

# SAM NOBLE MUSEUM EDUCATOR'S GUIDE

2018 – 2019

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# WELCOME!

# A CLASS ADVENTURE!

## Welcome to the Sam Noble Museum!

Dear educators,



Welcome to the Sam Noble Museum at the University of Oklahoma! This 2018 – 2019 Educator's Guide provides information regarding the museum's innovative educational programs, exhibits and experiences that inspire learners of all ages to understand the natural and cultural world.

This year, bring the museum to your classroom with Discovery Kits!

The educators at the Sam Noble Museum are excited to work with you and your students this year. We look forward to serving you and hope that you share your ideas and feedback with us regarding your visit to the museum.

Sincerely,  
Education Department Staff

Educational programming in 2018 is sponsored in part by



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This publication, printed by the Sam Noble Oklahoma Museum of Natural History, is issued by the University of Oklahoma. One thousand copies have been printed and distributed at a cost of \$1,900 to the taxpayers of the state of Oklahoma.

## Programs Your Students Will Love

Our education department staff has developed a range of inquiry-based programs for each grade level. All programs address Oklahoma Academic Standards and are taught by professional museum educators.

### Educational Program Guides

Let us help you prepare your students for their museum visit! Educational Program Guides include background information, vocabulary lists, and Oklahoma Academic Standards. Visit our website, [samnoblemuseum.ou.edu/schoolprograms](http://samnoblemuseum.ou.edu/schoolprograms), to download these resources.

### Gallery Activities

Our Gallery Guides include thoughtful activities that encourage students to explore the details in each gallery. Guides are available for grades PreK–2, 3–5, 6–8 and 9–12 in PDF form on the museum website. It takes about 30 minutes to complete the activities in one gallery.

### Exhibit Interpreters

Trained volunteers in each gallery share stories, touchable specimens, artifacts and activities with your students as they explore the museum.

### Hands-on Exploration

Our Discovery Room is a hands-on exhibit space designed for students to explore museum objects in a stimulating and fun environment. Students may explore collection drawers, complete a series of tabletop activities, excavate dinosaur bones or simply examine the many wonders displayed in the room.

## Exhibits That Bring Science to Life!

Oklahoma's present Native American heritage and its archaeological past, its ecology and wildlife, and its ancient life forms are all beautifully showcased in museum galleries.

### Explore the Natural Wonders of Oklahoma

Breathtaking dioramas in the Hall of Natural Wonders allow students to explore some of Oklahoma's unique habitats. Walk through a limestone cave that is home to bats and salamanders, observe bison in their natural habitat and marvel at the beauty of Black Mesa.

### Immerse Yourself in the Past

In the Hall of Ancient Life, your students can sit on replicas of 3-billion-year-old bacterial domes called stromatolites, wander the giant forests that became Oklahoma's coal deposits and then be awed by the dinosaurs and mammoth.

### Investigate Native Cultures of Oklahoma

The Hall of the People of Oklahoma explores how people lived in the state from 30,000 years ago to present day. The gallery includes mammoth-hunting tools, exotic trade goods from the Spiro mounds and a dugout canoe students can sit in. Also, learn about the cultures of Oklahoma's many Native American tribes.

### Professional Development Opportunities

We offer a variety of workshops for teachers throughout the year. Please check our website for current offerings.

## SPECIAL EXHIBITIONS



### Megalodon

Largest Shark That Ever Lived

**May 26 – Jan. 6, 2019**

Get a glimpse of this enormous prehistoric predator that cruised the world's oceans for 15 million years and discover what's being done to save today's sharks.



### Putting Baskets to Work in Southwest China

**June 9 – Aug. 12, 2018**

The photographs and baskets featured in this exhibit were gathered between 2013 and 2015 in Yunnan, Guangxi, and Guizhou provinces. They were collected among the Bai, Bouyei, Miao, Dong, and Yao people. These groups are just a few of the ethnic groups found in China's southwestern provinces.

Exhibits sponsored by





ExplorOlogy® is a series of innovative educational opportunities designed to engage Oklahomans in “doing science” by immersing them in exciting science experiences. All programs provide participants with an adventure in science discovery!

## Paleo Expedition

Be a paleontologist! Join scientists in the field as we excavate and explore Oklahoma’s prehistoric past. This two-week experience is for grades 9–11.

## Oklahoma Science Adventure

Are you ready to explore the forests, streams and fields of Oklahoma to discover science in action? Join us on this week-long adventure for grades 6–8.

## Science Institute

A unique professional development workshop for teachers who want to incorporate science process and inquiry more effectively into their classrooms. This workshop is for public, private and homeschool K–12 teachers.

## More Information

Elementary, middle and high school students and teachers are encouraged to find out more about these exciting programs! Call (405) 325-8879 or visit [samnoblemuseum.ou.edu/programs/explorology](http://samnoblemuseum.ou.edu/programs/explorology)



Jes Cole

ExplorOlogy® is a joint effort by the Sam Noble Museum and the Whitten-Newman Foundation to introduce young people in Oklahoma to science. In the first five years, over 50,000 school children experienced field-based research. Funding for ExplorOlogy® during this period was provided by a grant from the Whitten-Newman Foundation.

ExplorOlogy® is sponsored in part by Oklahoma’s oil and natural gas producers and royalty owners, through the Oklahoma Energy Resources Board **OERB**



## DISCOVERY ROOM SESSION

Discovery Room Sessions allow students to participate in free-choice learning opportunities and free play activities that enhance their understanding of natural and cultural history.

These 25-minute sessions are most appropriate for PreK through grade 5 and are limited to a maximum of 25 students per session.

**FEE** \$30 per session + museum admission

*School groups may visit the Discovery Room on either a first-come basis, or they may schedule a Discovery Room Session. Please remember, if you choose not to schedule a session, there is no guarantee that the room will be available while you are at the museum.*

## DISCOVERY ROOM PROGRAMS

Discovery Room programs involve hands-on activities and scientific specimens. Programs are 25 minutes and are limited to a maximum of 25 students per class.

**FEE** \$35 per session + museum admission

## From the Earth (PreK-K)

Natural resources are things we use every day! What kinds of things do you use and where do they come from? Get ready to find out in this interactive Discovery Room Session.

**OAS** Science Practices: 1, 2, 4, 6, 8 | Core Ideas: ESS3



## All About Amphibians (PreK-K)

What makes amphibians unique? Students will learn all about amphibians by observing live salamanders and tadpoles and participating in an exciting activity that takes us through the life cycle of a frog.

**OAS** Science Practices 1, 2, 4, 6, 8 | Core Ideas LS3 | Crosscutting Concepts, Structure and Function

## Rocks and Beyond! (Grades 1–2)

Geologists study more than just rocks. Mineral resources are an important part of the world we live in. Discover the difference between a rock and a mineral and learn how you use rocks as resources every day!

**OAS** Science Practices 1, 2, 4, 6, 8 | Core Ideas ESS3



FIELD TRIP

DETAILS

Hours for School Groups

Monday–Friday	9:30 a.m. to 5 p.m.
Saturday	10 a.m. to 5 p.m.
Sunday	1 to 5 p.m.

School Group Admission

School groups receive a discounted admission rate when reservations are made in advance with the museum education department.

Students	\$4
Adult Chaperones	
PreK–Grade 5 (1 adult per 5 students)	Free
Grades 6–12 (1 adult per 10 students)	Free

Additional Adults	\$7
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Please note that regular admission rates and program rates apply to school groups scheduling educational programs on Free First Mondays for Kids. School groups scheduling a general visit without programs will not be charged admission for children 17 and under on Free First Mondays for Kids.

School Group Program Fees

Enhance your museum experience with one of our hands-on programs! Advance registration is required and programs are limited to a maximum of 25 students. Please note that a teacher must be present at all times during each of your scheduled programs.

Classroom program (PreK–Grade 2)	\$35
Classroom program (Grades 3–12)	\$45
Laboratory program	\$80
Discovery Room session	\$30
Discovery Room program	\$35

Reservations

Begin the reservation process online at [samnoblemuseum.ou.edu/schoolprograms](http://samnoblemuseum.ou.edu/schoolprograms). You also may contact the education department at (405) 325-1008, or email us at [education.samnoblemuseum@ou.edu](mailto:education.samnoblemuseum@ou.edu). We recommend that reservations are made at least two weeks in advance of your planned visit.


Payment

Payment for admission and programs is due upon arrival. Payments may be made by purchase order, school check, credit card or cash. Schools that need to cancel a scheduled program should do so at least two business days in advance.

Fund My Field Trip!

Have your students missed out on visiting the Sam Noble Museum because of lack of funding? We offer a variety of funding opportunities. Visit our website for more information.

The museum’s Fossil Fuel Fund and the Oklahoma Energy Resources Board can assist schools with transportation, admission and/or educational program costs.

Educational programs paid for by OERB are marked with the OERB logo . For more information on OERB funding, please visit [oerb.com/education](http://oerb.com/education).

Chaperones

The required adult chaperones receive complimentary admission to the museum in exchange for their active supervision of all students. A ratio of 1:5 is required for elementary school children; a ratio of 1:10 is required for grades 6 through 12.

Lunch

- Outdoor tables are available on the museum grounds where school groups may eat sack lunches. Please bring group lunches in plastic totes. Corrugated cardboard is a pest hazard and cannot be brought into the museum.
- Reaves Park, about one-half mile east of the museum, is a great space for lunch. The park has play equipment and picnic tables.
- The Jacobson House Native Art Center offers indoor seating for groups of fewer than 40 who have sack lunches. Contact Jacobson House at (405) 366-1667.
- Couch Restaurants on the OU campus is available for groups desiring to purchase lunch. For more information, call (405) 325-5185 or visit [housing.ou.edu](http://housing.ou.edu).

Excavations, the Museum Store

The museum store offers a wide selection of T-shirts, books, toys and jewelry, with many items priced under \$5. Please provide supervision in the store in the ratio of 1:5 (PreK through 5) or 1:10 (6 through 12).



Charles Baker

SAMPLE FIELD TRIP ITINERARY

9 a.m.  
Depart school for the Sam Noble Museum!

- 10:15 a.m. Arrive at the Museum!
- Museum staff greets group on school bus
  - Head teacher checks group in at information desk
  - Group uses restrooms, divides into chaperone groups

- 10:30 a.m.
- Group A – 50-minute educational program
- Group B – 50-minute educational program
- Group C – Visit Hall of Ancient Life
- Group D – Visit Hall of Ancient Life

- 11:30 a.m.
- Group A – Visit Hall of People of Oklahoma and Hall of Natural Wonders
- Group B – Visit Hall of People of Oklahoma and Hall of Natural Wonders
- Group C – 50-minute educational program
- Group D – 50-minute educational program

12:30 p.m. Group Lunch at Reaves Park

- 1:30 p.m.
- Group A – Visit Hall of Ancient Life
- Group B – Visit Hall of Ancient Life
- Group C – Visit Hall of People of Oklahoma and Hall of Natural Wonders
- Group D – Visit Hall of People of Oklahoma and Hall of Natural Wonders

2:30 p.m. Depart the Sam Noble Museum



# GRADES PreK AND KINDERGARTEN

# GRADES 1-2

## EDUCATIONAL PROGRAMS

These programs last 25 minutes and involve hands-on activities with scientific specimens. Programs are limited to a maximum of 25 students per class.

**FEE** \$35 per class + museum admission

### Dinosaur Eggs and Babies

How does an egg protect the baby dinosaur developing inside? What adventures might it have once it hatches? Students will learn about two young dinosaurs in Cretaceous Oklahoma and participate in hands-on learning and experiments.

**OAS** Science Practices 1, 2, 4, 6, 8 | Crosscutting Concepts, Structure and Function, Patterns

### Creature Features

Fur, feathers, scales and slime! Students will find out firsthand what characteristics make birds, amphibians, reptiles and mammals both different and similar.

**OAS** Science Practices 1, 2, 4, 6, 8 | Core Ideas LS1  
Crosscutting Concepts, Structure and Function, Patterns

### Natural or Not

How can you tell the difference between things you find in nature and things that people have made? Students will classify a variety of objects to decide if they are natural or produced by humans and learn



Charles Baker

how people use natural resources, such as oil, in everyday life.

**OAS** Science Practices 1, 2, 4, 6, 8 | Core Ideas ESS3

**OERB**

**“The instructor asked questions in such a way for the students to improve their higher-level thinking skills. The kids learned a lot and enjoyed it very much.”**

**FIRST-GRADE TEACHER  
BETHEL LOWER ELEMENTARY, BETHEL**

## EDUCATIONAL PROGRAMS

These programs last 25 minutes and include activities using artifacts or scientific specimens. Some programs also include investigations, demonstrations or data collection and analysis. Programs are limited to a maximum of 25 students per class.

**FEE** \$35 per class + museum admission

### Meet the Dinosaurs

What kinds of dinosaurs roamed Oklahoma? Were they meat-eaters or plant-eaters? Did they have sharp teeth, large claws or other interesting adaptations?

Are they really all extinct? Students will discover the answer to these and other questions as they examine fossils and participate in a movement activity.

**OAS** 3-LS4-1 | Science Practices 1, 2, 3, 4, 6, 7, 8 | Core Ideas LS1, LS4 | Crosscutting Concepts, Patterns, Structure and Function



Konrad Eek

## Prairie Connections

What special adaptations do prairie animals need for living in their environment? Your students will meet native animals of the Oklahoma plains and discover the surprising ways they meet the challenges of prairie living.

**OAS** 2-LS4-1 | Science Practices 1, 2, 3, 4, 6, 7, 8 | Core Ideas LS1, LS2 | Crosscutting Concepts: Patterns, Structure and Function

## Raw to Refined

How do people modify natural resources to create tools, household items and other basic goods? Students will examine and classify common objects based on their raw materials to discover how humans interact with the natural world.

**OAS** Science Practices 1, 2, 3, 4, 6, 7, 8 | Core Ideas ESS3

**OERB**



Charles Baker



# GRADES 3-5



## EDUCATIONAL PROGRAMS

These programs last 50 minutes and include activities using artifacts or scientific specimens. Some programs also include investigations, demonstrations or data collection and analysis. Programs are limited to a maximum of 25 students per class.

**FEE** \$45 per class + museum admission

### Dinosaur Feasts

What do scientists know about how dinosaurs ate? Students will compare dinosaur fossils and modern animal specimens to discover how both carnivorous and herbivorous dinosaurs crunched and munched their food.

**OAS** 4-LS1-1 | Science Practices 1, 2, 3, 4, 6, 7, 8 |

Core Ideas LS1, LS4 | Crosscutting Concepts, Patterns, Structure and Function



**"Students were very attentive and enjoyed every minute of the class. You are amazing!"**

THIRD-GRADE TEACHER  
REAGAN ELEMENTARY, NORMAN

### Web of Life

How is a tree connected to a coyote? From plants to animals to fungus, students will use museum specimens to create a community, learn about how an ecosystem works, collect and graph class data and discover how all organisms in an ecosystem are connected.

**OAS** 4-LS1-1, 5-PS3-1, 5-LS2-1, 5-LS2-2

### Wild and Rare

Everyone hears about endangered species, but of the many plants and animals around us, which ones are endangered? Which ones are threatened? Which ones are surviving? Students will learn what makes a species vulnerable to extinction, then use museum specimens and hands-on materials to gather information and predict the futures of several species.

**OAS** 5-PS1-3 | Science Practices 1, 2, 3, 4, 6, 7, 8 | Core Ideas ESS3 | Crosscutting Concepts, Stability and Change, Cause and Effect



### The Bison Hunters: Native Americans of the Plains

How did the Native Americans use the natural resources on the Great Plains to meet their needs? Student teams will analyze and measure tools, clothing and other artifacts from Plains Indian culture to discover the relationship between these peoples and their natural environment.

**OAS** Science Practices: 1, 3, 4, 5, 6, 7, 8



### Rockin' Rocks

Did you know that not every rock is the same? In this class, students will understand the difference between minerals and rocks, test the porosity of rocks and learn how sedimentary rocks are formed.

**OAS** 5-PS1-3 | Science Practices 1, 2, 3, 4, 6, 7, 8 | Core Ideas ESS3 | Crosscutting Concepts, Patterns, Structure and Function, Stability and Change

**OERB**

**"The students loved all the hands-on activities!"**

FIFTH-GRADE TEACHER  
CENTRAL ELEMENTARY, YUKON





# GRADES 6-8

## EDUCATIONAL PROGRAMS

These programs last 50 minutes and include activities using artifacts or scientific specimens. Some programs also include investigations, demonstrations or data collection and analysis. Programs are limited to a maximum of 25 students per class.

**FEE** \$45 per class + museum admission

### Clues to the Past

Did you know that southeastern Oklahoma was once a swamp at the edge of the sea? Students in this class will identify marine, wetland and terrestrial fossils and map their locations to recreate Oklahoma's ecosystem as it existed 300 million years ago.

**OAS** Science Practices: 1, 2, 3, 4, 6, 7, 8

### Science ID

How does a scientist identify organisms and study differences among species? Students will observe, measure, identify and describe several different groups of museum specimens.

**OAS** Science Practices: 1, 2, 3, 4, 5, 6, 7, 8

### Ecosystem Interactions

How do ecosystems work? Students will explore energy transfer by building food webs with museum



Charles Baker

specimens, collecting and graphing data and discovering how the biotic and abiotic components of an ecosystem are connected.

**OAS** MS-LS2-3

### Rocks and Resources

Coal, sandstone and oil are just a few of the mineral natural resources that we use every day! In this class, students will learn about the differences between rocks and minerals, the formation of sedimentary, igneous and metamorphic rocks, and how we use different rocks and minerals as natural resources.

**OAS** Science Practices: 1, 2, 4, 6, 7, 8 | MS-PS1-3, MS-ESS2-1

**OERB**



## LABORATORY PROGRAM

Laboratory programs last 90 minutes and include experiments or simulations and active investigation by students. Laboratories are limited to a maximum of 25 students per class.

**FEE** \$80 per class + museum admission

### Geology Laboratory

Did you know you can experience the rock cycle in minutes rather than eons? In this laboratory, students will investigate the rock cycle by "making" sedimentary, igneous and metamorphic rocks, and then experience the processes of erosion, sedimentation and soil formation. Students also will identify a variety of rocks and minerals through observations and tests.

**OAS** MS-ESS2-1



"The hands-on activities helped reinforce the knowledge students were given in classroom instruction."

EIGHTH-GRADE TEACHER  
ADA JUNIOR HIGH, ADA

### Archaeology Laboratory

Students will experience the process of scientific archaeology from excavation through data collection, artifact identification, interpretation and reporting. The "sites" excavated represent five cultures from Oklahoma's past, ranging from the dramatic mammoth-hunting cultures of 11,000 years ago to the historic Wichita.

**OAS** Science Practices: 1, 3, 4, 6, 7, 8



Kenneth Folk



# GRADES 9-12



## EDUCATIONAL PROGRAMS

These programs last 50 minutes and include activities using artifacts or scientific specimens. Some programs also include investigations, demonstrations or data collection and analysis. Programs are limited to a maximum of 25 students per class.

**FEE** \$45 per class + museum admission

### It's Classified!

Scientists classify species into taxonomic groups based on characteristics such as tooth structure, color and body type. Students will identify and group a variety of museum specimens based on quantitative and qualitative characteristics.

**OAS** Science Practices 1, 2, 3, 4, 5, 6, 7, 8 | Core Ideas LS4

### Mysteries of the Mesozoic

What can you tell about a prehistoric animal from a single fossil? Students will find out by uncovering clues from the Mesozoic era, the age of dinosaurs. Student teams will participate in an excavation simulation at one of six "sites." They will collect data



Charles Baker

and then analyze their findings using principles of comparative anatomy.

**OAS** Science Practices 1, 2, 3, 4, 5, 6, 7, 8 | Core Ideas ESS2, Crosscutting Concepts, Scale Proportion and Quantity, Structure and Function

### Beneath the Bedrock: Fossils or Fuel?

Fossils and fossil fuels both formed over millions of years and hold great interest to scientists. In this program, students will explore the similarities and differences between fossils and oil. They also will use maps, diagrams and other models to discover the relationship between these two important resources.

**OAS** HS-ESS3-5 | Science Practices 1, 2, 4, 6, 7, 8

**OERB**

## LABORATORY PROGRAMS

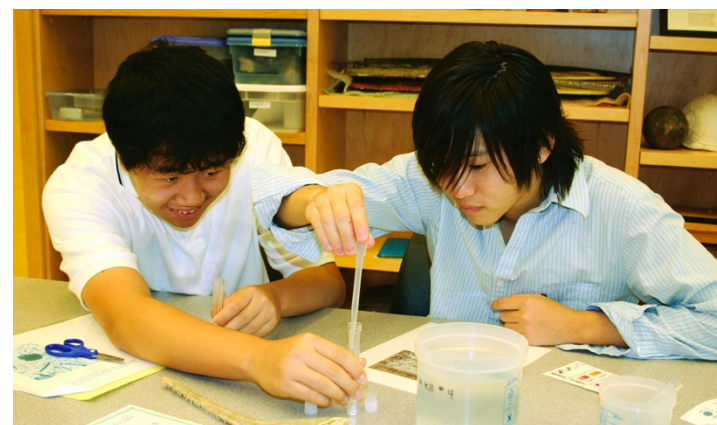
Laboratory programs last 90 minutes and include experiments or simulations and active investigation by students. Laboratories are limited to a maximum of 25 students per class.

**FEE** \$80 per class + museum admission

### In Deep Water

What happens when aquatic ecosystems experience changes in climate patterns? Students will examine what factors influence ocean conditions and marine populations. They will perform experiments, create and analyze graphs and gather information from scenarios to find out why our oceans are "in deep water."

**OAS** Science Practices: 1, 2, 3, 4, 5, 6, 7, 8 | Core Ideas:LS2, ESS2, ESS3 | Crosscutting Concepts: Cause and Effect, Stability and Change



Laura Vaughn

### CSI Red River

Students canoeing on the Red River find fish swimming erratically; a fisherman on the Mountain Fork of the Little River is stunned to find piles of dead and dying fish. What is happening? It is up to wildlife biologists to collect data and find the answers! Students in this class will use a variety of chemical tests, interviews and other data-collection skills to solve the mysteries.

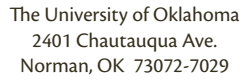
**OAS** Science Practices 1, 2, 3, 4, 5, 6, 7, 8 | Core Ideas LS2, ESS3 | Crosscutting Concepts, Cause and Effect, Stability and Change

All of the museum programs have companion pre-visit materials. Check them out on the museum's website at [samnoblemuseum.ou.edu](http://samnoblemuseum.ou.edu).



Konrad Eek





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