

**General Relationship
Grand Canyon Trip
Science Content Standards**

Grand Canyon Tour



GRAND CLASSROOM
PO BOX 7123
CHARLOTTESVILLE VA 22906
434-975-2629

Grand Canyon Tour

TOUR STOPS	Science Content
<p>LAKE MEAD, NV BOULDER CITY, NV Students share their first meal together and get a look at spectacular scenic vistas including deep canyons, dry washes, sheer cliffs, distant mountain ranges, the lakes, colorful soils, rock formations and mosaics of different vegetation.</p> <p>HOOVER DAM BOULDER CITY, NV Grand Classroom participants take the "Discovery Tour" at Hoover Dam that allows them to hear a lectured presentation by professional guides, access to the Exhibit Hall, Visitor's Center, the indoor/outdoor observations decks and a 25 minute movie on the dam's original construction Viewing this magnificent, man-made structure creates a respect for human accomplishments. The seasonal flooding of the Colorado River was eliminated, and millions of people now have drinking water and irrigation during the dry season. Students learn how the builders triumphed over environmental and engineering difficulties to complete the monumental task of building Hoover</p>	<p>Geology Plate Tectonics Shaping Earth's Surface Ecology Resources Evolution Earth and Life History</p> <p>Energy in the Earth Systems Resources Heat</p>
<p>MUSEUM OF NORTHERN ARIZONA FLAGSTAFF, AZ Groups visit the Museum of Northern Arizona and view exhibits relating to the Museum's four main disciplines: anthropology, biology, geology, and fine art. The Museum has permanent exhibits in five galleries and changing exhibits in three additional galleries.</p>	<p>Geology Anthropology Biology Ecology Evolution</p>

TOUR STOPS	Science Content
<p data-bbox="235 212 509 237">GRAND CANYON, AZ</p> <p data-bbox="235 279 797 485">The groups spend a day at the Grand Canyon with certified, local guides. All guides are Wilderness First Responders and because of this Grand Classroom is permitted to hike below the rim. Guides organize hikes for the group based on ability and weather conditions. However, most groups hike 2 miles on the South Kaibab trail.</p> <p data-bbox="235 527 797 919">Subjects covered include the human history of the canyon. Following 300 years of missionaries, trappers, explorers, government surveyors and soldiers, Major John Wesley Powell and his party of nine made the first successful boat trip down the Colorado River through the Grand Canyon in 1869. By the late 1800s, the spectacular beauty of the Canyon began to draw both visitors and businessmen alike. In 1901 the first Santa Fe passenger train arrived at the South Rim. Grand Canyon became a national monument in 1908 and on February 26, 1919, it was designated as the seventeenth national park.</p> <p data-bbox="235 961 797 1346">Students will also learn much about the geology of the Grand Canyon. Guides will be on to discuss the use of scientific method to understand the Canyon and its processes. Although there is not a definitive answer to how it was formed, there are some truths that will be discovered by the students. The most powerful force to have an impact on the Grand Canyon is erosion, primarily by water (and ice) and second by wind. Other forces that contributed to the Canyon's formation are the course of the Colorado river itself, volcanism, continental drift and slight variations in the earth's orbit that in turn causes variations in seasons and climate.</p>	<p data-bbox="826 212 1308 499">Geology Anthropology Biology Plate Tectonics and Earth's Structure: Shaping Earth's Surface: Ecology: Evolution: Earth and Life History</p>
<p data-bbox="235 1358 464 1415">RIVER FLOAT LEE'S FERRY, AZ</p> <p data-bbox="235 1451 792 1629">The Grand Canyon officially begins at Lee's Ferry, and the students take a half-day float trip from Page to this launching point. The students will view the Kaibab formation, a light band of limestone angling out above the water at the rim of the Grand Canyon gorge.</p> <p data-bbox="235 1665 797 1934">This limestone was deposited in horizontal layers at the bottom of an inland sea more than 200 million years ago. Subsequently, as these layers uplifted and warped, the Colorado River sliced down through them. The Kaibab Formation becomes visible here, 3,000 feet above sea level, and climbs to 8,500 feet at the North Rim of Grand Canyon, 90 river miles away. Licensed guides ride with the groups on the boats to give them an expert description.</p>	<p data-bbox="826 1358 1308 1537">Geology Plate Tectonics and Earth's Structure: Shaping Earth's Surface Ecology Resources</p>

TOUR STOPS	Science Content
<p>WUPATKI NATIONAL MONUMENT FLAGSTAFF, AZ</p> <p>The groups visit the Wupatki National Monument, once home to prehistoric Anasazi and Sinagua farmers and traders -- the Hisatsinom, as their Hopi descendants call them.</p> <p>Today, this 54 square miles of the Monument preserves many free-standing masonry pueblos, field houses, rock art, pottery, baskets and tools -- extraordinary evidence of a varied and complex lifestyle. Altogether, more than 2,700 archeological sites have been cataloged at Wupatki National Monument.</p>	<p>Anthropology Shaping Earth's Surface Ecology Resources Evolution Earth and Life History</p>
<p>SUNSET CRATER FLAGSTAFF, AZ</p> <p>Students enjoy seeing this volcanic crater formed just before 1100. Its upper portion is colored as if by a sunset. Sunset Crater appeared when molten rock was ejected into the air from a small crack in the Earth's crust. When this material fell to the ground, it was already solid and came down as large bombs and smaller cinders.</p> <p>This volcanic activity continued over 200 years building and re-shaping the cone and eventually creating a 1,000-foot cinder cone volcano around the vent. An 800 square mile radius was dusted with ash from this volcano. Lava flowed from the fissure both in 1064 and again in 1180. Over time new gas vents opened up forming spatter cones around the main cinder cone. In a final burst of activity, around 1250, lava containing iron and sulfur shot out of the vent. This lava then oxidized red and yellow, these colors painting the crater with a permanent "sunset" so bright that it appears still to glow from intense inner heat.</p>	<p>Plate Tectonics and Earth's Structure: Shaping Earth's Surface Earth and Life History Structure of Matter</p>

TOUR STOPS	Science Content
<p>OAK CREEK CANYON SEDONA, AZ</p> <p>Sedona is the gateway to spectacular scenery and recreation in Oak Creek Canyon and the surrounding red rock country. Students learn about the fascinating geology of the area, as well as ecology and environmental science issues. The eroding of the red rocks is explored. One of Oak Creek's most colorful attractions is Slide Rock State Park, where students (weather permitting) can swim. In this section of the canyon, the red rock forms the bottom as well as the walls of the canyon. Oak Creek has eroded the soft sandstone into beautiful shapes with resulting chutes, slides, pools, and waterfalls, forming a natural water park.</p>	<p>Geology Plate Tectonics and Earth's Structure: Shaping Earth's Surface Earth and Life History Structure of Matter</p>
<p>SLIDE ROCK STATE PARK, AZ</p> <p>As one of the few homesteads left intact in the canyon today, Slide Rock State Park is a fine example of early agricultural development in Central Arizona. The site was also instrumental to the development of the tourism industry in Oak Creek Canyon. The completion of the canyon road in 1914 and the paving of the roadway in 1938 were strong influences in encouraging recreational use of the canyon.</p> <p>The park is named after the famous Slide Rock, a stretch of slippery creek bottom adjacent to the homestead. Visitors may slide down a slick natural water chute or wade and sun along the creek. The swim area is located on National Forest land which is jointly managed by Arizona State Parks and the U.S. Forest Service. Together these areas have seen the making of many Hollywood movies such as "Broken Arrow" (1950) with James Stewart, "Drum Beat" (1954) with Alan Ladd and Charles Bronson, "Gun Fury" (1953) with Rock Hudson and Donna Reed, and a scene from "Angel and the Badman" (1946) with John Wayne.</p>	<p>Geology History Film History Biology Erosion</p>