

EVERGREEN AVIATION & SPACE MUSEUM

OUTREACH PROGRAMS

OUR MISSION

To Inspire and Educate

To Promote and Preserve Aviation and Space History

To Honor the Patriotic Service of Our Veterans

2010-2011



WHAT WE OFFER:

- Free program presentations within the classroom from a Museum Educator/s
- Engineering Design Challenges
- K-12 Educational Programming aligned to Oregon/Washington State Standards
- Serve ALL populations and development levels
- We provide accessible summer school/afterschool programs (on/offsite)
- Literacy Programs (ABC Book Club/Differentiated instruction).
- Host Science Fairs/Come to your site to be a Science Fair Judge
- We do it all! We go to school festivals/fairs/ Science Nights/Career Days/Community festivals/ Community groups (YMCA, Boys and Girls Clubs, Boy & Girl Scouts, Daycares, VBS and other associations/Camps)

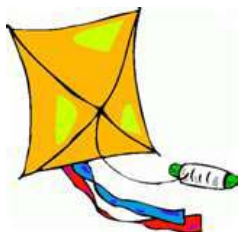


To Educate & Inspire

Outreach Education Programs: Grades K-8 Standards-Aligned Lessons & Activities

Moon Madness

Introduce your students to Moon/Earth differences in size, gravity, surface features, and temperature, as well as NASA spin-offs, and getting to the Moon, in a high-energy presentation about our nearest neighbor!

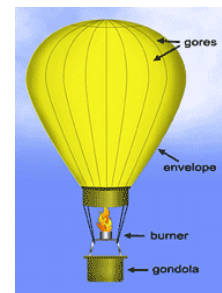


Kites Away! Kites in the Classroom

Learn how kites were precursors to airplanes and build your own air-flow kite. The student will design, build, and fly a kite. They will observe how a kite “catches” the wind and how different types of kites respond to the airflow of the wind.

Fantastic Hot Air Balloons!

This activity combines the natural excitement of the balloon with a wealth of teaching experience through a live demonstration and a hands-on activity. Who thought balloons could teach kids about principles of physics, chemistry, AND biology? You bet they can! Students will investigate air pressure and the properties of fluids and gases.



Feel the Force

Sir Isaac Newton would love to be here for this activity! Our Educator will guide your students through 5 'moving' science activities. Students will learn about gravity, the center of gravity, conservation of energy, resistance, friction, and acceleration! Force is physics and physics is force. And it's all fun!

Robotics: This program examines the expanding role of robotics in the exploration of Space, participants learn about NASA's most advanced robotic systems. **Space Robotics Program:** During this multi-session experience, participants will use the museum's robotics kits to explore the basic engineering skills required to build a successful moving robot, using some of the same technology astronaut/s use in space. Students will also learn some of the history of robotics and discuss the latest achievements of robots in space, on Earth, and in the home.



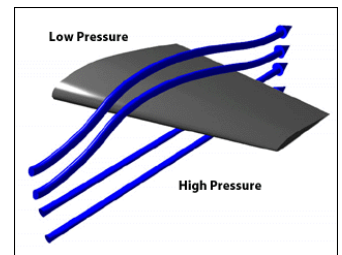
Gearing Up For Space:

What to Wear? Students will learn the environment of space cannot support human life and that a space suit functions like a miniature spacecraft to enable an astronaut to work outside the spacecraft. The educator will have a replica space suit demonstrated when talking to the students which will display the intricate parts of the actual space-suit. 1 hour presentation/ /Hands on activity.



Air: What is air? Properties of Air:

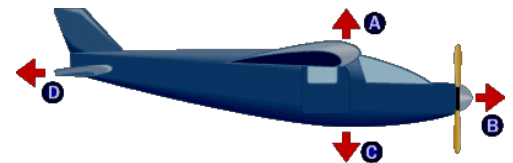
Students will learn the answer to the question: "What is air?" and learn the various properties of air in a fun-filled presentation with hands on activities. Students will learn how air takes up space, how it moves, that it can contain moisture and that air holds some things up. Students will be able to answer the following questions: Why do airplanes fly? Does air have weight? Explore these and other topics like how hot air balloons work. 1 hour presentation.



Rocketry: This cross curricular activity will allow students to gain an understanding of how objects move (based on air flight and space). Students will shoot off air-propelled paper rockets after the Evergreen Museum Educator shows how rockets work and demonstrate Newton's Third Law of Motion. 1 hour presentation/Video/Hands-on demonstration.

The Four Forces of Flight:

What Makes an Airplane Fly? Students will gain valuable knowledge about the different parts of an aircraft and identify the important forces that allow planes to fly. 1 hour presentation.



Wright Brothers History:

Students enjoy a variety of activities and demonstrations which illustrate the Wright Brothers' inspirations, discoveries, and experiences. Class experience is focused on the "Process of Invention."

Weather and Launch: Students will learn how weather not only affects their lives; they will also learn how weather develops and what precautions NASA makes in regards to monitoring the weather for a successful Space Shuttle launch. Students will assess local weather data to determine whether or not we could launch a shuttle at the Museum. Hands-on activities with a fun-filled presentation. In conjunction with WeatherBug online information.



Special Programs:



SKY HIGH After-School Program: Student STEM Learning Experiences: In/Outdoor education programs for after-school groups, called STEM learning experiences, could be available for kindergarten through grade 12

by the Evergreen Aviation and Space Museum at your school site. Most STEM learning experiences follow the sequence and continuum outlined in the **SKY HIGH** Learning Program, a supplemental curriculum developed by education team. Using this conceptual-based science education activity continuum, these activities develop aviation awareness, aeronautics and space travel knowledge and problem solving skills at the appropriate grade and development level, meet the National and State Educational Standards and are directed to fit your time needs and demands for your specific after-school program.



Sky High programs can be derived from outreach school-day presentations or could be adapted to meet the needs of the after-school program in regards to topic/subject matter taught. This is a 6 week course (1 hour per week) with the option of having an accumulative visit to our Museum/s. We serve special populations/ELL learners/general education populations. Call today to reserve your slot!

Teaching Thematic Units:

Using a thematic approach is a great way to cover a variety of topics related to a major topic or unit. Pick a theme from our selection of popular themes. Our Museum educator will come out and teach standards-aligned lessons to your students within your chosen block/unit schedule. These unit lessons are challenging, exciting, and fun for all students! We provide 2 to 4 week (1 hour a week) units for your convenience. Let us be a resource for you!



Units Available:

Rocketry

Robotics

Theory of Flight

Living and Working in Space

Engineering Concepts: Aviation and Space

Solar System:

Solar System Thematic Unit:



Come explore our Solar System! This thematic unit will take your students off into outer space with multiple techniques of learning. This unit provides the option to assign oral and written reports about the planets and those that have ventured into space; hands-on activities that provide many ways to look at our planets; as well as many other possibilities to tie into other subjects. At the end of this unit, be sure to set up the chance with the Outreach program for the opportunity to blast into outer space with some fun connection activities.

Elementary Design Challenges:

Design Challenge Unit Lessons (4-5 hour sessions): A Museum educator will come out and introduce basic concepts and organization of the design challenge. Student teams are invited to demonstrate their knowledge, skills and creative problem solving techniques through an exciting design challenge. Student teams design and program their idea/engineered contraption to meet the requirements of each challenge. The student-designed creations are constructed from the materials provided to each team during 4l 1 hour sessions. Can fit to individual daily or weekly schedules.



Eggstronaut Launch & Safe Landing: Student teams will be asked to brainstorm the factors affecting the speed at which a space capsule reaches the surface of a planet or moon and suggest how engineers might deal with each factor. They create a specific plan for a capsule that will protect an egg that is dropped from a specific height. Once their designs are complete and approved, they build their capsule from the materials provided. If time allows, they test this model and refine it. Once all models are

finalized, each capsule is dropped from a high point. The group records the results of each drop and discusses the strengths and weaknesses of each kind of design. Participating teams will be invited to attend a large-scale design challenge held at the Evergreen Space Museum in May.

Special Populations: Grades K-8



(Exceptional people with special needs) *Soaring to New Heights* Programs: The complete array of education services offered is also available for special populations. Special programming is available for groups with physical and learning disabilities.

Up, Up, and Away:

Your students with exceptional needs will learn the power of thrust in regards to how birds, insects, and other objects fly by participating in an exciting hands-on activity in addition to a developmentally appropriate craft.



Aerobic Astronomy:

Through kinesthetic movement students will learn how the Earth and other planets within our Solar System

move in conjunction with one another and how our Solar System works as a whole. Not only will they learn about how the Solar System operates, they will also participate in hands-on activities that will give them a better sense of the different sizes of the planets and distance between the Earth and the Sun and other planets.

Come Fly With Us!



The Outreach Program is a free educational program; however we do accept donations to further develop our programs. Thank You!
To make a donation; contact Evergreen Aviation & Space Museum at@ 503.434.4180



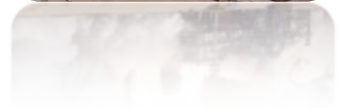
Outreach Activities for Middle and High School Classrooms

Middle School
and High School
Standards-
Based Lessons

Accommodated
to your student
and timeframe
needs

Design
Challenges/STEM
Centered
Activities/Science
Inquiry-Based

- LESSONS
AVAILABLE
- Gearing Up For Space
- Rocketry Propulsion
- Forces of Flight
- Design Challenges: Eggstronaut Challenge
- Infrared – Sensing the Invisible



Lesson Content:

Life in Space Activities

NASA's mission is not just entry into space, but also how to live there for extended periods of time, presently aboard the International Space Station, and soon on the Moon and Mars. This series of lessons highlights challenges that must be met for longer term space life.

Gearing Up for Space: Students will learn the environment of space cannot support human life and that a space suit functions like a miniature spacecraft to enable an astronaut to work outside the spacecraft. The educator can either have an actual space suit demonstrated when talking to the students, or have a billboard presentation that demonstrates the layers and intricate parts of the actual space-suit. Perhaps, students can volunteer to try on spacesuit to demonstrate the multi-step approach of securing the space suit before a simulated spacewalk. Presentation/Video/Hands on activity: Taking apart or putting together objects with large astronaut type gloves. Students will gain a good sense of the difficulty maneuvering objects around and accomplishing tasks with space suit-type gloves.

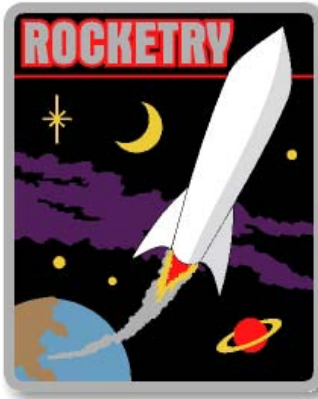


Infrared

If something is not visible, is it really there? How else can our bodies sense the phenomena and matter around us? Do things exist that our bodies cannot sense? How do we determine that these things are real?

Sensing the Invisible

A good pre-activity would be to do the Herschel Experiment. In "Sensing the Invisible", students will complete several short activities to learn about infrared radiation. They will first observe, using their own bodies, how infrared is detected on a screen. Next, they will search for red stars in a dimly lit room while wearing blue cellophane lenses, and apply what they learn to an image taken of the Crab Nebula. They will then learn about color addition and color subtraction by playing a card game. Finally, they will detect infrared light by hearing it!- using a solar panel and a transistor radio. (grades 6-8, 9-12)

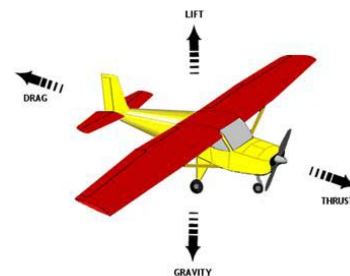


Rocketry:

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The Four Forces of Flight:

What Makes an Airplane Fly? Students will gain valuable knowledge about the different parts of an aircraft and identify the important forces that allow planes to fly. 1 hour presentation.



ENGINEERING DESIGN CHALLENGES:

Middle School Design Challenge Unit Lessons (4 week sessions): A Museum educator will come out and introduce basic concepts and organization of the design challenge. Student teams are invited to demonstrate their knowledge, skills and creative problem solving techniques through an exciting design challenge. Student teams design and program their idea/engineered contraption to meet the requirements of each challenge. The student-designed creations are constructed from the materials provided to each team during 4-5/ 1 hour sessions.

Eggstronaut Launch & Safe Landing: Student teams will be asked to brainstorm the factors affecting the speed at which a space capsule reaches the surface of a planet or moon and suggest how engineers might deal with each factor. They create a specific plan for a capsule that will protect an egg that is dropped from a specific height. Once their designs are complete and approved, they build their capsule from the materials provided. If time allows, they test this model and refine it. Once all models are finalized, each capsule is dropped from a high point. The group records the results of each drop and discusses the strengths and weaknesses of each kind of design. Participating teams will be invited to attend a large-scale design challenge held at the Evergreen Space Museum in May.



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