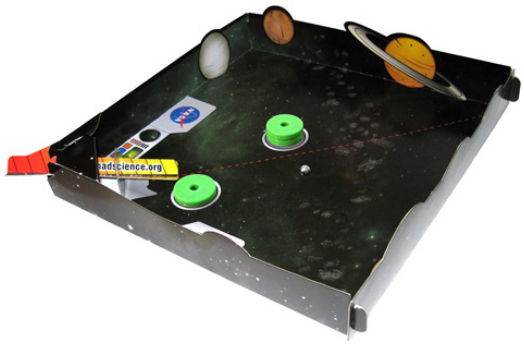
NASA: Academy of Future Space Explorers

SUMMARY: In this class, students set off on a voyage to discover the Solar System. Students impersonate the planets to compare their sizes and distances from the Sun, recreate a solar and lunar eclipse, and become particles on a voyage into a planet's core. Students build the Mad Science Gravity Assisted Launcher that models how planetary gravity assists on space probes.

EDUCATIONAL VALUE: In Planets and Moons, students use models and scaling in order to understand the relative size and distance of objects in our Solar System. Your class will have chance to view the planets through micro-slide viewers. Students experiment with eclipses and learn why denser materials make up a planet's core while lighter materials form its surface. Your class will also have a chance to do group work with Planetariums, learning about day and night, the seasons, eclipses, and the location and motions of the planets.



TAKE-HOME PROJECT: Mad Science Gravity Assisted Launcher

ATMOSPHERE & BEYOND

SUMMARY: In Atmosphere and Beyond, students will discover the properties of the air around us and explore the atmosphere of Earth and those of planets beyond. Students will be challenged to keep Arny the Aquanaut dry during an underwater walk, and to create their very own sunset. Children will assemble the Mad Science Meteorological Station that senses the environment and indicates weather data. Equipped with a UV detector, barometer and anemometer, this tiny powerhouse works well with our planet's atmosphere.

EDUCATIONAL VALUE: Students will gain an understanding of the importance of our planet's atmosphere for life on Earth, and compare the composition of Earth's atmosphere with those of other planets in the solar system. Students learn what it takes to make a planet viable for life as we know it, explore the effects of atmospheric particles on the color of sunsets and rainbows, and study the optical properties of a turbulent atmosphere.

TAKE-HOME PROJECT: Mad Science Meteorological Station

SUMMARY: In Space Phenomena, students will explore the phenomenal events that take place in the night sky. Children will create their own impact craters, and observe model meteors fall through a model atmosphere. After a friendly game of satellite tag designed to teach students about reflected light, students watch a model comet form right before their eyes. After exploring the composition of real comets, students build The Mad Science Space Telescope models the satellite viewers orbiting our Earth. This device's fixed double lenses bring faraway objects into focus. You will learn about optics and like what you see!

EDUCATIONAL VALUE: Space Phenomena introduces students to phenomenal space events. Students have a chance to investigate real Meteorites, Tektites, and view real space phenomena's through micro-slide viewers. 5th and 6th graders will have a chance to make comets out of dry ice and simulate asteroids burning out. Students investigate asteroid impacts and meteors, learn to differentiate the lights of airplanes from those of satellites, and explore the composition and nature of comets!

TAKE-HOME PRODUCT:

Space Telescope

SUN AND STARS

SUMMARY:

In this class, students will investigate the Sun and distant stars, and the galaxies they form. Children will explore stellar life cycles, create new solar systems, and make their own constellations. The class concludes with building the Mad Science Cosmic Disk reveals a section of the night sky that's viewable around the globe. This pocket sky map provides children with a chance to add their elements to the universe with a sticker sheet of stars.

EDUCATIONAL VALUE:

This workshop introduces students to stars (including our own) and the galaxies they form. A rich combination of hands-on activities and interactive demonstrations teaches children about stellar life cycles, how stars affect planetary formation, and about the various kinds of galaxies. Children will also investigate the perception of stars from Earth as they examine constellations in three dimensions.

TAKE-HOME PRODUCT:

Cosmic Disk

ROCKET SCIENCE

SUMMARY: Students will follow a detailed construction plan to build their very own model rockets while exploring the science of rocketry. Children will play a fun game illustrating the four forces of flight. A model rocket launch will be part of the Space Travel class.

EDUCATIONAL VALUE: Students are provided with a valuable hands-on experience as they build a functional model rocket. As they move through the various stages of construction, students learn the components of a rocket and the roles each play in a rocket's flight. Students will learn about the four forces affecting flight in lessons that will be reinforced with a fun game in which they race through space.

TAKE-HOME PRODUCT:

Skyblazer II Rocket

SUMMARY:

In Space Travel, students will launch their investigation of rocket propulsion using the compressed air inside balloons for thrust. The class will race balloon rockets and be challenged to devise a balloon-powered rocket car. Experimenting with the fast moving air produced by spinning propellers, students will build a unique Shuttle Copter to take home. For our grand finale, students will witness a thrilling model rocket launch, and learn the meticulous preparations necessary to send up a rocket! Children build a Space Copter and use kinetic energy to make the Copter fly.

EDUCATIONAL VALUE:

In this class, students will learn about the propulsion systems employed for space travel. Children will participate in inquiry-based discussions and multiple hands-on experiments designed to introduce them to the concepts of thrust, propulsion, action/reaction, aerodynamics, rocket construction, the stages of rocket flight, and more!

TAKE-HOME PRODUCT:

Space Copter

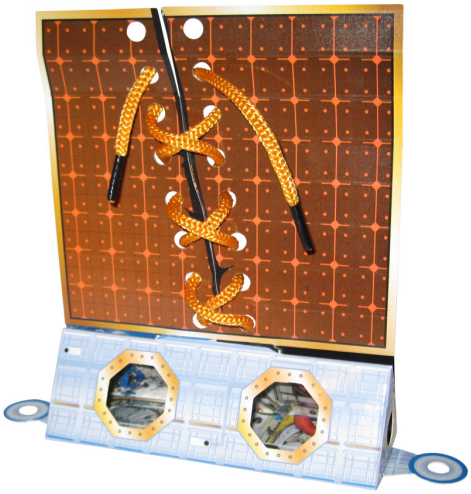
SUMMARY: Space Technology starts with an exploration of space-related technologies used on Earth. Students will help laser light through a maze, use principles of radar technology to find hidden mountains, and discover the importance of points of reference to depth perception. From there, it's out into space with the launch of a satellite into orbit (at the edge of their desks) and an examination of potential threats to spacecraft. Children will leave revved up by an investigation of shuttle fuel! Children take home the Mad Science Stereoscopic Viewer, which brings depth to photographed sightings of our solar system. This space probe camera model helps the brain link two pictures to make one 3D space-related image. Pick one up to bring out-of-this-world scenes down to Earth!

EDUCATIONAL VALUE: This workshop introduces students to space-related technologies, including those used on Earth to aid space exploration and the very scientific principles of space travel. Engaging demonstrations and exciting hands-on activities will make this investigation of Space Technology a fun learning experience.

TAKE-HOME PRODUCT: Mad Science Stereoscopic Viewer

LIVING IN SPACE

SUMMARY: Students will set out on a mission to investigate life in space! Children will see the special adaptations needed to live in space, learn about mission training techniques, and participate in the construction of a model space station. Students build a Mad Science Spacewalk Challenge and simulate a solar panel problem on an International Space Station. Children take on the task of repairing a ripped solar panel without moving off target. This is a no-holds test for new astronauts.



EDUCATIONAL VALUE: This class puts students in the shoes of an astronaut. Children will explore the various demands and challenges facing astronauts, and the scientists who send them into space. Students then investigate astronaut training, mobility, life support, and experience astronaut life for themselves as they participate in a space station building mission. Comparing their own schedules with those of astronauts, students will see how demanding a role it is!

TAKE-HOME PRODUCT:

Spacewalk Challenge