FREQUENTLY ASKED QUESTIONS

What is the difference between a Weekday Lab and a Lab On Demand?
Weekday Labs are scheduled labs rotated monthly and are available at a discount if booked in that month. Labs On Demand are available at the date and time of your choice.

How much do labs cost?
Weekday Labs booked in the scheduled month cost $200. Dissection labs start at $250, but can cost more depending on specimens. Labs On Demand range in cost from $250-$500 per 25 students depending on the selection. Labs On Demand can travel to your school for an additional $75 travel fee.

For individual students, individual registration labs are also available for purchase in the museum's online Box Office.

Are labs available at HMNS Sugar Land?
Yes! Weekday Labs are available at HMNS Sugar Land on select Thursdays and Fridays each month, and select Labs On Demand are available at HMNS Sugar Land as well.

How do I register for labs?
Email educationquestions@hmns.org with your preferred lab, date, group size, and age. We will work with you to find a mutually agreed upon date and time.

What if I don’t see a lab topic I like?
Email us what you had in mind! We may be able to help you!
Dissection Labs take an inside look at a variety of specimens, from organs to animals. *Note: Some dissections are only offered at HMNS Hermann Park.*

**GRADES 5-12**

**Introduction to Dissection**
Learn how to hold a scalpel, what tools are needed for success, and which way is up in this class for anyone unfamiliar with dissection.

**Brain**
Put your axons to work as you model nerves and neurotransmitters.

**Eyeball**
Blind spots, color blindness, or myopia a problem? Come find out why as you take an inside look at the eye and see how it functions.

**Fetal Pigs (Advanced Lab – 2 hours)**
An extended lab for older students. Explore mammalian anatomy of thoracic and abdominal cavities with dissection of a fetal pig.

**Frog**
A classic example of vertebrate anatomy, the frog still has a few surprises in store.

**Grasshopper**
Explore the world of insects as you look at the Lubber grasshopper (*Romalea*).

**Heart**
Nothing beats that “Aww” moment! Take a detailed, in-depth look at one powerful muscle and vital body organ, the heart.

**Horseshoe Crab**
It’s neither part horse nor crab, but it sure is one incredible, ancient arthropod, an actual living fossil! Investigate the horseshoe crab inside and out.

**Kidney**
From filtration to waste removal, investigate the body’s very own specialized water treatment plant and body fluid balancer, the kidney.

**Lizard**
Moths, roaches, and beetles, yum! Discover the ins and outs of a fascinating predator and local color changer, the anole.

**Lung**
Take a close look at the mammalian respiratory system as you dissect a sheep pluck, separating the lungs from the trachea and heart.

**Owl Pellet**
Ever wonder what happens to the indigestible parts when raptors swallow food whole? Find out as you deconstruct and explore an owl pellet.

**Starfish**
Dive deep into this class about the starfish and other aquatic Echinoderms.

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**SEPTEMBER WEEKDAY LABS**

<table>
<thead>
<tr>
<th>MAGNETS</th>
<th>DISSECTION LAB</th>
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<td>Magnets</td>
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<tr>
<td>Investigate Magnetic fields and other interested magnetic behavior.</td>
<td>Take a look at the mammalian respiratory system as you dissect a sheep pluck!</td>
<td>Some predators ambush, while others set clever traps! Learn about ways animals catch their meals.</td>
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Select September labs available at HMNS Sugar Land on September 26-27.
Biology Labs cover a wide range of topics in molecular biology, ecology, genetics, and more.

**GRADES 5-12**

**Blood**
Nobody can do without it, and we mean no body! Learn about some different kinds of blood and use simulated blood to identify human blood types.

**Carbohydrates**
Discover the facts about the structure and properties of a powerful energy source: carbohydrates. Crack the code and identify an unknown carbohydrate.

**Cells**
What do you have over 75 trillion of but have never seen with the naked eye? Compare animal and plant cells as you take an up close look at our most basic component.

**Enzymes**
Crazy for catalyzing! Examine how the body's enzymes aid in digestion and control the release of energy essential to life.

**Flowers and Pollination**
Get the buzz on how some plants pull out all the stops to attract their perfect, specific pollinator. Investigate how flower form meets function in full color.

**Mendelian Genetics**
Investigate a variety of phenotypes, genotypes and Punnett squares using Mendel's Principles of Inheritance, the three laws that are the foundation of genetics.

**Mitosis**
Learn about chromosomes and cellular division as you study mitosis.

**Nitrogen Cycle/Water Quality**
pH got you down? Are your microbes multiplying? Learn about the nitrogen cycle and how your water quality affects your quality of life.

**Osmosis and Diffusion**
Explore the mystery of molecular motion as you experiment with diffusion and osmosis.

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**OCTOBER WEEKDAY LABS**

**DISSECTION LAB**
Leaping Lizards
Discover a fascinating predator and local color changer, the anole. Includes lizard dissection.

**SOUTHWESTERN ENERGY SCIENCE LAB**
Season's Greetings
Explore the earth's rotation and orbit and discover how it affects Earth's seasons!

**TIME LAB**
Barbarians!
Go Goth as you meet the bad boys and girls that helped to usher in the Middle Ages.

Select October labs available at HMNS Sugar Land on October 24-25.
Earth Science Labs explore everything Earth—from the depths of the sea to our place in space.

**GRADES 1-8**

Discover Maps!
Learn about latitude, longitude, and cartography in this class about maps!

Fossil Fuels
Dig into fossil fuels! Explore the formation of these resources.

Fossil Sort
Watch your students become paleontologists! From shark teeth to sea shells, students will catch a glimpse of the past. They will have the opportunity to sort through fossil matrix and identify the fossilized remains of prehistoric ocean creatures.

Land Forms
Explore the basic landforms and waterways found in Texas. Follow our water from spring to shore!

Layers of the Atmosphere
Let’s take it from the top! In this lab, we’ll explore the layers of the earth’s atmosphere, and discuss how altitude, pressure, and temperature change in our atmosphere.

Layers of the Earth
Journey to the center of the earth? Of course! We’re going to explore everything from the core to the crust and all the layers in between.

Layers of the Ocean
Take a journey into the depths of the ocean! Learn about the ocean’s layers and the pressure it creates for the living and nonliving things in each layer.

Livable Earth
Discover the characteristics that make the Earth an ideal place for us to live!

Mohs Hardness Scale
Mohs scale helps determine how useful a mineral can be. In this lab you will test minerals and learn their uses.

Our Place in Space
Delve into our solar system to find out what makes it unique and see what lies outside of its boundaries.

Petroleum Production
Discover everyday items that come from this fossil fuel.

Plate Tectonics
From Pangea to the present, the continents have shifted over time. Discover tectonic plates and how they shift a little bit every year!

Renewable Energy
Discover the many forms of renewable energy at our fingertips.

Rock Cycle
Sedimentary, metamorphic and igneous, oh my! Take a spin through the rock cycle and investigate how rocks are formed.

Rocks and Minerals
Discover the difference between rocks and minerals and learn how you use them daily.

Smaller than a Planet
What else is in our solar system? Discover comets and asteroids, meteors, and meteorites, and other bits found in space!

Total Eclipse of the Sun
Explore what happens during an eclipse, and prepare for our next total solar eclipse!

Bright Side of the Moon
Explore the phases of the moon and find out what causes it to wax and wane over the course of a month.
ConocoPhillips Techno Science Labs feature interactive experiments in a variety of chemistry and physics topics.

**GRDES 1-8**

**Balancing Act**
From levers and mobiles to leaning towers, explore the center of mass and find out why it matters.

**Crash Course**
Investigate the physics of collisions and safety technology.

**Discovering Density**
Discover how hot air balloons rise, why rocks sink, and explore cool density tricks.

**Falling Fast**
Explore parachutes and other ways to cushion a fall, then design and protect an egg ‘passenger’ from a crash.

**Kitchen Chemistry**
Check out the cool chemistry hiding in household items.

**Light**
Explore fluorescence, luminescence, and color as we experiment with light.

**Magnets**
Explore properties of magnets, testing different materials and investigating magnetic fields.

**Marvelous Mixtures**
Investigate properties of solutions, colloids, alloys, and other mixtures and figure out how to separate them.

**Optical Illusions**
Investigate ambiguous pictures, impossible shapes, strobe effects, and other amazing illusions.

**Optics**
Experiment with water drop lenses and mirrors to explore reflection, refraction, and light.

**Polymers**
From plastic and rubber to gummy bears and slime, polymers are everywhere.

**Pressure**
Lift, crush, and hover with the amazing power of air pressure.

**Shape Science**
Discover the science and math of shapes through tessellations, construction, and more.

**Shape Science II**
There’s so much shape science it wouldn’t all fit in one class! Explore more puzzles, tessellations, and symmetry.

**Skyscraper Science**
Experiment with tension, compression, and more to solve the problems of building sky-high.

**Sound Science**
Use tuning forks and tubes to investigate pitch, resonance, and the science of music.

**Speed**
Explore circular motion and discover what shapes are speediest.

**Water Works**
Discover surprising things about water and explore surface tension and capillary action.

**GRDES 9-12**

**Density**
Discover how hot air balloons rise, why rocks sink, and explore cool density tricks.

**Polymers Investigation**
Polymers from plastics and rubber to gelatin and glue are all around us and are incredibly useful! Explore different polymer types and properties (like strength or stickiness) and learn how they are made.

**Test for the Best**
Decide how to fairly test and compare products to discover which is the best chocolate bar, the most absorbent paper towel, the bubbliest bubble gum, and also how to select the best value as a smart consumer. Allergy note: We will consume food in this lab.

**Probability and Problem Solving**
Explore the mathematics of chance, from game shows and dice rolls to the weather – what do the numbers really mean, and what is the probability of getting a certain outcome?

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**DECEMBER WEEKDAY LABS**

**Polymers**
From plastic and rubber to gummy bears and slime, polymers are everywhere.

**Vikings**
Boat builders, farmers, and warriors are a few descriptors for Vikings. Experience their culture in this class.

**Multifaceted Mammals**
Find out what you have in common with a bat, whale, wombat, mouse and more in this lab about mammals.

Select December labs available at HMNS Sugar Land on December 12-13.
LABS ON DEMAND

TIME LABS

Travel through history in each Time Lab, exploring a variety of topics with interactive activities.

GRADES 1-8

 Ancient Persia
 Enter through the Gate of Xerxes as we explore the ruins of the ancient Persian city of Persepolis and discover how this ancient culture influenced our own.

 Ancient Writing
 Try your hand as an ancient scribe! Experiment with different writing styles from different ancient cultures and discover the earliest alphabets.

 Archaeology
 Dead men really do tell tales! Come explore the science of archeology from shards to skulls and beyond.

 Aztecs
 Come meet the Mesoamerican people who lived in what is now Mexico City and the surrounding territory beginning in the 14th century. They established a broad empire that lasted roughly 200 years and was one of the most advanced for its time.

 Black Death
 In 1348 Genoese sailors brought the Black Death to Europe from Asia. Explore the effects this plague had on the lives and cultures of Medieval Europe.

 Bloodstain Pattern Analysis: Spatter Lab
 Bloodstains have a story to tell if you know how to listen. Get hands-on experience and learn to “listen” in our spatter lab. Basics – 1 hour; Extended in-depth – 2 hours

 Castles
 Explore the basics of medieval castle structure and life inside these amazing fortresses. Then use what you’ve learned to design your own.

 Civil War Science
 Argued by some to be the first “modern” war, explore what made this conflict different than those before.

 Cleopatra
 Last pharaoh of Ancient Egypt and shrewd politician meet this mysterious woman of the past.

 Egypt 101
 What is Egyptology? What does an Egyptologist do? Come explore this exciting field of study in our “mini” Egyptology Lab.

 Egypt (Mummification)
 Discover the process of mummifying the dead; and delve into the closely held secrets of the ancient embalmers.

 Fingerprinting
 Discover the techniques crime scene investigators use to collect and examine evidence. This hands-on class offers you the opportunity to practice lifting fingerprints and basic fingerprint identification in order to better understand the science.

 Forensic Anthropology
 Get up close and personal with bones and discover what secrets they can tell you if you know how to listen. Class includes work with skeletal reproductions. Basics – 1 hour; Extended in-depth – 2 hours

 Gallant Gladiators
 In Rome, gladiators were big business! Encounter the various versions of gladiators and immerse yourself in the ultimate spectator sport.

 History of Espionage
 Do you have what it takes to crack the case? Discover the history of the covert world of espionage.

 History of the Horse and Man
 Humans have a 6000 year history with the horse and only 100 years with the automobile. Come discover what makes this historical relationship so important.

 Imperial Rome
 Experience the magnificence of Rome during its reign as the dominant political, economic and military power of the western civilized world.

 Indus River Valley Civilization
 The Indus River Valley Civilization is one of the three earliest civilizations.

 Time Labs continue on page 7.

 JANUARY WEEKDAY LABS

 Shape Science I
 Discover the science and math of shapes through tessellations, construction and more.

 14-Legged Fun
 Learn about one incredible arthropod - the horseshoe crab! Includes horseshoe crab dissection.

 Medieval Life
 Travel the “Three Estates” as you discover what life held for people in the Middle Ages.


 www.hmns.org/lab (713) 639-4625 educationquestions@hmns.org
LABS ON DEMAND

Also known as the Harappan Civilization, they were known for their urban planning and metallurgy. Discover this vast empire!

Is There a Doctor in the Hut?
Explore the good and the bad as we consider medicine throughout the ancient world from trepanation to tourniquets.

Lost Colony of Roanoke
Explore what clues we have to what happened to the settlers who disappeared from this early colony.

Medieval Japan
Shogun to samurai; come on a journey to Medieval Japan.

Middle Ages/Castles
Explore the basics of medieval castle structure and life inside these amazing fortresses.

Mongol Empire
Come ride with the Mongols! In less than 80 years, a small band of warriors grew to an empire that stretched from the Pacific Ocean to the Danube River.

Monstrous Megaliths
From Stonehenge to Easter Island come uncover the mysteries of these fascinating stone structures.

The Race for Space!
Delve into the great race and explore the extreme competition between the United States and the Soviets for primacy in space.

Roman Water
Explore the genius of the Roman aqueducts and use what you learn to design and test your own.

Scientific Farming
Science and innovation made farming more productive and better for the environment, find out how!

Seven Wonders of the Ancient World
Come travel all over the world as you discover the wonders of the ancient world, from the Lighthouse of Alexandria to the Great Pyramids at Giza.

Siege Machines
Discover the weapons of the “Medieval Arms Race” and design a working model.

Spice
Follow the spice routes as you take a flavorful journey to investigate spices and their impact on economy, health and food.

The Zulu Kingdom
Discover this South African kingdom who gained fame during and after the Anglo-Zulu War.

Timbuktu
Discover this West African city, long synonymous with the uttermost end of the Earth, that was a center of Islamic scholarship under several African empires, was home to a university that helped the spread of Islam throughout Africa.

Underground Railroad
Discover the secret network organized by people to help men, women, and children, escape slavery to freedom.

We Built this City
What does it take to build a successful city? Try your hand at ancient urban engineering.

Time Labs continue on page 8.

FEBRUARY WEEKDAY LABS

Behind the Tides
Find out why the tides change throughout the day, and what celestial body is to blame.

Medieval Medicine
Come explore the medicine of the Middle Ages and make an apothecary box to take home.

Bump in the Night
Discover animals that enjoy nightlife and the adaptations that help them conquer the night.

Select February labs available at HMNS Sugar Land on February 20-21.
Archeology
Dead men really do tell tales! Come explore the science of archeology from shards to skulls and beyond.

Black Death
In 1348 Genoese sailors brought the Black Death to Europe from Asia. Explore the effects this plague had on the lives and cultures of Medieval Europe.

Bloodstain Pattern Analysis: Spatter Lab
Bloodstains have a story to tell if you know how to listen. Get hands-on experience and learn to “listen” in our spatter lab. *Basics – 1 hour; Extended in-depth – 2 hours*

Da Vinci Science
Inventor, artist, architect, genius-Leonardo Da Vinci is the ultimate Renaissance Man. Discover the range of Leonardo’s talents as you try out some challenges of your own.

Egypt (Mummification)
Discover the process of mummifying the dead; and delve into the closely held secrets of the ancient embalmers

Fingerprinting
Discover the techniques crime scene investigators use to collect and examine evidence. In addition to the classroom presentation, this hands-on class offers you the opportunity to practice lifting fingerprints and basic fingerprint identification in order to better understand the science. *Basics – 1 hour; Extended in-depth – 2 hours*

Forensic Anthropology
Get up close and personal with bones and discover what secrets they can tell you if you know how to listen. Class includes work with skeletal reproductions. *Basics – 1 hour; Extended in-depth – 2 hours*

Maya
Discover the Continent’s longest lived indigenous civilization and some of their enduring contributions.

Middle Ages/Castles
Explore the basics of medieval castle structure and life inside these fortresses.

Siege Machines
Discover the weapons of the “Medieval Arms Race” and design a model.

Vikings
Boat builders, farmers, and fierce warriors are but a few descriptors for the amazing people known as the Vikings. Experience Viking culture and activities in this hands-on class.
LABS ON DEMAND

WILDLIFE LABS

Wildlife labs use specimens to discuss the natural world and the unique creatures who inhabit it.

GRADES 1-8

All in the Family
SCHOOL yourself with this fun class PACKed full of information!

Amphibians
Are frogs and salamanders fortune tellers? Study these environmental indicators to discover what they could tell you about your own future.

Animal Sense of Sight/Smell
He who smelt it... gets the best meal! See the world through the eyes of alligators, rodents, hawks and more; then test your own schnoz to see how it stacks up with the rest of the animal kingdom!

Australian Wildlife
It's got flying foxes, the only two egg-laying mammals in the world, and more!

Bite Your Tongue
Why are giraffe tongues dark? Are frog tongues really on backwards? Answer these questions as we study this important and often overlooked organ.

Deep Sea Divers
We know more about the surface of the moon than we do the ocean floor. These deep sea creatures are not from space, but with their fangs, transparent heads, built in lights and love of toxic chemicals, they sure are aliens!

Endangered Species
Come quickly because they're going fast! Why are some animal populations on the decline? What can we do to help them?

Get a Grip
Animals use everything from claws to wrinkles to hang on tight.

Get Batty!
Next time you see a bat, don't call pest control, bats ARE the pest control! Discover why bats aren't as spooky as they seem and why they make such great neighbors.

How It's Made
If you have eaten honey or worn silk, you have benefited from the labor of industrious creatures. Take a behind-the-scenes look at animal-run factories.

Just Keep Swimming
Become an amateur ichthyologist in this lab all about fish fins.

Magnificent Madagascar
This island sits off the coast of Africa and is a hotspot for biodiversity. Learn more about the strange inhabitants of this land.

Myrmecology
There are over 10,000 ant species. Become a myrmecologist and discover ants that cooperate to form super colonies, set traps to capture prey, and even grow their own food!

Nature's Revenge
Don't make them mad; these animals are equipped with toxins to fight back! Delve into the world of venomous and poisonous animals, particularly those found in Texas.

One of These Things is Not Like the Other
Study characteristics of living things and sort them into their taxonomic groups; then, meet the animals you sorted!

Pollution and the Food Web
Small changes in an environment can have a big impact on wildlife. Discover the impact humans have had, both good and bad, as you explore the effects of pollutants in a food web.

Polyp-palooza!
Often confused for plants or rocks, coral beds are full of fascinating animals working together to support an incredible amount of life forms. Pay these polyps the attention they deserve in this wildlife lab.

Select April labs available at HMNS Sugar Land on April 23-24.

www.hmns.org/lab

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Endangered Species
Come quickly because they’re going fast! Why are some animal populations on the decline? What can we do to help them?

Swamp Things
Dig up the truth on the animals in the muck as we encounter wetland wildlife.

The Better to Bite You With
Say cheese! Say plants! Say meat! Smile wide and examine your teeth and the teeth of other animals to see how they match up to their favorite meal.

Young Wonders
Learn about the interesting forms young animals take on their journey to adulthood.

Math Labs bring numbers, beautiful shapes and equations to life. Check each class for skills requirements.

AGES 8-13
Meet the Number Families
Explore way beyond odd and even—prime, ‘perfect,’ and ‘pizza’ are all number families! Should understand multiples.

AGES 10-16
Patterns in Nature
Explore the Fibonacci sequence and other cool patterns found in animals, plants, minerals, and more! Should understand simple exponents.

Shapes and Solids
What flat shapes can be folded into a cube? Build and investigate three-dimensional solids. Should understand very simple algebraic equations.

AGES 12-18
Fascinating Fractals
Explore endlessly repeating patterns similar to the branches of a tree. Then figure out how to draw your own. Should understand orders of magnitude.

Select May labs available at HMNS Sugar Land on May 21-22.
Scouts@HMNS, generously supported by Occidental, takes the fun, educational nature of HMNS Education and applies it to Scouting requirements! Scout classes taking place from September through May will be offered on Saturdays and will cover requirements for one badge.

Classes are available at HMNS Hermann Park with a limited selection available at HMNS Sugar Land. Email scouts@hmns.org to inquire about setting up an On Demand private session for your group.

Cub Scouts
Cub Scout classes are designed to complete one Adventure in two hours. Adventure classes are available for Lion Cubs, Tiger Cubs, Wolf Cubs, and Bear Cubs. Each session will introduce and reinforce concepts with hands-on activities to inspire young minds.

Webelos
Classes are designed to complete one Adventure in two hours. Each class brings concepts to life with hands-on activities designed to promote learning and retention.

Scouts BSA
Classes are designed to meet requirements for one Merit Badge in four hours. Many different Merit Badge classes are offered, including Eagle-required Merit Badges! Each class emphasizes the fun and educational components of requirements.

Daisies
Classes earn each participant an entire Badge. Each class includes a guided tour of an HMNS exhibit hall as well as hands-on crafts.

Brownies
Earn an entire Badge in two hours. Exploring everything from bugs to art, these classes bring topics to life with engaging activities.

Juniors
Classes will meet requirements for an entire Badge in two hours. Badges are available at HMNS, covering a variety of topics.

Cadettes
Classes will meet requirements for each Badge in two-hour sessions.

Badges On Demand
Set up a private class for your Scouts! Contact scouts@hmns.org to organize a Badge On Demand session for your entire Troop or Pack. This option works best for groups of 10+.

Do I have to be a Scout to participate?
No! All classes are open to children of the appropriate age. Girls are welcome in Boy Scout classes and vice versa.
Classes presented in Jurassic James’ collection are behind-the-scenes educational Labs on Demand, using the staff’s training classrooms and, time permitting, featuring a special tour. All Labs can be offered as either one-hour sessions or two-hour sessions. One-hour sessions are suggested for 1st through 6th graders, and two-hour sessions are suggested for 7th through 12th grades.

The class curricula are adapted from Jurassic James’ time as a supplemental instructor in the Lone Star College system.

**GRADES 1 & UP**

**What is a Dinosaur?**
The objective of this class is to learn the fundamental anatomical features that classify dinosaurs from all other prehistoric life. The second half of class will be a brief journey through the Morian Hall of Paleontology to observe the same features on mounted skeletons. In the Morian Hall of Paleontology, we will use the handout received in class to identify which specimen are dinosaurs and which are not.

**Prehistoric Animal Diets: Carnivores, Herbivores, and Omnivores, oh my!**
The focus of this class is to study the dentition (teeth) of dinosaurs and other prehistoric life. Determining how and what these prehistoric animals ate is easily derived by modern analogous and morphology of the tooth. Using the handout received in class while in the Morian Hall of Paleontology, we will compare the teeth of each skeletal mount to determine diet.

**Prehistoric Defense: Teeth, claws, run, or hide!**
When people imagine dinosaurs they often see them fighting for food, territory, mates or just because! This class will study the teeth, hones and claws used to execute these actions while referencing actual fossil finds from all of the world as evidence.

**Paleontology 101 (Two-hour session recommended)**
An Introduction to Paleontology & Fossils covers specimens from the earliest invertebrates in prehistoric seas to the dinosaur right up to the end of the last “Ice age”. This lecture portion will focus on the origins of the fossil record as well as the various methods of fossilization. To complete your understanding of the topics covered, you will be encouraged to touch and examine a variety of actual fossils. Time permitting, an in-depth tour of the Morian Hall of Paleontology using the Museum’s internationally acclaimed collection of specimens is also included.

**How Fossils Form**
Most people know the fundamentals of fossilization, but this class will look at the many subdivisions that are taught in college courses - from imprints, cast, molds, recrystallization, petrification, pyritization, permineralization, and trace fossils like coprolites (fossil droppings) and tracks.

**DINOSAURS!**
There are thousands of dinosaur species known to science. In this class, we will look at the five major groups of dinosaurs - Theropoda (usually predatory dinosaurs), Sauropoda (long necked dinosaurs), Ornithopoda (Iguanodonts and “duck-billed” dinosaurs), Marginocephala (horned dinosaurs), and Thyreophora (armored dinosaurs) - and what defines them.

**Life in the Precambrian and Paleozoic: Before Dinosaurs**
This class is a detailed look at the earliest life on Earth and how they adapted to an ever-changing world. Bacteria, sponges, corals, Mollusca

*James’ classes continue on Page 13.*
(clams, snails, and squid), Arthropods (bugs), Echinoderms (sea stars and sand dollars), and vertebrates (fish, amphibians, reptiles and mammals) are all life forms that began during this time. These time periods culminated in the greatest extinction known to life on Earth, about 186 million years before the more well-known dinosaur extinction.

**Life in the Mesozoic: The Age of Reptiles**
This is the time dinosaurs walked the Earth, but they were not alone. Flying above their heads were winged reptiles, and the oceans were filled with gigantic marine reptiles the likes of which could only be reimagined in Hollywood movies. And while these life forms dominated the world stage, mammals, snakes, crocodiles, turtles, legless snakes, bees, ants and flowering plants acted as a supporting cast.

**Life in the Cenozoic: Life After Dinosaurs!**
This class focuses on the fact that the 66 million year old dinosaur extinction event did not lead straight into the Ice age. There was a mammal renaissance in which bats took flight and whales evolved from land mammals, while tree loving primates learned to walk upright.

**Life in the Jurassic**
This class offers a detailed look at the museum's animals of the Jurassic Period, which include Diplodocus, Stegosaurus, Allosaurus, Othnielosaurus and Marine reptiles like Ichthyosaurs, Plesiosaurus and Marine Crocodiles. We will discuss these animals and their lifestyles, then see the actual skeletons.

**Life in the Cretaceous**
This class offers a detailed look at the animals of the Cretaceous Period, which include Tyrannosaurus rex, Triceratops, Edmontosaurus, Gorgosaurus, Denversaurus, Acrocanthosaurus, Deinonychus, Mosasaurus, and Quetzalcoatlus. We will discuss these animals and their lifestyles, then see the actual skeletons.

**Life in the Pleistocene: Ice Age**
When people say the “Ice age” they are referring to the Pleistocene, which translates to “most recent”. One thing that makes the animals from this time so interesting is that they lived in the Houston area, so you can consider them the local prehistoric wildlife!

**Prehistoric Texas Wildlife: Appreciate the Animal History of your Own Backyard!**
This exciting class will focus on amphibians, reptiles, mammals and birds of Texas. Jurassic James has been all over our great state and has seen and interacted with many of these species. Due to Texas’ large size and geographical position, many species inhabit our state either year round or seasonally. Have you ever wondered why they say “Where the deer and the antelope play” when Texas has no antelope, only pronghorns? This class will explain the answer to this as well as discuss many more ideas about your state’s wildlife! We will also journey to the Farish Hall of Texas Wildlife, time permitting.

**Prehistoric African Wildlife**
This class will focus on the broad range of wildlife that inhabit many of Africa’s variety of ecosystems. It will cover the feeding methods of many African species, both carnivorous and herbivorous, and how all these species can coexist. The tour portion will take place inside the Frensley/Graham Hall of African Wildlife, where we will see a short necked giraffe, learn why humans domesticated horses and not zebras, and examine how elephants in India are like organic bulldozers, while African elephants are having none of it!

**Introduction to Minerals (Two-hour session recommended)**
Using hundreds of specimen representing 160 minerals species, this course focuses on the way different minerals form and how they are classified. With an emphasis on industrial and commercial uses, this course is a must for identifying and

[James’ classes continue on Page 14.]
appreciating minerals in your day-to-day life. The second half of the class will be focused on the mineral collection of the Houston Museum of Natural Science. A quick tour of the Cullen Hall of Gems and Minerals (time permitting) will give you the chance to appreciate some of the world’s finest mineral specimens and their uses in industry and art.

The Rock Cycle (Two-hour session recommended)
Using a vast collection of rock and specimen, this tactile heavy introductory lecture will look at many of Earth’s environments and geologic structures while explaining the rocks they produce. Time permitting, the accompanying tour of the Houston Museum of Natural Science features multiple exhibit halls.

Sedimentary Rocks and the Environments that Make Them
This class focuses on the effects of weather, erosion, and transportation of the various sedimentary environments that make up the world. Highlights include the formation of the gulf coast, swamps, marshes, bogs, lakes, river features, estuaries, barrier islands, and lagoons. Time permitting, the tours will consist of portions of the Wiess Energy Hall, Morian Hall of Paleontology, Frensley/Graham Hall of African Wildlife, and Farish Hall of Texas Wildlife. These tours will provide visuals to clarify the concepts described in the classroom.

Igneous Rocks, Volcanoes, Metamorphic Rocks, and Metamorphism
Emphasizing the relationship that volcanoes have with earthquakes and their effects on civilizations past and future, this course continues developing the concepts of the rock cycle, with a focus on the different types of volcanoes all over the world, what conditions create them, and the rocks they produce. The second portion of the lecture will focus on the various types of metamorphism caused by magma deep within the earth and lava at the surface.

Rocks and Minerals of Ancient Americas
Have you ever wondered why some cultures leave pyramids and others do not? In this class we will take a brief look at Granite, Scoria, Obsidian, Limestone, Sandstone, Gneiss, and more with the express emphasis on how the ancient peoples of the Americas used these materials to build their worlds. Then, time permitting, we will tour in the John P. McGovern Hall of the Americas and take a look at the different civilizations represented, with a focus on the specific geologic conditions that gave them the building materials to create their mega structures and mythologies. From a geologic standpoint, most of human history is a drive for resources, and the Egyptians were just downright lucky! The class will have a tour of the Hall of Ancient Egypt, time permitting.

Rocks and Minerals of Ancient Egypt
This class provides a look at Granite, Scoria, Obsidian, Limestone, Sandstone, and Gneiss and how the ancient peoples of Egypt used these materials to build their worlds. The Ancient Egyptians are one of the most revered and researched ancient cultures. So what more can we add to this grand story? Well, the simple question of how did they do it? We will focus on the specific geologic conditions that gave them the building materials to create their mega structures and mythologies. From a geologic standpoint, most of human history is a drive for resources, and the Egyptians were just down-right lucky! The class will have a tour of the Hall of Ancient Egypt, time permitting.

GRADUES 6-12
Plate Tectonics (Two-hour class)
The idea of moving continents was first proposed a little over a century ago with Alfred Wegner’s Theory of Continental Drift. The Theory of Plate Tectonics did not completely form until the late 1960’s. This class will look at the clues scattered throughout the world and will end inside the Weiss Energy Hall, time permitting, where we will review the models and animations created to explain these theories.
FIELD TRIP PACKAGES

The Basic
• Admission to the Permanent Exhibit Halls
• The Burke Baker Planetarium show, Starry Night Express
Cost: Approximately $7.50 per person

The George Experience
• Missions in the Expedition Center
• Astronomy classes
• Walking trails in Brazos Bend State Park
Cost: Varies based on grade level and group size

A Day with Dinos
• Admission to the Permanent Exhibit Halls
• Guided tour of the Morian Hall of Paleontology
• Exclusive access to touch carts with your tour guide
• Show: Tales of a Time Traveler in the Burke Baker Planetarium
Cost: Approximately $8.50 per person

Add a Lab On Demand or On-site Outreach to your Field Trip!

AFTER HOURS PROGRAMS

Spend the night at the Museum with Overnight Programs at HMNS! Try a Lab or Outreach program, see a show in the Burke Baker Planetarium, and answer the age-old question: does everything come to life at night?

For ages 6-12, begin your customized booking by sending an email to overnights@hmns.org or learn more online at www.hmns.org/overnights!

VIP Overnights
Get the Museum to yourself after hours! Go on a scavenger hunt in the Morian Hall of Paleontology, see a show in the Burke Baker Planetarium, and close out the night by sleeping in an exhibit hall! Customize your itinerary with a variety of options, including Labs On Demand, Outreach, and more. It’s your night, your way; an experience you’ll never forget!

Late Nights
Have an after hours experience without packing your pillow! Late Night packages include the options available for VIP Overnights, including scavenger hunts, activities, and Labs On Demand and Outreach upgrades!

Sleuths and Secrets
Uncover secrets of Ferrante Imperato, the mastermind behind the Cabinet of Curiosities, in this interactive mystery adventure. Perfect for groups of 10-14 people, ages 12 & up.

Overnights for Scouts
Individual registration Overnights for Cub Scouts and Girl Scouts are available in September and February, respectively. VIP Overnights for Scouts are also available, where Scouts can include optional add-ons that complete requirements for Adventures and Badges!
EARLY CHILDHOOD

Early Investigations
Led by Museum docents, these interactive field trip add-ons feature a 45-minute interactive class as well as a 45-minute tour of an exhibit hall, perfect for your young learner. Topics include: Paleontology, Insect Zoo, Texas Wildlife, Native North Americans, Energy, Ancient Egypt, and Malacology.

Cost: Approximately $10.00 per person

Early Childhood Development Labs
Interactive activities, hands-on learning, active instruction; at HMNS, we know how to engage your young learners! Ask about special Early Childhood Development Labs!

Science Start
TEKS-aligned presentations that come straight to you, Science Start gives the head start K-2 students need for scientific topics like density, scale, and the human body! To learn more, email outreach@hmns.org.

TEACHER WORKSHOPS

The Educator Event @HMNS
FREE to educators, this conference-style event every October features a variety of workshops and booths from local organizations. Participants will earn up to three hours of CPE credit!

Educator Maker Labs
Participants will learn a number of new skills and then use those skills in a group setting to solve challenges related to TEKS based objectives! Participants will earn four hours of CPE credit.

Gifted & Talented Workshops
Earn up to six hours of TAGT-verified credit in these fun workshops utilizing HMNS’ vast resources. Laugh and learn with our Youth Education Sales team!

Shell Educators’ Preview
Get a free peek of the latest HMNS exhibitions, enjoy light refreshments, and meet our youth education staff! You’ll even earn one hour of CPE credit in the process!
Bring the Museum straight to you! Our exciting, hands-on Outreach Programs cover a wide variety of topics for all ages, from early childhood to senior citizens! Witness everything from chemical reactions to a katydid the size of your hand, and take a trip to the moon or even back in time. There’s something for everyone with HMNS Outreach!

**Bugs On Wheels**
Hands-on presentations introduce students to the natural world, from tall trees to small insects. Featuring specimens from the Cockrell Butterfly Center’s live collection, topics include: *All About Butterflies, Amazing Arthropods, Awesome Arachnids, The Buzz About Bees, Clean-up Crew, Monarchs, and Plants & Pollinators*

**Chevron Earth Science On Wheels**
From crystals to claws and teeth to *Triceratops* skin, students will be amazed by the wonders of earth science! Topics include: *Dinosaur Discovery, Dynamic Earth, Focus on Fossils, Know Your Rocks, Renewable is Doable, Science Sort, and The Water Cycle*

**ConocoPhillips Science On Stage**
Through exciting demonstrations, these large-group presentations explore chemistry and physics for up to 250 people! From examining the effects of liquid nitrogen to seeing Newton’s laws in action, this program makes physical science fun for everyone! Topics include: *Cool Chemistry, Exploring Energy, and Motion Commotion*

**Discovery Dome**
A giant, inflatable, portable dome theater brings the best of the Burke Baker Planetarium right to your group! Featuring over 40 different presentations for all ages, covering a range of topics, the Discovery Dome takes audiences on a journey not possible anywhere else.

**Docents To Go**
A trained Museum docent presents real Museum artifacts and specimens! Each 45-minute session is a hands-on, interactive experience. Topics include: *Astronomy, Cultural Africa, Birds, Egypt, Energy, Insects, Native Americans, Ocean Life, Paleontology, Rocks & Minerals, and Texas Wildlife*

**Science Start**
Think Science On Stage for young learners. These 25-minute presentations bring basic science concepts to life through fun demonstrations, perfect for your K-2nd grade scientists! Topics include: *Body Works, Build It Big, Discovering Density, Sound Science, and Space: Going the Distance*

**Wildlife On Wheels**
Live animals and Museum specimens come to you, giving students opportunities to explore the basics of wildlife in an up-close and personal way. Topics include: *Invertebrates, Rainforests, Reptiles & Amphibians, Texas Wildlife, Venomous vs. Poisonous, and Vertebrates*

**Activity Stations**
Add crafting or investigation stations to your next event! See a full list of topics online.

**On-site Outreach**—receive a discount on your program!
Add an Outreach Program to your HMNS field trip and receive the special discounted On-site Outreach rate, starting at just $275!
HMNS MEMBERSHIP

MEMBER EVENTS

An HMNS Membership will get you free or discounted admission to fun and educational events! Ask about special educator discounts!

2nd Saturday — Members Only!
Fun for the whole family, this monthly event full of crafts, tours and activities is the perfect way to kick off a weekend, when HMNS opens one hour early, exclusively for Members on the 2nd Saturday of each month!

Girls Exploring Math and Science (GEMS) – February 15, 2020
A day of hands-on activities for all to enjoy! Local professionals will be at the Museum to answer questions about their careers in STEM fields.

World Trekkers — Members Only!
Take a trip with World Trekkers. Each event highlights a different country, with special animals, crafts and cuisine.

MEMBER BENEFITS

- Permanent Exhibit Hall Admission is free all year!
- Members First! Get exclusive early access to special exhibitions
- Free admission to the Permanent Exhibitions at HMNS Sugar Land
- Discounted admission to ticketed special exhibitions, the Cockrell Butterfly Center, the Burke Baker Planetarium, and the Wortham Giant Screen Theatre
- Early registration and discounts for Summer Camps @HMNS
- Invitations to special Members’ Only events
- Reduced rates for lectures, classes, programs, and special events
- Special Member rate for parking
- Members’ Only ticket line
- And much, much more!

MEMBER LEVELS

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Catalysts—HMNS’ Young Professional Membership Group

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HMNS ACCESSIBILITY

Our goal is to make the Houston Museum of Natural Science accessible to all visitors. We are excited to offer resources for those with sensory sensitivities or those affected by autism spectrum disorders.

Before coming to the Museum, visit www hmns org/accessibility. You'll be able to download and review our guides, planners, and other resources to make your visit to HMNS more enjoyable for you and the whole family! If you have any questions, email accessprogramming@hmns.org, and we’ll be happy to help.

Visual Vocabulary Cards
Use our Visual Vocabulary Cards to make visiting new spaces and transitioning between Museum halls easier. You can also use these cards to create a visual schedule of your day at HMNS!

Exploration Planner
Use our Exploration Planner to let your family know what to expect during your day at the Museum, from waiting in line at the box office to exploring our many exhibit halls.

Sensory Guide
Our Sensory Guide provides you with information on which exhibits meet your or your child’s sensory needs, including noise levels, visual stimulation, and tactile components. Use it to plan your visit and decide which exhibit halls are appropriate for you and your family. You can also use this map to ensure your transitions between Museum halls are appropriate for your family’s sensory needs.

HMNS Accessibility App
We are proud to announce an iPhone and Android app, “Access HMNS,” to help you make the most of your HMNS experience!

HMNS Accessibility App

April 25, 2020 and September 26, 2020, 8-10 a.m.
December 7, 2020, 9 a.m.-5 p.m.
HMNS is committed to making the Museum as accessible as possible to those with sensory sensitivities. Visit the Museum with modifications, including bright lights dimmed, dark spaces lit, loud noises lowered, and venues adjusted for a sensory friendly experience!