



"Wisdom begins with wonder..." –Socrates

CURIOSITY

Welcome Educators!

Thank you for your interest in visiting the Sierra College Natural History Museum (SCNHM). We are excited to present in-depth, natural history and science experiences that go "beyond the classroom".

The materials enclosed in this packet will provide you with further information regarding Museum tours and other SCNHM educational programming.

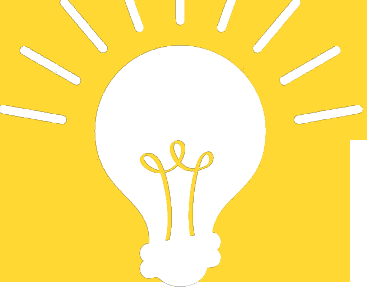
This *Educator Resource Guide* will overview Museum offerings for K-12 students, guide you through the tour reservation process, and expedite the logistics of your visit to the Museum.

We've also included a few fun teaching resources, so that you may share our passion for S.T.E.A.M. (science, technology, engineering, arts, and math) disciplines with your future scientists and excite them about their upcoming field trip!

Please read and review all enclosed materials prior to your scheduled program date. Electronic copies of fillable forms, activities, and support materials may be found online at the Museum website, www.sierracollege.edu

Rachael Greve,

Sierra College Natural History Museum Director



"Somewhere , something incredible is waiting to be known."
-Carl Sagan

INSPIRATION

EDUCATIONAL OFFERINGS

Sierra College Natural History Museum offers a broad bandwidth of educational programming for students ages four to one hundred-four!

For over fifty years, the Museum has provided inspirational scientific education to its students and the community. Initially funded by a special grant, Project Gold Mind, the Museum's champion and department chair, R.A. Underhill, oversaw the construction of exhibits based upon the rising theme of ecology. Accompanied by the popular planetarium, the Museum became the familiar home of thousands of youngsters, students, teachers, and parents who came to engage, experience, and discover. Over a period of its first eleven years, more than 150,000 people participated in lectures, demonstrations, exhibits, field trips, and classes.

Since then, we've added supplemental natural history experiences to our catalogue of offerings that go "beyond the classroom including the Natural Trail Area, Desert Garden, Rock Walk, and Arboretum, along with community outreach initiatives such as Free First Saturday, loan trunks, Rocklin Mini Maker Faire, and Dinosaur Day: Science Fest.

When planning your Museum experience, please consider your current science curriculum needs and time allowance as options lasts approximately one (1) hour. Don't forget to factor in travel time (to and from the Museum), as well as multiple bathroom breaks, and lunch for students).

Although, the Museum can be a dynamic self-guided tour experience and is admission-free to the general public, it is located in an actively used classroom and laboratory building. For that reason, school groups and any other large group over ten (10) can visit on Fridays and are require a paid tour guide/docent. Our comprehensive fee schedule includes docent fees and is listed on the *Logistics* form. Our docents are specially trained Sierra College students (typically science majors) that can answer your questions and invoke critical thinking throughout the galleries. Docents cannot collect your school's cash payment for tour services; please refer to *Logistics >Payment Q&A* for further details.

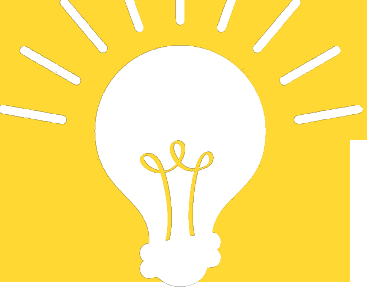
Field Trip Options:

- Museum Tour
- *Planetarium (as scheduling permits)
- Nature Trail Area
- Any Combination of the above (M/P/NT)

Museum Tour

The Sierra College Natural History Museum does not find it hard to get ahead! There are over seventy taxidermied animal head mounts and one hundred-forty skulls on exhibit focusing on vertebrate species. The *Animals of the World* exhibit spans the entire Museum! Students will marvel at fauna from Europe, North America, South America, Asia, and Africa. Many of these massive animals are herbivores. If carnivores are your favorite, we have a few of those as well. An interesting "sleuth" of omnivores can be found in the west lobby *Bear* exhibit.

Marine Mammals gallery features aquatic favorites such as the unusual narwhal and loveable manatee, but the showstopper is our hanging 38ft California Gray Whale, the state marine mammal of California! Back on land, we have a dynamic fossil *Tortoise* display



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and a unique *Hawver Cave* special exhibit. Other featured Pleistocene beasts include the Mastodon and Mammoth *Megafauna* cases, *Gomphothere* excavation display, *Ice Age Mammals*, and a real *Tarpit of Doom*.

Natural History ROCKS! Aspiring paleontologists may reference the fossil record through our *History of Life* exhibit. It's conveniently located underneath the gargantuan fossilized *Ichthyosaur*. Check out our trilobites, giant horseshoe crabs, and buzz saw-shaped Helicoprion shark tooth! One of California's few dinosaurs is the Hypsilyphodont; a Sierra College professor found its left hind leg! It's in our *Dinosauria* gallery, where you can also measure up to a long-necked Apatosaurus.

An impressive *Entomology Compendium* including a *California Butterfly* exhibit, will have your students buzzin' for more bug fun. If you are teaching Earth Science as part of your classroom curriculum, the *Mineralogy* exhibit is visually stunning as it colorfully showcases many of the planet's beautiful elements and minerals. Regional geological features such as the *Chico Formation* display, warrant a tour stop; don't miss the Mosasaur skull fragment found right around the corner from us in Granite Bay!

Earthquake studies will make your students tremble with excitement as they look for tremor activity on our real seismograph machine in the *Weather Station* exhibit.

Botany buffs will scream for green at our *Sierra Forest* exhibit; it's a forest INSIDE a museum case! Visitors are offered an up-close glimpse of the wildlife and botanicals found in our own backyard, the Sierra Nevada foothills! This lens into our unique ecosystem focuses on Northern California plants and animals featuring specimens from cedars to woodpeckers, creepy crawlers in subsoil habitats, owls, coyotes--there's even a rare Wolverine, Sierra College's mascot! More native trees can be found in the updated *Conifers of California* display, which contains almost thirty species of cones. A fun, tactile experience can be found nearby at one of many petrified wood specimens. We left this mineralized former tree without an acrylic museum enclosure, so that students may touch and feel its ancient texture.

This is just a brief descriptive snapshot of the 21,000 specimens that are held in our collection and organized into six unique data bases. Additionally, SCNHM is a repository for many federally permitted specimens including the Bureau of Land Management (through the U.S. Department of the Interior) and Forest Service (U.S. Department of Agriculture). What does that mean? A repository is a place where things may be put for safekeeping or exhibition. The Museum is a secure and organized academic institution that does just that! We keep specimens found on federal lands on behalf of the U.S. government. We don't "own" these fossils but rather the Museum (or other Museums) and our scientists receive research permits for lands that are federally managed. We agree to keep important found materials and associated records protected and preserved on behalf of that government agency. In turn, we get to use the specimens for research or exhibition!

*Planetarium Show

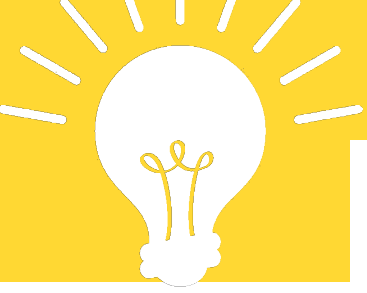
The Sierra College Natural History Museum offers Astronomy shows in Sewell Hall's planetarium. Built in the late 1960s, this Moon Landing-era planetarium seats fifty visitors. The Planetarium Shows last approximately one hour and consists of a PowerPoint program, celestial skies presentation, and Q&A session with an astronomer. Because the planetarium show is a "total darkness" environment, this program is offered for students ages 1st grade+.

*Planetarium availability varies per semester.

Nature Trail Area

The Sierra College Natural History Museum serves as chief steward of the Nature Area. A shaded path winding through the foothill oak woodland and riparian forests has several miles of trails, including those across Secret Ravine Creek. The Secret Ravine Nature Trail is about ¾ mile long, but there is a branch that includes a gentler loop upslope to accommodate the possibility of strollers (jog strollers-- 4WD kind!)

The tour will visit oak forests and a shallow, yet swift portion of the Secret Ravine Creek, which serves as a habitat for Chinook salmon, Steelhead Trout, and other fish species. The surrounding area is home to roaming rafters of wild turkeys, a skulk of gray fox, coyotes, otters, various reptiles, birds, and rodents.



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Echoes of the indigenous people from the area are heard along the tour by way of nutting and grinding stones and other Maidu archaeology. A spear point found along the trail by Sierra College students is exhibited in the S-110 gallery.

The Sierra College Nature Trail was designed and constructed by members of the Sierra College Science Club and their faculty advisors in the 1960s. As knowledge of the Nature Trail area has expanded, a trail guide has grown as well. *The Sierra Foothills Nature Guide* is available as a field guide to the biology and ecology of the Nature Trail. It covers one hundred-eighty five (185) species accompanied by nearly two hundred (200) detailed original illustrations. It is available for purchase through the Sierra College Natural History Museum.

Because this is an outdoor activity, please encourage parents to dress their children in appropriate attire and stay on the trail! Recommended for Kindergarten+.

Other Options:

- Outreach Presentation
- Loan Trunks
- Free First Saturdays
- Dinosaur Day and ScienceFest (late April/early May 2020)
- Museum Lecture Series

Outreach Presentation

Currently, the Museum does not offer outreach to area schools. We are in the early process of developing an outreach program that would allow us to be equitable in admissions, staffing, and funding for on-site school opportunities.

We are able to occasionally partner with museums, non-profits, science agencies, maker fairs, and S.T.E.A.M. advocacy groups to educate the community about SCNHM. Please contact our Museum Office directly for such requests at (916) 660-7923.

Loan Trunk

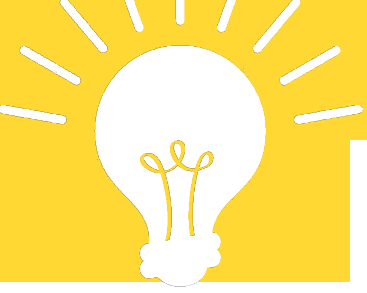
Educators may borrow one of three Museum traveling trunks to use in their classrooms for up to two weeks:

1. **Natural History Rocks** (igneous, sedimentary, and metamorphic rocks)
2. **Fantastic Fossils** (specimens of single cell organisms, prehistoric flora, and megafauna)
3. **Mighty Minerals** (metals and minerals)

Each exciting discovery box contains an inventory list and description of specimens for classroom use. Educators will be required to complete a check-out form for each loan trunk requested.

Free First Saturday

Come join Sierra College professors, Museum staff, and scientists for a fun, open-house science workshop geared toward all ages! This new initiative at Sierra College Natural History Museum hosts unique monthly themes such as dinosaurs, marine mammals, Pleistocene megafauna, volcanoes, bats, fossils, carnivorous plants, microbes/stinky foods, magnetic slime, astronomy, a Lego



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buffet, and S.T.E.A.M. maker stations. Docent-led tours of the Museum are offered, as well as games, crafts, and snacks. Available the first Saturday of each month from 10am-12pm.

Dinosaur Day and ScienceFest

Save the date! The first Sunday in May is our annual Museum Dinosaur Day and ScienceFest fundraiser!

Museum Lecture Series

Please join us on the third Friday evening of the month during Spring and Fall Semesters for an exciting science lecture by S.T.E.A.M. content experts! 7:30pm. S-111 Classroom in Sewell Hall

"Great white sharks, big storms -- somehow, I think we like to be put in our place by awesome things. Dinosaurs do that." –Sue Hendrickson



ADVENTURE

Planning Your Field Trip:

- Please read over the *Educational Offerings Information*. Select the option that you want your students to experience and that best fits your curriculum needs and/or time allocation.
- Make your reservation online at <https://sierracollege.doubleknot.com/facilitycalendar/4352>. SCNHM will make every effort to accommodate reservation changes but cannot guarantee docent availability if major changes are made prior to 48 hours before field trip.
- To reserve a tour time/planetarium show/nature trail hike, click your activity start time. Then click below it one hour on the solid blue bar. A “reserve” tag will pop up in in red letters.
- For billing, please remit payment online at checkout with credit card or if your school needs to be billed, please click the mailbox icon for mail-in payments. All checks must be made payable to Sierra College **FOUNDATION** with Museum tour in the Memo. Do NOT send cash.
- Cost is \$3.00 per activity per person. Except bus drivers. (No one ever does nice things for them, so they are free admission.)
- You will receive a communication/receipt from the Museum Office confirming that we have received your tour reservation. If you do not receive an email confirmation during this time period, please contact the Museum Office at (916) 660-7923.
- Two (2) weeks before your scheduled field trip, the Museum Office will email you a courtesy reminder and itinerary.



"Science and everyday life cannot and should not be separated."
– Rosalind Franklin

INNOVATION

Vocabulary Terms & Concepts:

Adaptation: A feature that makes an organism more successful in their environment. (A leopard's spots, pack hunting, a duck's webbed feet, a pelican's beak).

Amphibians: A class of animals that have permeable skin, are dependent on water, and lay unshelled eggs.

Arthropods: Animals that have more than four legs, possess an exoskeleton, and have jointed legs. Things like spiders, insects, and crabs are arthropods.

Astronomy: A science involving celestial objects, space, and the whole physical universe.

Botany: The scientific study of all types of plants.

Dinosaur: A group of terrestrial reptiles that lived from the beginning of the Triassic, until the end of the Cretaceous.

Endangered: A species that is threatened or close to extinction.

Evolution: Gradual change in organisms primarily due to natural selection, environment, or mutation.

Extinct: When a species has no more living members or can no longer reproduce new offspring.

Fossil: The remains or impression of a prehistoric plant or animal preserved in rock or sediment.

Geological Time Periods: Divisions of Earth's geologic history; the Precambrian, Cambrian, Ordovician, Silurian, Devonian, Carboniferous, Permian, Triassic, Jurassic, Cretaceous, Tertiary, and Quaternary.

Ice Age: A long lasting reduction in temperature that results in mass amounts of ice and glaciers. The most recent Ice Age was during the Pleistocene when megafauna mammals such as the mammoth flourished.

Mammals: A class of animals that have hair, are warm-blooded, produce milk, and typically give live birth.

Mineralogy: A science of studying and classifying minerals.

Mollusc: A large category of invertebrates such as snails, slugs, clams, and squid that live in damp or aquatic habitats.

Natural History: The observation and study of living organisms. Their habitats, and their environment interactions.

Natural Selection: Organisms that are better adapted to their environment will survive and reproduce, passing on their genes; those who are not well adapted will die out.

Pangea: The massive supercontinent that existed during the Permian and Triassic Periods.

Plate Tectonics: Millions of years ago, the only land mass on the planet was a supercontinent called Pangaea. As time passed, plates in the Earth's crust shifted and split Pangaea apart, eventually forming the continents we are familiar with today.

Reptiles: A class of animals that have scales and typically lay eggs. Snakes, lizards, turtles, crocodilians, and birds are considered reptiles.

Scientific Method: Method of procedure that has characterized natural science since the 17th century, consisting of systematic observation, measurement, and experiment, and the formulation, testing, and modification of hypotheses.

Taxidermy: The practice of stuffing and mounting animals skins to appear life like; such as our polar bear, snow leopard, and deer.

Taxonomy: The science of defining and naming groups of biological organisms on the basis of shared characteristics.

"A scientist is a child who's never grown up." –Neil de Grasse Tyson



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LOGISTICS

Field trips can be quite stressful but they can also be memorable, even life changing experiences. Sometimes, a single field trip can change the trajectory of a child's aspirations. Quite a few of our professors and the Museum's Director are field trip success stories!

To help you navigate the currents of booking your field trip, making payment, preparing your students, and traveling to the Museum, we have stream lined the process to make it as easy and enjoyable as possible.

Payment:

Please make checks payable to: **Sierra College Foundation** with "**Museum Tour**" in the memo line. You may also call the Museum Office at (916) 660-7923 to pay with a credit card or pay online during your reservation checkout.

Please mail the payment stub with your deposit to:

**Sierra College
ATT: Natural History Museum
5100 Sierra College Blvd.
Rocklin, CA 95677**

Please, **do not** pay in cash. (The docents cannot make change and cannot carry cash payments on their person for safety reasons.) You will receive a receipt of payment for accounting records.

Fee Schedule:

The following fee schedule is listed for the Fiscal Year 2018-19. Please note that the Museum provides complimentary admission for our underappreciated teachers and bus drivers! Please list the number of teachers and bus drivers for your school trip on your Tour Request Form. Chaperones are charged the same cost as students.

*Regretfully, bus driver entry fee waiver cannot be substituted for personal vehicle parking fee.

FEE SCHEDULE

- **All Activities** (Museum tour, Nature Trail hike, or Planetarium show) = **\$3.00 per visitor, per activity**.

Cancellations:

The Museum **does not cancel** reservations unless **Sierra College has cancelled** class and other campus-wide activities for that day or environmental factors make the activity unsafe to continue. (i.e., inclement weather including but not limited to flood, fire, lightning, sleet/hail, etc... or emergencies that would force a campus closure.)

If you have requested the Nature Trail tour, we will hike the trail regardless of snow, light rain, or shine. (So long as there is not lightning.)

We encourage safety first and foremost, and that includes travel to our Museum. Should weather or transportation issues cause you to significantly delay or cancel your field trip, we will gladly reschedule your trip completely or reimburse your organization's paid reservation.

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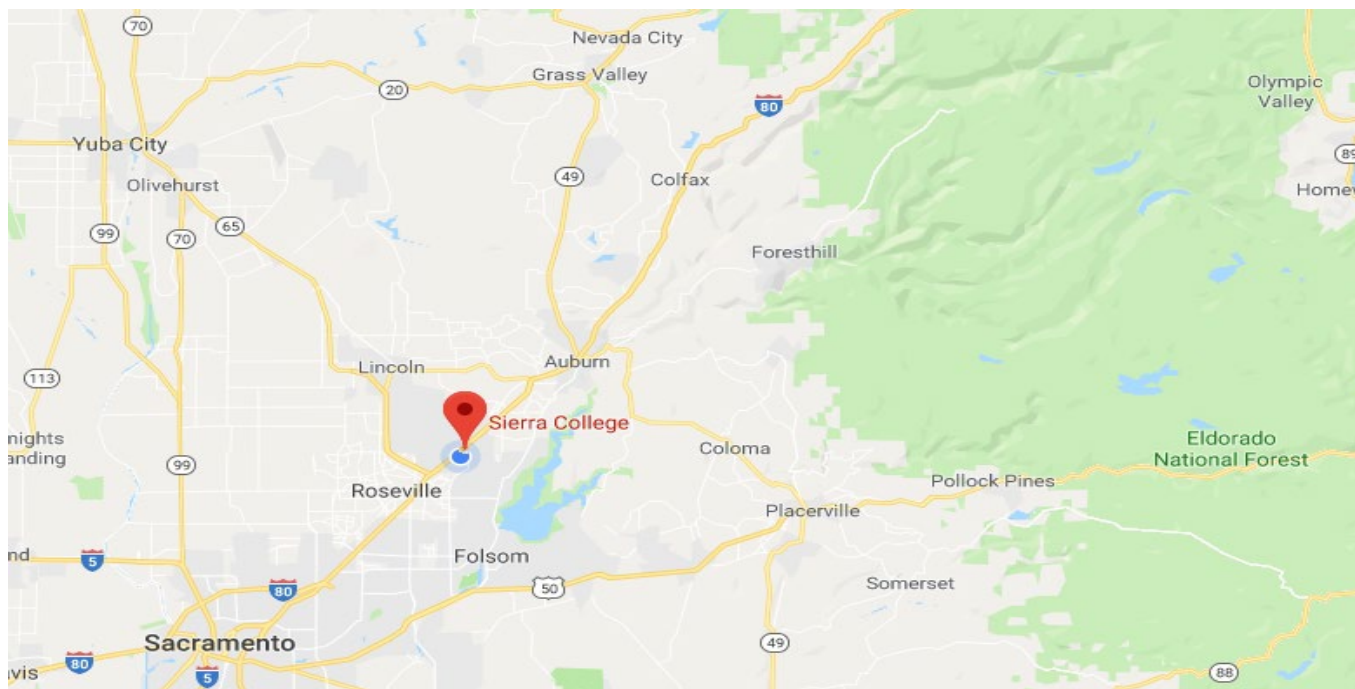
Getting Here:

Sierra College Natural History Museum is located in the science building on the west side of the Rocklin Campus in the heart of Sewell Hall. (Note that map apps on your phone may redirect you to the opposite side of campus near the stadium.) **If you are traveling by BUS, park in the Theatre lot's bus pullout.**

From Auburn/Grass Valley: Take Interstate 80 towards Sacramento. Exit Rocklin Road #108 and turn left. Turn right at the red light on to El Don Drive. At the intersection of E Lot and Campus Drive, turn into F Lot for DAILY PARKING!

From Placerville: Take Interstate 50 towards Sacramento. Turn right on exit #21 Hazel Avenue. (Hazel becomes Sierra College Blvd.) Turn left onto Rocklin Road. Turn right at the red light on to El Don Drive. At the intersection of E Lot and Campus Drive, turn into F Lot for DAILY PARKING!

From Sacramento: Take Interstate 80 towards Reno. Exit Rocklin Road #108. Turn right onto Rocklin Road. Turn left at the red light on to El Don. At the intersection of E Lot and Campus Drive, turn into F Lot for DAILY PARKING!



Additionally, please find below, a Sierra College campus map so that your bus driver or chaperones may locate their designated parking lots. A larger version of this map is included in this resource guide. **For buses, please park in the Lot E Bus Pullout, adjacent to Dietrich Theatre (where your docent will greet you in front of the water fountain feature).**



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DAILY PARKING, LOT F is highlighted by red and green parked cars! You may cross Campus Drive via the cross walk and take the side walk towards the “Banking” ATM. Turn left just after the ATM and you will see Dietrich Theatre’s awning (**Building T**) and the outdoor fountain feature. We will have a docent waiting for you there!

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Preparing Your Students:

Please feel free to use these handy tips to prepare your students for a dynamic, beyond the classroom science experience.

- Remind students and parents to wear activity and weather appropriate clothing on field trip day.
- Practice dimming the classroom lights in small increments for younger students in preparation for the Planetarium's "total darkness" experience.
- Expose the students to the provided *Vocabulary Terms and Concepts*. (There's so much visual eye candy in the Museum and coupled with sheer excitement, it's easy to lose focus. Hearing common terminology and science-speak will feel familiar to your class during the tour and serve as a grounding force.)
- Talk about "critical thinking" with your students. Plan some questions for your docent.
- Encourage your class that science is for everyone and that they can absolutely work in a S.T.E.A.M vocation if they desire.

Museum Guidelines and Expectations:

As the Museum is located inside Sewell Hall, the science building on the Rocklin campus, we do abide by Sierra College District policies and procedures. The campus is entirely smoke free. Weapons, animals other than service animals, and skateboarding are prohibited.

To ensure the quality of every visitor's experience, we respectfully request the following from individuals touring or participating in activities at the Museum:

- **Please use inside or library voices;** We are a teaching Museum (our professors often use the Museum to instruct classes), and we share the space with Sierra College students that are listening to instructors, taking tests, or participating in lab practicums.
- **Please refrain from eating food or beverages.** (There are water fountains located around the Museum with water bottle fillers.) Food and sugary drinks attract insects that could infest our taxidermy specimens. We also ask that snacks or lunches not be eaten in the gallery spaces because it is distracting to other tours. You may utilize the Quad's grassy areas or picnic tables throughout Campus should you bring school lunches. The Museum does not have allocated space for dining.
- **Please do not water Museum plants** (inside or outside) with leftover beverages. It could kill them or worse, make them coffee snobs.
- **Please be respectful of your docent/tour guide.** Don't leave the group and do walk behind the docent, especially on the Nature Trail.
- **Please refrain from horseplay/running/yelling/cellphones.** (Ouch! We know it's hard because we live in a smartphone reliant culture, but students or chaperones that are chatting on their cellphones during a tour are a big distraction. We can absolutely take a group photo of your class after the tour is over using your camera app. And that way, you are in the picture, too!)
- **Please do raise your hand and ask questions!** The Museum encourages critical thinking and after they are finished sharing information, your docent will be happy to answer any questions. They might even ask students to think of a few questions to present to their fellow classmates.

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- **Please do not lean or push on the exhibits.** We recognize that children are tactile learners, so there are many incredible opportunities purposefully situated within the Museum for such hands-on learning. Ask your docent to identify those touch and feel areas. A fun example of such for students is placing their hands inside a therapod footprint from millions of years ago!
- **Please wear appropriate clothing.** We want you to be comfortable as you learn! If touring the Nature Trail, please ensure students are wearing appropriate outdoor clothing. And if you are participating in the Planetarium show, please no light-up shoes or glow-in-the-dark clothing. (It disrupts the total darkness effect.)