

Endeavour Science Education Programs (ESEP)

A. Airplanes and Flight

Learn the basics of aerodynamics and airplane components. Capture the endeavour spirit to fly. Balsa-wood model airplanes that students have constructed in class prior to field trip are competitively flown by correctly adjusting aileron, rudder and elevators tabs after the lesson. Launch water pressure rockets if time permits. Recommended Items to Order: 1 Airplane Kit per student (see following page).

B. Astronomy and Waves.

Understand the basics of the visible light spectrum, frequency and Doppler shift effect with "hands-on" demonstrations. Astronomy terms such as supernova explosions, black-holes, comets, asteroids, clusters, and quasars are discussed. View the beginning of the universe and our solar system with videos. Construct and experiment with a spectroscopy kit which accurately measures the frequency of light. Recommended Items to Order: 1 Spectroscopy Kit per student (see following page).

C. Human Space Exploration

Space environmental concepts such as a vacuum, extreme temperatures and why astronauts float are explained. Astronaut suit design is explained and demonstrated. Living and eating aboard the Space Shuttle are shown on video. Space Station construction and assembly are shown. Current Mars missions and future ones are explored. A Space Shuttle glider is constructed at the Endeavour Center and a Shuttle tile is burned. The concepts of heat transfer and insulation are explained. Recommended Items to Order: 1 Space Shuttle Glider per student, Astronaut ice cream (see following page).

D. Rocket Propulsion

Introduction to the basics of solid and liquid type rocket motors. Current space vehicles are discussed with models which include OSC's Pegasus rocket, Titan IV, Space Shuttle and the Saturn V. A video of rocket launches from Vandenberg AFB and Pegasus vehicle stage separations from an on-board camera looking back towards Earth is shown as it deploys a satellite. Model rockets that students have constructed in class prior to field trip are discussed and launched after the lesson. Recommended Items to Order: 1 Rocket Kit per student - must be built prior to program (see following page).

E. Telescopes and Constellations

Discuss the different types of telescopes and how they work. Discover how to view the night sky and constellations. Construct and learn how to use a star chart. Build and use a refractor telescope kit at the Endeavour Center if purchased. Take a tour of the Endeavour Center's \$60,000 solar-powered research telescope and dome. Recommended Items to Order: 1 Refractor Telescope Kit per student, 1 Star Chart per student (see following page).

F. Intergalactic Geology

Learn all about plate tectonics, volcanism, landforms, and rocks on Earth and beyond. Learn to identify the three different types of rocks using the rock cycle and various physical property tests. Field Trip to local fossil dig site may be requested. Recommended Items to Order: Rental of 15-Passenger Van / Bus depending on group size and/or 1 Break Your Own Geode per student (see following page).

G. Robotics

Learn all about NASA's Martian Rover programs and other robotic missions. Build battery-powered rovers of your own design and experiment with robotics (see following page).

ENDEAVOUR SCIENCE EDUCATION PROGRAM (ESEP) RECEIPT

ORIGINAL TO CUSTOMER AND COPY TO SIL FILE
CHECKS PAYABLE TO: SIL, INC. FOR ENDEAVOUR CENTER SCHOOL FIELD TRIP

SCHOOL ORGANIZER: _____ PHONE: () - FAX: () -

PROGRAM: _____ E-MAIL: _____

GROUP/SCHOOL: _____ ADDRESS: _____

GROUP VISIT DATE(S) (00/00/00): ____ / ____ / ____ , ____ / ____ / ____

GROUP VISIT TIME(S) (00:00a/pm to 00:00a/pm): ____ : ____ am - ____ : ____ pm

WHERE DID YOU HEAR ABOUT US: _____

NOTES:

SCIENCE KITS			
ITEM	UNIT COST	QUANTITY	COST
AIRPLANE KIT	\$5.00 Ea.		\$.
ROCKET KITS (includes 1 motor per kit installed prior to launch)	\$75.00/box of 12 Kits \$6.25/Kit	Boxes Kits	\$.
ROBOTICS KIT	\$8.00 Ea.		\$.
SPECTRASCOPE KITS	\$100.00/box of 10 Kits \$10.00/Kit	Boxes Kits	\$.
REFRACTOR TELESCOPE KITS	\$75.00/box of 10 Kits \$7.50/Kit	Boxes Kits	\$.
STAR CHART	\$2.00 Ea.		\$.
SPACE SHUTTLE GLIDER	\$2.00 Ea.		\$.
SPACE ICE CREAM	\$3.00 Ea.		\$.
BREAK YOUR OWN GEODES	\$2.00 Ea.		\$.
Add 7.75% Sales Tax			\$.
PROGRAM AT THE ENDEAVOUR CENTER			
ITEM	UNIT COST	QUANTITY	COST
COST PERYOUTH: 3-4 hours (NO CHARGE FOR ADULTS)	\$8.00		\$.
COST PER YOUTH: 1-2 hours (NO CHARGE FOR ADULTS)	\$6.00		\$.
Rental of 15-Passenger Van (1/2 DAY TRIP)	\$100.00		\$.
Rental of 15-Passenger Van (FULL DAY TRIP)	\$150.00		\$.
Rental of 28-Passenger Bus (includes driver) (1/2 DAY TRIP)	\$125.00		\$.
Rental of 28-Passenger Bus (includes driver) (FULL DAY TRIP)	\$200.00		\$.
MILEAGE (Van or Bus Rental)	\$0.44/Mi.	. Mi.	\$.
PROGRAM AT SCHOOL/GROUP SITE			
ITEM	UNIT COST	QUANTITY	COST
OUTSIDE-CENTER PROGRAM	\$50/Hr. for 1 Staff	. Hrs.	\$.
	\$25/Hr./additional staff	. Hrs.	\$.
MILEAGE (to and from School/Group Site)	\$0.44/Mi.	. Mi.	\$.
TOTAL =			\$.