

Private/parochial/Home School visits within U-46 boundaries

U-46 Planetarium Program Outline – Lesson Sequence 2023-24

312 Watch St. Elgin, IL 60120

(847) 888-5019

PeggyHernandez@u-46.org

josephkellenberger@u-46.org

Each session includes building history, content exploration (through a PPT presentation or a *full dome* video) and time under the nighttime sky. The content aligns with the IL Science Standards (NGSS) and integrates with common core.

Grd.	<i>LESSON OPTIONS (all can be modified to another grade level)</i>
Kdg	*One World, One Sky: What is a planetarium? Introduce constellations, explore sun in day (warm and bright) and no sun at night (cooler, dark), The longer (or higher) the sun is up, the warmer Earth gets. Observe the night sky K-PS3-1, some K PS3-2 and K ESS2-1
1	*The Moon: Observing, describing, and predicting observable changes in sky (Moon phase patterns); explore illumination-ours eyes work when light comes from or hits an object, observe constellation, moon, and Sun movement across sky to compare 1-ESS1-1, 1-ESS1-2, 1-PS4-2
2	*Rocky Earth in Space: Sort planets and rocks by observable properties, rocks change slowly and can change fast: How old is old? What happens to rock hit by an asteroid? Explore evidence of big rocks hitting the Earth in the past. Observe night sky constellations, rotate vs revolve 2-PS1-1, 2-ESS1-1
4	Cosmic Collisions and Time Telling: History of the ENWC Observatory telling & transmitting time, importance to community/economy, observe satellite imagery for craters from impacts, using Earth (rocks) to measure time of events, erosion, K-T boundary 4ESS2-1, 4ESS2-2, 4PS3-1 & PS3-3 plus SS.EC.2.4, SS.G.2.4
5	Celestial Movement and Patterns: Differences in brightness of nighttime stars to each other AND the Sun, What about the North Star? What yearly, monthly and daily patterns we see in the sky? How to chart or graph that? Can we make predictions based on what we see? Which way is down in space? 5ESS1-1, 5ESS1-2, 5PS2-1 (select 2 of 3)
6	Forces and Motion in Space: How objects move...everywhere, motion (kinetic energy) as related to objects in solar system, gravity and orbital motion, unbalanced forces and collisions, can we get hit by an asteroid? MS-PS2-2, MS-PS3-1, MS-PS2-1 *Legends of the Night Sky: Perseus and Andromeda (18min) The Greek tale can be included in alignment with study of mythology
MS	Models of our Solar System: Rotation vs. revolution with visuals, focus on movements of the moon as compared to Earth and Sun, explore north pole views vs. side views vs. view from Earth in diagrams, observe the past 24 hours and make predictions for the moon next week(s) MS-ESS1-1, MS-ESS1-3 & MS-ESS1-2 (supporting) and SS.H.1.6-8 & V using Elgin Natl Watch Company impacts on Elgin, IL

Grade	Possible alternate programs via full dome video. Most of these videos can be presented at any grade levels.
Kdg	<i>*Tribute to Apollo 11 (7min)</i> <i>*Losing the Dark (6 min)</i> PSA on light pollution,
1	<i>*Flight Adventures (22min)</i> aeronautics, inventors, NASA models, <i>*Losing the Dark (6 min)</i> PSA on light pollution, <i>*The Moon (25min)</i> Boy watches the Moon
2	<i>*Pluto Story(7 min):</i> Our 8 planets (not 9) and why, extra-solar planet discovery, <i>*Rusty Rocket's Last Blast (30min)</i> tour of solar system, <i>*Losing the Dark (6 min)</i> PSA on light pollution,
3	<i>*Magic Tree House-Space Mission,(30 min):</i> (based on M.P. Osbourne series) astronauts & exploration, scale of SS, stars, <i>*Losing the Dark (6 min)</i> PSA on light pollution,
4	<i>*Earth, Moon and Sun(25min):</i> notable patterns and movement of stars, sun and moon, Navajo fables (oral traditions) with Coyote. <i>*Dawn of the Space Age</i> (history of space exploration), <i>*Did an asteroid Really Kill the Dinosaurs (25 min)</i> , evidence and effects, <i>*Losing the Dark (6 min)</i> PSA on light pollution,
5	<i>*Two Small Pieces of Glass(20 min)s</i> , or <i>*Galileo: Power of the telescope (28min):</i> function, uses, history of the telescope, <i>*Dawn of the Space Age(40min)</i> (history of space exploration), <i>*Did an asteroid Really Kill the Dinosaurs (25 min)</i> , evidence and effects, <i>*Losing the Dark (6 min)</i> PSA on light pollution,
6	<i>*Cosmic Colors (31 min):</i> Electro-magnetic energy, <i>*Dawn of the Space Age, (35min)</i> history of space exploration, <i>*Losing the Dark (6 min)</i> PSA on light pollution, <i>*Legends of the Night Sky: Perseus and Andromeda (18min)</i> The Greek tale,
middle	<i>*The First Stargazers (20 min)</i> a look at ancient to modern astronomy, <i>*Chasing the Ghost Particle: Neutrino studies at the South Pole (26min)</i> current research info, <i>*Sky Wars: Battles of Discovery (25min)</i> exploring common misconceptions, fact vs. fiction or opinions <i>* Solar Quest (10min)</i> Sun documentary, <i>*SunStruck()</i> basic facts, <i>*Mystery of Dark Matter (30min)</i> delves into dark matter, <i>*Losing the Dark (6 min)</i> PSA on light pollution, <i>*Hot Universe (31 min)</i> EMS energy and black holes, <i>*Legends of the Night Sky: Perseus and Andromeda (18min)</i> The Greek tale

The U-46 Planetarium is not able to offer session to classes outside of the U-46 attendance boundaries.

Planetarium lesson ideas for high school classes Note: any middle school lesson above can be modified and used for HS	
Lesson 1	*Legends of the Night Sky: Perseus and Andromeda: The Greek tale comes alive! Included is the connection to our night sky under the dome.
Lesson 2	Electromagnetic spectrum: nuclear fusion, spectroscopy with spectral tubes, Doppler Effect and red shift (evidence of Big Bang) Excerpts from <i>*Cosmic Colors</i>
Lesson 3	Observational astronomy: Sky map reading with practice identifying constellations, Observe daily and/or yearly motion of stars and planets
Lesson 4	Effects of Earth's Revolution: seasons, tides, Kepler's Laws of planetary motion, Newton's Universal Gravitation, can include extra-solar planets
Lesson 5	The Moon: Phases explained & demonstrated, solar and lunar eclipses, exploration, <i>*Tribute to Apollo 11 and possibly excerpts of *Earth, Moon and Sun</i>
Lesson 6	Telescopes and history of Astronomy: Contributions of Copernicus, Ptolemy, Galileo, Newton & Kepler <i>Two Small Pieces of Glass* *Galileo, Power of the Telescope</i>
Lesson 7	Astronomical Coordinates: A look at how astronomers measure the sky (ecliptic, celestial equator, right ascension and declination), and movement of objects across them, can incorporate planetary movement patterns
Lesson 8	Solar System Objects: A look at comets, meteoroids and asteroids and how they compare, then compare our solar system's place in our galaxy
Lesson 9	*Chasing the Ghost Particle: the lowdown on neutrino studies at the south pole
Lesson 10	* The First Stargazers: A look at ancient astronomy up to modern day
Lesson 11	*Sky Wars, Battles of Discovery addresses misconceptions, facts and evidence, astrology vs. astronomy

We have an upcoming Solar Eclipse on April 8, 2024 (93% covered here in northern IL!) All school sessions will have a brief look at basic solar eclipse facts and tips for observing.

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***Full Dome:** (*italicized*) video (planetarium produced) that projects across most of dome surface (like Omni-max)

Program Times: Lessons in the planetarium are 50-60 minutes in length, depending show being presented

Seating Capacity: Max 60 grades K-3, 50 for grades 3 and up. Maximum is total adults & children. Fewer are recommended for full dome videos

Accessibility: The building is accessible and can accommodate up to three wheelchairs and/or strollers. [Please go here for a virtual tour of the building.](#)

Admission: No fee for schools verified within U-46 boundaries. Classes may be combined with others who have same program request.

Drop-off: A bus or cars may drop off the students at the front of the building which is on the north side Watch St. There is no parking on either side Watch St., but it is okay for the bus to wait there. There is a public parking lot down the block at Raymond St. and National St. for individual cars to park. If your bus/group arrives early you may unload and wait on the steps or wait on the bus. If I am finishing up with a previous class, I will be at the door shortly. There is no lobby, gift shop or lunchroom or inside place to wait if you are early. For security reasons the building is locked at all times.

Available dates: The U-46 Planetarium hosts homeschool groups *from within the U-46 boundaries* twice per school year for a lesson focused on astronomy. The dates are Mon. 10/23/23 (9:00-10:00am or 1:30-2:30pm) and Fri. 5/10/24 (10:00-11:00am or 1:30-2:30pm) Contact me to reserve spaces: peggyhernandez@u-46.org or 847 888-5019

To set up a lesson with your class in the U-46 Planetarium, please email me the following information.

1. Your name and phone number
2. School (with address) and grade level (range)
3. Total number of students and adults that will attend. One adult per class up to 30 is acceptable, no more than 1 chaperone per 5 students. (homeschool groups may have more adults)
4. Program of your choice listed above. I can be flexible with content, so please ask if you have a special topic request or would like several parts of separate programs.
5. Homeschool groups are combined into a session offered once per semester.
 - I will email or call you back with the options available.
 - Requests will be responded to in the order they are received.

U-46 Planetarium Procedures and Expectations

1. Your time assigned is the time to be in the planetarium. Plan on arriving 5-10 minutes before your scheduled session. There is no lobby or waiting area inside. If I am not at the door to greet you, I am probably finishing up a session with a group just prior to your arrival. You may knock at your appointed time, but the door is always locked when I am in session.
2. The address is 312 Watch. St. and there is no parking on Watch St. on either side. There is a free city parking lot at National St. and Raymond St. one block away (3-4 minute walk). Visitors may be dropped off in front, but no parking on the street or in Senior Care Home across the street.
3. The students should not bring any books, pencils, food or glow-in-the-dark items.
4. Please refrain from running or jumping on/over benches.
6. Please don't add unnecessary light pollution. The glow of a cell phone is overwhelming when looking at the dark sky. Light up shoes have become particularly bright with the arrival of LED bulbs. Please avoid wearing them on planetarium day.
7. There is only one single stall bathroom. I understand you may have a few students who really need to use the restroom, but it is not intended for an all class bathroom break. Please plan accordingly.
8. Children under the age of 5 often have difficulty in a planetarium due to the time required to sit and darkness. Please plan accordingly.
9. General evening public shows are offered 4-5 times per school year. These are a great option for family groups. The dates and times for those are listed on the [observatory/planetarium department of the U-46 website](#).

Please e-mail or phone me if you have any questions.

Sincerely,

Peggy Hernandez, Planetarium Teacher (847) 888-5019

peggyhernandez@u-46.org

The Elgin National Watch Company Observatory and Elgin School District U-46 Planetarium



Parent information

The Elgin National Watch Company (ENWC) was founded in Elgin in 1864 and went on to make over 60 million watches in its almost 100 years in business. Part of that success was due to the precise time measurements made by the observatory that the company built on Watch St. in Elgin in 1910 a few blocks from the factory. Astronomers hired by ENWC tracked the movement of stars at night and calculated the exact time for almost 40 years using star measurements with the help of regulator clocks inside the building.

Unfortunately, the ENWC went out of business, but in 1960 they gave the building to Elgin School District U-46 to use as a resource for astronomy education. The observatory and telescope were already outdated by that time, but today it is a place of historical significance to Elgin and the history of time-telling.

In 1963 the district built a planetarium addition to the building. A planetarium is a classroom specially equipped to teach astronomy. Over 1 million students have passed through the doors since it opened 60 years ago to learn about Earth, sky and space. Nearly all of them have been U-46 students. In addition to being a full-time classroom during the school year, the planetarium has been a venue for evening shows, after school clubs (Jr. Astro Society, Ham Radio Club, Antique Radio Club, summer camps, scout groups, etc...) and other special events. It is utilized full time for science lessons.

Your class has been scheduled to come to the planetarium for a lesson. The programs offered at the planetarium align with current IL learning standards. The session always includes some time under the stars looking at constellations and the nighttime movement of the sky using the original star projector! There is also a focus topic (seasons, solar system objects, moon phases, etc...) for each visit. This topic is presented through a power point lecture, full dome video projection and/or activity. Your child's teacher can tell you the focus for this visit.

This visit is considered a science lesson in a U-46 classroom. The session under the dome is 50-60 minutes. There is no lobby or gift shop. This is more like a visit to a special classroom than an entertainment venue.

Occasionally the planetarium is open for special public shows in the evening. The dates, times and details for these are posted on the Observatory/Planetarium section of the U-46 website. The evening shows are \$2.00 per person (any age) or \$10.00 max per family. The evening shows offer a self-guided tour through the building to see the old equipment either before the show. There are no reservations, but seating is limited.

[Check here for upcoming public shows and events.](#)

Wear comfortable clothing and a coat appropriate for the weather that day. If there is a session right before yours, there may be a few minutes waiting outside. Please **do not wear light up shoes** or glow in the dark items on that day!

Sincerely,

Peggy Hernandez and Joe Kellenberger, U-46 Planetarium Teachers

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