

BGSU PLANETARIUM TEACHER'S GUIDE (2010-2011)

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Welcome to our new 2010-2011 Teacher's Guide! Our programs cover all grade levels from pre-school to college. In each, we are committed to providing a high-quality educational experience for you and your class. We look forward to serving you.

What is a Planetarium?

A planetarium is a theatre of the Universe. It can surround you with an accurate image of the sparkling night sky. It can show all the motions and cycles of the sky. It can create a multi-media experience with slides, video, visual effects, computer animations, narration, and music that reveal the wonders of the cosmos to you and your class. It can interpret the Universe in a way that appeals to both the mind and eye. The Planetarium will introduce your students to a lifelong acquaintance with the sky and the Universe.

Who Should Use the Planetarium?

Classes studying astronomy should visit the Planetarium. Ideally, a student should make several visits over the years to experience a broad range of programs. We also encourage students and parents to attend our public shows in the evening.

Many of our programs are interdisciplinary in nature and can enrich classes not only in the other sciences (*e.g.*, earth science and biology, see pages 6 and 8), but also in history, geography, and study of various cultures (see pages 8, 10, and 11).

Types of Programs

You can choose from three main types of programs:

- (1) Multimedia program — The presentation of one of our taped multimedia shows with a live introduction and a question-and-answer session at the end.
- (2) Live program — a live presentation on a selected topic using the star projector and other visual aids; can usually be adapted to the specific needs of your class.
- (3) Workshop program — an interactive lab-style study of selected sky motions.

******* PRACTICAL INFORMATION *******Using the Planetarium Effectively

We see the planetarium as a resource to help you teach astronomy and as a means to convey the excitement of astronomy and the sciences and to attract student interest in these topics. We want the visit of your class to be a stimulating and educational experience. When you call to arrange a visit, please let us know any questions you have. This will help us assure the best possible program for your class.

Some helpful pointers include:

- * A planetarium visit is most valuable when it is integrated with the regular classroom syllabus. The visit should generally be made after students have studied the related material in class, especially for the younger grades.
- * We strongly urge preparatory and follow-up activities to prepare the students and to build on the interest the visit promotes. We have available for loan a catalog of astronomy activities for the classroom at a variety of grade levels.
- * The planetarium visit can be used to extend the classroom unit. Don't necessarily choose the program that most completely overlaps your curriculum. Consider also a program that expands on just part of your unit or that extends the unit in a new direction.

How to Arrange a Visit

Arranging a visit to the planetarium is simple. Call the Director, Dr. Dale Smith, at (419) 372-8666 to select a specific program and secure a date and time for the visit. You can also make contact by email at <dsmith@newton.bgsu.edu> or check the planetarium's web site at <http://physics.bgsu.edu/planetarium>. School programs are done anytime on Tuesdays and Thursdays during BGSU's fall and spring semesters. All weekdays are available during final exam week. We are usually booked to capacity late in the semester, especially spring, so it is wise to reserve well in advance and, if possible, to select times earlier in the semester.

Our price is \$1 per person for all programs. Groups must meet the following minimum totals: \$20 for a daytime show, \$25 for an evening show, \$50 for a Saturday or Sunday show.

You can also reserve two programs for your group to create a two-hour visit; the price for this option is \$2 per person. If you reserve two multimedia programs, there will be a break of about 30 minutes between them to change shows, or you can do one program before lunch and another after lunch.

Finally, we note that the Planetarium is an expensive room with a busy schedule; therefore, all groups must arrive on time and strict discipline must be maintained at all times. Food and beverage are prohibited in the Planetarium at all times. The use of cell phones, flashing shoes, and flash photography are prohibited at all times during shows.

***** **LIVE PROGRAMS** *****

These programs are live presentations pitched to the grade level of your class. All involve student participation. The emphasis is on demonstrations that use the star projector or other equipment unique to the planetarium rather than on lessons that could also be done in the regular classroom.

In order to encourage student involvement, the maximum group size for live programs is about 55 students (two classes), except for preschool through grade 1, where the maximum is about 25 students (one class).

Live programs are about one hour long, including an introduction to the planetarium and time for questions at the end.

STAR SHAPES (Preschool and kindergarten): An introduction to the planetarium and the sun and stars, using a format of storytelling, activities, and a look at the planetarium's starfield. *Maximum 20 students.* (30 minutes)

DAY AND NIGHT (Grade 1): An explanation of day and night. The sun's motion across the sky is shown and the concept that it moves because the earth rotates is demonstrated. Then, the current evening sky and some constellations are shown. (45 minutes)

DIRECTIONS (Grade 2): A demonstration of the meaning of directions: east and west as the directions of sunrise and sunset, south as the direction of the midday Sun, and north as the direction of the pole star. The seasonal variation in the Sun's sky path is demonstrated and the current evening sky is also shown. (45 minutes)

STORYBOOK SKY (Grades 2-12): The mythology and stories of a few prominent constellations. The tales of the ancient Greeks, native Americans, and many other cultures used the sky as a storyboard. A variety of these tales are told under the planetarium sky and the students also create their own constellations and stories. Upon request, particular cultures can be emphasized.

CONSTELLATIONS AND THE SKY TONIGHT (Grades 2-12): How to find and recognize constellations, using star charts, the planetarium sky, and practice in small groups. The emphasis is on learning a few constellations well so the student can find them in the real sky. Other features of the sky such as colors of stars are also shown. The short taped show, *More Than Meets the Eye*, can be included as part of this program upon request (see page 7). Maximum about 25 students.

NAME THAT PLANET! (Grades 2-4): A unique tour of the whole solar system in a modified game-show format. Dozens of pictures show each planet and comparisons and contrasts among the planets. The current position of the planets in the sky and in their orbits is also shown. This program is designed to follow, not precede, the classroom unit.

THE MOON AND MONTHS (Grades 3-6): A lesson on watching the moon, including its phases, when it is visible, how it moves across the sky, and its appearance to the eye and through binoculars. The connection between the moon and months and a short tour of the moon are also included.

THE SUN AND SEASONS (Grades 3-6): A lesson on how the sun moves across our sky in different seasons and why there are seasons. The sun's sky path at other latitudes is also shown in order to illustrate the midnight sun and the opposite seasons of the southern hemisphere. The lesson begins with an explanation of why the Sun shines.

WHAT TIME IS IT? (Grades 4-6): How our clocks and calendars are based on motions of the sky. Topics include the sun's motion across the daytime sky, the stars and their movement at night, the moon's phases and their connection to weeks and months, and the changing path of the Sun in different seasons.

LIFE CYCLES OF STARS (Grades 5-12): An explanation of the life cycle of the Sun and other stars, including their birth, evolution, and death. Examples of most stages are identified in the night sky, including examples of what the Sun was like in the past and will be like in the future. In this way, the student's appreciation of the night sky is enhanced.

ASTRONOMICAL COORDINATES (Grades 7-12): An explanation of the various coordinate systems and reference circles astronomers use to record and organize the motions of the stars and Sun in our sky.

MARS WARS: PROVING THE EARTH MOVES (Grades 9-12): The question of how we can prove three things we take for granted: the Earth is round, it spins on its axis, it goes around the Sun. The program demonstrates and explains the astronomical proofs and shows that a round, moving Earth is a sophisticated concept that was not easy to prove.

******* WORKSHOP-STYLE PROGRAMS *******

These programs are designed for small groups in a workshop/laboratory format. In each, the student keeps a quantitative record of the sky motions being demonstrated and learns the patterns by making predictions and comparing them with observations.

The maximum group size is 25 and most of these programs require 75 to 90 minutes to complete.

WATCHING THE SUN (Grades 7-12): Demonstrates the Sun's path across the sky in different seasons and as seen from different places on the earth. Before each step, the student predicts the Sun's motion, and thus over several steps learns the trends with season and latitude.

WATCHING THE MOON (Grades 7-12): Demonstrates the moon's path across the sky at different phases and seasons and when it rises and sets. Before each step, the student predicts the motion and thus over several steps learns the trends.

WATCHING THE PLANETS (Grades 8-12): Charting the movement of the planets against the backdrop of the constellations in order to understand why planets are seen in morning twilight, evening twilight, at night, or not at all.

KEPLER'S THIRD LAW (Grades 9-12): Demonstrates Kepler's law relating the period and radius of a planet's orbit. Available for either inner or outer planets.

***** MULTIMEDIA PROGRAMS *****

These taped programs combine narration, music, dozens or hundreds of slides and other visuals, and the planetarium starfield in an instructive multimedia show. They are preceded by a live introduction and followed by a question-and-answer period.

The roster of available programs includes all of our former public shows plus several others we maintain specifically for school classes. It has been our experience that most programs designed with adults in mind also work well for children as young as grades 3 or 4. A few programs designed just for children have an upper grade limit indicated.

The maximum group size is 118, our seating capacity.

Most taped shows are about 40 minutes long, so plan a total of up to 75 minutes to allow enough time for questions.

After each program description, we have listed the running time and number of slides. Programs created at BGSU are also marked BG.

For some programs, we have a teacher's page that will be sent to you when you book the show.

For the Youngest Students

DON'T DUCK, LOOK UP! (preschool through 1st grade): Meet Dudley, a bright little duck who hatches before your eyes and begins to learn about the sky with his barnyard of animal friends. (20-30 minutes, 100 slides)

LARRY, CAT IN SPACE (Grades K-2): The playful story of an inquisitive cat who takes a trip to the moon, told through a "cats-eye-view" of the moon, space travel, and living on another world. (30 minutes, 160 slides)

THE LITTLE STAR THAT COULD (Grades 1-2): An introduction to stars and planets using the story of a little yellow star (the Sun) that wanders through space to meet many kinds of stars and finally discovers its own planets. (34 minutes, 147 slides)

SECRET OF THE CARDBOARD ROCKET (Grades 1-2): An introduction to the solar system using the story of a cardboard rocket which takes two children on a trip to the Sun and each planet. (37 minutes, 113 slides)

THE DAY THE EARTH TURNED THE WRONG WAY (Grades 1 and up): A story-format program on the environment in which the Earth protests environmental abuses by rotating backwards. The program shows many of these abuses and their effects and appeals to children to respect the earth. The taped part is followed by a live discussion expanding on these points and showing how the other planets differ from the Earth. See also The Seabird Show. (18 minutes, 212 slides, BG)

BEAR TALES (AND OTHER GRIZZLY STORIES) (Grades 2 and up). An introduction to constellations using a grandfatherly character who teaches his grandchildren the star patterns and stories about them. (33 minutes, 72 slides)

The Solar System-general

- NINE PLANETS AND COUNTING... (Grades 3 and up): A 21st-century tour of the Solar System, covering all the planets as well as asteroids and comets, with a special emphasis on the question of whether Pluto is or is not a planet. (public show, 2007) (42 minutes, 391 slides plus video)
- PLANET PATROL (Grades 3-5): An imaginative and instructive tour of the whole solar system with Investigator Sam Snork who travels around searching for a mysterious radio transmission. Includes slides and video of each planet. (public show, 2000) (40 minutes, 325 slides plus video)
- UNWORLDLY WEATHER (Grades 3 and up): The most spectacular weather on the Earth, other planets and moons, and the Sun, including hurricanes, tornados, thunderstorms, floods, drought, and extreme hot and cold, as well as many types of clouds, rain and snow. (public show, 1994) (44 minutes, 517 slides plus video, BG)
- PLANET QUEST (Grades 5 and up): The appearance of the planets in our sky, how the ancient Greeks thought all planets revolved around the earth, and an imaginary journey to each planet using space art and photography. (public show, 1986) (43 minutes, 358 slides, BG)
- OCEANS IN SPACE (Grades 4 and up): The oceans of Earth and other planets. Explores the Earth's oceans and their connection with life. Recreates possible ancient oceans on Mars and the probable present ocean on Jupiter's moon Europa, and visualizes possible oceans on planets around other stars. (public show, 2007) (30 minutes, 186 slides plus video)

Biology and Extraterrestrial Life

- LIFE BEYOND EARTH (Grades 5 and up): Explores the possibility of extraterrestrial life, the search for life-bearing planets, and the history of life on earth. (32 minutes, 375 slides)
- THE STELLAR THREAD (Grades 10 and up): A look at DNA, explaining its role in our lives and the origin of its atoms in the stars. Suitable for biology, chemistry, or general science classes. (46 minutes, 155 slides plus film)
- THE SEABIRD SHOW (Grades 2 and up): A celebration of seabirds and their environment, including the colorful puffins which range from Alaska to Europe. Can be combined with The Day the Earth Turned The Wrong Way as a double-feature for the price of one show. (public show, 1993) (28 minutes, 363 slides plus video, BG)
- IN SEARCH OF PLANETS WITH LIFE (Grades 5 and up): Describes the recent discoveries of planets around other stars and considers whether these newfound planets or any of the other planets in our solar system may be suitable for life. (public show, 1998) (32 minutes, 352 slides plus video)

The Solar System-individual planets

MAGELLAN: REPORT FROM VENUS (Grades 4 and up): The planet Venus as revealed by the Magellan and other spacecraft, including the spectacular surface and thick atmosphere. (29 minutes, 160 slides)

TRANSIT OF VENUS (Grades 4 and up): All about the rare "transits" when Venus passes directly between the Earth and the Sun. Explains the astronomy involved and the fascinating stories of past transits. The June 2004 transit is the first since 1882. (public show, 2004) (35 minutes, 228 slides plus video)

THE MARS SHOW (Grades 3 and up): A look at Mars past, present, and future: as described in science fiction, as revealed by spacecraft missions, as colonized within a century. (public show, 1988) (41 minutes, 375 slides)

MARSQUEST (Grades 4 and up): Successor to the Mars Show. A new look at Mars past, present, and future: as described in science fiction, as revealed by spacecraft missions, as colonized within a century. (public show, 2002) (41 minutes, 357 slides)

THE VOYAGER ENCOUNTERS (Grades 4 and up): A tour of the outer planets (Jupiter, Saturn, Uranus, and Neptune), their moons, and their rings through the eyes of the Voyager spacecraft, and a look at how the spacecraft worked. (public show, 1990) (43 minutes, 420 slides)

RINGWORLD (Grades 4 and up): Saturn, its many moons, its magnificent rings, and the Cassini-Huygens spacecraft mission due to arrive at the ringed planet in 2004, go into orbit, and send a lander to the mysterious moon Titan. (public show, 2004) (35 minutes, about 323 slides plus video)

HALLEY: A COMET'S TALE (Grades 2 and up): The saga of Halley's Comet, its birth, its trips around the Sun, its future, and its record in history. (public show, 1985) (37 minutes, 289 slides, BG)

COMETS ARE COMING! (Grades 4 and up): All about comets, including what they're like, how astronomers discover and study them, comet collisions with planets, Halley's Comet, and more. Can be combined with Cosmic Explorer for the price of one show. (public show, 1997) (34 minutes, 275 slides plus video)

The Moon

FOOTSTEPS (Grades 4 and up): A program about the moon, including the moon's origin and history, early myths and stories about the moon, the Apollo manned missions to the moon, and future uses of the moon. (41 minutes, 172 slides plus film)

LUNAR ODYSSEY (Grades 3 and up): An imaginary 21st century trip to the Moon that recounts the Moon's origin, tours its craters and other surface features, shows what it would be like to live on the Moon, explains the Moon's phases, and gives tips for watching the Moon in the sky. (public show, 2001) (42 minutes, 377 slides plus video)

ONCE IN A BLUE MOON (Grades 2 and up): A wide-ranging program about the Moon, covering the Moon's origin and surface features, the first Moon landing by astronauts, myths about the Moon from around the world, and an explanation of the Moon's phases. (public show, 2006) (37 minutes, 295 slides plus video)

The Earth

WATER WORLD (Grades 4 and up): The marvelous story of planet Earth: its birth and life history; its drifting continents, mountains ranges, and volcanoes; its oceans, ice ages, and life; and its ultimate fate. (public show, 1992) (44 minutes, 566 slides, BG)

NEW WORLDS? (Grades 4 and up): To commemorate the 500th anniversary of Columbus' landfall, a story of human exploration of the Earth, including the first Americans, the ancient Greeks and Phoenicians, the Vikings, Columbus, and today's astronauts. Suitable for use with history and geography as well as astronomy classes. (public show, 1992) (49 minutes, 655 slides, BG)

DINOSAUR LIGHT (Grades 5 and up): A unique trip out in space and back in time. The light we now see from stars and galaxies left them long ago, when the events we record on human history and the Earth's history were happening. The program weaves together a tour of the present-day Universe with a history of the Earth from recent events to the days of the dinosaurs. (public show, 1996) (51 minutes, 571 slides plus video, BG)

AURORA! (Grades 5 and up): Examines the science and folklore of the fascinating northern lights and includes superb video of their color and changing appearance. (public show, 2001) (35 minutes, 302 slides plus video)

THEY FOUND A WORLD OF ICE AND BEAUTY: POLAR EXPLORATION AT THE ENDS OF THE EARTH (Grades 5 and up): A showcase of the natural beauty and brave exploration of the Arctic and Antarctic as recorded by the eyes of modern cameras and as revealed in the adventures of early explorers. (public show, 1996) (44 minutes, 454 slides plus video, BG)

COSMIC CATASTROPHES (Grades 4 and up): A look at astronomical events that may threaten life on Earth, ranging from the explosions of massive stars to the impact of giant meteorites. Also includes human threats such as damage to the ozone layer and the danger of nuclear winter. (public show, 1993) (38 minutes, 377 slides plus video)

THE ENDLESS HORIZON (Grades 5 and up): The human exploration of Earth and space. Includes stone-age skywatchers, Columbus' voyage, the work of Darwin and Newton, the development of flight, and landing on the Moon. (public show, 1994) (46 minutes, 237 slides plus video)

BLOWN AWAY: THE WILD WORLD OF WEATHER (Grades 3 and up): The wild and wonderful weather of planet Earth. Covers hurricanes, tornados, thunderstorms, the cause of seasons, and the effect of seasons on weather. (public show, 2008) (38 minutes, 289 slides plus video)

Space Exploration

DESTINATION UNIVERSE (Grades 3 and up): The future of space exploration and colonization from Space Station Freedom to planetary engineering projects thousands of years in the future. (public show, 1991) (37 minutes, 365 slides)

ALL SYSTEMS GO! (Grades 3 and up): The story of NASA from its inception to the development of the Space Shuttle, with emphasis on the Apollo manned missions to the moon. (public show, 1984) (43 minutes, 313 slides plus film)

Stars and the Universe

- TO SHINE ALMOST FOREVER: THE INCREDIBLE LIVES OF STARS** (Grades 4 and up): The life cycles of stars, from their birth out of interstellar gas and dust, to their lifetimes of billions of years, to their expansion to become giant stars, to their final explosions and fading out. Emphasizes how stars work, the production of chemical elements in stars, and how to see the various stages of starlife in the night sky. (public show, 1995) (43 minutes, 465 slides plus video, BG)
- JOURNEY TO EARTH** (Grades 5 and up): A unique journey from the Milky Way to the universe at large and back to the earth to discover the place of the earth and humans in the universe. The hierarchy of structure (planets, stars, galaxies, clusters of galaxies) and vast distance scales of the universe are built up, and the creation in other stars of the elements comprising humans is revealed. One of our best programs. (public show, 1988) (38 minutes, 345 slides, BG)
- SPRINGTIME OF THE UNIVERSE** (Grades 6 and up): The life story of the Universe and its stars, including life cycles of stars, the future of the Sun and earth, and a glimpse at the far future of the Universe. (public show, 1985) (46 minutes, 125 slides plus film)
- THE UNIVERSE OF DR. EINSTEIN** (Grades 5 and up): A biography of Albert Einstein and a conversational approach to explain his revolutionary concepts of the Universe. (public show, 1986) (41 minutes, 258 slides)
- COSMIC EXPLORER** (Grades 5 and up): A tour of the Universe through the eyes of artists, from the nearest planets to the farthest galaxies, and all the wonders in between. With images and music alone, the beauty of the Universe is revealed. Can be combined with Comets are Coming! for the price of one show. (public show, 1997) (13 minutes, 175 slides)
- DINOSAUR LIGHT** (Grades 5 and up): A unique trip out in space and back in time. The light we now see from stars and galaxies left them long ago, when the events we record on human history and the Earth's history were happening. The program weaves together a tour of the present-day Universe with a history of the Earth from recent events to the days of the dinosaurs. (public show, 1996) (51 minutes, 571 slides plus video, BG)
- STAR STEALERS** (Grades 4 and up): A cosmic "whodunit?" in which detective Sam Snork investigates the mystery of the missing stars. Along the way he learns all about the lives of the stars. (public show, 1997) (46 minutes, 339 slides plus video)
- ALPHABET UNIVERSE** (Grades 5 and up): An astronomical sampler with a bit of everything. Twenty six topics from A to Z cover the Universe from skywatching to planets, stars, and galaxies. (public show, 1998) (48 minutes, 541 slides plus video, BG)
- SPACE DREAMS** (Grades 3 and up): Ancient and modern dreams inspired by looking to the sky—the dreams and birth of space travel, the quest of astronomers to understand the cosmos, and the hopes of finding alien life. (public show, 2004) (35 minutes, 285 slides plus video)

Astronomy in Everyday Life

- WORLDS IN YOUR WALLET** (Grades 5 and up): How the world's money tells the story of science. Using dozens of images of scientists on the world's money as textbook and tour guide, this interdisciplinary show covers topics in biology, math, astronomy, and physics, including electricity and magnetism, radioactivity, atoms and nuclei, gravity, and more, using an approach that combines science, history, and biography. Suitable for use with history or geography as well as astronomy or general science units. (public show, 2006) (50 minutes, 475 slides, BG)
- STAR-SPANGLED BANNERS** (Grades 5 and up): A world-wide tour of astronomical flags and the nations, states, and cities that fly them. Dozens of flags around the world float images of the Sun, the Moon, stars and constellations, and the northern lights. This interdisciplinary program shows all of these flags, explains the celestial sights they embody, and visits the places that fly them. Suitable for use with history or geography as well as astronomy or general science units. (public show, 2003) (46 minutes, 544 slides, BG)
- IT'S ABOUT TIME** (Grades 5 and up): The tale of astronomy's greatest effect on our everyday lives: keeping time. Our clocks and calendars record all the cycles of the sky, such as the rising and setting of the sun and stars, the phases of the moon, the passage of the seasons, and more. The program shows all of these celestial cycles and tells the story of how many early cultures based their calendars on them, thereby creating hours, days, weeks, months, years, and all the other ways we keep time today. Suitable for use with history or geography as well as astronomy or general science units. (public show, 1987) (47 minutes, 488 slides, BG)
- IS THIS THE END OF THE WORLD?** (Grades 5 and up): An wide-ranging astronomer's look at end of the world topics. Tells the saga of the race to be first to the South Pole, commemorates the Apollo moon landings a half-century later, and explains how the moon was made. Recounts "end-of-the-world" scares caused by comets, meteor showers, and calendar changes. Looks at meteorite and asteroid impact in the recent and distant past, and forecasts the Earth's future. (public show, 1999) (48 minutes, 608 slides plus video, BG)
- I PAINT THE SKY** (Grades 3 and up): A guide to the beautiful colors in the sky: blue daytimes, red sunsets, vibrant rainbows, shimmering auroras, icy halos, and more. (public show, 1989) (34 minutes, 476 slides, BG)
- CENTURIES!** (Grades 4 and up): A bicentennial show that tells Ohio's history from the ancient ice ages to the modern space age. Covers Ohio's geological past, the legacy of native Americans, European settlement, Ohio's statehood, the Civil War, the Wright Brothers, and Ohio's famous astronauts. Suitable for history classes. (public show, 2003) (47 minutes, 396 slides)
- BAD ASTRONOMY: MYTHS & MISCONCEPTIONS** (Grades 6 and up): Debunks several popular myths and misconceptions about astronomy—the Moon Hoax, UFOs and alien visitors, and astrology—all with good humor. (public show, 2009) (40 minutes)
- SECRET OF THE STAR** (Grades 3 and up): A program for Christmas. It shows the origin of many Christmas customs in ancient solstice festivals, retells the first Christmas story, and demonstrates several theories of the star of Bethlehem. (public show each year since 1989) (available only in December) (42 minutes, 594 slides, BG)

Cultures and Astronomy

- SKY STONES** (Grades 4 and up): An interpretive trip to Stonehenge, the pyramids of Egypt, the temples of the Maya, and several native American sites, all part of the legacy of ancient skywatchers who recorded the movement of the sun, moon, planets, and stars in their great stone monuments. (public show, 1991) (45 minutes, 462 slides, BG)
- SKYWATCHERS OF AFRICA** (Grades 3 and up): The legacy of African skywatchers. Includes the Pyramids and skylore of Egypt, desert traders using the stars as a roadmap across the sand, creation myths of the Dogon, prehistoric records of the Moon's phases, and more. (public show, 2005) (29 minutes, 380 slides)
- SPIRITS FROM THE SKY** (Grades 3 and up): The star world of the Pawnee Native American Nation. How Pawnee priests watched the appearance of planets, stars, and constellations, and used them to pattern their lives and culture. Told with authentic music and the voice of a Pawnee elder. (public show, 2005) (35 minutes, 350 slides)
- LAND OF THE SOUTHERN CROSS** (Grades 2 and up): A trip to Australia, covering the cities, land, people, animals, coasts, observatories, and the southern hemisphere skies. (public show, 1989) (45 minutes, 656 slides)
- SERPENTS OF THE SUN** (Grades 3 and up): Ohio's prehistoric mounds and their astronomical significance. Visits Serpent Mound, Fort Ancient, and other earthen mounds which are aligned with the Sun. (public show, 1994) (41 minutes, 257 slides)
- ISLANDS IN THE SKY** (Grades 4 and up): How the ancient Polynesians sailed vast distances of the Pacific Ocean in canoes navigating by the stars. (42 minutes, 149 slides)
- THE PEOPLE** (Grades 3 and up): A collection of American Indian myths about the sky told using the sun, starfield, and artwork. (48 minutes, 116 slides)
- NAVIGATING WITH LEWIS & CLARK** (Grades 5 and up): A trip with Lewis and Clark along the route they followed in exploring the American west over 200 years ago, with emphasis on how they used the sky to navigate and record their their route. (public show, 2007) (35 minutes, about 300 slides)
- THE WRIGHT WAY TO FLY** (Grades 4 and up): How the Wright Brothers developed and flew their first airplane. In an interview style, covers the principles of flight and the story behind the first flight in 1903. Suitable for history classes. (public show, 2004) (37 minutes, 150 slides plus video)
- HUMANITIES AND THE STARS** (Grades 6 and up): A series of 11 lecture-like programs relating the mythology of ancient cultures and the night sky those cultures saw. Programs are available on the following cultures: Polynesian-Hawaiian, Mayan, American Plateau, Eskimo, Norse, British Celtic, Chinese, Hindu, Egyptian, Babylonian, and Greek. Each program describes its culture and recounts several myths. Since these programs are shorter and less elaborate than our others, you may select any two as a single show. (approximately 30 minutes, 90 slides each)

Light and Telescopes

- GALILEO: THE POWER OF THE TELESCOPE** (Grades 5 and up): Tells the story of Galileo, his pioneering discoveries with the telescope, and how the telescope has developed in the four hundred years since Galileo. (public show, 2010) (27 minutes, 223 slides plus video)
- HUBBLE VISION** (Grades 4 and up): The latest and best discoveries of the Hubble Space Telescope, featuring dozens of Hubble's best images and what we have learned from them. (public show, 2005) (30 minutes, 238 slides)
- HUBBLE'S UNIVERSE** (Grades 5 and up): The exciting discoveries of the Space Telescope from nearby planetary landscapes to the farthest sights we can see. Includes a description of how the telescope works. (public show, 2001) (39 minutes, 273 slides plus video)
- THROUGH THE EYES OF HUBBLE** (Grades 5 and up): A tour of the Universe through the eyes of the Space Telescope: comet collisions with Jupiter, sites of starbirth, stellar explosions and black holes, remote galaxies, and more. Includes a description of the Telescope. (public show, 1995) (42 minutes, 250 slides plus video)
- FIRST LIGHT** (Grades 4 and up): The story of the Space Telescope and a guide to the universe it will reveal, along with the history of telescopes. (public show, 1987) (33 minutes, 346 slides)
- ADVENTURES ALONG THE SPECTRUM** (Grades 5-8): Light and how astronomers use it to study the universe. Professor Photon leads from the familiar realm of visible light to the invisible realm of ultraviolet, infrared, microwave, and radio energy. (42 minutes, 147 slides)

Watching the Sky

THE COWBOY ASTRONOMER (Grades 4 and up): The joys of watching the sky—stars, constellations, secrets of the Universe, and sky stories—all from a cowboy's point of view. (public show, 2008) (37 minutes)

AMAZING STARGAZING (Grades 3 and up): A light-hearted and comprehensive guide to skywatching, covering constellations, the Sun, the Moon, the planets, and other sights of the night sky. (public show, 2002) (35 minutes, 196 slides plus video) For older classes, the following program can also be included as part of this presentation: **SAVING THE NIGHT** (Grades 5 and up): A short show about the dangers of light pollution and what we can do to recover a dark and inspiring night sky. (public show, 2002) (11 minutes, 68 slides)

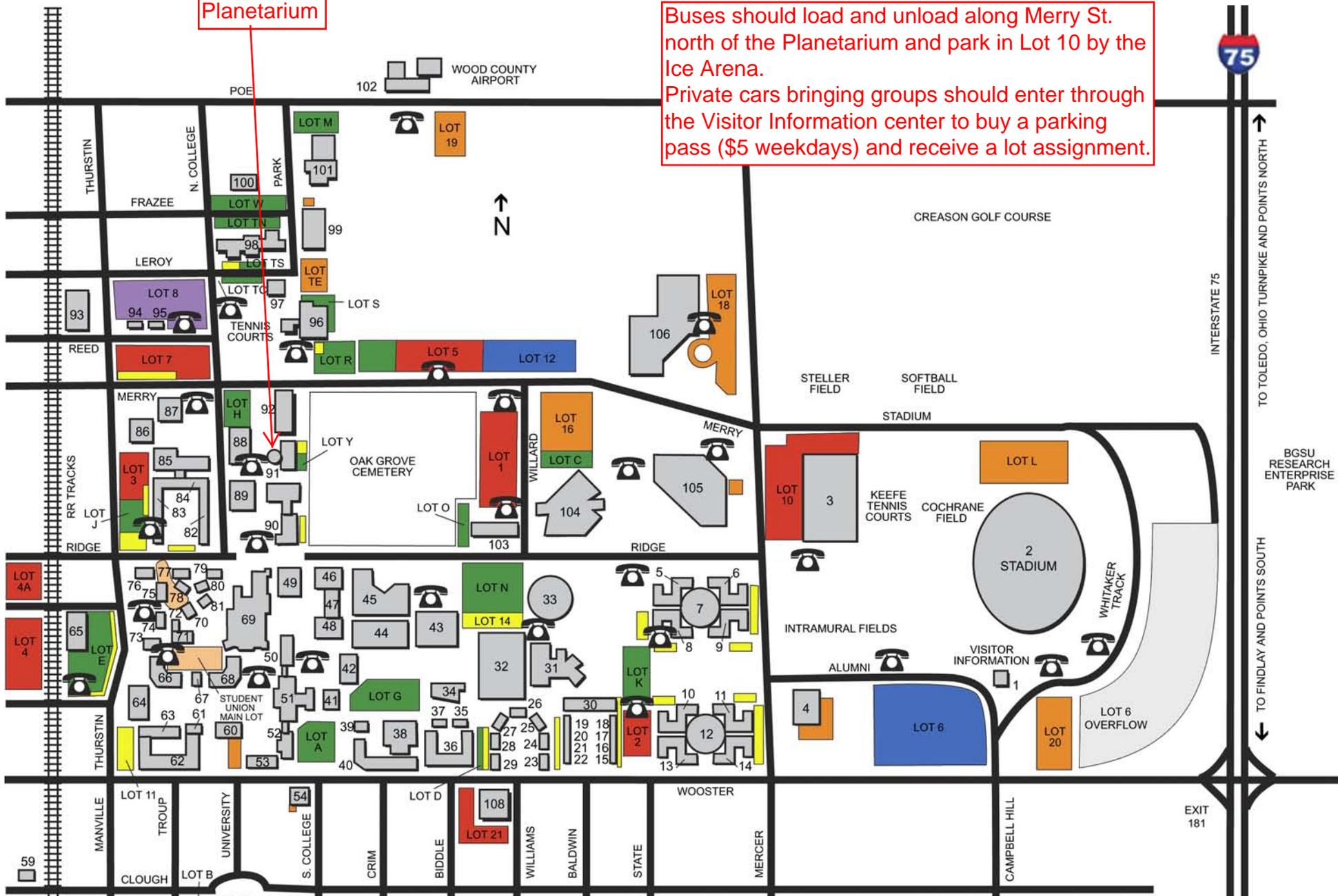
MORE THAN MEETS THE EYE (Grades 4 and up): An introduction to stargazing, showing what can be seen with the eye, binoculars, and telescopes. Available upon request as part of the live program *Constellations and The Sky Tonight*. (see page 3) (17 minutes, 31 slides)

THE LIGHT-HEARTED ASTRONOMER (Grades 5 and up): An introduction to skywatching, both with the unaided eye and with telescopes. Upon request, a showing of the program *More Than Meets the Eye* can be included as part of this show. (public show, 1993) (31 minutes, 261 slides)

STAR TRACKS (Grades 3 and up): A guided tour of the winter sky and a just-for-fun "space journey" combining space music and motions of the starfield. (public show, 1985) (48 minutes, 28 slides, BG)

Planetarium

Buses should load and unload along Merry St. north of the Planetarium and park in Lot 10 by the Ice Arena.
Private cars bringing groups should enter through the Visitor Information center to buy a parking pass (\$5 weekdays) and receive a lot assignment.



Buildings	Commuter Lot	On-Campus Lot
Student Union Main Lot	Faculty/Staff Lot	Short-term On-Campus Lot
Metered Visitor Lot	As Posted Lot	Emergency Telephones

Administration Building.....	64	Field House.....	106	Overman Hall.....	90
Admissions.....	60	Financial Aid.....	64	Park Avenue Warehouse.....	99
Alpha Chi Omega Sorority.....	80	Fine Arts Center.....	31	Parking and Traffic Division.....	38
Alpha Gamma Delta Sorority.....	17	Founders Hall.....	62	Perry Field House.....	106
Alpha Omicron Pi Sorority.....	79	Gamma Phi Beta Sorority.....	73	Perry Stadium.....	2
Alpha Phi Sorority.....	76	Gish Film Theater.....	52	Phi Delta Theta Fraternity.....	26
Alpha Sigma Phi Fraternity.....	29	Golf Clubhouse.....	107	Phi Gamma Delta Fraternity.....	24
Alpha Xi Delta Sorority.....	74	Graduate College.....	60	Phi Kappa Tau Fraternity.....	35
Alumni Center.....	4	Greenhouse.....	97	Phi Mu Sorority.....	70
Amani.....	38	Guest House.....	56	Physical Sciences Laboratory Building.....	91
Anderson Arena.....	43	Hanna Hall.....	52	Pi Beta Phi Sorority.....	15
Anderson Hall.....	13	Harshman Quadrangle.....	12	Pi Kappa Alpha Fraternity.....	18
Arts and Sciences, College of.....	64	Hayes Hall.....	49	Pi Kappa Phi Fraternity.....	27
Ashley Hall.....	8	Health and Human Services, College of.....	103	Planetarium.....	91
Batchelder Hall.....	5	Health Center.....	103	Popular Culture Center.....	54
Beta Theta Pi Fraternity.....	25	Heating Plant.....	65	Prout Chapel.....	67
Bookstore.....	69	Housing.....	33	Psychology Building.....	92
Bowen-Thompson Student Union.....	69	Ice Arena.....	3	Public Safety.....	38
Bromfield Hall.....	10	Jerome Library.....	32	Recreation Center.....	105
Bryan Recital Hall.....	104	Johnston Hall.....	71	Reed Street Warehouse.....	93
Bursar.....	64	Jordan Family Development Center.....	100	Registration and Records.....	64
Business Administration Building.....	44	Kappa Alpha Order.....	21	Rodgers Hall.....	36
Central Services.....	101	Kappa Delta Sorority.....	77	ROTC.....	43
Centrex Building.....	41	Kappa Kappa Gamma Sorority.....	22	Saddlemire Student Services Building.....	33
Chapman Hall.....	11	Kappa Sigma Fraternity.....	20	Science Library.....	89
Chi Omega Sorority.....	81	Kigma Lambda Gamma Sorority.....	94	Shatzel Hall.....	66
College Park Office Building.....	98	Kobacker Hall.....	104	Sigma Kappa Sorority.....	16
Commons.....	38	Kohl Hall.....	40	Sigma Phi Epsilon Fraternity.....	37
Compton Hall.....	6	Kreischer Quadrangle.....	7	Social Philosophy and Policy Center.....	58
Conklin North Hall.....	30	La Maison Française.....	78	South Hall.....	53
Darrow Hall.....	9	Lambda Chi Alpha Fraternity.....	28	Stadium.....	2
Day Care Center.....	100	Library.....	32	Student Health Center.....	103
Delta Chi Fraternity.....	23	Life Sciences Building.....	88	Student Recreation Center.....	105
Delta Gamma Sorority.....	75	Mathematical Sciences Building.....	89	Student Services Building.....	33
Delta Sigma Theta Sorority.....	59	McDonald Dining Hall.....	85	Student Union.....	69
Delta Tau Delta Fraternity.....	55	McDonald East Hall.....	82	Technology Annex.....	102
Delta Zeta Sorority.....	19	McDonald North Hall.....	84	Technology Building.....	96
Dunbar Hall.....	14	McDonald West Hall.....	83	Television Station.....	57
Early Childhood Education Center.....	72	McFall Center.....	60	Tucker Telecommunications Center.....	57
East Hall.....	34	Memorial Hall.....	43	University Hall.....	51
Education Building.....	42	Mileti Alumni Center.....	4	Visitor Information Center.....	1
Educational Memorabilia Center.....	39	Moore Musical Arts Center.....	104	Warehouse.....	99
Eppler Center.....	47	Moseley Hall.....	50	WBGU-TV.....	57
Eppler North.....	46	Off Campus Student Center.....	69	West Hall.....	63
Eppler South.....	48	Offenhauer Tower East.....	87	Williams Hall.....	68
Eva Marie Saint Theatre.....	51	Offenhauer Tower West.....	86	Wooster Center.....	108
Family and Consumer Sciences Building.....	61	Olscamp Hall.....	45	Zeta Phi Beta Fraternity.....	95