow Educators and NASA Engineers and Scientists at a reception Thursday evening.
- ◆ Enjoy a party on Friday night, where you will be served a banquet dinner and drinks, then dance the night away with Astronaut band Max-Q!

SPONSORS AND PARTNERS

Space Center Houston Educational Programs would like to thank the following sponsors and partners:



REGISTRATION INFORMATION

There are several methods for registering! You can register online at www.spacecenter.org/seec.html. You may also fax or phone in your registration information (and payment) with a credit card; or mail the registration form along with your check or money order to Space Center Houston. **Registrations will not be accepted without payment. Registration for SEEC is only \$199.00!**

If you have already pre-registered and sent in your payment, simply make your session choices, check that you are pre-registered under payment information, and return your form to Space Center Houston as soon as possible.

Don't forget to make your session selections! Sessions fill up fast and are on a first come, first served basis.

GENERAL INFORMATION

Travel Notes

Space Center Houston is located midway between downtown Houston and Galveston. Take I-45 and Exit NASA Parkway. The Center is approximately three miles east of I-45. If flying in, try and use Hobby Airport. Be prepared for cool weather or rain. The Center is always cool, so bring a sweater. We also recommend comfortable attire since you will be actively participating in breakout sessions. **Business attire is requested for the Friday evening banquet.**

Cancellations

Due to the popularity of SEEC, cancellations and no-shows will be charged the full registration fee. **No refunds will be granted.** However, registration may be transferred to a fellow colleague.

Receiving ERC Materials

If you would like to receive materials from the Educator Resource Center, please visit the ERC help table located near the shuttle mock-up in the plaza. The staff would be more than happy to help you with any questions you have. Videotapes should also be dropped off at this table (video directories will be available).

CONFERENCE HOTELS

SEEC buses will provide transportation to and from the hotels listed below. Space Center Houston is not responsible for making attendees' hotel arrangements. Bus schedules will be posted in the hotel lobbies during the conference.

Hampton Inn & Suites	506 W. Bay Area Blvd, Webster (281) 332-7952, \$79.00
Wellesley Inn & Suites	720 W. Bay Area Blvd, Webster (281) 338-7711, \$69.00 (Queen Single), \$79.00 (King & Double)
Holiday Inn—NASA	1300 NASA Parkway, Houston (281) 333-2500, \$59.00
Hilton—NASA	3000 NASA Parkway, Houston (281) 333-9300, \$87.00
Super 8 Motel	18103 Kings Row (corner of NASA Parkway), Houston (281) 333-5385, \$55.00
Quality Inn	904 E NASA Parkway, Houston (281) 333-3737, \$49.50 (King), \$55.00 (Double)
Best Western	889 W. Bay Area Blvd, Webster (281) 338-6000, \$59.95
Comfort Inn	750 W. NASA Parkway, Webster (281) 332-1001, \$49.95 (King), \$54.95 (Double)

When making your reservations, be sure to inform the hotel that you are a SEEC Conference participant at Space Center Houston. If you are in need of shuttle service from the airport, please make inquiries at your hotel.

CONFERENCE PRODUCTS

Additional reception and banquet tickets, for any guests you would like to bring, are available for \$25 and \$28 respectively. This tickets are on sale via the internet, mailing in the registration form, or during the conference.

Space Center Houston will also have available curriculum products and conference apparel during the conference. More information, including order forms, will be available at www.spacecenter.org/seec.html one month prior to the conference.

SESSION SELECTIONS, THURSDAY 12:00-2:00

Adapt or Die!

Grades 5-8

Crystal Trujillo & Marsha Turner, STARBASE-Atlantis-Hawaii

WE WANT YOU! Have you got the right stuff? Pack your bags and head to student astronaut training for our most important mission since the first walk on the moon. See if you have what it takes to spend months, or even years, in a spacecraft that will have to support life with no help from earth. You will participate in hands-on activities and receive ready-to-implement lessons. Be ready for anything—your lives could depend on it!

Bringing Parents on Board with your Space Exploration Curriculum

Grades K-12

Kareen Borders & Rya Diede, Key Peninsula Middle School

Bring your parents on board your space exploration curriculum with parent “Space Café” evenings. Parents will feel comfortable and supportive of space exploration as they gain knowledge, have fun, and explore their own questions. Participants will leave with hand-outs and the experience of engaging in several of the parent evening activities.

Human Space Explorer: Cardiovascular System in Space

Grades 6-12

Julia Bulkowski, Bioastronautics Outreach & Barbara Tharp, NSBRI

Participants will gain an insight to current cardiovascular research conducted at NASA. The structure and function of the cardiovascular system on Earth, the effects of microgravity, and implications for long-duration spaceflight will be considered. Teachers will sample activities to take back to the classroom. Hand-outs and classroom activities relating to these topics will be provided.

Informal Education Discussion (Science Center/Museum Staff Only)

Grades K-12

Daniel Bateman, Kansas Cosmosphere & Space Center

Meet and network with fellow science center/museum people. Come prepared to share information on your programs. Do you have ideas for joint projects? Come brainstorm with other informal educators. Also included will be an informal education discussion with NASA representatives—how can we better serve each other?

Kinesthetic Astronomy: The Sky Time Lesson

Grades 9-12

Brad McLain, Space Science Institute

Teach astronomy the kinesthetic way with the Sky Time Lesson! Reconnect your students with the astronomical meaning of the day, year and seasons, while covering scale, and distance in the solar system and the galaxy, the apparent motions of the sun and other stars, and the seasonal appearance of the constellations of the zodiac.

Light & Color

Grades 4-12

David Temple & Dean Dotson, Jefferson Independent School District

From the very basics to advanced discussion of light and how it is made and the main division of the electromagnetic spectrum. Why is the sky blue? Why are oceans blue? Why is winter clothing the color it is? These and many more topics are covered in this hands on workshop.

Planet Polyhedra

Grades 4-6

Shields Templeton & Holly Ray, Murfreesboro Schools

NASA's bubble technology is used for designing space craft due to the restraints on amount of building materials. Bubble technology can be demonstrated using items as simple as wire pipe cleaners and soap bubbles. Experiment with bubble technology and use geometric concepts to construct polyhedra, which can range in size from a tennis ball to a beach ball, and vary in shape. Once constructed, the polyhedra can be used to represent planets, kits of the history of flight, time capsules, asteroids, etc. Content areas include science, math, and language arts.

Tiny Bubbles: The SCUBA Connection

Grades 5-9

Christy Garvin, Vaughan Elementary

In our quest to complete the ISS, create a colony on the moon, and explore Mars, astronauts will spend countless hours engaging in extra vehicular activity or spacewalks. While on Earth, astronauts train for these EVA's in a huge pool where neutral buoyancy can be established to simulate the effect of microgravity. This session will provide connections between spacewalks and SCUBA diving as participants engage in hands-on experiments dealing with pressure and volume as related to Boyle's law.

SESSION SELECTIONS, THURSDAY 12:00-2:00

Return to Flight Computer Workshop

Grades 3-9

Russ Baker, Entertainment Technologies, Inc.

Return to Flight is an educational program developed by Space Camp and ETI to coincide with return to flight. Conducted in a computer environment, teachers will have the ability to set-up and manage a single classroom session, a full Space Day or a complete Space Week. Activities, both computer and non-computer based, designed to inspire students about the Earth and our place in the Universe while assisting teachers to present difficult curriculum concepts in science, math, technology and the environment. Students will experience what it's like to train as an astronaut and learn to command an actual launch as they meet standard curriculum objectives. Receive a complimentary copy of ETI's Space Simulation Software, Liftoff, for PC and Mac.

To the Moon, Mars and Beyond!

Grades K-3

Dee Mock, Region IV Service Center & Christine Graham, Fannin Elementary

Get ready for hands-on, real world science that you can use immediately to prepare your students for the state assessments. Your students will be amazed as they learn about the Earth, the Earth's moon, the solar system, and space exploration through hands-on activities, inquiry based science experiments, music, literacy centers, graphic organizers and literature. This session will incorporate National Standards (and TEKS) as it introduces space across the curriculum. Expect make-and-take activities, handouts and door prizes!

SESSION SELECTIONS, THURSDAY 2:30-4:30

Four Principles of Flight

Grades K-3

Charlene Jones, Milton Schools

This session is a hands-on experience of how to teach K-3 students the beginning fundamental principles of flight. Teachers will come away with an experience of hands-on activities used during the session that can be modified for their classroom. Attendees will receive a packet of curriculum which includes websites, standards, and much, much more.

Human Space Explorer: Muscles and Bones

Grades 6-12

Monica Trevathan, Bioastronautics Outreach & Paula Cutler, NSBRI

Participants will gain an insight to current research on muscles and bones during spaceflight from NASA. During prolonged exposure to weightlessness, the Human Space Explorer will undergo a decrease in muscle size and strength, and bone mineral density. Session participants will hear about countermeasures to these adverse effects including exercise and good nutrition before, during and after spaceflight. Sample activities to take back to the classroom. Hand-outs and classroom activities relating to these topics will be provided.

Making Every Day Space Day

Grades 5-8

Brian Ewenson, Arizona Aerospace Foundation & Sharon Eggleston, Lockheed Martin

No shoes, no shower, no gravity...no problem! Take your class on the ultimate field trip—a trip to space. Learn what it takes to launch a vehicle into space, to live and work, and return safely.

Making the Journey Together: Space Week for All Grade Levels

Grades K-12

Maureen Adams, West Ward Elementary & Jamie Gay, Killeen High School

Come experience space week whatever your grade level! Join teachers from a NES school, a high school, a middle school and space camp as you learn through demonstration, dialog and discussion how to challenge and excite your colleagues and students about space that rocket them through the school year. Lots of hand-outs and opportunities to share with your staff and great surprises from Space Camp!

Microbes in Space!

Grades 5-12

Stephen Wagner, SFA University & Lynn Wagner, Christ Episcopal School

Help Wanted! Soil samples from the Mars Send and Return Mission Alpha have just arrived at the Johnson Space Center; we need all interested astrobiologists to help search for life in these samples. Recruits will receive valuable inquiry-based curricula developed by NASA and the American Society for Microbiology that can be used to teach students about the search for life on other planets.

SESSION SELECTIONS, THURSDAY 2:30-4:30

Newton's Laws: Gaining an In-Depth Understanding

Grades 9-12

Bjarni V Tryggvason, Astronaut, Canadian Space Agency

Newton's Laws stand as the foundation for a wide range of work in science and engineering. Come explore Newton's Laws at a high level. Grades 9 and higher only for this in-depth session.

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The Moon Rocks!

Grades 5-8

Jeanine Wolf, Midway Middle School & Judy York, ESC Region XII

"Lunar Base One, this is Mission Control, please report on mining operations." Join us in a simulated exploration of life on a not so distant heavenly body. We will be teaming up to build a lunar colony and a mining operation to help us explore how we might one day have a permanent colony on the moon. So come put on your spacesuit and "dig in" with us.

SESSION SELECTIONS, FRIDAY 10:30-11:45

Back to Mercury with the MESSENGER!

Grades 5-9

Lollie Garay, Redd School & Debra Evans, Chouteau High School

The Messenger spacecraft was launched in August 2004. Learn more about Mercury, the mission, and how to involve your classrooms in this awesome journey. Receive curriculum materials for inquiry-driven activities that meet the National Standards. This will be an active session so be prepared!

Cleaning Up Without Comet!

Grades 2-4

Chief Master Sgt. Michael Bennett & Kimberly Maloy, STARBASE-Oklahoma

Learn about filtration of water and its importance. Participants will learn about the process of water filtration and learn how to make their own water filtration system using common household items, from the fish tank to the toilet tank.

Come Explore SIF!

Grades 1-6

Melodee Knopp, Greenbush ESC & Joy Scales, Virginia Tech

Come Explore SIF! Launch your students on a learning journey as they build space knowledge, teamwork and problem solving skills using SIF! SIF activities will allow students to learn space through play and also how to work together to solve space exploration problems, all while discovering the true meaning of SIF!

Littlest Astronauts: Space in the Early Childhood Classroom

Grades Pre-K-2

Jennifer Becerra, NASA AESP & Cynthia McArthur, Teaching from Space

Excite the littlest astronauts about space education. Teach space education in the early childhood classroom through Language Arts, Math, Science, History and the arts. Learn how to bring rocketry and other space basics to your littlest astronaut's orbit.

Its Hard to Dance in a Spacesuit

Grades K-12

Phil West, NASA

The ISS is not only a working laboratory in space, it's a high altitude construction zone. The workers at this jobsite need clothes that let them build, while protecting them from the extreme environment. We'll look at spacesuits and tools astronauts are using in orbit today. Oh...and don't put away your dancing shoes, we'll explore space fashion of the future as well.

SESSION SELECTIONS, FRIDAY 10:30-11:45

MARS 2K4: From the Peaks of Olympus Mons to the Martian Craters

Grades 6-8

Shana Kaase & Jennifer Millsap, Region XII Science Collaborative

Take your students on a journey to Mars from the ground up, through robotics, cooperative learning, math reasoning, meteorological observations, and geological studies all in a hands-on approach. Walk away with your own debriefing manual of standards-based lessons, 5E Models, and extensions.

Microgravity: Bad to the Bone!

Grades 5-9

Letitia Hoaas, NASA Explorer School Coordinator & Rudo Kashiri, NASA AESP

As we plan for the trip to Mars, it is important to understand the changes that occur in the human body. Current NASA research on physiological changes that take place during extended stays in space will be used to help participants learn about microgravity and its effects on bone. By conducting hands-on activities, participants will make connections between NASA research and the mathematics and technology they teach in the classrooms.

Science Principles in Space

Grades 9-12

Bjarni Tryggvason, Astronaut, Canadian Space Agency

The ISS environment is a near ideal "free fall" where all parts of the laboratory, including the experiments on board, are in the same state of free fall. This tends to reduce relative motion and hence reduces convections, sedimentation and buoyancy to levels that are much lower than in Earth bound experiments. But things are rarely so simple! This session will explore how the ISS environment can be used to gain a better understanding of some basic and seemingly simple science principles.

Sir Isaac Newton's Motion Spectacular

Grades 6-8

Danette Morrison & Mary Fretz, Richardson ISD

Do you want to learn exciting student centered activities, which teach Newton's laws of motion? Attending this session will not only do that, but also teach an exciting method of teaching any unit. This workshop will show how to build upon objectives from previous years. Teachers will receive entire color curriculum.

Soar Into Technology Integration

Grades 3-6

Anita McPartland, Lancaster Independent School District

Explore rockets and "elementary" propulsion in an inquiry-based environment. Experience rocketry through integration of technology, math, science, and language arts. Engage students in hands-on activities utilizing inquiry to understand basic propulsion and rocket design. Enhance learning with Internet resources, cognitive maps, Microsoft Office templates, and hands-on manipulatives. This session provides an opportunity for participants to create simple rockets, test rockets, and record results. Return to your class with ready to use activities.

Using Microsoft PowerPoint to Inspire the Next Generation...As Only NASA Can.

Grades K-12

Scott Anderson, NASA Teaching From Space

Learn how to create dynamic PowerPoint presentations using NASA technologies. Participants will be presented with an overview of several NASA ISS websites and learn how to capture content for the classroom. In this hands-on session, participants will develop a presentation that is ready to go in the classroom and will also be provided with several "get you started" templates.

What to Wear When You're Out There

Grades 6-8

Heather Paul, NASA's Advanced Extravehicular Activity Team

Except for the people on "Survivor", everyone wears clothes, especially when they live and work in space! Come see the latest ideas coming off the NASA runway, and learn how your students can become fashion designers to the stars.

X-35

Grades 3-9

Cherri Brinley & Karen Craig, St. Edward Catholic School

The United Federation of Planets is currently seeking proposals for a new expandable launch vehicle. Come participate in 10 hands-on activities and then build your own ELV using only 2 liter bottles. Receive a CD or book of rocketry activities and keep all manipulatives from activities.

SESSION SELECTIONS, FRIDAY 1:15-2:30

AIMing for the Moon and Mars

Grades 9-12

Heather Paul, NASA's Advanced Extravehicular Activity Team

Imagine the most challenging puzzle you have ever seen. How do you put the pieces together? Do you start at the edges? The corners? Or do you focus on a piece of the picture? Come see how NASA plans to solve the puzzle of getting back to the Moon and on to Mars.

And the Rocket's Red Glare

Grades 3-5

Diana Larson, Judson Independent School District

Here are some challenging hands-on lessons that will stretch your students' minds intellectually and creatively. Learn about the many ways we can integrate space studies into the curriculum. I will show you how my students simulated living on a space station. You will leave with your own futuristic spacecraft.

"Egg"pollo Mission to Mars: A Hands-on Journey to the Red Planet

Grades 2-6

Terry Sue Fanning, Moore County Schools & Billy Hix, Motlow College

Come and be a part of the "Egg"pollo mission to Mars as well as build a "rocket engine" using Coffee Mate and study chemical interactions. Find out more about nutrition and space food. Then learn about the interactions of matter as we have a "Houston, we have a problem" moment with a landing gear failure upon arrival on Mars and the crew is forced to build another type of landing system. Gain knowledge as you experience three activities that can be used to enhance classroom instruction. Participants receive a CD with all hand-outs, classroom materials, and the opportunity to win prizes.

Cheering Science Students: Fact or Fiction?

Grades 5-8

Crystal Trujillo & Marsha Turner, STARBASE-Atlantis-Hawaii

Students jumping up and down cheering during one of your science lessons—fact or fiction? This can be fact when you use these two hands-on activities to clearly illustrate Newton's Three Laws of Motion and how they relate to the launching of space vehicles.

Mars Exploration: An Integrated, Classroom Ready Unit

Grades 4-8

Valerie Graves, NASA IV&V Facility & Evonne DeNome, Berkeley Schools

This will be a hands-on workshop with activities that focus on mathematics, science, technology, and social studies (current events) using Mars exploration as the theme. Each participant will receive a children's trade book about Mars and a complete, ready to use, standards-based unit developed around the trade book. The presentation will be an integrated approach to exploring Mars, examining current research on the effects of long-term space travel on the human body, and investigating the impact space exploration has on our society.

Orbital Mechanics for Middle School Students

Grades 6-12

David Maneth, Christ the King Catholic School

What can an ellipse, a string, and a tennis ball tell you about going to Mars? This session will explain how basic mathematics, some standard scientific laws, and some everyday common sense can help you show your students how NASA scientists send astronauts into space. Using the Apollo program as an example, the session will also discuss how to best use these concepts to return to the Moon and travel to Mars.

Size Matters: Using GLAST to Explore Very Small and Very Large Matter in Our Universe

Grades 6-12

Ellen Holmes, Sonoma State University & Lisa Bacon, AIAA

Many know black holes can swallow huge quantities of matter—but did you know they can also accelerate jets of sub-atomic matter outward at fantastic speeds? Create a model of an artichoke galaxy and learn how to integrate algebra, measurement, and geometry into your science curriculum. All participants will receive a CD of ready-to-use classroom presentations, NASA educator guide, NASA full-color poster, and much more!

SESSION SELECTIONS, FRIDAY 1:15-2:30

Space Chicks Explore More

Grades K-12

Adair Teller & Paula Garrett & Joan Blackman, Spacechicks

This session will discuss how a single lesson can easily be modified to meet the needs of various types of students often included in today's classroom and how to encompass NASA's current goal of capturing the imagination of ALL students. (Session emphasis: special needs students.)

Where in Space Do We REALLY Live?

Grades 5-9

Kathy Mullane Higgins, Hudson Middle School

How would you find your way home from outer space? Where exactly is the Earth, your city in the realms of the Universe? What is your Universe address? There are all questions that will need to be answered in the future as we begin to explore our Solar System and the Universe. This is a wonderful introduction to any space related unit or activity. This mini-unit gives you all the background information, awesome websites, lesson plans and hand-outs necessary to take this unit home and teach it to your students next week!

Write to Space

Grades K-2

Mary Frances Clardy & Bernadette Tayson, Farnsworth Aerospace Elementary

Learn how to generate content and topics for writing that will inspire students to write in several different genres that focus on aerospace and future explorations. Genres that will be presented are fiction, nonfiction, narrative, poetry and picture books (including alphabet, counting, and wordless books). Units presented will actively increase student's knowledge of aerospace vocabulary and will create metacognitive thinking. Writing is essential to learning both the content and processes of science.

You, Too, Can Become a Space Geek

Grades K-12

Linda Beebe, Detroit Public Schools & Alicia Baturoni, NASA Ames Research & Cindy Byers, Rosholt Public School District

These seasoned Space Geeks join forces again to bring you their very best, tried and tested, standards-based, hands-on activities. Start with a trip to the moon with Bob the Astronaut, visit the ISS with Don Pettit, and finish by choosing the first crew to voyage to Mars. Your journey will include a stop along the way for every grade level, as these activities each highlight one aspect of the Vision for Space Exploration.

The Exploration of Mars: Young Astronauts Club

Grades 3-5

Traci Perry & Kaye Fulton, T.W. Ogg Elementary

Are you looking for ways to make learning come alive in your classroom? Come with us on our hands-on, make-and-take journey to Mars as we encounter black holes, comets, asteroids, and finally land on the planet Mars. You will leave with an entire year's worth of lessons and hand-outs that will have your students wanting to blast off to Mars!

SESSION SELECTIONS, FRIDAY 2:45-4:00

Exploring Mars! Inquiry-based, Hands-on Classroom Activities

Grades 5-12

Sheri Klug & Paige Valderrama, ASU Mars Education Program

Come and explore Mars with NASA in this hands-on, inquiry-based session! Lots of fun activities will be presented that help engage and connect your students to real-time exploration and interest them in wanting more science, math and technology. Learn about the upcoming teacher and student opportunities. All participants will receive classroom materials.

Fly Me to the Moon

Grades 3-5

Becky Peltonen, Patterson Elementary Magnet School

Learn more about our closest neighbor without staying up late! We will identify all the phases of the Moon in a way that children will understand. You will be able to calculate the distance between various scale models of the Earth and the Moon. We will study the lunar landscape through hands-on experiments and the revisiting of Apollo landings. Learn how to help your students design and build models of life support systems, which are crucial to our successful settlement of the Moon.

History in the Making

Grades K-12

Dr. Jack Bacon, NASA Johnson Space Center

It's not about history that *has* been. It's about the history that is *yet to be*, made richer by those with a complete and diversified education. Beginning with participatory exercises that demonstrate how the human brain acquires and stores information, explore the educational process and demonstrate the potential of every educated individual in each new generation. Tie everything together with evidence and the rationale of how and why in the *current* generation the pace of human intellectual development has begun to accelerate in unprecedented rates. End with a thrilling tour of some of the technologies, trends, and challenges that will form the foundation of the world that your students will shape.

Houston, We Have a Problem

Grades 5-9

Allan Miller, Kenai Peninsula Borough Schools & Daniel Wray, Warsaw Schools

This session will feature a trans-continental problem-solving simulation accomplished by middle school students in Alaska working with middle school students in Indiana. Students have assumed the roles of space flight crews and mission controllers to solve simulated problems across great distances just as occurs in the realm of manned space flight. The presentation will include background information of the simulation as well as specific details from the activity this year. Finally, participants will have the opportunity to perform the simulation and discuss issues related to use in their classroom.

Human Physiology in Space

Grades 9-12

Brad McLain, Space Science Institute

What happens to the human body during space travel? What happens when we return to Earth? Will we ever really be able to leave our home and live on other worlds or travel in spaceships for extended periods? This session discusses these questions, covering fundamentals of human physiology and looking at how they change in a microgravity environment, including the cardiovascular system, the musculo-skeletal system, and the vestibular system, with hands-on, classroom-appropriate activities for each topic.

It's Happening Today and Tomorrow

Grades 3-8

Happy Wells Modisette & Shondra Kelsey, Central Independent School District

Experience and receive activities from Earth to space and back again. Expand your upper elementary and junior high curriculum with our hands-on activities you create and take home. Websites and packets will be available.

KIDS in Space: Kindergartens Investigate, Discover and Study in Space

Grades K-5

Julia Bodenhamer, Clear Creek Independent School District

Develop tomorrow's leaders and space explorers today as upper elementary students create and present "A Day of Space Exploration" for lower elementary students. Timelines, student-created lessons, and samples of all hands-on activities will be provided.

Moon Journals: A Synthesis of Science, Art and Writing

Grades 3-9

Jo Lynne Roberts & Christina Macaya, Camas School District

Writing! Art! Science! Meld these three together and you have a powerful project—Moon Journals. Students follow the cycle of the moon for 28 days, recording their observations and thoughts each day...first as a scientist and then as a poet. These observations are enhanced with science content and art invitations to create a high quality showcase project. Come and explore with us through participatory activities.

Next Stop, New Extrasolar Planets!

Grades 6-8

Adrian Carrales & Trish Jarrott, Kealing Middle School

Upon the recovery of geology samples from newly discovered planets, students will perform tests to determine if any of the planets are suitable for life and future exploration. Students will examine rock samples, liquid samples, soil samples, and perform paper chromatography of the newly discovered planets. Hands-on activities, hand-outs and teacher notes will be provided.

SESSION SELECTIONS, FRIDAY 2:45-4:00

Oreo Moon Phases and More Cheap Labs!

Grades 6-8

Becky Wolf, Crain Middle School & Sharon Holochwost, Stroman High School

This presentation is geared toward low cost labs and projects that students can relate state standards to real world applications. We want participants to leave with several ideas or new labs/projects ready to implement into their curriculums that will enhance student learning and prepare students for assessment tests. Each participant will receive copies of labs that are demonstrated as well as other labs discussed. Door prizes!

Pack your Bags: A Hands-on Look at Mars Mission Planning

Grades 2-6

Joel Walker & Tom Holcomb, Kansas Cosmosphere and Space Center

It is time to pack your bags! Come and learn a little more about the Red Planet and our future trips to the surface, both manned and unmanned. Once you have brushed up on your Mars facts, Cosmosphere educators will walk you through a fun and adaptable activity that will challenge your students as they pack their bags for a trip to Mars. All supporting materials, black line masters and plans for creating this activity will be included in the free activity packet. Learn how your students can plan their trips to Mars today.

Protector-Nauts

Grades 2-4

Gail Going & Susan Burgess, STARBASE-Oklahoma

Teamwork and communication skills are needed to successfully protect interplanetary astronauts. Participants in this interactive, hands-on session will take back plenty of how-to instructions to teach their students cooperation, problem solving and good oral communication skills.

Start Your Own Space Program

Grades 3-12

Brian Krauklis, Jon Maxwell, & Kelly Stroud, Katy Independent School District

Want to start your own space program but don't know how...or maybe you have a few billion dollars less than the NASA people? Well, the N.A.S.A. and S.E.E.K. aerospace programs from Katy, Texas invite you to take a look at our very flexible programs and find out how to adapt them to start your own space program. Learn how to build an inflatable spacecraft or Mars base cheap and maybe steal a few activities. Your students will be glad you did!

SESSION SELECTIONS, FRIDAY 4:15-5:30

Back to Mercury with Messenger!

Grades 9-12

Allan Miller, Kenai Peninsula Borough Schools

In 2011, The Mercury Messenger satellite will end a seven year journey and enter an orbit to begin scientific studies of one of the least known bodies in our solar system. Participants in this workshop will gain an appreciation of the complexities of this mission, but more importantly will take part in mission based hands-on activities that can be used in high school math and science classes to teach the concepts of scale modeling, solar system dimensions, electromagnetic radiation and solar radiation.

Bodies in Space

Grades 3-5

Mary Matthes, Frankford Schools

Find out what an astronaut does during a 24-hour day and what physical and mental adaptations must be made to enable survival and best performance on long expeditions. Learn how the articulation of the human body influences design of robots that can replace or supplement tasks done by humans when planning missions to un-Earthly places like Mars or the Moon. Hands-on activities and lessons provided.

Canadarm2: The Big Arm on the Ship?

Grades 5-9

Steve Lang, Canadian Space Resource Centre

The SSRMS or Canadarm2 is Canada's contribution to the ISS. This session will focus on the role that robotics plays in the building and maintenance of the ISS. We will discuss how Canada became one of the international partners on ISS. This hands-on session will demonstrate the design of Canadarm2, it's strengths and capabilities. The future of robotics on missions to Mars and repairing the Hubble Space Telescope will also be discussed.

SESSION SELECTIONS, FRIDAY 4:15-5:30

The Geobat Flying Wing

Grades 6-12

Debi Huffman, Fernbank Science Center & Randy Pollard, Geobat Development Team

Never before has anyone presented a viable aircraft design that is perfectly circular. Participants will design and build models of the Geobat Flying Wing. Limited only by your own imagination, explore different designs, and perhaps yours will be the precursor to the planetary version.

How Do You Stay Cool on Mercury?

Grades K-4

Lollie Garay, Redd School & Debra Evans, Chouteau High School

The Messenger mission was launched in August 2004. One of the challenges the spacecraft faces is staying cool as it closes in on Mercury. Take your classrooms along on the journey with hands-on activities. Leave this session with the materials you need for the trip! This will be an active session!

International Space Station and the Moon

Grades 5-7

Euva Dill and R. Ray Franklin, STARBASE-Oklahoma

Do astronauts on board the ISS see the same moon phases we do? How often do they see a complete lunar cycle? Participants in this interactive, hands-on session will learn to calculate distances, make scale models, and learn how to construct a moon phases box.

Mission to Mars

Grades 3-8

Loren Lykins & Charla Jordan, Carlisle Independent School District

Take your students through a few of the steps of preparing a mission to Mars. From the step by step design of the rocket, including component testing on smaller rockets, to the lander, your students will be designing and redesigning just like professional engineers. This is a hands-on presentation, so be prepared to have fun!

NASAexplores—Express Lessons Online

Grades K-12

Mindi Capp, NASAexplores

NASAexplores provides free weekly K-12 educational articles and lesson plans on current NASA projects. Printable and downloadable, these supplemental curriculum resources support national education standards. Come learn how to integrate these and other NASA on-line resources into your curricula. Teach your students to use their skills to solve real world problems.

Reading and Space Station Science

Grades 3-6

Gay Bowman & Nancy Gealow, Spring Independent School District

An interactive unit based on Marianne Dyson's book "Space Station Science" and Sally Ride's "To Space and Back", as well as others. Connections are made in reading, writing and sciences as well as the history of human spaceflight.

Stars and Constellations 101

Grades 7-9

Brandon Gillette & Julie Miller, Olathe Public Schools

Have you ever had a hard time finding constellations in the night sky? Have you ever wondered why we don't see the same stars night after night throughout the year? Do you enjoy dancing? Come learn activities that can immediately be taken into the classroom to teach the students about stars and the constellations they inhabit. These activities will provide fun ways to enhance your overall astronomy curriculum.

SESSION SELECTIONS, SATURDAY 9:15-10:30

Gem Clip Astronauts

Grades 1-10

Bob Boykin, Bossier Parish Community College

Come help NASA and your fellow colleagues explore the world of rocketry as you launch "Gem Clip", that shiny twisted metal guy that is in everyone's desk drawer, into the new frontier of space travel. This bright "twisted" metal astronaut needs your help in designing a rocket to carry him and two of his friends to the Moon.

SESSION SELECTIONS, SATURDAY 9:15-10:30

Genesis and the Search for Origins: Success After Failure

Grades 6-9

Sandy Peck, Clear Creek ISD & Tara Oakes, Houston Museum of Natural Science

The Genesis mission was an attempt to capture samples from our remarkable star, the Sun. Although it was not captured as intended, samples were returned to a special cleanroom for study at JSC that will be able to give us a better understanding of the sun and its processes. Participate in hands-on activities that you can do with your students to demonstrate the capture process as well as the importance of cleanrooms in the study of samples.

How to Demonstrate Microgravity (aka Weightlessness) in Your Classroom

Grades 5-12

Richard DeLombard, NASA Glenn Research Center

The concept of microgravity (aka "weightlessness") will be explained and demonstrated with six separate devices suitable for classroom use. Participants will be able to use the devices during the session. Microgravity not only occurs in orbiting spacecraft, it can be 'created' by simply dropping or tossing an object. Handout materials will be provided to allow later fabrication and use of each one.

Life Support—Without Us It Isn't "Manned" Spaceflight

Grades 5-8

Marybeth A. Edeen, NASA Johnson Space Center

This presentation will demonstrate two hands-on activities demonstrating what life support is, why recycling of air and water is necessary for long duration space flight, how to build a life support system, and how to communicate tasks to remote crews. Written lesson plans of the activities will be provided and participants will perform the activities as a class of students would.

Living on Orbit: A Stimulating Simulation

Grades K-8

Betty Dietzen & Jo Lynne Roberts, Camas School District

Imagine...on-orbit astronauts repairing a satellite's solar panel, communicating with Mission Control, or conducting experiments in your classroom or gymnasium. We will guide teachers through the development of Space Station Alpha-Z from a single classroom, low budget, on orbit simulation to a high tech, full day, 10 hour mission for over 150 students.

Lunar Station I: Creating a Lunar Colony in Your Classroom!

Grades 4-8

Jennifer Sinsel, Wichita Collegiate School &

Melissa J. Duncan, Challenger Learning Center—St Louis

With the President's new space initiative to send humans to the Moon, Mars, and beyond, the timing is perfect to begin igniting your students' imaginations toward living in outer space. In this session, learn how to conduct an inexpensive lunar colony simulation in your school. Activities will include teamwork ideas, lunar experiments, spacesuit making, scheduling samples, and even the construction of a partial colony!

Rescue Mission Game

Grades 3-5

Sylvia G. Wood, Klein ISD

Let the rescue begin! This session will present one of the many lessons available through NCTM that focus on concepts that relate to flight and space exploration. The students will play a rescue game and learn the concepts of lift, drag, thrust and gravity.

Seeing the Invisible with SOFIA

Grades 6-10

Margie Corp, Troy Middle School & Lea Brulc, Monge Junior High School

Come and learn about NASA's next generation of airborne observatories. Look, see, and hear what's beyond the rainbow by understanding infrared light. Find out how you can fly with NASA aboard SOFIA. Many activities, handouts and resources will be provided.

SESSION SELECTIONS, SATURDAY 9:15-10:30

Starry, Starry Night—Creating Connections Between Art, Music, Writing, and Space Science

Grades K-5

Sara Conlon, Canton Public Schools

Bring your left and right brain to this session to make wonderful connections between space explorations, art, music, and writing. You'll leave with creative space science ideas that are ready and easy to implement in your classroom.

Teamwork & Problem Solving: From the Classroom to Space

Grades 3-10

Reed K. Steele, Challenger Learning Center

This program utilizes a series of hands-on/minds-on activities to bolster students' skills in teamwork, creative problem solving, communication, and decision making skills. Classroom tested, these activities use space as a theme to teach life skills in addition to coordinate graphing, logging, and analyzing data, principles of flight, lunar exploration, and prioritizing. You will receive classroom ready materials.

The Pressures On

Grades 1-4

Cecelia Rankin and Elizabeth Peterson, Farnsworth Elementary

Air gets pushy! Learn about pushing and the power of air. Teach your students simple experiments and how this common fluid behaves.

To Infinity and Beyond!: An Out of This World Space-based Learning Environment

Grades K-12

Doug Walrath & Joe Regan, Wood River Middle School

Elementary school, middle school, or high school—here's something for all grades. A space-based theme of teaching used in a middle school Technology Education program which could just as easily be applied to a science setting, elementary environment or team-teaching situations. Space-based exploration ideas galore (e.g. robotics, microgravity experiments, space stations, wind tunnels) to take home and apply in your classroom.

Two Terrific Teamwork Tasks

Grades 4-6

Laurel Hamilton & Adrian Friend, STARBASE Oklahoma

Two exciting teamwork activities will be presented. These activities will energize your students to work together and communicate to solve the problems presented. These activities can be simplified or expanded to be used with most age groups. Participants will experience these activities first-hand.

SESSION SELECTIONS, SATURDAY 10:45-12:00

Celebrate Mars, and More!

Grades 3-6

Penny Leon Glackman, Merion School, Lower Merion School

Past, present and future space exploration has its eyes on the red planet. Find out ways to include Mars study in the curriculum and to celebrate planetary missions with your students. Discover new hands-on activities: Flight and space-related paper models such as the simple one-straw kite, 2001 Mars Odyssey Aero-Box, or the more complex Cassini. Leave this session with easy-to-use templates, information about user-friendly websites for educators and students, and a beautiful poster for your classroom.

Diving Into Space: A Glimpse at NASA's Future

Grades K-12

Grant Murray, NASA Johnson Space Center

President Bush has given NASA a new vision for space exploration, including retiring the space shuttle and missions to the Moon and Mars. Come hear about the new plans, new technologies, and exciting new future in space exploration.

Every Drop Counts

Grades 3-8

Kati Searcy, Mountain Park Elementary

Discover how ISS engineers are working on an innovative recycling system that can turn the astronauts' own urine in to clean, drinkable water. Participate in a problem solving session relative to water consumption on the ISS. Make and take a simple filtration system to demonstrate water purification. Participants will receive a CD that includes hands on activities, Internet resources, photos and presenter's PowerPoint presentation.

SESSION SELECTIONS, SATURDAY 10:45-12:00

Exploring New Horizons

Grades 5-8

Kelly Wardlaw, NASA/JPL, Kathy Curtin, Civil Air Patrol, & Aaron Wardlaw, US Air Force
Through group description, graphics, and hands-on projects, the participants will experience the exciting New Horizons Mission to Pluto-Charon and the Kuiper Belt Objects. A Solar System Educator will present the information and each participant will construct a model of the (1)solar system and (2) planet Pluto. Don't miss this invigorating look at the future of space exploration and take home an innovative lesson plan.

Finding Mass in Microgravity

Grades 6-8

Ed Massey & Tom Grady, Goldthwaite ISD

A low cost way to help your middle school students understand the difference between mass and weight, line of best fit, and a connection between math and science.

Fun with Frizzle

Grades 1-3

Kimberly Maloy & Judy Moore, STARBASE Oklahoma

Everyone, HOP ON THE BUS! Hands on activities about the properties of matter, rock formations, moon craters, and ringed planets.

Kindernauts

Grades K-3

Dan Malerbo, Carnegie Science Center

Find out how to 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. Discover how to introduce your young learners to robotic spacecraft, the space shuttle and the ISS. Handouts and door prizes provided.

Launch into Space Science with Paper Rockets

Grades K-12

Jay Staker, Iowa State University

Launch yourself into learning "Rocket Science" by building, launching, and analyzing a paper rocket. Learn the dynamics and forces of rocket building and rocket flight. The session will include a full set of lessons for building rockets that match your budget and safety requirements.

How to Build a Solar System with Planets and Orbits to Scale

Grades 5-9

Richard DeLombard, NASA Glenn Research Center

Build components for your own scale solar system to take back and use at your school. This model will combine both the planet size AND the orbital distances between planets. Get some ideas on how to present the solar system size to students.

Mars: Journey to the Red Planet

Grades 6-12

Margaret Baguio & Talia Jurgens, Texas Space Grant Consortium, Joyce Hill & Rebecca Moreland, Highland High School

Mars has been a beacon for exploration and discovery since the dawn of history. Today, Mars stands as a symbol of the high frontier—the next logical step in our exploration of the universe around us. Hands-on activities will provide participants the opportunity to explore the red planet, study its characteristics, and test theories. Curriculum is matched to TEKS. Web sites and activities ready to use in the classroom will be provided.

Seeing the Universe with a New Set of Eyes-The Swift Space Telescope Project

Grades 5-10

David Beier, E/PO NASA, Sonoma State University

NASA's Swift Mission, scheduled for launch in October 2004, uses telescopes to perform detailed multi-wavelength observations starting immediately after a Gamma Ray Burst. Swift has the capability to determine the origin of the still-mysterious GRBs, and to use them to probe the conditions that existed in the early Universe. This hands-on workshop will explain the science behind this mission, and will provide teachers with science curriculum materials and activities to help learn and teach about our multi-wavelength universe.

SESSION SELECTIONS, SATURDAY 10:45-12:00

Seems Like an Awful Waste of Space

Grades 9-12

Dan Oates, West Virginia School for the Blind

The night sky has always held a mystique for all of us. Considering the possibilities of life in the universe and the vastness of space has always been more than we can comprehend. By learning some basic information, concepts, formulas and history, the vastness of space can be brought down to size. Join me in some deep thoughts about the Hubble Deep Field!

Shark Sightings (HJM Young Astronauts) on Mars

Grades K-6

Diane Billings & Elizabeth Grubbs, HJM Elementary

Experience the thrill of travel on Mars with your Young Astronauts. Hands-on activities will include soil sampling, measurement of craters, hydroponics and testing of rock samples. Gain knowledge in building a Young Astronauts program. Participants will be given exciting materials which can be implemented into their classroom or campus enrichment program.

The NASA SCI Files: The Case of the Great Space Exploration

Grades 3-8

Shannon S. Ricles, NASA Langley Research Center

The NASA SCI Files is an annual series of Free Emmy-award-winning educational programs for grades 3-5 emphasizing research-inquiry– and standards-based instruction; Problem-Based Learning (PBL); and scientific inquiry. Each program supports the national mathematics, science, and technology standards and has three components that include (1) a 60-minute television broadcast; (2) an educator guide with activities; and (3) an interactive web site featuring a PBL activity that enables students to further explore topics presented in the broadcast. <http://scifiles.larc.nasa.gov>.

SESSION SELECTIONS, SATURDAY 1:15-2:30

A Brief Explanation of Everything Related to Space...Almost

Grades K-12

Steve Lang, Canadian Space Resource Centre

Is a Black Hole a gateway to another Universe? Has a student ever asked a space question that you couldn't answer? The answer to these and other questions will be revealed. Participants will receive a CD containing the presentation, all question and answers and related information and resources.

Astrotots (Bilingual)

Grades K-6

Kristie Staas, Houston ISD & Amanda Peterson, Pflugerville ISD

What is an Astrotot? An Astrotot is a primary-aged student interested in space exploration. Activities are created and taught in both English and Spanish by 4th and 5th graders in a center-based atmosphere. Session is HANDS-ON and attendees will leave with a CD full of sample activities (both English and Spanish) and a step-by-step knowledge of how to create Astrotots at your school.

Extreme Solar System: Craters, Ice Volcanoes

Grades K-7

Ruth Ruud, Millcreek Township School District & Dan Malerbo, Carnegie Science Center

Come to learn about the Extreme Solar System: volcanoes, ice and craters while doing activities that demonstrate critical thinking, inquiry, and curriculum integration. Door prizes will be given.

Interplanetary Geology for Primary Grades

Grades 2-4

Julie Muffler, Challenger Learning Center

Discover how your students can become interplanetary geologists. Through hands-on, minds-on activities that incorporate life, earth, and physical sciences as well as language arts, these would-be geologists investigate, analyze data, and design spin off investigations. Participate in two or three activities and take home a packet of ten ready to implement for classroom use. Compare these investigations to NASA's!

SESSION SELECTIONS, SATURDAY 1:15-2:30

Investigating Hydroponics

Grades 4-8

Kristy Schneider, LaCenter School District & Laurie Cripe, Evergreen School District

Learn about six simple hydroponic systems today and begin involving your students tomorrow with inquiry investigations. Gain some background knowledge of the Plant Research Unit, which is housed in the Gravitational Biology Facility on the International Space Station.

The Invisible Universe, Viewing More Than The Eye Can See!

Grades 6-9

Lynne H. Hehr & Cindy Cardwell, Center for Math and Science Education/NASA

Explore the *Invisible Universe* through this fun, fast-paced, hands-on, interactive science/math/technology investigation session dealing with wave motion, wavelength and how "invisible" objects in space are viewed. All participants will receive (1) loads of background information on teaching the EM Spectrum from the GEMS.NASA teacher guide, *Invisible Universe: The EM Spectrum from Radio Waves to Gamma Rays*, (2) the video, *Infrared: More Than The Eye Can See*, and (3) a CD packed full of supporting materials, and (4) much more!

MARS: Making Aerospace Real for Students

Grades K-12

Beth A. White & Kathy Baucum, Civil Air Patrol

Aerospace Education Program Managers from National Headquarters Civil Air Patrol will show you how to make aerospace real for students by using aerospace themes to excite and motivate students to excel in core curriculum subjects. Learn how to build a space shuttle, Goddard rocket, and other fun-filled, hands-on educational activities made from inexpensive materials.

Mars Mission Planning in your Classroom

Grades 4-9

Teresa Sindelar & Joel Walker, Kansas Cosmosphere and Space Center

Do your students have the "Right Stuff" to plan and carry out a mission to the Red Planet? We will show you how to find out. The four part mission, created by Cosmosphere Educators for the Mars Academy camp program, will take your students through every phase of a mission from launch to sample analysis and it is easy and affordable to do in any classroom. All attendees will receive a curriculum packet complete with black line masters and additional resources. Learn about this exciting hands-on mission for your classroom today!

Mission to Mars: Effects of Prolonged Microgravity on the Human Body

Grades 9-12

Richard A. Scheuring, D.O., Wylie Laboratories and Life Science Systems

A mission to Mars could take as long as two years. What are the effects on the human body during this long-duration flight? Come learn about current research being conducted to counter the negative effects of space travel and see just what it will take for humans to survive on the Red Planet.

NASA Engineering Design Challenges

Grades 6-10

Julie Clift, Ai Signal Research, Inc. & Kenneth Huff, Williamsville Central Schools

Design a model thermal protection system for the next generation of space transportation vehicles and test it over a propane torch! See how you can lead a thrilling but inexpensive engineering challenge that will get your students to design, build, and test models as well as record data and analyze results. This inquiry-based unit provides many opportunities for incorporating national mathematics, science, and technology learning standards into your curriculum. Student worksheets and evaluation rubrics are just a few of the materials that will be distributed.

Putting the Spin into Spinoffs

Grades 2-6

Karen Schroeder, Beloit-Turner Schools

"Putting the Spin into Spinoffs" Activities and Webquest. Get your students excited about Spinoff and they will broadcast the many benefits of NASA that the public often forgets. Have your students delve into a webquest in which they investigate, research, prepare and present information regarding the wide variety of Spinoffs from NASA. Explore some of the activities students can do in your classroom in various curricular areas. Student presentations are the best way to let the public know about all the ways NASA Spinoff technology benefits our lives.

SESSION SELECTIONS, SATURDAY 1:15-2:30

Robotics Rules!

Grades 6-8

Jeana Reagan, Boerne Middle School North & Michael O'Rourke, Lake Travis High School

Design, build and program Lego rovers to successfully clear debris from a landing site on Mars. Teamwork, critical thinking and problem solving are emphasized in this exciting, hands-on activity.

Sharpening the Pencil: Optimizing the ISS

Grades K-12

Jack Bacon, NASA Johnson Space Center

Recap two years worth of bright ideas and new lessons learned from flying the 11A assembly stage of the ISS as NASA prepares for the final building sequence. This talk will include and expand upon last year's topic "Optimizing the ISS", so if you saw it last year, there will be even more to smile about this time.

Space Cell Biology and Biotechnology

Grades 6-12

Elisca Hicks, JSC BSO E & O

Cell Biology and NASA? Where's the connection? Biotechnology is the answer! Come discover NASA's innovative and novel cell research using the environment of space and how to bring it into your very own classroom. NASA uses spaceflight as well as a microgravity analog called a "rotating bioreactor" to stimulate cell growth as if it was in the body or *in vivo*. Each participant will receive education materials, a CD, a DVD, as well as a classroom model bioreactor to inspire your students with inquiry-based lessons. This is one session on the leading edge of science that you will not want to miss!

SESSION SELECTIONS, SATURDAY 2:45-4:00

3,2 1 Liftoff

Grades K-2

Lynne H. Hehr & Cindy Cardwell, Center for Math and Science Education/NASA

Rocket your way through space exploration with the NASA guide "3,2,1...Liftoff." Experience a fast paced, hands-on session as you explore interdisciplinary activities in science, math and language arts for the early learner. Participants will receive teacher guides, posters, and much, much more!

Elementary Space Museum 2005: Mission to Learning

Grades K-5

Ann Schultz & Kathie Jalowzynski, Shepherd Public Schools

Bring space exploration to your town by organizing and implementing a space museum at your school! Our session addresses the need for children and families that do not have access to space or science museums in their geographic area. The presentation will include: ideas for possible funding, contact information for exhibits, an estimated budget, ways to get the community and school involved, and detailed descriptions of centers used at the museum. These centers were designed to reach different learning styles by using multi-sensory activities that appealed to people of all ages. This event is guaranteed to excite your whole community about future space exploration!

The Health Of Our Planet, Meteorites, Differentiated Planetary Bodies: A Simulation Using Lithos, Activities, Frozen Boiled Eggs, and Earth Rocks

Grades 5-9

Patricia G. Smith & Judy Parish, STARBASE Oklahoma

Learn to simulate the forces in the early solar nebula, manipulate materials to show planetary accretion, and experience the layering that occurs upon the break up of planetary bodies using frozen boiled eggs. A complete guide with a collection of meteorite lithographs of chunks and cross-sections will be provided. Comparisons will be made between the lithographs and rock types on earth. An understanding of the formation and content of meteors may some day lead to mining of meteorites, particularly on the moon and other planetary bodies that have a higher concentration of meteorites because of a lack of atmosphere.

I Am Too Wise To Believe My Eyes: Black Holes & Gamma Ray Bursts

Grades 7-12

Pamela Whiffen, NASA

Experience the wonder of the invisible universe through NASA's latest space-based telescopes. Come away with hands-on, inquiry based activities developed by NASA for your classroom including *The Hidden Lives of Galaxies*, *Anatomy of Black Holes* and *Modeling the Size and Scale of the Universe*. All participants will receive materials and CD-ROMS. 18

SESSION SELECTIONS, SATURDAY 2:45-4:00

Mars Rovers in the Classroom

Grades K-12

*Joan Blackman, JPL Solar System Ambassador &
Dr. Ken Berry, California State Northridge*

Learn how robotics education can close the workforce and gender gap and enhance communications, problem solving skills while developing the necessary work and business ethics necessary for our students' futures. Build a robot and share in the excitement of science and the role it can play in the lives of our students' futures. Join us in a fun filled, hands on engaged learning experience using robots in your classroom. Each participant will receive resources and a CD to take back and use in the classroom.

Math, Mapping, and More on Mars

Grades K-6

Chuck Yeager & Sophia Clotfelter, Priceville Elementary School

Motivate and excite your students with hands-on math and science activities. These activities are based on National Math and Science standards. Activities will intrigue and excite elementary students and show them how fun math and science can be. Attendees will be immersed in hands-on and minds-on activities.

Moon Madness

Grades 4-10

Leesa Hubbard, Wilson County Schools

Experience ways to teach students about our nearest neighbor in space, the Moon! Topics covered will include: Earth/Moon distance, phases of the Moon, why phases occur, lunar and solar eclipses, and the challenge to return to the Moon. Activities in this workshop emphasize hands-on involvement, and you will leave with free instructional materials.

“Rocket Boys”: An Interdisciplinary Unit

Grades 5-12

Kris Anderson, Sandwich Middle School & Ruth Marie Oliver, Space Camp

A novel study integrating core subject areas in an interdisciplinary unit where students will experience the underlying themes of space exploration (past, present, and future) following your dreams, and rocket design/construction in relation to the novel “Rocket Boys” by Homer Hickson, Jr. Attendees will be provided with a copy of the interdisciplinary unit lesson plans and websites. Seminar will include the construction of an air rocket.

A Space Agency in your School

Grades 9-12

Rhonda Cox & Ben Ahring, Orion High School

Come hear about a project that the Illinois State Board of Education has awarded the Those Who Excel Award of Excellence. Learn how you can excite and challenge your high school students with a cross-curricular project which gives students the experience of working like NASA scientists! This presentation will introduce you to a high school project that crosses many curricular areas such as physics, trigonometry, industrial technology, history, English, art, journalism, and media arts. This is truly a challenging project which can be used throughout the school and with the most advanced high school students—and you can do it without giving up other curricula!

Space Center Engineer

Grades 7-9

Danette Morrison & Sabrina Ewald, Richardson ISD

All students love dropping parachutes. What better way to teach free fall, air resistance or drag, than dropping parachutes? Different masses are used and students become space engineers designing a system to drop a rover onto Mars.

Technology for Space Education

Grades 4-6

Tara Inscore & Nancy Gealow, Spring ISD

Are you looking for exciting and updated technology to use in your classroom to teach space? If so, this is the session for you! We will show you how to use and get technology such as PowerPoint, SmartBoard, Dana by AlphaSmart, and e-Instruction CPS Clickers.

SESSION SELECTIONS, SATURDAY 2:45-4:00

Tools of the Trade

Grades 4-6

Stacey Wheeler & Laurel Hamilton, STARBASE Oklahoma

Participants will use teamwork, problem solving, communication, and fine motor skills to repair and replace parts on a "satellite" using a "robotic arm". This teamwork activity is fun and challenging. The activity can be simplified or expanded to be used with any age group. Most materials for this project are ordinary items or those that can be easily obtained.

Writing About Space: Developing the 6-Trait Connection

Grades 4-8

James Dewey & Christina Macaya, Camas School District

This session will focus on presenting rich and challenging writing lessons that help teach the elements of Expository, Persuasive, and Narrative Essays with Space Exploration as the theme. Participants will experience hands-on activities that they can use to challenge their own students to improve their writing skills. Handouts detailing necessary parts of lessons and examples of actual student writing will be given to participants to take home.

SPECIAL AND REOCCURRING SESSIONS

ISS Construction Simulation

Grades K-12

Marsha Willis, University of Texas & Cliff Wendell, Dive Shop Proprietor

This double session will give you the opportunity to experience weightlessness first-hand while using SCUBA gear in a local swimming pool (not the NBL). Train like the astronauts by participating in underwater training exercises. No previous SCUBA experience is necessary for the beginner's sessions, but you must be in good health and ready to get wet! Repeat session attendees or those with dive experience only will be allowed to register for the advanced session. Bring a swimsuit and towel!

This session is offered Thursday, 1:15-4:00 and Friday, 2:45-5:30 for beginners.

This session is offered Saturday 1:15-4:00 for advanced participants.

A mandatory meeting prior to the session is required. You may choose from Thursday, 11:00 AM or 7:15 AM on Friday.

ISS Module Tour

Grades K-12

View the full-scale ISS mock-ups on-site at the Johnson Space Center. This tour is a MUST if you have never been to this Conference so you can see for yourselves where the action takes place!

Neutral Buoyancy Lab Tour

Grades K-12

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

Mission Control Tour

Grades K-12

Once the shuttle has launched, Houston Mission Control takes over. Visit this secured location that monitors shuttle flights and Space Station 24 hours a day. Based on flight schedules, you may visit both Historic Mission Control and the new Flight Control Rooms. *Note, portions of this tour may be cancelled due to mission restrictions.*

Robotics Lab Tour

Grades K-12

Space can be a dangerous place and there are corners that humans just can't reach. Come peak inside the robotics lab at Johnson Space Center and see what engineers have developed to aide the astronauts in construction and maintenance of the ISS and future space exploration.

Food Lab Tour

Grades K-12

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

Advanced Space Propulsion Laboratory

Grades K-12

Come see brand new technology first-hand! Johnson Space Center is developing a new engine for future exploration. Come see what may send the first human to Mars! 20

CONFERENCE REGISTRATON & SESSION SELECTION

Express Registration is now available online! Please visit the conference



website at www.spacecenter.org/seec.html
to register for conference and sessions!



Please indicate if you a pre-registered:

Pre-registered 1st Time Attendee Repeat Attendee Presenter

Name: _____

School: _____

Address: _____

City: _____ State: _____ Zip: _____

Home Phone: _____ Work Phone: _____

Fax: _____ Email: _____

Please indicate what grade level(s) best describe your expertise: _____

IF YOU HAVE NOT PRE-REGISTERED WITH PAYMENT, PLEASE FILL OUT THE PAYMENT INFORMATION BELOW

Please check items you wish to pay for:

Conference Registration \$199 Qty. _____
 Reception Ticket, for guest \$25 Qty. _____
 Banquet Ticket, for guest \$28 Qty. _____ Total: _____

Payment Method: Check Credit Card

If paying by check, Driver's License # _____

Please make checks payable to Space Center Houston.

Visa MasterCard Discover American Express Diner's Club
 Card # _____ Exp. Date: _____

Name as it appears on card: _____

Signature: _____

Number your first, second, and third choice for each block of sessions. If you do not indicate alternate sessions and your first choice is full, we will assign you a session. All efforts will be made to place you in one of your three preferences. You may also register for sessions online.

Thursday, 11:00

Dive Session Meeting

Thursday, 12:00-2:00

- Adapt or Die!
- Bringing Parents on Board
- Human Space Explorer
- Informal Ed Discussion
- Kinesthetic Astronomy
- Light & Color
- Planet Polyhedra
- Return to Flight
- Tiny Bubbles
- To the Moon, Mars & Beyond

Thursday, 1:15-4:00

ISS Construction Simulation (Beginner)

Thursday, 2:30-4:30

- Four Principles of Flight
- Human Space Explorer
- Making Every Day Space Day
- Making the Journey Together
- Microbes in Space
- Newton's Laws
- Return to Flight
- The Moon Rocks

Friday, 7:15 AM

Dive Session Meeting

Friday, 10:30-11:45

- Back to Mercury
- Cleaning up Without Comet
- Come Explore SIF!
- Littlest Astronauts
- It's Hard to Dance
- Mars 2K4
- Microgravity: Bad to Bone
- Science Principles in Space
- Sir Isaac Newton's Motion Spectacular
- Soar into Tech Integration
- Using Microsoft PowerPoint
- What to Wear
- X-35
- ISS Module Tour
- NBL Tour
- Mission Control Tour
- Robotics Lab Tour
- Food Lab Tour
- Advanced Space Lab Tour

Friday, 1:15-2:30

- AIMing for the Moon & Mars
- And the Rocket's Red
- "Egg"pollo Mission to Mars
- Cheering Science Students

Friday, 1:15-2:30 (Continued)

- Mars Exploration
- Orbital Mechanics
- Size Matters
- Space Chicks Explore More
- Where in Space
- Write to Space
- You, Too, Can Become a Space Geek
- The Exploration of Mars
- ISS Module Tour
- NBL Tour
- Mission Control Tour
- Robotics Lab Tour
- Food Lab Tour
- Advanced Space Lab Tour

Friday, 2:45-4:00

- Exploring Mars!
- Fly Me to the Moon
- History in the Making
- Houston, We Have a Problem
- Human Physiology in Space
- It's Happening Today and Tomorrow
- KIDS in Space
- Moon Journals
- Next Stop, New Extrasolar Planets!
- Oreo Moon Phases
- Pack your Bags

CONFERENCE REGISTRATON & SESSION SELECTION

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Friday, 2:45-4:00 (Continued)

- Protector-Nauts
- Start Your Own Space Program
- ISS Module Tour
- NBL Tour
- Mission Control Tour
- Robotics Lab Tour
- Food Lab Tour
- Advanced Space Lab Tour

Friday, 2:45-5:30

- ISS Construction Simulation (Beginner)

Friday, 4:15-5:30

- Back to Mercury
- Bodies in Space
- Canadarm 2
- Geobat Flying Wing
- How Do you Stay Cool
- ISS and the Moon
- Mission to Mars
- NASAexplores
- Reading & Space Station Science
- Stars & Constellations 101
- ISS Module Tour
- NBL Tour
- Mission Control Tour
- Robotics Lab Tour
- Food Lab Tour
- Advanced Space Lab

Saturday, 9:15-10:30

- Gem Clip Astronauts
- Genesis & the Search for Origins
- How to Demo Microgravity
- Life Support
- Living on Orbit
- Lunar Station I
- Rescue Mission Game
- Seeing the Invisible
- Starry, Starry Night
- Teamwork & Problem Solving
- The Pressures On
- To Infinity and Beyond
- Two Terrific Teamwork Tasks
- ISS Module Tour
- NBL Tour
- Mission Control Tour

Saturday, 10:45-12:00

- Celebrate Mars & More
- Diving into Space
- Every Drop Counts
- Exploring New Horizons
- Finding Mass in Microgravity
- Fun with Frizzle

Regular Registration:

Mail or fax forms to
Space Center Houston
Attn: SEEC
1601 NASA Parkway
Houston, TX 77058
Fax to: (281) 283-7724

Saturday, 10:45-12:00 (Continued)

- Kindernauts
- Launch into Space Science
- How to Build a Solar System
- Mars: Journey to the Red Planet
- Seeing the Universe with a New Set of Eyes
- Seems Like an Awful Waste of Space
- Shark Sightings
- The NASA SCI Files
- ISS Module Tour
- NBL Tour
- Mission Control Tour

Saturday, 1:15-2:30

- A Brief Explanation
- Astrotots (Bilingual)
- Extreme Solar System
- Interplanetary Geology
- Investigating Hydroponics
- The Invisible Universe
- MARS-Making Aerospace Real
- Mars Mission Planning
- Mission to Mars
- NASA Engineering
- Putting the Spin in Spinoffs
- Robotics Rules
- Sharpening the Pencil
- Space Cell Biology
- ISS Module Tour
- NBL Tour
- Mission Control Tour

Saturday, 1:15-4:00

- ISS Construction Simulation (Advanced)

Saturday, 2:45-4:00

- 3, 2, 1 Liftoff
- Elementary Space Museum
- The Health of Our Planet
- I Am Too Wise
- Mars Rovers in the Classroom
- Math, Mapping and More
- Moon Madness
- "Rocket Boys"
- A Space Agency in your School
- Space Center Engineer
- Technology for Space Education
- Tools of the Trade
- Writing About Space
- ISS Module Tour
- NBL Tour
- Mission Control Tour

If you have any questions please contact the SEEC staff by calling (281) 244-2149

**or by emailing
katieb@spacecenter.org**



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