



FLANDRAU TEACHER GUIDE

From customizable planetarium shows to hands-on exhibits, discovery program add-ons or a guided tour of our world class Mineral Museum, Flandrau offers a variety of options to make your field trip the **best one ever.**

A standard **field trip** includes an age-appropriate, interactive planetarium show for your pre-kindergarten through high school group, presented by a knowledgeable presenter. Your class will also explore hands-on exhibits representing various sciences.



Field Trips are available by reservation to school groups Monday through Friday mornings. Afternoon field trips are available on select days. Discovery programs and mineral museum tours are available at various times throughout the year, see our website for more details on specific availability of these programs. Shows, exhibits and programs are aligned with state and next generation science standards.

COST

Field Trip (45min. planetarium show, approx. 2hr. visit)	\$5.00
Discovery Program (Workshop only, 1-2hrs.)	\$5.00
Planetarium Show Add-On (45min.)	\$2.00

*Prices per student; Title I discounts available

CURRENT EXHIBITS



Puzzles, Proofs & Patterns

Experience the power and perception of mathematics, and feel your brain get supercharged. In the exhibit you'll see how math touches everything in our daily lives, and you'll learn about the history of mathematics through the stories of the men and women who made it happen. Math is a powerful tool that has enabled us to both measure and transform our world. It has also enabled us to explore new worlds. We've described the laws of nature using mathematics, and that's why math has been called "the language of the universe." Many people don't think of math as a "science" but in fact has been called the "Queen of the Sciences" because of its essential role in our understanding of physics, chemistry, astronomy and many other disciplines. Packed with more than twenty games and puzzles for all ages, this new exhibit will tickle your brain as you hunt for solutions. And you'll start to realize how math touches everything around us. Teacher materials coming soon, appropriate for students of all ages.

Meet The Trilobites (Through December 2015)

This new special exhibit, "Meet the Trilobites – Arizona's First Inhabitants," produced in collaboration with the UA Mineral Museum, will feature an astonishing variety of trilobite specimens from world-class collectors. Alongside the exquisite fossils, you'll learn about the wonders of trilobites, how they fit into the geologic time scale, and what these ancient creatures have taught us about the history of life on earth.

From Tucson To the Moon

At the University of Arizona, astronomer Gerard Kuiper led a team of researchers in the effort to understand the moon. In the process, NASA funded the construction of the Lunar and Planetary Laboratory, now a world leader in planetary science, and began a golden age of solar system exploration. Kuiper's team created detailed maps of the moon that were used by NASA to identify lunar landing sites. Learn about the Space Race and the role that Tucson, and the University of Arizona, played to land us on the Moon through historical photographs and spacecraft models.

The Fossil Corner

Did you know that dinosaurs once roamed Arizona? In our "Fossil Corner" exhibit you'll see dinosaur fossils found near Tucson, you'll see amazing fossils of ancient creatures, and you'll travel back in time when you see our "Paleo Reef" display that shows what life in the oceans looked like millions of years ago. Dig into Flandrau's Fossil Corner and discover the treasures of Earth's past.



The UA Mineral Museum

With over 2,000 minerals presently on display, the UA Mineral Museum offers your students the opportunity to explore the world of rocks, minerals and gems and understand the differences between them. Also on display are meteorites from localities around the world. The collection itself is divided into roughly ten major exhibits, including exhibits of the minerals from Guanajuato, Mexico and famous Arizona localities such as Bisbee, Ajo, Morenci, Ray, and Tiger. Each visit includes a scavenger hunt that looks at what makes minerals unique from each other, to learning how minerals impact our every day lives. This tour is both exciting and educational, and staff will share their knowledge about the minerals and their uses, as well as answer questions from your new rockhounds.

DISCOVERY PROGRAMS

Discovery Programs encourage students to “think like scientists” using their observation, critical thinking and problem-solving skills. They introduce students to the amazing science of everyday life in a very hands-on way. They also provide a great opportunity to encourage higher education by allowing interaction with university students, who facilitate the programs. Most discovery programs are approximately two hours, although shorter programs can be booked in order to accommodate large groups or to combine workshops with exhibit exploration time and a planetarium show.

Marine Discovery



Sponsored by the Department of Ecology and Evolutionary Biology, Marine Discovery is an outreach program designed to teach 3rd-8th grade students about the importance of our oceans. Marine Discovery workshop stations are hands-on, activity-based explorations which provide students with the opportunity to work with live marine animals and teaching specimens. Students are exposed to living and preserved organisms found in the Gulf of California and gain a general understanding of the scientific relationships between them. Students learn about the rocky intertidal zone; the plankton in our oceans & their importance as the base of the marine food chain; fish diversity and how the shape of a fish can inform you about what it does for a living; and shark and squid dissections with an emphasis on body form and function, and adaptations to the marine environment. Workshops are offered September through November, Tuesday through Friday mornings.

Insect Discovery

Sponsored by the Department of Entomology in collaboration with Cooperative Extension and 4-H, Insect Discovery is an outreach program designed to teach 1st-3rd grade students basic science concepts using insects. Workshop stations are hands-on, inquiry-based activities addressing concepts such as diversity, adaptation, and life cycles. Students get to hold live butterflies, dig for decomposers and explore the amazing insect life of Arizona. Workshops are offered February through May, Tuesday and Wednesday mornings.

Physics Discovery

Sponsored by the Department of Physics, these hands-on workshops are designed to teach K-12 students about the simple laws that govern the physical universe. Guided activities include Newton’s laws of motion, making liquids from gases, making magnetism from electricity, and exploring the optics of mirrors and lenses. Activities are covered at a level appropriate to the age group of visiting students and can be scheduled for one to two hours. Physics Discovery is offered both spring and fall semesters, days and times vary.

Chemistry Discovery

Sponsored by the Department of Chemistry, these hands-on workshops are designed to promote and facilitate chemistry learning for middle-school students grades 6-8. The workshops prompt students to discover chemical concepts in their daily experience and explore the chemical properties of common objects in the world around them. Specific workshop stations change each year, but include a variety of chemistry topics such as the properties of metals, the molecules involved in the chemistry of living organisms, the synthesis of polymeric materials like nylon, the chemistry of glow sticks and detergents, and the different pH values of common liquids. Limited workshops are offered during the fall semester in October and November.

PLANETARIUM SHOWS



Back to the Moon for Good

Immerse yourself in a race to return to the Moon forty years after the historic Apollo landings. See how a competition among privately funded international teams is ushering in a new era of lunar exploration. Learn about the Moon's resources and discover what humanity's future on the Moon might hold. Narrated by Tim Allen, Back To The Moon For Good presents the Google Lunar XPRIZE, and the personal stories of competition and collaboration it inspires.

Type of Show: FullDome film followed by a live star talk

Recommended for: 4th grade and up

Desert Moon

Documentary of University of Arizona's contribution to the Apollo missions, the space race and mapping of the moon. Narrated by Mark Kelly.

Type of Show: Standard format film followed by a live star/moon talk

Recommended for: 6th grade and up

Dynamic Earth

The award-winning Dynamic Earth explores the inner workings of Earth's climate system. Audiences will ride along on swirling ocean and wind currents, dive into the heart of a monster hurricane, come face-to-face with sharks and gigantic whales, and fly into roiling volcanoes. Narrated by Liam Neeson.

Type of Show: FullDome film followed by a live star talk (Film portion of show is also available in Spanish; the star talk would still be in English.)

Recommended for: 3rd grade and up

Exploring New Horizons

This show tells the full story of the New Horizons mission and Pluto. From the discovery of Pluto in 1930, to the science of the icy objects that form the Kuiper Belt, to the launch of the New Horizons mission in 2006, this new show is the perfect introduction to the discoveries that will unfold as New Horizons explores Pluto.

Type of Show: FullDome film preceded by interview with UA Scientist Veronica Bray, and a review of the latest images from New Horizons

Recommended for: 3rd grade and up

From Earth to the Universe

The night sky, both beautiful and mysterious, has been the subject of campfire stories, ancient myths and awe for as long as there have been people. A desire to comprehend the Universe may well be humanity's oldest shared intellectual experience. Yet only recently have we truly begun to grasp our place in the vast cosmos. To learn about this journey of celestial discovery, from the theories of the ancient Greek astronomers to today's grandest telescopes, we invite you to experience From Earth to the Universe.

Type of Show: FullDome film followed by a live star talk

Recommended for: 3rd grade and up

IBEX

Join scientists who are investigating the boundary between our Solar System and the rest of our galaxy in IBEX: Search for the Edge of the Solar System. Designed for visitors with an appreciation for the challenges of space science and a desire to learn more about science research, the show follows the creation of NASA's Interstellar Boundary Explorer (IBEX). Audiences will get an in-depth look at the mission and how IBEX is collecting high-speed atoms to create a map of our Solar System's boundary. Narrated by two inquisitive teenagers, audiences will hear from the scientists and engineers that developed the IBEX mission and created the spacecraft, and get the latest updates on the mission's discoveries.

Type of Show: FullDome film followed by a live star talk

Recommended for: 6th grade and up

Legends of the Night Sky

Take a lighthearted and imaginative look at the myths and stories associated with the constellation Orion or the constellations of Perseus and Andromeda.

Type of Show: Laser animation followed by a live star talk

Recommended for: Kinder to 8th grade

Magic Tree House Space Mission

Based on the popular children's book series, in Magic Tree House® Space Mission, a mysterious "M" sends the intrepid Jack and Annie on a fun-filled journey to discover the secrets of the Sun, Moon, planets, space travel and more. Aligned with early elementary information skills learning objectives, this beautifully-produced show is a winner with Magic Tree House® fans of all ages and school audiences alike.

Type of Show: FullDome film followed by a live star talk

Recommended for: Kinder to 3rd

Max Goes to the Moon

It is an adaptation of the fictional, but science-based, children's book of the same title by author and astronomer Dr. Jeffrey Bennett. Max the Dog and a young girl named Tori take the first trip to the Moon since the Apollo era, and their trip proves so inspiring to people back on Earth that all the nations of the world come together to build a great Moon colony. From the colony, the views of Earth make everyone realize how small and precious planet Earth is.

Type of Show: Standard format film followed by a live star/moon talk

Recommended for: Pre-K to 3rd

Season of Light

An updated “fulldome” version of a holiday classic, this show traces the history and development of many of the world's most endearing holiday customs, all of which involve lighting up the winter season — from the burning Yule log to the lighting of luminarias in the American Southwest. Audiences will learn a selection of Northern hemisphere winter constellations, and find out why we have the seasons. Season of Light is visually rich, culturally inclusive, musically satisfying, and soothing as a warm drink on a cold winter's night!

Type of Show: FullDome film followed by a live star talk

Recommended for: All ages

Sunstruck

Discover the wonders of our sun. Its incredible energy has supported life on earth for millennia, but is now threatening our technology and way of life. Travel to the distant future to discover our sun's connection to the universe's cosmic cycle of life and death.

Type of Show: FullDome film followed by a live star talk

Recommended for: 3rd grade and up

Tucson Sky and Beyond

This is our "classic" night sky show, but not like you remember it! Take a relaxing look at the night sky as one of our skilled "Console Captains" gives you a guided tour of the stars, planets, constellations and current events happening in the night sky. This live show is never the same and there is always a surprise in store

Type of Show: Live FullDome Presentation

Recommended for: All ages, show can be tailored to your grade level

Touring the Planets

Zoom away from planet Earth and take a guided tour through the Solar System! In this show we stop by each of the planets and learn why they are unique. We'll even explore moons, asteroids, the Milky Way and beyond. Hold on, this is one fun ride.

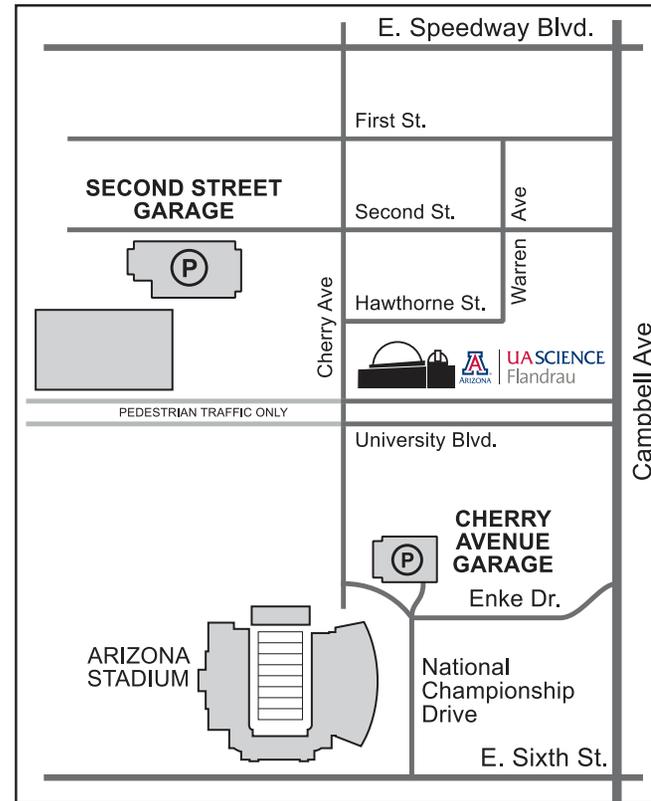
Type of Show: Live FullDome Presentation

Recommended for: All ages, show can be tailored to your grade level

Parking

We offer limited, free parking on the south side of Hawthorne Avenue long the yellow painted curb. This parking is available on a first-come, first-serve basis. Bus parking is also available along National Championship Drive, just east of the football stadium.

Convenient parking is always available at the Cherry Avenue Garage for a small fee.



For More Information

On all of our programs, hours, shows and more, please visit our website at flandrau.org or give us a call at (520) 621-4516



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