WINNER OF THE 2014 NATIONAL MEDAL
FOR MUSEUM AND LIBRARY SERVICE

The Institute for Museum and Library Services recognized the Sam Noble Museum as one of only five museums in the nation to receive the 2014 National Medal for Museum and Library Service. The museum was chosen as an institution that demonstrates innovative approaches to public service and provides exceptional educational experiences to the community.
Welcome to the Sam Noble Museum!

Dear Educators,

Welcome to the Sam Noble Museum at the University of Oklahoma! This 2014 – 2015 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.

We are excited to announce that this year, our educational programs will meet Oklahoma Academic Standards for Science (OAS) as well as the Priority Academic Student Skills (PASS). 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

TABLE OF CONTENTS

A Class Adventure 2
Field Trip Details 4
Discovery Room 6
Programs: PreK–Kindergarten 7
Programs: Grades 1–3 8
Programs: Grades 4–5 10
Programs: Grades 6–8 12
Programs: Grades 9–12 14
Programs: ExplorOlogy® 16

The University of Oklahoma in compliance with all applicable federal and state laws and regulations does not discriminate on the basis of race, color, national origin, sexual orientation, genetic information, sex, age, religion, disability, political beliefs, or status as a veteran in any of its policies, practices or procedures. This includes but is not limited to admissions, employment, financial aid and educational services. For questions regarding discrimination, sexual harassment, or sexual assault, please contact the Office(s) of Institutional Equity as may be applicable — Norman campus at (405) 325-3546/3549, the Health Sciences Center at (405) 271-2110 or the OU-Tulsa Title IX Office at (918) 660-3107. Please see http://www.ou.edu/eoo.
Our gallery Discovery Guides include thoughtful activities that encourage students to explore the details in each gallery. Guides are available for grades Pk–k, 1–3, 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.

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.

Discovery Kits for Teachers
Discovery Kits are available at no charge to teachers and can be picked up at the museum. The loan period is two weeks. Kits include *Diaries in the Dirt* (archaeology), *Excavation to Exhibit* (palentontology), *Dinosaur Dig* (palentontology), *Herpetology 101* (biology), *Just Add Water* (biology and earth sciences) and *Minerals Rock!* (earth sciences). Visit our website for Discovery Kit descriptions and information on custom Discovery Kits. To arrange a loan, email education@snomnh.ou.edu or call (405) 325-1008.

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**Programs Your Students Will Love**
Our education department staff has developed a range of inquiry-based programs for each grade level. All programs address PASS and 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 PASS and Oklahoma Academic Standards. Visit our website, http://www.samnoblemuseum.org/schoolprograms, to download these resources.

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

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**OCTOBER**
Teacher Appreciation Month

During the month of October, all PreK through 12th-grade teachers and their families are invited to visit the museum free of charge! Simply fill out a brief informational survey and experience the wonders of the Sam Noble Museum!
Professional Development Opportunities
We offer a variety of workshops for teachers throughout the year. Please check our website for current offerings.

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.

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.

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.

SPECIAL EXHIBITIONS

Formed in Stone
July 4, 2014 through Jan. 4, 2015
Formed in Stone: The Natural Beauty of Fossils features high-resolution digital images of specimens from the invertebrate paleontology collection at the Sam Noble Museum that show both the art and science of fossils.

RARE: Portraits of America’s Endangered Species
Rare: Portraits of America’s Endangered Species includes well-known endangered species like bald eagles and sea turtles, but it also spotlights more unfamiliar species, including the Delhi Sands flower-loving fly and the Higgins eye mussel.

Harmless Hunter: The Wildlife Work of Charles M. Russell
Jan. 30 through April 26, 2015
Explore the wonderful wildlife work of Charles M. Russell in paintings, drawings and sculpture that celebrate the majesty and harmony of nature.

A Forest Journey
Jan. 17 through May 3, 2015
This interactive exhibit is inspired by the Harvard classic A Forest Journey: The Role of Wood in the Development of Civilization by science writer John Perlin. It sheds new light on the history of the use of wood and forest products throughout the world, and on the relationship between forests and the greenhouse effect.

Exhibits sponsored by Love’s Travel Stops and Country Stores.
**Hours for School Groups**

<table>
<thead>
<tr>
<th>Days</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday–Friday</td>
<td>9:30 a.m. to 5 p.m.</td>
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<tr>
<td>Saturday</td>
<td>10 a.m. to 5 p.m.</td>
</tr>
<tr>
<td>Sunday</td>
<td>1 to 5 p.m.</td>
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</tbody>
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**School Group Admission**

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

**Students**

- PreK–Kindergarten: Free
- Grades 1–12: $2

**Adult Chaperones**

- PreK–Grade 5: (1 adult per 5 students): Free
- Grades 6–12: (1 adult per 10 students): Free

**Additional Adults**

- Adults: $4

*Please note that regular admission rates and program rates apply to school groups scheduling educational programs on Free First Mondays. School groups scheduling a general visit without programs will not be charged admission on Free First Mondays.*

**School Group Program Fees**

Enhance your museum experience with one of our inquiry-based 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: $35
- Laboratory program: $70
- Discovery Room session: $25
- Discovery Room program: $35

**Reservations**

Begin the reservation process online at http://www.samnoblemuseum.org/schoolprograms. You also may contact the education department at (405) 325-1008, or email us at education@snmnhou.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 due to 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 http://www.oerb.com/ForEducators/tabid/58/Default.aspx

**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.
- The Redbud Café, located inside the museum, can provide box lunches for groups that order at least five days in advance. To make arrangements for box lunches, call (405) 325-1131.
- 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 willing to purchase lunch. For more information call (405) 325-5185 or visit http://www.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).

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
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** $25 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, live animals and scientific specimens. Programs are 25 minutes and are limited to a maximum of 25 students per class.

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

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**From the Earth**

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.

**PASS** Science Process 1.1, 1.2, 1.3 | Physical Science 1.1

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

**All About Amphibians**

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.

**PASS** PRE-K Science Processes and Inquiry 1.1, 1.4 | Physical Science 2.2, 2.3 | Life Science 3.1, 3.2, 3.3

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

**Rocks and Beyond!**

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!

**PASS** Science Process 1.1, 1.2, 2.1, 3.1, 3.2

**1ST GRADE** Physical Science 1.1, 1.2

**2ND GRADE** Physical Science 1.1; Earth and Space Science 3.1

**3RD GRADE** Physical Science 1.1; Earth and Space Science 3.1

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

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**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.

**PASS** PreK Science Process 1.1, 1.3 | Physical Science 2.1 | Life Science 3.1, 3.2

**KINDERGARTEN** Science Process 1.1–1.3 | Physical Science 1.1 | Life Science 2.1, 2.2

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

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**Creature Features**

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

**PASS** PreK Science Process 1.1, 1.4 | Physical Science 1.1 | Life Science 1.3

**KINDERGARTEN** Science Process 1.1, 1.3 | Physical Science 1.1 | Life Science 2.3

**OAS** Science Practices 1, 2, 4, 6, 8 | Core Ideas LS1

Crosscutting Concepts, Structure and Function, Patterns

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

**PASS** PreK Science Process 1.1, 1.2, 1.4 | Physical Science 2.2 | Earth/Space Science 4.1

**KINDERGARTEN** Science Process 1.1, 1.3, 1.4 | Physical Science 1.2 | Earth/Space Science 3.1

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

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"The instructor was very flexible with the kids’ answers and adapted to their knowledge."

PREK TEACHER
KATHERINE I. DAILY ELEMENTARY, NOBLE
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** $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 Cretaceous role-playing.

**Prairie Connections**
What special adaptations do prairie animals need for living in their environment? Let your students meet native animals of the Oklahoma plains and discover the surprising ways they meet the challenges of prairie living.

**PASS**

**GRADE 1** Science Process 1.2, 3.1 | Life Science 1.1, 1.2 | C5
**GRADE 2** Science Process 1.2, 3.1, 4.1 | Life Science 2.1, 2.2 | C5
**GRADE 3** Science Process 1.2, 3.1, 4.2, 4.3 | Life Science 2.1–2.3

**OAS**

3-LS3-2 | 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.

PASS

GRADE 1 Science Process 1.1, 1.2, 2.1, 2.2 | Physical Science 1.1, 1.2
GRADE 2 Science Process 1.1, 1.2, 2.1, 2.2 | Physical Science 1.1 | Earth/Space Science 3.1
GRADE 3 Science Process 1.1, 1.2, 2.1, 2.2 | Physical Science 1.1

OAS

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

“I loved how the kids had to work together and think outside of the box.”

SECOND-GRADE TEACHER
AMBER-POCASSET ELEMENTARY
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.

**Cost** $35 per class + museum admission

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**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.

**PASS**
- **GRADE 4** Science Process 1.2, 2.1, 4.4, 5.3 | Life Science 3.1, 3.2
- **GRADE 5** Science Process 1.2, 2.1, 4.4, 5.3 | Life Science 2.1

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

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**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.

**PASS**
- **GRADE 4** Science Process 1.2, 3.1, 4.3, 5.1, 5.3, 5.4 | Life Science 3.1, 3.2
- **GRADE 5** Science Process 1.2, 2.1, 3.1, 4.3, 5.3, 5.4 | Life Science 2.1, 2.2

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

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“We researched various earth biomes and this class really reinforced the interaction between biotic and abiotic factors.”

**FOURTH-GRADE TEACHER**
**CENTRAL ELEMENTARY, WARR ACRES**

**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.
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.

PASS  GRADE 4 Social Studies 4.1, 4.2, 5.2, 5.3, 5.5
       GRADE 5 Social Studies 6.3, 7.2, 7.5
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.

PASS  GRADE 4 Science Process 1.1, 1.2, 2.1, 2.2, 3.1-3.4, 4.1-4.4 | Earth/Space Science 4.1-4.4
       GRADE 5 Science Process 1.1, 1.2, 2.1, 2.2, 3.1-3.4, 4.1-4.4
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

“The program exposed my students to science and social studies experiences that I cannot provide in my classroom.”

FOURTH-GRADE TEACHER
CELIA CLINTON ELEMENTARY, TULSA
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** $35 per class + museum admission

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**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 re-create Oklahoma’s ecosystem as it existed 300 million years ago.

**PASS**  
GRADE 6, 7, 8 Science Process 2.1, 2.2  
GRADE 6 Life Science 3.2, 4.1, 4.2  
GRADE 7 Life Science 4.2  
GRADE 8 Life Science 3.1, 3.2

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

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**Science I.D.**

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

**PASS**  
GRADE 6, 7, 8 Science Process 1.1, 1.3, 2.1, 4.3  
GRADE 7 Life Science 2.2, 3.1  
GRADE 8 Life Science 3.1, 3.2

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

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**Ecosystem Interactions**

How do ecosystems work? Students will explore energy transfer by building food webs with museum specimens, collecting and graphing data and discovering how the biotic and abiotic components of an ecosystem are connected.

**PASS**  
GRADE 6 Science Process, 2.1, 2.2, 4.1–4.3, 5.1, 5.3, 5.4 | Life Science 3.2, 4.1, 4.2  
GRADE 7 Science Process 1.3, 2.2, 3.1, 4.1–4.3, 5.3, 5.4 | Life Science 2.1, 3.1, 4.2  
GRADE 8 Science Process 1.3, 2.1, 2.2, 4.1–4.3, 5.1, 5.3, 5.4 | Life Science 3.2

**OAS** MS-LS2-3
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 $70 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.

PASS Grades 6–8 Process Skills 1.1, 1.2, 2.2, 3.1, 4.1, 4.3, 5.1
GRADE 6 Earth-Space Science 5.1
GRADE 8 Earth-Space Science 4.3, 4.2

OAS MS-ESS2-1

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.

PASS Grade 6 Social Studies 1.1, 3.1, 3.2
Grade 7 Social Studies 1.1, 5.1, 5.2
Grade 8 Social Studies 1.1

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

“The program provided visual, hands-on examples of what we could only read or see on the internet.”

FIFTH-GRADE TEACHER
BRIDGESTONE ELEMENTARY

Sam Noble Museum (405) 325-1008
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.

**FEES** $35 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.

**PASS** GRADES 9–12 Science Process 1.1, 2.1, 2.2, 4.1, 2.3, 4.2, 4.4, 5.1, 5.3, 6.1–6.4,

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

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 and then analyze their findings using principles of comparative anatomy.

**PASS** GRADES 9–12 Process Standards 1.1–1.3, 2.1, 4.1, 4.2, 4.4, 5.1–5.3, 6.1–6.4,

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

“See the wonder, the awe, the interest in my students as they viewed the exhibits, to watch them interact and answer the educator, and to experience their growth in social/community skills was so satisfying for me.”

NINTH-GRADE TEACHER
ADA JUNIOR HIGH, ADA
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 $70 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 in order to find out why our oceans are “in deep water.”

PASS GRADES 9–12 Process Standards 1.1-1.3, 2.1, 4.1-4.4, 4.8, 5.1-5.3, 6.1-6.4
High School Environmental Science: 1.1b, 4.2, 5.1-5.3
OAS Science Practices 1, 2, 3, 4, 5, 6, 7, 8 | Core Ideas LS2, ESS3 | Crosscutting Concepts, Cause and Effect, Stability and Change

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.

PASS GRADES 9–12 Science Process 1.1, 1.2, 1.3, 4.1–4.8, 6.1–6.4
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 www.samnoblemuseum.org.
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!

About
During these discovery-based programs, students and teachers explore the natural world we all share. This is a chance for Oklahomans to work alongside scientists and experts from the museum. Participants will have a unique opportunity to combine nature experiences with hands-on participation in field-based science, where the laboratory is the great outdoors.

Elementary, middle and high school students and teachers are encouraged to find out more about these exciting programs at http://www.samnoblemuseum.org/explorology or call (405) 325-3183.

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.