

Astronaut Ellison Onizuka Science Day

"Make your life count and the world will be a better place because you tried." Ellison Onizuka, Astronaut

Saturday, January 24, 2009, University of Hawai'i at Hilo

Interactive Workshops to choose from for 4th – 12th grade students and parents and teachers of any grade level



WORKSHOP 01 Up Close with the Astronaut

Be inspired by an astronaut. Bring your questions of how to live and work in space, and how to become an astronaut. (Session II only)

Workshop 02 The Incredible Pathfinder Mission

Wendell Thomas, Challenger Center /NASA RERC Hawai'i

The Mars Pathfinder Mission provided fabulous information for NASA scientists. Construct a working rover model and explore facts about Mars. Are you ready to build your working model rover and learn more about the planet Mars?

Workshop 03 Hydroponic Vegetable Growing

Dr. Bernard Kraky and Glenn Sako, Cooperative Extension Service, College of Tropical Agriculture and Human Resources, Univ. of Hawai'i at Manoa

The basic concept of the non-circulating hydroponic method will be discussed with a PowerPoint presentation followed by a hands on demonstration of a hydroponic growing module. Various methods of growing a single head of lettuce to a large scale operation will be presented

Workshop 04 Gases in Space Living

Kristine Takata, Hilo High School, and Ron Takata, Honolulu Community College

In order to live in space, on the Moon or on Mars, we need to maintain a healthful atmosphere. Oxygen must be produced for us to breathe, get rid of harmful gases in the air of our living quarters which include carbon dioxide. Learn the needs and problems of gases in space living.

Workshop 05 Electricity Flows

Marion Buscher, St. Joseph School

What is electricity? How does it light up our houses? What is the role of the switch? Come and learn the basics of electricity - the flow of power from a battery through a light bulb and back to the battery. See how a switch can turn on or off the light.

Workshop 06 Supervolcano!

Steven Lundblad, Dept. of Geology- Univ. of Hawai'i at Hilo, and Sean O'Neill, Center for the Study of Active Volcanoes-Univ. of Hawai'i at Hilo

Why do volcanoes erupt? What causes some volcanoes to erupt explosively? Do volcanoes in Hawai'i explode? Come explore the factors that influence volcanic eruptions and watch some volcanic eruption simulations.

Workshop 07 GPS Geocaching

Waimea Middle School Team, Waimea Middle Public Conversion Charter School

Join our team in our latest mission. You will become an expert in GPS use to mark and find strategic locations vital to the mission. In this geocaching experience you will use your technology skills and decoding abilities to save the day.

Workshop 08 Design an Alien—Introduction of Astrobiology

Dr. Kumiko S. Usuda and Rie Takemoto, Subaru Telescope, National Astronomical Observatory of Japan

Astronomers have found about 300 planets OUTSIDE of our Solar System, and a few of them are found to be in a habitable zone. Scientists are now thinking seriously about living things outside of Earth. Considering the designs of animals and ourselves on Earth, let's design an alien under a specific environment.

Workshop 09 Motion, Flight and Gravity!

Mary Ann Chester, Alicia Hui and Sandra Hathaway

Come move and fly with Bernoulli and Newton! We will construct and test some flying gizmos with Bernoulli's Law in mind and be on the move testing some of Newton's Laws of Motion. You will learn about Bernoulli, a Swiss mathematician that liked messing around with air pressure and Isaac Newton, a British physicist who was on the move.

Workshop 10 Photo Technology for Fun

Lois Sanekane, Robyn Mathews, Vincent Sanekane, Pahoa High & Intermediate School Gifts, preserving memories, research projects and presentations for school...what do they have in common? Photography! Participants will learn basic photography techniques, go out and take their own photos with digital cameras, download their pictures, crop them and print them to take home as souvenirs all in one hour!

Workshop 11 Big, Little & In-Between: Observations in Scale

Gail Loeffler and Ranjani Srinivasan, 'Imiloa Astronomy Center

Make your own scientific observations of objects from the very small (using jeweler's loupes and microscopes), to the everyday (using rulers and yardsticks), to the very large scale (using models to help understand large distances in the solar system and beyond). Be amazed at how size changes your perspective and sparks the imagination!

Workshop 12 Galileo and Refracting Telescopes

Jon Archambeau and Andolie Marten, Gemini Observatory

Starting from the contributions of Galileo to the astronomy here in Hawaii purportedly at the cutting edge of science, participants will be given a brief history of astronomy.

Then you will each assemble a small refracting telescope and use it to observe various galactic pictures. Come see how Galileo did it.

Workshop 13 Cartesian Diver Madness

Laurel Clay, Kealahoe Intermediate School

Explore making various types of cartesian divers, including a diabolical cartesian diver challenge! This is a hands-on, might-get-a little-wet, make-it/take-it workshop. Be sure to bring your enthusiasm and thinking skills!

Workshop 14 External Fish Anatomy

Yumi Yasutake, Tanya DeCambra, Papahānaumokuākea Marine National Monument, NOAA

Learn about external fish anatomy, and make your own gyotaku (fish print) shirts. Be introduced to the scientific terms of the fish parts, as well as their function. (Participants should be prepared to work with paint that may stain clothes if not washed out immediately.)

Workshop 15 Different Wavelengths of Light/Experiments in the Infrared

Kenyan Beals, University of Hawai'i Institute for Astronomy

There is more to light than meets the eye! The visible spectrum is a very small part of the entire light spectrum. Explore the different wavelengths and learn about their energy, frequency, and how they can be observed. We will also do a few demonstrations that illustrate how we "see" the infrared spectrum using an infrared camera.

Workshop 16 Me?? A Rocket Scientist??

Calvin Motoda, Boeing

Have you ever dreamed of becoming a rocket scientist? Never? What does a rocket scientist do? Not sure? Come and meet one right here from our own Big Island. Find out if this job is for you as you construct, test-fly, and get to take home a space shuttle (glider, of course). Who knows? You may be the next rocket scientist from our island!

Workshop 17 Rambling Rovers

Cindy Fong, Hilo Intermediate School, and Dean McMahl, KapuRacing and Electrical Engineer Mentor, Regional MATE-BIRR Steering Committee

Build an underwater remotely operated vehicle (ROV) to pick up colored samples from the shallow lagoon. A fun learning activity and a friendly competition.

Workshop 18 Hilo Bay Animals Under the Microscope

Lisa Parr and Marine Option Program Students, UHH Marine Science Dept and Marine Option Program

Lots of organisms make their homes in Hilo Bay - and not just fish and urchins. Come meet the lesser known inhabitants of the bay, like tunicates, bryozoans, amphipods, nematodes...creatures you may not have even known exist! You'll be working in the UHH Marine Science wet lab, looking at live animals under microscopes. Wear closed-toed shoes (sneakers) and be prepared to get your hands muddy!

Workshop 19 Newton's Laws and Bernoulli Principle

Ingrid Moreau, STARBASE Hawai'i

Learn about Newton's 3 Laws of Motion, force in motion, and their real life applications and properties of air along with Bernoulli's Principle. Hands-on activities include Index Card-Penny trick, Catapult, Newton's Cradle and the floating Ping Pong Ball. (session I only)

Workshop 20 Model Rocketry (Stomp and Compressed Air)

Todd Friel, STARBASE Hawai'i

Use stomp and compressed air model rocketry in a hands-on environment. Build and fire your own compressed air rockets, as well as a stomp rocket. Learn Newton's Laws of Motion, the Forces of Flight, and the fin and spin-stabilized ballistics. (session II only)

Workshop 21 Alien Worlds: Real and Imagined

Inge Heyer, Joint Astronomy Center

With new and more sensitive technology it has finally become possible to search for planets around other stars. Since the age of science fiction people have imagined what other worlds might look like, now we can at least infer some of their characteristics. It won't be long until we will be able to take pictures. What are these worlds like? Can we compare them to our planets? And if there should be life on these worlds, how might it perceive the Universe? We will go on a journey, both fanciful and very real, to see what we have found in our search for alien worlds.

Workshop 22 How Hot is Too Hot? Heat Shielding for our Future Spacecraft?

Pascal Pinner, Hilo Intermediate School

Each space team will develop a heat shield for their spacecraft of the future. A competition will ensue to see how long the shield holds together with a direct heat source (like re-entry into our atmosphere). May the best design win!

Workshop 23 Native Species—Propagation & Protection

Virginia Aragon and Mary Brzenowski, Div. of Forestry & Wildlife – Kaulana Manu

Native Bird and Plant Sanctuary

Hawaii's endangered and rare birds as well as plants are well cared for by the hard working wildlife workers and one special place in particular, Kaulana Manu -Native Bird & Plant Sanctuary. Learn how we propagate or grow a huge koa tree from seed and plant a seed yourself which will later be planted in the sanctuary. View a live native Nene goose and a baby pig.

Workshop 24 Make a Lunar Crater! Prelude to NASA's LCROSS Mission to the Moon

Tony Leavitt, NASA Ames Research Center

Summer 2009, NASA will intentionally crash a spacecraft into the surface of the Moon. It is called the LCROSS Mission. Learn how this will happen and what NASA hopes to discover by creating this crater. Next you will have a chance to make your own lunar crater! Projectiles will be launched into lunar soil simulants, then craters will be measured and analyzed for size, shape and the ejecta tossed out.