



**The Grand Canyon Super Group:** Studying Plants, Rocks and Water Quality at the base of the Country's deepest Classroom

**July 1-9, 2012**

**Itinerary:**

**DAY 1 LAS VEGAS. NEVADA**

Arrive in Las Vegas and transfer to our hotel Gather for a trip orientation and welcome dinner this evening.

*Green Valley Ranch Resort & Spa*

**DAY 2 GRAND CANYON/NORTH RIM**

Cross the desert and canyons of the Arizona Strip en route to the North Rim of the Grand Canyon. The North Rim's higher altitude supports dense forests of pine, fir, and aspen, a striking contrast to the arid landscape of the South Rim. At Point Imperial, enjoy a picnic lunch overlooking the canyon's spectacular swirling chasm, carved by the Colorado River over millions of years. Embark on a short warm-up hike to the Grand Canyon lodge perched above the canyon and our home for the next two nights. (2 miles hiking, 1 hour)

*Grand Canyon Lodge North Rim*



### DAY 3 NORTH KAIBAB TRAIL

After breakfast set out on a hike below the rim on the North Kaibab Trail, passing through several geological layers and life zones. If you wish, turn around at an earlier point and spend the afternoon discovering the breathtaking viewpoints along Cape Royal Road. Or continue on a more challenging descent to Roaring Springs, where we'll picnic beside the waterfall before hiking back up. (5-10 miles hiking, 2-5 hours)

*Grand Canyon Lodge North Rim*

### DAY 4 VERMILLION CLIFFS/ANTELOPE CANYON/ HORSESHOE BEND

Drive to the South Rim of the Grand Canyon, stopping at several scenic points along the way. At the Vermillion Cliffs look for reintroduced California condors among the sandstone waves. At Antelope Canyon, explore one of the most photographed slot canyons with a Navajo guide, later, take a short hike to Horseshoe Bend overlook, where the Colorado River makes a spectacular loop below *red* cliffs. Arrive at the South Rim in time for sunset and dinner overlooking the canyon. (2-4 miles hiking, 3 hours)

*Thunderbird Lodge*

### DAY 5 SOUTH KAIBAB TRAIL

We have two hiking options today. Descend the steep switchbacks of the South Kaibab Trail passing ancient strata layers and panoramic viewpoints on our way to Cedar Ridge. Or hike the West Rim Trail skirting the South Rim. Enjoy a picnic lunch while learning about the ecosystems and geology of the park. Keep an eye

out for mule deer, desert bighorn sheep, condors, and other canyon wildlife. Tonight, capture the canyon at sunset on a photographic walk to some of the best viewpoints. (3.7 miles hiking, 2-4 hours)

*Thunderbird Lodge*



#### DAY 6 HAVASU CANYON/HAVASU FALLS

A morning drive brings us to Hualapai Hilltop (4,849) where we embark on a 10-mile hike into Havasu Canyon. Red-rock walls rise overhead as we descend through a series of switchbacks. Near the canyon floor, the rocky terrain opens into a wide plain shaded by cottonwood and willow trees. Visit the village of Supai, home to both the Havasupai tribe and the only us. post office that still uses pack mules. This afternoon, arrive at our base camp situated on the banks of Havasu Creek. Take a refreshing dip in the pools of Havasu Falls or relax in hammocks overlooking this desert oasis. (10 miles hiking. 4-5 hours)

*Camping*





#### DAY7 MOONEY FALLS/BEAVER FALLS

Awaken to the sun rising over the canyon. Embark on a hike to the spectacular Mooney Falls, which drop about 200 feet into travertine-lined pools. This area is home to desert bighorn sheep, Gila monsters, and rare bird species including peregrine falcons. Relax on the shore or, if you wish, continue hiking to Beaver Falls and explore the “green room” a cave hidden beneath the falls and only accessible through an underwater hole. (3-9 miles hiking, 2-5 hours)

*Camping*

#### DAY 8 CARBONATE CANYON

Set out on a morning hike through Carbonate Canyon, looking for fossils among its narrow slots. The afternoon is free to relax at our camp or hike to two newer falls formed by a flood in 2008. At the base of the falls, swim in blue-green pools surrounded by a dramatic red-rock amphitheater. Tonight, enjoy a festive farewell dinner. (2-6 miles hiking, 2-3 hours)

*Camping*

#### DAY 9 HAVASU CANYON/LAS VEGAS

This morning, begin our ascent back to the canyon rim. Passing whimsical rock formations and sculpted red cliffs. Return to Las Vegas this afternoon and depart on your flight home.

(10 miles hiking. 4-5 hours)

## **Course Elements:**

### **Geology:**

The Grand Canyon is one of the most studied sequences of rock on Earth. This course will expose you first hand to important geological data. We will study plate tectonics, erosion effects, fossils, and the history, formation, and composition of many of the visible rock layers that make the canyon such an attraction. Each student will take samples home for classroom study and keep a detailed photo journal.

### **Water Quality:**

Water quality is the physical, chemical, and biological characteristics of water. The chemical content of water can also vary dramatically as a result of point source inputs and non-point source inputs. The course will cover alkalinity and the carbonate system especially with respect to the issues of acid rain, acidification of the Earth's oceans, acid/base reactions especially with respect to disinfection of drinking water. We will explore remediation of environmental systems contaminated with inorganic pollutants. Familiarizes students with various methods used for analysis of chemical parameters in environmental samples (water and soil). Students will learn about constituencies participating in modern management of large river basins, including water developers, irrigators, municipalities, power consumers, recreationists, environmentalists, and scientists. (Primary examples drawn from Colorado, Columbia, Rio Grande, and Missouri river basins.) The course reviews biological and social problems caused by point and nonpoint source water pollution; toxicology; abiotic and biotic water quality parameters; and use criteria of the Clean Water Act. Samples will be collected for testing upon return to the Lab and keep a detailed journal.

### **Plant Chemistry:**

In this class students will see how certain plants, invertebrates, and fish are good or bad indicators of water quality. They will study the relationship between plant growth and available nutrient supply. Students will use the definition or criteria of an essential element for plant growth (Criteria proposed by Arnon and Stout in 1939.) Students will also classify plants based on how they attain or process energy in different environments as the Canyon is home to a wide range of ecosystems. Students will keep a detailed photo journal..

### **Hike Description:**

Set out on foot to discover the extraordinary beauty of Grand Canyon National Park. From the lush forests of the North Rim, hike along sinuous sandstone ribbons sculpted over millions of years. Explore the more arid terrain of the South Rim and witness the canyon's shifting palette of red, orange, and gold. Then head to Havasu Canyon, a stunning oasis located just outside a remote section of the park for a camping expedition. Hike through a red-rock labyrinth and feel the cool spray of waterfalls as they gush over travertine terraces. Swim In turquoise pools, delve into slot canyons, and sleep in tents beside a shaded creek. Explore the geological formations that make the Grand Canyon one of the most magnificent natural wonders of the world.



### **Grand Canyon Super Group Important Details:**

**Dates:** July 1-9, 2011 at the Grand Canyon  
July 11-12, 15-18 science labs at Saint Peter's Prep

Please note that nights 1-5 of the Grand Canyon trip have hotel/lodge accommodations. Nights 6-8 require camping in the Grand Canyon.

**Hiking rating:** Moderate (Note that hikes are between 2 and 5 hours each day.)

**Credit:** 1 credit in science

**Cost:** \$4245 + round trip air fare to Las Vegas

**Instructors and Trip Moderators:** Mr. Canale and Ms. Castellano

Please contact Mr. Canale ([canalea@spprep.org](mailto:canalea@spprep.org)) or Mr. Furlong ([furlong@spprep.org](mailto:furlong@spprep.org)) if you are interested in this summer course.

