

McDonald Observatory Student Field Experience Program and Activity Descriptions for Grades 6-8

Grades 6-8: The Moon and Stars at McDonald Observatory (Up to 80 students)

Students explore McDonald Observatory and tour a large research telescope, make safe observations of the Sun using specially filtered telescopes (weather permitting), and take part in a kinesthetic activity that gives them a great model for moon phases.

Telescope Tour: Load up the bus! Your group will travel with your facilitator in transportation that you provide up to the summit of Mt. Locke. After a short walk and some wonderful views, students will visit the 2.7-meter research telescope. You'll discuss how it works and how it is used by astronomers. (Although rare, due to unforeseen technical issues we may be forced to alter or cancel this portion of your program.)

Format: Inquiry-based Guided Tour

Our Star the Sun: Don't look straight at the sun! We have a better way! We will be taking a safe look at our closest star, the Sun. We will observe live views of the Sun using specially filtered telescopes fitted with video cameras. We'll observe sunspots, solar prominences, maybe even solar flares. Demos help us understand some of the phenomena that we observe.

Format: Classroom/Theater Presentation, Hands-On Activity

Moon Phases and Eclipses: Come get Lun(ar)y with us! Students will use a kinesthetic model of the Sun-Earth-Moon system to obtain a clear idea of the Moon's motion around the Earth, moon phases, and eclipses.

Format: Classroom/Theater Presentation, Hands-On Activity

Grade 6-8: Frontiers (Up to 60 students)

One of the most exciting things about astronomy is that our understanding of the Universe is constantly changing and growing. Join us at McDonald Observatory to visit one of our newest telescopes, and learn about two "hot" fields in astronomy: exoplanets and the expanding Universe.

Hobby-Eberly Telescope Tour: Your group will travel with your facilitator in transportation that you provide to see one of the largest telescopes in the world, the Hobby-Eberly Telescope. It's big, it's unique, and it is doing some amazing science! (Although rare, due to unforeseen technical issues we may be forced to alter or cancel this portion of your program.)

Format: Inquiry-based Guided Tour

Exoplanets: Are there planets out there orbiting other stars? How do astronomers detect them? How would we learn about them? In our visitors center classroom, students will explore

some of the ways that exoplanets are detected, and then take part in an activity called “Strange New Planet”, where we discover how gaining new technology can help us learn more about planets, even in our own Solar System.

Format: Classroom/Theater Presentation, Hands-On Activity

Expanding Universe: The Universe is expanding! If that’s the case, where’s the center? In our visitors center classroom, students will form two teams and actively demonstrate the expansion of the Universe to show that there is no center point.

Format: Classroom/Theater Presentation, Hands-On Activity

Grades 6-8: Tools of the Astronomer (Up to 60 students)

How do astronomers at McDonald Observatory study the sky? How does a telescope work? What makes our location a good place to have an observatory? Students will visit a big research telescope to see in person and learn how it works and how the astronomers will use it. In the classroom, they will learn about the Law of Reflection and about the dark sky environment of McDonald Observatory.

Telescope Tour: Load up the bus! Your group will travel with your facilitator in transportation that you provide up to the summit of Mt. Locke. After a short walk and some wonderful views, students will visit the 2.7-meter research telescope. You’ll discuss how it works and how it is used by astronomers. (Although rare, due to unforeseen technical issues we may be forced to alter or cancel this portion of your program.)

Format: Inquiry-based Guided Tour

Mirror, Mirror: In this classroom activity, students test the Law of Reflection using experimental evidence. We will use back-silvered mirrors, and see how the results differ when a front-silvered mirror is used. Once we have explored the Law of Reflection in the classroom, we will finish with a “field trip” outside to the Visitors Center telescope park to see how mirrors are used in telescopes.

Format: Classroom/Theater Presentation, Hands-On Activity

Preserving Dark Skies: You have heard that the stars at night are big and bright here in this part of Texas, and that’s mainly because our night sky is very dark. Students will learn the importance of a dark sky, as they build a model of outdoor lighting that keeps the sky dark, but keeps people on the ground safe. There is a take-home activity as well, where students can measure and compare the sky darkness at home and at another location.

Format: Classroom/Theater Presentation, Hands-On Activity

HETDEX (6-8) (Up to 60 students)

The Universe is expanding and the expansion is speeding up! This relatively recent discovery in astronomy has sparked a huge project here at McDonald Observatory: the Hobby-Eberly Telescope Dark Energy Experiment (HETDEX). Students will learn about the unique telescope hosting the HETDEX project and some of the science behind the effort.

Hobby-Eberly Telescope Tour: Your group will travel with your facilitator in transportation that you provide to see one of the largest telescopes in the world, the Hobby-Eberly Telescope. It's big, it's unique, and it is doing some amazing science! (Although rare, due to unforeseen technical issues we may be forced to alter or cancel this portion of your program.)

Format: Inquiry-based Guided Tour

Telescope Technology: In the visitors center classroom, students will explore some of the technology that makes our largest telescope unique. Students will create a two-dimensional model of the HET mirror array and discover what astronomers need to do to track an object across the sky using HET.

Format: Classroom/Theater Presentation, Hands-On Activity

Expanding Universe: The Universe is expanding! If that's the case, where's the center? In our visitors center classroom, students will form two teams and actively demonstrate the expansion of the Universe to show that there is no center point.

Format: Classroom/Theater Presentation, Hands-On Activity