

Planetarium Program Guide



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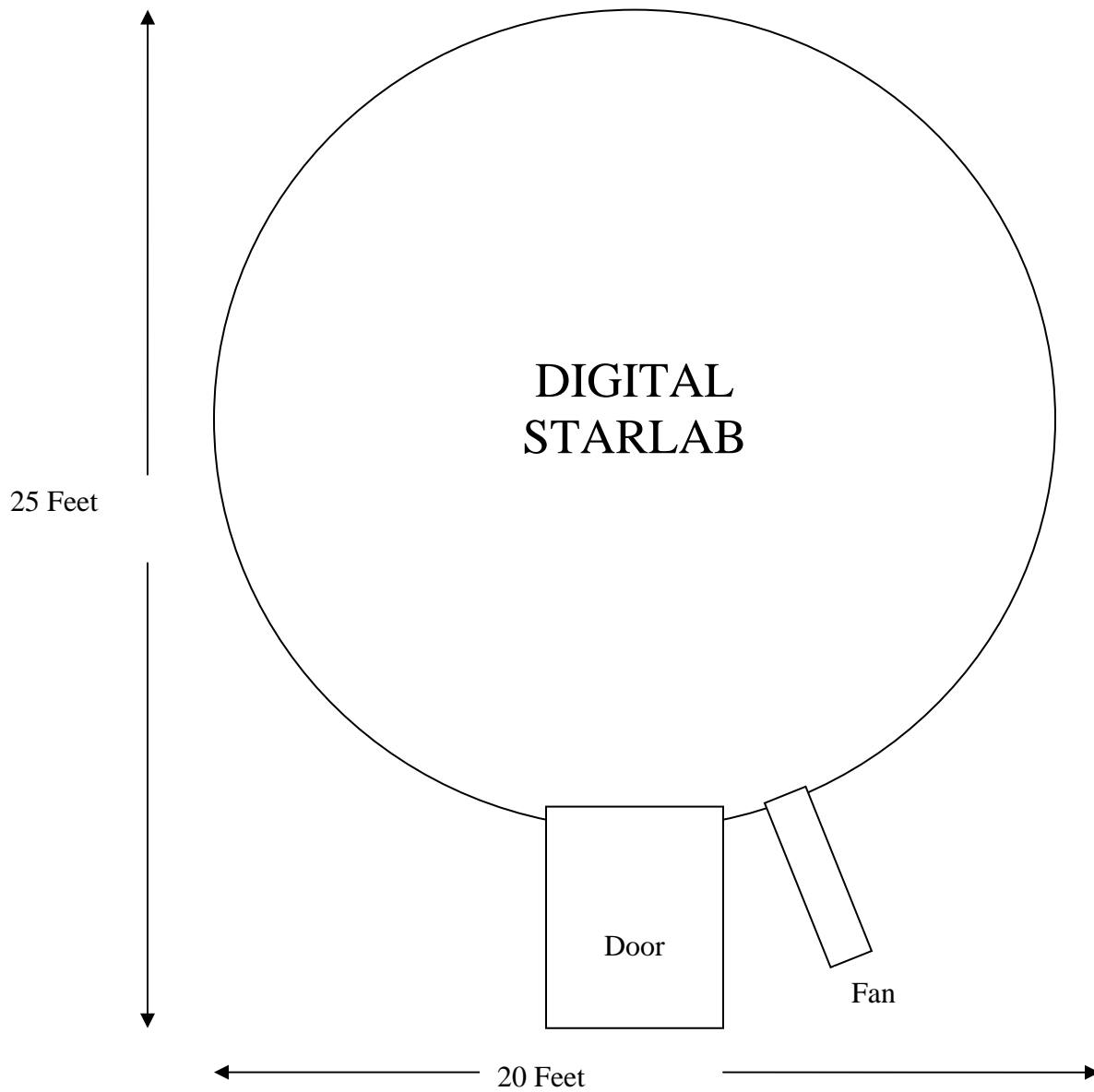
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Planetarium Dimensions

Height = 11 feet

Width = 20 Feet

Length = 25 Feet



Digital Starlab Requirements and Procedures

I. Scheduling

Each building representative will provide the instructor with a completed daily schedule for each class' visit(s) to the Planetarium. This schedule should include lunch times for the instructor and the times of any special presentations requested. These schedules need to be sent to the OCM BOCES Science Center two weeks prior to the day the Planetarium will arrive at your school.

In order to best meet the educational needs of each class, the building representative or individual teachers should forward to the OCM BOCES Science Center their topic selections or special instructional requests at least one week prior to the scheduled Planetarium visit.

A building representative should be on hand one and a half hours before the first scheduled presentation of the day to allow the instructor ample set-up time.

II. Locating the Planetarium

The Planetarium should be located in an area measuring at least 20' x 25' with a ceiling clearance of 10.5'. At least one grounded 110 volt outlet is required. The floor area must be cleared of all objects (i.e. desks, chairs, music stands, stage scenery, etc) and be swept clean of dirt and dust to avoid damaging the equipment.

III. Capacity

The Planetarium can comfortably accommodate up to 30 elementary or 25 junior-senior high students with their teacher.

IV. Power Failure/Emergency Evacuation/Fire Drill

The fan must remain on in order to maintain dome inflation. If a power failure were to occur or if an emergency evacuation were needed, the instructor is trained to be able to "flip" the dome over and off of the occupants within a matter of a few seconds, allowing the classroom teacher to lead students to their designated emergency area or exit.

ATTENTION BUILDING ADMINISTRATORS: It would be appreciated if any planned fire drills were not scheduled during the times the Planetarium is scheduled to be in use. Rapid evacuation of the Planetarium should be avoided except for emergency situations as it takes approximately 20 minutes to reset projectors and re-inflate the dome. This could lead to a class missing its scheduled presentation.

V. Security

Digital Starlab is a precise and fragile scientific instrument (approximate replacement cost is \$25,000) and precautions should be taken to protect it. The presentation room should be locked when not in use. If this is not possible, please inform the instructor at the time of your visit. On multiple day visits, the instructor can disassemble the Planetarium for storage in a secure place or, if necessary, take it with them at the end of the day.

VI. Presentations

A. Pre-Visit:

The classroom teacher should inform students that they will be expected to:

1. Enter and exit the dome carefully. The dome has an airlock type of doorway that is designed so that participants can walk into the dome. This doorway is also designed to accommodate special needs students, including those in wheelchairs.
2. Leave all objects such as pens, pencils, and/or books outside the dome. (This is to insure the safety of the dome and fellow students. Due to the darkened environment, eyes cannot detect danger and will not respond effectively.)
3. Remain seated during the presentation.
4. Due to the acoustic nature of domed structures, loud talking or clapping should be avoided inside the dome.
5. Listen carefully to the Planetarium instructor and do not ask questions when others are talking or during pre-recorded portions of the program.

B. Presentation

The classroom teacher will:

1. **Be inside the planetarium at all times** to assist the instructor by being actively involved in the presentation and dealing with discipline problems which may arise. In order to help in monitoring students, teachers will be given a special flashlight which can be used during the presentation. If the classroom teacher is unable to participate inside of the Planetarium, another staff member may be substituted.
2. Be prepared to evaluate the presentation.

C. Post-Visit

The classroom teacher will:

1. Lead the students out of the Planetarium and assist them in putting on their shoes and lining up away from the dome.
2. Discuss any questions that develop after the class returns to their room. (If any questions are unanswered after researching them, they can be forwarded to the OCM BOCES Science Center and we will answer them as soon as time permits.)
3. Submit a completed evaluation to their building principal and/or to the OCM BOCES Science Center.

Curriculum Objectives

This outline is provided as a comprehensive overview of our Planetarium Program. As a result of their Planetarium visit(s) the following objectives will be met.

Primary Level students will be:

1. Comfortable upon entering or exiting the dome and participating in the presentation.
2. Aware of daily celestial events and diurnal motion.
3. Able to list the differences between day and night.
4. Able to locate both Dippers (Big and Little) and the North Star.
5. Stimulated to discuss stars, sun, moon, and planet topics.

Intermediate Level Students will be:

1. Aware of celestial motions, events and be able to explain their causes.
2. Able to locate both Dippers, the North Star, prominent seasonal and circumpolar constellations, and name the 1st magnitude (brightest) stars visible.
3. Motivated to discuss/investigate celestial objects, events and phenomena.

Secondary Level Students will be:

1. Aware of celestial motions, events and be able to explain their causes.
2. Able to locate both Dippers, the North Star, prominent seasonal and circumpolar constellations, and name the 1st magnitude (brightest) stars visible.
3. Able to measure altitude (vertical) and azimuth (horizontal) angles of celestial objects.
4. Able to describe and explain reasons for the seasonal variation of constellations.
5. Able to explain seasonal changes throughout the year as caused by variations of the sun's apparent path in the sky.

Public/Community Level Clients will be:

1. Able to locate prominent constellations and 1st magnitude stars.
2. Able to describe the daily motions of the sun, moon, stars and planets.
3. Aware of observable changes in the day/night sky due to the motions of Earth.

Program Selections

The OCM BOCES Science Center has made some significant updates to its Planetarium Program in the past years. We have purchased a new Digital Starlab dome which has replaced the cumbersome tunnel entry way (which required participants to crawl on hands and knees to access the dome) with a doorway entry which allows users to simply step into the dome. This change has been very popular with teachers who had trouble entering the older dome. The new dome is slightly larger in diameter and height than the older style dome, but because of the elimination of the tunnel, it still fits the same dimensional footprint.

We have also updated our program offerings with the addition of multimedia presentations based on the “Sky Tellers” series of Planetarium programs. These programs introduce the wonders of the night sky through the telling of traditional Native American stories. Each of the ten programs features a Native American storyteller relating various legends about the night sky. Each legend is then followed by a multimedia “science story” which explains what the current scientific evidence is relative to each program topic. For older students we have obtained the program “The Planets” produced the Southeastern Planetarium Association, along with lessons on cosmic collisions, the search for extraterrestrial life, and the size and scale of the universe.

The addition of “Sky Tellers” and other programming was made possible by the purchase of new star field projector, a high definition LCD projector and computer system. This same system allows our instructor to customize the program offerings to the needs of each individual teacher and class from pre-K to high school. We now have the ability to project a realistic daytime sky with azimuth and altitude grids for those requesting the program “Sun and Seasons.”

The grade levels listed below are suggestions based on past Planetarium use. All programs, except those for secondary students, can be differentiated to suit the abilities of individual classes.

Sky Tellers Program Selections (Grades K-6)(40-45 minutes)

1. **Day and Night** (Grades K-2) Story - “Ant Dances for Light.”
This program explores the differences and causes of day and night. This is the introductory lesson for those new to the Planetarium.
2. **Sun** (Grades 1-2) Story – “Coyote Makes the Sun.”
This program explores the origins of the sun and the fact that our Sun is a star.
3. **Polaris** (Grades 1-3) Story – “Why the North Star Stands Still.”
The title of the story describes the main objective of the program! It also explores and identifies the five circumpolar constellations.
4. **Seasons** (Grades 2-3) Story - “Spring Defeats Winter.”
This program demonstrates the basic reasons for the seasons. For those needing a more advanced program, see the secondary program “Sun and Seasons.”

5. **Constellations** (Grades 3-4) Story – “Why the Coyote Howls.”

This program demonstrates some common constellations, and how they help us find our way in the night sky.

6. **Solar System** (Grades 3-4) Story – “The Creation of Earth.”

The origin of our solar system is demonstrated. Planets currently visible in the night sky are located and identified. If time permits, students digitally visit each planet and discuss the physical properties of each.

7. **Moon Phases** (Grades 4-5) Story – “The Girl Who Married the Moon.”

This program allows students to observe, name, and chart the phases of our moon Luna. They will recognize the patterns of phases and learn that the moon does not create its own light. If time permits, both lunar and solar eclipses will be demonstrated.

8. **Meteors** (Grades 4-5) Story – “Coyote and the Dancing Stars.”

Students will gain an understanding of the origins of meteors, meteoroids, and meteorites as well as their characteristics and importance while tackling some common misconceptions.

9. **Stars** (Grades 5-6) Story – “How We Got Stars.”

The formation and life cycle of stars is discussed. The brightest stars of the night sky are identified.

10. **Galaxies** (Grades 5-6) Story – “Coyote and the Milky Way.”

This program explores how smaller systems, such as our solar system, exist within larger systems.

Please note: All of the ten programs can be presented by the Planetarium instructor utilizing relevant stories from Greek Mythology.

****Teachers may also request special programs supporting their own specific lessons in astronomy by contacting our Planetarium Instructor at the OCM BOCES Science Center at least one week prior to your scheduled visit.****

Programs for Secondary Students (Grades 7-12)(45-60 minutes)

The following programs are most suitable for use in grades 7 – 12. These programs can be differentiated to accommodate differences in the age and abilities of individual classes. Where possible, class suggestions are included.

1. The Search for Life – Are We Alone?? (Biology, Life Sciences)

This presentation starts with a look at the inner world of cellular structure using the Planetarium and extends outward past the bounds of Earth to explore the possibility of extra terrestrial life. The recent discovery of exoplanets is discussed. This program includes a 20 minute video.

2. Where is Home? Our Cosmic Address (Earth Science, Astronomy)

The focus of this program is the size, shape, and structure of the current universe and our place in it. This program includes a 20 minute video.

3. Cosmic Collisions (Earth Science, Astronomy)

This program explores the role collisions have played in the past, present and future of our planet. This program includes a 20 minute video.

4. Sun and Seasons (Earth Science)

Students will observe the apparent daily motion of the sun on the first day of each season (winter solstice, vernal equinox, summer solstice, autumnal equinox). Horizontal (azimuth) and vertical (altitude) angles for the sun at sunrise, noon and sunset will be recorded as well as the number of daylight hours for each date. This program can be presented using our traditional starfield projector, or with full dome LCD projection which includes realistic landscapes and sky.

5. Planet Motions (Earth Science, Astronomy)

Students will observe the positions and patterns of the visible planets, their positions during the preceding six months, and their positions six months in the future. Observations will also include retrograde motion of superior planets and the phasing of the inferior planets. Students will draw conclusions and state the reasons for what they observed.

6. Seasonal Constellations (Astronomy)

Students will observe the positions and patterns of the visible constellations of the various seasons and be able to identify the constellations presented as well as the 1st magnitude stars in them. The apparent motion of these constellations will be explored. If time permits, the twelve constellations of the zodiac will also be identified.

Please check our website, <http://sciencecenter.ocmboces.org/>, for the latest Planetarium news and program updates.

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