



# Field Trip Program Descriptions

*Time: 60 minutes*

**Please note that for programs that include live animals, participants will NOT be able to touch the animals.**

## Grades: Pre-K - 2<sup>nd</sup>

### **Exploring Reptiles and Amphibians**

Slimy salamanders, leopard frogs, corn snakes - oh my! These are just a few of the Museum's Animal Ambassadors participants will interact with as they discover the amazing characteristics of herps. As they learn, participants will explore biofacts, play an organism sort game, and create their own reptile or amphibian out of clay. After all this learning, participants will put on their thinking caps and try to figure out whether the mystery animal is a reptile or an amphibian.

**Grades: Pre-K - 2<sup>nd</sup>**

### **Interesting Insects**

What is the largest phylum in the animal phyla? Arthropods! What's the largest class of Arthropods? Insects! Insects are incredibly important to ecosystems and make up a large portion of overall species diversity, but what makes an insect different than other arthropods? In this class, discover what makes an insect unique, including body composition and metamorphosis, and what makes insects so important in ecosystems.

**Grades: Pre-K - 2<sup>nd</sup>**

### **Ocean Explorers**

Dive into the amazing underwater world of the ocean! Participants will make their own 3D ocean model, complete with plants and animals, as they learn about what's beneath the waves. Songs, stories, and a visit to the Oceans Exhibit will make this class memorable for little explorers.

**Grades: Pre-K - 2<sup>nd</sup>**

## Grades: K - 2<sup>nd</sup>

### **Alabama Biomes**

Take a stroll through our home state and explore the different biomes Alabama holds! Learn what makes each biome unique and participate in a variety of sensory activities using fascinating biofacts. Discover what animals belong in each biome, the types of habitats they live in, and how they assist each other in their quest for survival. Live animal presentations demonstrate some of the physical attributes animals have that enable them to live in their unique biome. Participants will create a physical model, featuring four of Alabama's distinct biomes: forests, wetlands, rivers, and oceans!

**Grades: K - 2<sup>nd</sup>**

## **Extraordinary Life Cycles I**

For some animals, a whole lot of change must happen for them to become adults! From eggs to larva to pupae, from seeds to seedlings to adults, life cycles keep organisms growing, changing, and making more of their kind! Throughout this class, participants will enjoy modeling the steps to the lifecycle of four living things: frogs, plants, turtles, and butterflies!

**Grades: K - 2<sup>nd</sup>**

## **Power of Pollination**

One out of every three bites of food we eat exists because of pollinators, but what is a pollinator? What do they do that is so important? Through games and interactive biofacts, explore different examples of pollinators (such as bees, butterflies, hummingbirds, and bats) and experience the essential work they do for the planet and the plants around us! Discover the plant anatomy that makes pollination possible through a flower dissection. Participants will create their own flower model!

**Grades: K - 2<sup>nd</sup>**

## **States of Matter**

What's the matter? Solids, Liquids, and Gases of course!

Come have a blast discovering what makes each state of matter different. With hands-on activities, interactive games, and fun experiments, learn about the atomic make up of each state as well as how matter transitions from state to state. Finally, get messy and try to figure out what state of matter Oobleck is!

**Grades: K - 2<sup>nd</sup>**

## **Weather Watchers I: Clouds, Lightning, and Tornadoes!**

Weather events such as clouds, lightning, and tornadoes can be so astounding that we sometimes forget that it isn't magic - it's SCIENCE! With Weather Watchers, participants will step into the shoes of meteorologists and learn the secrets behind the formation of local weather events. Interactive demonstrations allow them to watch the development of clouds, lightning, and tornadoes in the classroom! Participants will work together to create a weather station equipped with a barometer, anemometer, and a weathervane to take back to the classroom.

**Grades: K - 2<sup>nd</sup>**

## **Grades: 3<sup>rd</sup> or higher**

### **All About Squid**

Investigate the amazing body structure of these squishy cephalopods! Participants in this interactive class will dissect a squid and study how their unique design allows them to catch food, evade predators, and thrive in oceans all around the globe.

**Grades: 3<sup>rd</sup> - 9<sup>th</sup>**

### **Electromagnetism: Science or Superpower?**

In this shocking and interactive program, participants will work with the concept of electromagnetism! First, explore and experiment with electricity and magnetism, then review and learn concepts that help with the understanding of electromagnetism. Finally, utilize engineering, magnetic fields, and electric currents to build an electromagnet!

**Grades: 3<sup>rd</sup> - 8<sup>th</sup>**

## **Extraordinary Life Cycles II**

Everyone knows human babies don't stay little, but does that apply to animals and plants as well? Enjoy spending a fun filled hour investigating this question, first by brainstorming the life cycles of several familiar species. Then observe the life cycles of frogs, flowers, and turtles with live animals, plants, and models. The final example is a firefly, complete with a take-home model! To end the class, participants will test their new knowledge and play a "Who Am I?" game with stages from the life cycles investigated.

**Grades: 3<sup>rd</sup> - 5<sup>th</sup>**

## **Herpetology 101**

In Herpetology 101, discover the differences between an amphibian and a reptile by examining some of the Museum's Animal Ambassadors - like the leopard frogs and corn snake - up close! Then, as a group, collaborate to guess which group the mystery animal belongs in! Finally, compare habitats and design a home that meets a reptile or amphibian's needs.

**Grades: 3<sup>rd</sup> - 5<sup>th</sup>**

## **Perplexing Pellets**

Skulls, animals, and pellets, oh my! Come learn how energy cycles through all living things and how that energy gets from one source to the next. Meet some of the Museum's Animal Ambassadors and see how they relate to each other. Lastly, dissect an owl pellet to see how food webs and food chains correlate to real life ecosystems - and keep the bones to take home!

**Grades: 3<sup>rd</sup> - 7<sup>th</sup>**

## **Rocks, Minerals, Geology!**

In this hands-on class, learn how to identify minerals using tactics used by real geologists! These tactics include color, luster, effervescence, streak, magnetism, cleavage, and hardness. Learn about the three types of rocks (Igneous, Metamorphic, Sedimentary) and conduct a hands-on experiment to learn about the rock cycle!

**Grades: 3<sup>rd</sup> - 6<sup>th</sup>**

## **Weather Watchers II: Clouds, Lightning, and Tornadoes!**

Weather events such as clouds, lightning, and tornadoes can be so astounding that we sometimes forget that it isn't magic - it's SCIENCE! With Weather Watchers, participants step into the shoes of meteorologists and learn the secrets behind the formation of local weather events. Interactive demonstrations allow them to watch the development of clouds, lightning, and tornadoes in the classroom. Participants will work together to build a home that can withstand the weather in different climates and then test it out.

**Grades: 3<sup>rd</sup> - 6<sup>th</sup>**

## **Grades: 5<sup>th</sup> or higher**

## **Arthropod Comparative Anatomy Study**

In this laboratory experience, learn about the taxonomy of the arthropod phylum, study the various appendages afforded by the arthropod exoskeleton, and distinguish among three types of metamorphoses. Then observe live crustaceans and insects and study dissected grasshopper specimens. A lab packet is included.

**Grades: 5<sup>th</sup> - 8<sup>th</sup>**



## **Crash, Don't Crack!**

In this highly engaging, hands-on class, look deeper into the structure of plants, birds, and mammals to see amazing designs for shock absorption in the natural world. Then use these principles in constructing a vehicle that is fast, safe, and protects its cargo, a raw egg. Participants will test their vehicle designs against other groups in the class.

**Grades: 5<sup>th</sup> - 8<sup>th</sup>**

## **Echinoderm Investigation and Dissection**

Sea stars, sea cucumbers, brittle stars, and sand dollars, what are they? Echinoderms! Come learn what classes make up the Phylum Echinodermata and the characteristics they all share. Investigate each class, where it lives, and its role in its ecosystem. Learn how these special animals move and what makes them echinoderms with hands-on activities and dissections of a sea star and sea urchin.

**Grades: 5<sup>th</sup> - 10<sup>th</sup>**

## **Other Opportunities**

### **Animal Presentations**

\$5 per participant with a \$100 minimum for each presentation  
Time: 30 minutes

Each presentation introduces students to 3 to 5 live animals from the selected topic and discusses what makes them special in the animal kingdom. Participants will NOT be able to touch the animals.

#### **Presentation Topics:**

- **TOAD-ally Awesome Amphibians**
- **Turtles, Terrapins, Tortoises...OH MY!**
- **The Squamata (lizards and snakes)**

### **For A Day Camps**

**Grades 4<sup>th</sup> - 8<sup>th</sup>**

Have you ever wondered what it would be like to work at the Cook Museum of Natural Science? What would you have to know? What would you get to do? Come join us and explore the work of the museum aquarist, herpetologist, or entomologist. Experience live animal feedings, behind the scenes tours, educational classes, independent workstations, and dissection classes! Lunch and a t-shirt included. Please see individual camp descriptions for more information.

**Aquarist for a Day (One Day) - \$125/student**

**Herpetologist for a Day (One Day) - \$125/student**

**Entomologist for a Day (One Day) - \$125/student**

# Field Trip Connections to Alabama Standards

## Grade: Pre-K - 2<sup>nd</sup>

### **Exploring Reptiles and Amphibians**

- AL.K.SC.5 Construct a model of a natural habitat (e.g., terrarium, ant farm, diorama) conducive to meeting the needs of plants and animals native to Alabama.
- AL.K.SC.3 Distinguish between living and nonliving things and verify what living things need to survive (e.g., animals needing food, water, and air; plants needing nutrients, water, sunlight, and air).

### **Interesting Insects**

- AL.SC.K.5.3 Discuss animals native to Alabama.
- AL.SC.K.3 Distinguish between living and nonliving things and verify what living things need to survive (e.g., animals needing food, water, and air; plants needing nutrients, water, sunlight, and air).
- AL.SC.1.5.2 Design an animal that has special body parts that help the animal survive. (e.g., picture, project, or model)
- AL.SC.1.6.1 Define offspring.
- AL.SC.1.6.2 Describe how parents use patterns of behavior to help their offspring survive (e.g., using media or texts).
- AL.SC.1.7.2 Compare and contrast offspring to their parents and other members of the same species (e.g., picture cards).
- AL.SC.2.6.2 Model ways animals disperse seeds and pollinate plants.

### **Ocean Explorers**

- AL.SC.2.7.2 Describe different habitats in water.
- AL.SC.2.7.4 Match animals to various habitats.
- AL.SC.3.7.4 Compare traits of various plants and/or animals (e.g., dogs, cats, fish, flowers, trees).

## Grades: K - 2<sup>nd</sup>

### **Alabama Biomes**

- AL.SC.K.3 Distinguish between living and nonliving things and verify what living things need to survive (e.g., animals needing food, water, and air; plants needing nutrients, water, sunlight, and air).
- AL.SC.AAS.K.3 Sort a group of items based on whether the items are living or nonliving.
- AL.SC.AAS.K.5 Participate in the construction and/or care of a model habitat of plants and animals native to Alabama.
- AL.SC.AAS.2.9 Identify physical features of Earth (e.g., mountain, valley, river, lake).
- AL.SC.AAS.3.5 Classify common objects as living, rather than nonliving, based on their ability to obtain and use resources, grow, reproduce, and adapt to the environment.
- AL.SCI.3.8 Engage in argument from evidence to justify that traits can be influenced by the environment (e.g., stunted growth in normally tall plants due to insufficient water, change in an arctic fox's fur color due to light and/or temperature, stunted growth of a normally large animal due to malnourishment).
- AL.SCI.AAS.3.8 Recognize that living things have specific needs (water, light, temperature, food, shelter) to live and grow in an environment.
- AL.SCI.3.11 Construct an argument from evidence to explain the likelihood of an organism's ability to survive when compared to the resources in a certain habitat (e.g., freshwater organisms survive well, less well, or not at all in saltwater; desert organisms survive well, less well, or not at all in woodlands).
- SCI.AAS.4.16 Use a map key to identify land and water features on a map.

### **Extraordinary Life Cycles I**

- AL. SC.K.3.1 Define living and non-living things.
- AL. SC.K.3.3 Distinguish patterns between living and non-living things using examples.
- AL. SC.K.3.4 Use pictures to discuss living and non-living things.
- AL. SC.1.5.2 Design an animal that has special body parts that help the animal survive.
- AL. SC.1.6.1 Define offspring.
- AL. SC.2.5.2 Recognize factors that contribute to plant growth.
- AL. SC.2.5.3 Identify causes and effects of plant growth.

### **Power of Pollination**

- AL.SC.K.5.3 Discuss animals native to Alabama.
- AL.SC.K.5.4 Describe plants native to Alabama.
- AL.SC.2.5.2 Recognize factors that contribute to plant growth.
- AL.SC.2.6.1 Define disperse and pollinate.
- AL.SC.2.6.2 Model ways animals disperse seeds and pollinate plants.
- AL.SC.4.9.1 Identify the internal and external structures of plants.

### **States of Matter**

- AL.SC.2.1 Conduct an investigation to describe and classify various substances according to physical properties.
- AL.SC.2.2 Collect and evaluate data to determine appropriate uses of materials based on their properties.
- AL.SC.2.4 Provide evidence that some changes in matter caused by heating or cooling can be reversed and some changes are irreversible.

### **Weather Watchers I: Clouds, Lightning, and Tornadoes!**

- AL.SC.K.7 Observe and describe the effects of sunlight on Earth's surface
- AL.SC.K.8 Design and construct a device to reduce the effects of sunlight
- AL.SC.K.10 Ask questions to obtain information about the purpose of weather forecasts in planning for, preparing for, and responding to severe weather.
- AL.SC.2.1 Use and share observations of local weather conditions to describe patterns over time

## **Grades: 3<sup>rd</sup> or higher**

### **All About Squid**

- SCI.3.10 Investigate how variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.
- SCI.4.9 Examine evidence to support an argument that the internal and external structures of plants and animals' function to support survival, growth, behavior, and reproduction.
- SCI.4.11 Investigate different ways animals receive information through the senses, process that information, and respond to it in different ways.
- SCI.7.12 Construct and use models to explain that genetic variations between parent and offspring occur because of genetic differences in randomly inherited genes located on chromosomes and that additional variations may arise from alteration of genetic information.
- SCI.7.13 Construct an explanation from evidence to describe how genetic mutations result in harmful, beneficial, or neutral effects to the structure and function of an organism.

### **Electromagnetism: Science or Superpower?**

- AL.SC.3.3: Explore objects that can be manipulated in order to determine cause-and-effect relationships (e.g., distance between objects affecting strength of a force, orientation of magnets affecting direction of a magnetic force) of electric interactions between two objects not in contact with one another (e.g., force on hair from an electrically charged balloon, electrical forces between a charged rod and pieces of paper) or magnetic interactions between two objects not in contact with one another (e.g., force between two permanent magnets or between an electromagnet and steel paperclips, force exerted by one magnet versus the force exerted by two magnets).
- AL.SC.3.4 Apply scientific ideas about magnets to solve a problem through an engineering design project (e.g., constructing a latch to keep a door shut, creating a device to keep two moving objects from touching each other such as a maglev system).\*
- AL.SC.4.2 Plan and carry out investigations that explain transference of energy from place to place by sound, light, heat, and electric currents.
- AL.SC.4.4 Design, construct, and test a device that changes energy from one form to another (e.g., electric circuits converting electrical energy into motion, light, or sound energy; a passive solar heater converting light energy into heat energy).\*

### **Extraordinary Life Cycles II**

- AL.SC.3.6 Create representations to explain the unique and diverse life cycles of organisms other than humans (e.g., flowering plants, frogs, butterflies), including commonalities such as birth, growth, reproduction, and death.

### **Herpetology 101**

- AL.SC.3.10 Investigate how variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.
- AL.SC.3.11 Construct an argument from evidence to explain the likelihood of an organism's ability to survive when compared to the resources in a certain habitat.
- AL.SC.4.9 Examine evidence to support an argument that the internal and external structures of plants and animals' function to support survival, growth, behavior, and reproduction.
- AL.SC.4.11 Investigate different ways animals receive information through the senses, process that information and respond to it in different ways.

### **Perplexing Pellets**

- AL.SC.3.6 Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
- AL.SC.4.9 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
- AL.SC.4.1: Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.
- AL.SC.5.10 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
- AL.SC.7.5 Examine the cycling of matter between abiotic and biotic parts of ecosystems to explain the flow of energy and the conservation of matter.
- AL.SC.7.6 Analyze and interpret data to provide evidence regarding how resource availability impacts individual organisms as well as populations of organisms within an ecosystem.

### **Rocks, Minerals, Geology!**

- ALSS - 4.14 Explore information to support the claim that landforms are the result of a combination of constructive forces, including crustal deformation, volcanic eruptions, and sediment deposition as well as a result of destructive forces, including erosion and weathering.
- ALSS- 6.8 Plan and carry out investigations that demonstrate the chemical and physical processes that form rocks and cycle Earth's materials (e.g., processes of crystallization, heating and cooling, weathering, deformation, and sedimentation).

### **Weather Watchers II: Clouds, Lightning, and Tornadoes!**

- AL.SC.4.17 Formulate and evaluate solutions to limit the effects of natural Earth processes on humans.
- AL.SC.5.14 Use a model to represent how any two systems, specifically the atmosphere, biosphere, geosphere, and/or hydrosphere, interact and support life.

## Grades: 5<sup>th</sup> or higher

### **Arthropod Comparative Anatomy Study**

- AL.SC.7.4 Construct models and representations of organ systems (e.g., circulatory, digestive, respiratory, muscular, skeletal, nervous) to demonstrate how multiple interacting organs and systems work together to accomplish specific functions.
- AL.SC.7.6 Analyze and interpret data to provide evidence regarding how resource availability impacts individual organisms as well as populations of organisms within an ecosystem.
- AL.SC.7.8 Construct an explanation to predict patterns of interactions in different ecosystems in terms of the relationships between and among organisms (e.g., competition, predation, mutualism, commensalism, parasitism).

### **Crash, Don't Crack!**

- AL.SC.5.7 Design and conduct a test to modify the speed of a falling object due to gravity.
- AL.SC.8.8 Use Newton's first law to demonstrate and explain that an object is either at rest or moves at a constant velocity unless acted upon by an external force.
- AL.SC.8.9 Use Newton's second law to demonstrate and explain how changes in an object's motion depend on the sum of the external forces on the object and the mass of the object.
- AL.SC.8.10 Use Newton's third law to design a model to demonstrate and explain the resulting motion of two colliding objects.

### **Echinoderm Investigation and Dissection**

- AL.SC.5.11 Create a model to illustrate the transfer of matter among producers; consumers, including scavengers and decomposers; and the environment.
- AL.SC.7.6 Analyze and interpret data to provide evidence regarding how resource availability impacts individual organisms as well as populations of organisms within an ecosystem.
- AL.SC.7.7 Use empirical evidence from patterns and data to demonstrate how changes to physical or biological components of an ecosystem can lead to shifts in populations.
- AL.SC.7.9 Engage in argument to defend the effectiveness of a design solution that maintains biodiversity and ecosystem services (e.g., using scientific, economic, and social considerations regarding purifying water, recycling nutrients, preventing soil erosion).
- AL.SC.9-12.13 Obtain, evaluate, and communicate information to explain how organisms are classified by physical characteristics, organized into levels of taxonomy, and identified by binomial nomenclature (e.g., taxonomic classification, dichotomous keys).
- AL.SC.9-12.15 Engage in argument from evidence (e.g., mathematical models such as distribution graphs) to explain how the diversity of organisms is affected by overpopulation of species, variation due to genetic mutations, and competition for limited resources.