



ECO-ACADEMY

EDUCATORS' CURRICULUM AND LEARNING PROGRAM GUIDE FOR PARENT EDUCATORS AND STUDENTS



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TABLE OF CONTENTS

Curriculum	Page
Introduction to Eco-Academy	3
Environmental Sciences	4
Marine Biology	8
Archaeology	12
Animal Kingdom	17
Animal Adaptations (Survival Traits)	21
Endangered Species	25



ECO-ACADEMY FOR PARENT EDUCATORS AND STUDENTS

*"I hear, I forget.
I hear and see, I remember.
I hear, see and do, I understand"
Old Chinese Proverb*

The **ECO-ACADEMY** provides a hands-on curriculum to community youth and the general public in the fields of environmental sciences, marine biology, archeology, animal kingdom, animal adaptations and endangered species. Our team is a highly trained group of individuals that is dedicated to preserve and interpret the invaluable resources found at Deering Estate at Cutler and Miami Metrozoo. Our Eco-brigade is prepared to interact in a fun and educational way with every group regardless of age, special interests or grade level. They will encourage student and parent educator's participation during the educational programs. The Eco-Academy staff is trained in environmental sciences, marine biology, archaeology, zoology and ecology of South Florida and the world's ecosystems. With some of the highest quality and most diverse natural resources remaining in Miami-Dade County, our **ECO-ACADEMY** also educates our community about preserving our biodiversity through environmental stewardship, environmental sustainability, and overall resource management.

ECO-ACADEMY sessions are correlated to the Florida State Standards. They engage participants in an interactive, positive and balanced activity to help them understand and appreciate, as well as think critically about the world around them. The Deering Estate and Miami Metrozoo staff provide homeschooling educators with fossils, artifacts and tools, living exhibits, preserved specimens, photographs and simple laboratory experiments to help illustrate the key points of a specific topic. The program will accommodate up to 30 people and will be offered once a week for 30 week (15 wk at Deering Estate and 15 wk at Metrozoo) during the academic year, for 2 hours each session. The fee is \$5 per participant. The cost of material is included in the fee.

MODULE SESSIONS

Core Modules	Sessions	Dates
Group DZ (Deering –Zoo)		
Environmental Sciences	5 wk	August 31st – October 1st
Marine Biology	5 wk	October 6th – November 5th
Archaeology	5 wk	November 10th – December 17th
Animal Kingdom	5 wk	January 11th – February 10th
Animal Adaptations (Survival Traits)	5 wk	February 15th – March 17th
Endangered Species	5 wk	March 22nd – April 26th
Group ZD (Zoo – Deering)		
Animal Kingdom	5 wk	September 1st – October 1st
Animal Adaptations (Survival Traits)	5 wk	October 6th – November 5th
Endangered Species	5 wk	November 10th – December 17th
Environmental Sciences	5 wk	January 12th – February 11th
Marine Biology	5 wk	February 16th – March 18th
Archaeology	5 wk	March 23rd – April 27th

ENVIRONMENTAL SCIENCES



ENVIRONMENTAL SCIENCES

Environmental Sciences is an expression encompassing the wide range of scientific disciplines that need to be brought together to understand and manage the natural environment and the many interactions among physical, chemical, and biological components. Environmental Sciences provides an integrated, quantitative, and interdisciplinary approach to the study of environmental systems. Individuals may operate as environmental scientists or a group of scientists may work together pooling their individual skills. The most common model for the delivery of environmental science is through the work of an individual scientist or small team drawing on the peer-reviewed, published work of many other scientists throughout the world. (www.wikipedia.com)

The [Environmental Sciences Module](#) is designed to study all the elements that encompass our environment, including air, land and water. It also includes the study of animals and their adaptations to different habitats found in Florida. Participants will be familiarized with different techniques that are polluting

our environment and the alternatives that we have to protect it. Students will learn about each topic through hands-on activities and simple experiments. At the end of the module, participants will create a unique campaign to create awareness about our environment.

ENVIRONMENTAL SCIENCES

Unit	Date	Description	Florida State Standards K-5 th grade	Florida State Standards 6 th -12 th
Our Planet Earth	Sept. 1 – 3 or Jan 12-14	The purpose of this program is to familiarize participants with knowledge of the Earth and the different parts in it. The first part will be taught with an interactive power point presentation. Next, there will be a series of hands on experiments and projects to understand properties of our planet.	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 VA.A.1.3 VA.E.1.3
			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2 VA.A.1.2 VA.E.1.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F. 1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 VA.A.1.4 VA.E.1.4
Water Pollution and Treatment	Sept. 8-10 or Jan 19-21	The purpose of the program is familiarizing students with the properties of water. The first part of the will be taught with an interactive power point presentation. Next, there will be a series of hands on programs and projects relating to the material showed in the first section. At the end the students will be able to identify the importance of our water resources and how to protect them.	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 VA.A.1.3 VA.E.1.3
			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F. 1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 VA.A.1.4

			VA.A.1.2 VA.E.1.2	VA.E.1.4
Solid and Hazardous Waste	Sept. 15-17 or Jan 26-28	Participants will develop an appreciation of the land and the natural world that lives on it. By the end of the program children will know how land is a changing environment and they will understand the factors that affect it and how we can protect it from destruction.	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 VA.A.1.3 VA.E.1.3
			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2 VA.A.1.2 VA.E.1.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F. 1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 VA.A.1.4 VA.E.1.4
Oceans and Fisheries	Sept. 22-24 or Feb 2 - 4	Participants will learn about the importance of our oceans and how fisheries are affecting it. Through hands-on experiments and walk through the Estate grounds, students will understand the role of our oceans and what to do to protect it.	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 VA.A.1.3 VA.E.1.3
			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2 VA.A.1.2 VA.E.1.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F. 1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 VA.A.1.4 VA.E.1.4

Ecosystems and Biodiversity	Sept. 29- Oct 1 or Feb 9-11	Students will develop an appreciation of the environment. The first part will be a hands-on activity and during the second part participants will appreciate the environment through a bike tour. Students will learn to identify different habitats and their role in our planet.	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 VA.A.1.3 VA.E.1.3
			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2 VA.A.1.2 VA.E.1.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F. 1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 VA.A.1.4 VA.E.1.4

MARINE BIOLOGY



MARINE BIOLOGY

Marine Biology is the study of living organisms found in salt or brackish water. The oceans cover 75% of the Earth. "Marine life is a vast resource, providing food, medicine, and raw materials in addition to helping to support recreation and tourism all over the world. Marine life helps determine the very nature of our planet. Marine organisms contribute significantly to the oxygen cycle, and more involved in the regulation of the earth's climate. Shorelines are in part shaped and protected by marine life, and some marine organisms even help create new land."(www.wikipedia.com).

The [Marine Biology](#) module includes the study of coral reefs and all the life that surrounds these wonderful habitats, a session about Cephalopods, echinoderms, seashells and sea turtles and marine mammals. Students will learn about the different adaptations of these fantastic creatures, where to find them and how to protect them.

MARINE BIOLOGY

Unit	Date	Description	Florida State Standards K-5 th	Florida State Standards 6 th -12 th
Coral Reefs	Oct 6-8 or Feb 16-18	During this session students will learn about coral reefs and the community associated with this habitat. They will learn the differences between soft corals and hard corals, camouflage, as well as about sponges and other animals that use them as their home.	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 VA.A.1.3 VA.E.1.3
			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2 VA.A.1.2 VA.E.1.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F. 1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 VA.A.1.4 VA.E.1.4
Marine Mammals	Oct 13-15 or Feb 23-25	Participants will learn about the marine mammals found in South Florida, their behavior and anatomy. They will also learn about the role of these animals in our ecosystem.	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 VA.A.1.3 VA.E.1.3
			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F. 1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 VA.A.1.4

			VA.A.1.2 VA.E.1.2	VA.E.1.4
Echinoderms and Seashells	Oct 20-22 or March 2-4	Students will know the differences between bivalves and univalves, basic facts about mollusk anatomy and physiology and the roles of mollusks in the natural environment.	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 VA.A.1.3 VA.E.1.3
			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2 VA.A.1.2 VA.E.1.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F. 1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 VA.A.1.4 VA.E.1.4
Sea Turtles	Oct 27-29 or March 9-11	Participants will learn about the different types of sea turtles found in Florida, their body parts and their behavior.	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 VA.A.1.3 VA.E.1.3
			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F. 1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 VA.A.1.4

			VA.A.1.2 VA.E.1.2	VA.E.1.4
Cephalopods	Nov 3-5 or March 16-18	Students will have an up close look of squids and learn about their anatomy. Students will dissect a squid and engage in a discussion about its internal organs.	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 VA.A.1.3 VA.E.1.3
			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2 VA.A.1.2 VA.E.1.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F. 1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 VA.A.1.4 VA.E.1.4

ARCHAEOLOGY

ARCHAEOLOGY

"Archaeology is the science that studies human cultures through the recovery, documentation, analysis and interpretation of material remains and environmental data, including architecture, artifacts, features, bio-facts, and landscapes." (www.wikipedia.com). The Deering Estate Archaeology program offers participants the opportunity to learn about the past and create a sense of cultural awareness.



Our education and interpretive staff will take the group for an introduction on basic principles of archaeology techniques. Students will spend weeks learning about the Tequesta and Seminole Indians, as well as the early settlers of South Dade. They will also learn about the fossils of extinct animals found in the solution holes in the estate. Participants will have a chance to use techniques that are commonly used by archaeologists as they unearth relics such as pottery, shards tools, animal bones and other artifacts dating back as far as 3,000 years.

The [Archaeology](#) module is designed to make students get their hands "dirty" and experience history. These sessions will allow students to research artifacts from ancient civilizations. Students will act as museum curators to gather artifacts to display essential aspects of each ancient civilization. They will develop an ability to assemble clues and decipher various indicators concerning one person's life and family background, learn about the process of mummification and understand how pirates are related to the archaeology. They will also learn about the techniques used in the underwater archaeology.

ARCHAEOLOGY

Unit	Date	Description	Florida State Standards K-5 th	Florida State Standards 6 th -12 th
Mummification	Nov 10-12 or March 23-25	<p>This lesson provides students with the opportunity to develop their process skills by engaging in a mummification process and methodologically documenting the process. Students will experience the scientific process of mummification and develop an understanding that mummification was an essential part of the religion of Ancient Egypt.</p> <p>Students will be able to engage in the scientific process of mummification and follow through and document the process over a long period of time.</p>	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 SS.A.1.1 SS.B.1.1 SS.B.2.1 SS.D.1.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 SS.A.1.3 SS.B.1.3 SS.B.2.3 VA.A.1.3 VA.E.1.3
			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2 SS.A.1.3 SS.A.2.3 SS.A.6.3 SS.B.2.3 VA.A.1.2 VA.E.1.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F.1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 SS.A.1.4 SS.B.1.4 SS.B.2.4 VA.A.1.4 VA.E.1.4
Ancient Civilizations	Nov 17-19 or April 6-8	This lesson will allow students to research artifacts from ancient civilizations. Students will act as museum curators to gather artifacts to display essential aspects of each ancient civilization.	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 SS.A.1.3 SS.B.1.3 SS.B.2.3 VA.A.1.3 VA.E.1.3

			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2 SS.A.1.3 SS.A.2.3 SS.A.6.3 SS.B.2.3 VA.A.1.2 VA.E.1.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F.1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 SS.A.1.4 SS.B.1.4 SS.B.2.4 VA.A.1.4 VA.E.1.4
Pirate Archaeology	Dec 1-3 or April 13-15	This lesson reviews students' understanding of where pirates worked and what their motivations were. It asks students to consider where they might look for sunken pirate ships and what they would expect to find on such ships. Students will pretend to be historians seeking funding for expeditions to search for pirate ships and write up their plans.	LA.A.1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 SS.A.1.1 SS.B.1.1 SS.B.2.1 SS.D.1.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 SS.A.1.3 SS.B.1.3 SS.B.2.3 VA.A.1.3 VA.E.1.3
			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2 SS.A.1.3 SS.A.2.3 SS.A.6.3 SS.B.2.3 VA.A.1.2 VA.E.1.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F.1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 SS.A.1.4 SS.B.1.4 SS.B.2.4 VA.A.1.4 VA.E.1.4

The Scientific Method in Undersea Archaeology	Dec 8-10 or April 20-22	Current theory says that during the Ice Age, the Black Sea was an isolated freshwater lake surrounded by farmland that was eventually flooded. This lesson asks students to analyze how the scientific method has been used in studies of the Black Sea. Students will diagram the steps the scientists took to test one of their hypotheses concerning the flooding, and they will outline two other hypotheses and the steps that were taken to test them. They will conclude by writing a research plan for future studies.	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 SS.A.1.1 SS.B.1.1 SS.B.2.1 SS.D.1.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 SS.A.1.3 SS.B.1.3 SS.B.2.3 VA.A.1.3 VA.E.1.3
			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2 SS.A.1.3 SS.A.2.3 SS.A.6.3 SS.B.2.3 VA.A.1.2 VA.E.1.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F.1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 SS.A.1.4 SS.B.1.4 SS.B.2.4 VA.A.1.4 VA.E.1.4
Shoe Box Archaeology	Dec 15-17 or April 25-27	Participants will develop an ability to assemble clues and decipher various indicators concerning one person's life and family background. In this way, he or she will develop and understanding of the way in which present day archaeologists "dig" for the unlocking of our past.	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 SS.A.1.1 SS.B.1.1 SS.B.2.1 SS.D.1.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 SS.A.1.3 SS.B.1.3 SS.B.2.3 VA.A.1.3 VA.E.1.3
			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F.1.4 SC.G.1.4

			SC.G.2.2 SC.H.2.2 SC.H.3.2 SS.A 1.3 SS.A 2.3 SS.A 6.3 SS.B 2.3 VA.A.1.2 VA.E.1.2	SC.G.2.4 SC.H.3.4 SS.A.1.4 SS.B.1.4 SS.B.2.4 VA.A.1.4 VA.E.1.4
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ANIMAL KINGDOM



ANIMAL KINGDOM

Animals are a major group of mostly multicellular organisms of the kingdom Animalia. Their body plan eventually becomes fixed as they develop, although some undergo a process of metamorphosis later on in their life. Most animals are motile, meaning they can move spontaneously and independently. Most animals are also heterotrophs, meaning they must ingest other organisms for sustenance.

Miami Metrozoo has over 80 exhibits and more than 1,000 animals, representing over 400 species, 48 of which are endangered species. The zoo has representatives from all vertebrates groups: mammals, birds, reptiles, amphibians and fish. Their newest exhibit Amazon and Beyond comprised of 27-acres and features over 100 astonishing species, with a total of more than 600 new animals.

During the **Animal Kingdom** module participants will understand the difference between the major groups of animals and they will study in depth the wonderful world of giraffes, lesser apes, otters and bats. Students will be able to identify specific characteristics of each of these animals and also study their behavior and habitats.

ANIMAL KINGDOM

Unit	Date	Description	Florida State Standards K-5 th grade	Florida State Standards 6 th -12 th
Introduction to Animal Kingdom	Sept. 1 – 3 or Jan 11-13	The purpose of this program is to familiarize participants with knowledge of the animal kingdom. The first part will be taught with an interactive power point presentation. Next, there will be a series of hands on programs and projects relating to the material showed in the first section and a visit to a zoo animal.	L.A.A. 1.1 L.A.C.1.1 L.A.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	L.A.A.1.3 L.A.A.2.3 L.A.C.1.3 L.A.C.2.3 L.A.C.3.3 L.A.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 V.A.A.1.3 VA.E.1.3
			L.A.A.1.2 L.A.A.2.2 L.A.C.1.2 L.A.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2 V.A.A.1.2 VA.E.1.2	L.A.A.1.4 L.A.A.2.4 L.A.B.2.4 L.A.C.1.4 L.A.C.2.4 L.A.C.3.4 L.A.E.2.4 SC.F. 1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 V.A.A.1.4 VA.E.1.4
Giraffes	Sept. 8-10 or Jan 18-20	The purpose of the program is familiarizing students with giraffes. The first part will be taught with an interactive power point presentation. Next, there will be a series of hands on programs and projects relating to the material showed in the first section. At the end the students will be able to identify different species of giraffes.	L.A.A. 1.1 L.A.C.1.1 L.A.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	L.A.A.1.3 L.A.A.2.3 L.A.C.1.3 L.A.C.2.3 L.A.C.3.3 L.A.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 V.A.A.1.3 VA.E.1.3
			L.A.A.1.2 L.A.A.2.2 L.A.C.1.2 L.A.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2 V.A.A.1.2 VA.E.1.2	L.A.A.1.4 L.A.A.2.4 L.A.B.2.4 L.A.C.1.4 L.A.C.2.4 L.A.C.3.4 L.A.E.2.4 SC.F. 1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 V.A.A.1.4 VA.E.1.4

			VA.E.1.2	
Lesser Apes	Sept. 15-17 or Jan 25-27	The purpose of the program is to familiarize students with lesser apes, such as siamangs and gibbons. The first part will be taught with an interactive power point presentation. Next, there will be engaging activities relating to the material showed in the first section. At the end the students will be able to identify different species of lesser apes.	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 VA.A.1.3 VA.E.1.3
			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2 VA.A.1.2 VA.E.1.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F. 1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 VA.A.1.4 VA.E.1.4
Otters	Sept. 22-24 or Feb 1-3	Students will develop an appreciation of aquatic mammals in this session. The first part will be an introduction to otters using an interactive power point presentation. At the end the students will be able to appreciate and understand the different species of otters.	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 VA.A.1.3 VA.E.1.3
			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2 VA.A.1.2 VA.E.1.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F. 1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 VA.A.1.4 VA.E.1.4

Bats	Sept 29- Oct 1 or Feb 8-10	The purpose of the program is to familiarize students with the diversity of flying mammals, bats. The first part will be taught with an interactive power point presentation. Next, there will be engaging activities relating to the material showed in the first section. At the end the students will be able to appreciate the ecological roles that bats play.	L.A.A. 1.1 L.A.C.1.1 L.A.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	L.A.A.1.3 L.A.A.2.3 L.A.C.1.3 L.A.C.2.3 L.A.C.3.3 L.A.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 VA.A.1.3 VA.E.1.3
			L.A.A.1.2 L.A.A.2.2 L.A.C.1.2 L.A.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2 VA.A.1.2 VA.E.1.2	L.A.A.1.4 L.A.A.2.4 L.A.B.2.4 L.A.C.1.4 L.A.C.2.4 L.A.C.3.4 L.A.E.2.4 SC.F. 1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 VA.A.1.4 VA.E.1.4

ANIMAL ADAPTATIONS

Animal Survival Traits



ANIMAL ADAPTATIONS (Survival Traits)

Adaptation is one of the basic phenomena of biology. The term adaptation refers to a characteristic or trait, which is especially important for an organism survival. Examples of these traits are, for example, the horses' teeth being suitable to grinding grass, or their ability to run fast and escape predators. Such adaptations to

environmental challenges and their diet, aids the species to survive and successfully reproduce.

During the Animal Adaptations – Survival Traits module students will learn about the different characteristics found in animals and how their bodies and behaviors fit the challenges that they find in their environment. They will study survival traits to live in the water, in the air, on the trees and on land, and discover the different types of locomotion, feet, fins and wings that allow these animals to thrive and succeed in their habitats.

ANIMAL ADAPTATIONS

Unit	Date	Description	Florida State Standards K-5 th grade	Florida State Standards 6 th -12 th
Life in the Water	Oct. 6-8 or Feb 15-17	In this program students will explore how animals are adapted to live in the water. They will understand that adaptations are crucial to their survival in their natural habitats.	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 VA.A.1.3 VA.E.1.3
			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2 VA.A.1.2 VA.E.1.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F. 1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 VA.A.1.4 VA.E.1.4
Life in the Trees	Oct. 13-15 or Feb 22-24	Participants will discover how animals that live in the trees have developed arboreal adaptations. Many of these animals will live their whole life in the trees where they find food, shelter and everything else they need.	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 VA.A.1.3 VA.E.1.3
			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F. 1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4

			SC.H.3.2 VA.A.1.2 VA.E.1.2	VA.A.1.4 VA.E.1.4
Life on Land	Oct. 20-22 or March 1-3	During this session students will take a journey through the world of animals that live a terrestrial existence such as some snakes and other land creatures.	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 VA.A.1.3 VA.E.1.3
			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2 VA.A.1.2 VA.E.1.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F. 1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 VA.A.1.4 VA.E.1.4
Life in the Air	Oct 27-29 or March 8-10	This program focuses on birds and other creatures that spend a lot of time in the air. Find out their unique adaptations for flight.	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 VA.A.1.3 VA.E.1.3
			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2 VA.A.1.2 VA.E.1.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F. 1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 VA.A.1.4 VA.E.1.4

Animal Enrichment	Nov 3-5 or March 15-17	During this program participants will produce an enrichment item for animals that live in the zoo. They will also learn how important these items are to keep zoo animals active and healthy.	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 VA.A.1.3 VA.E.1.3
			LA.A.1.2 LA.A.2.2 LA.C.1.2 LA.C.3.2 SC.A.1.2 SC.D.2.2 SC.F.1.2 SC.F.2.2 SC.G.1.2 SC.G.2.2 SC.H.2.2 SC.H.3.2 VA.A.1.2 VA.E.1.2	LA.A.1.4 LA.A.2.4 LA.B.2.4 LA.C.1.4 LA.C.2.4 LA.C.3.4 LA.E.2.4 SC.F. 1.4 SC.G.1.4 SC.G.2.4 SC.H.3.4 VA.A.1.4 VA.E.1.4

ENDANGERED SPECIES



ENDANGERED SPECIES

An endangered species is a population of an organism which is at risk of becoming extinct because it is either few in numbers, or threatened by changing environmental or predation parameters. An endangered species is usually a taxonomic species, but may be another evolutionary significant unit. The International Union for Conservation of Nature (IUCN) has calculated the percentage of endangered species as 40 percent of all organisms based on the sample of species that have been evaluated through 2006. Many nations have laws offering protection to conservation of species: for example, forbidding hunting, restricting land development or creating preserves. Only a few of the many species at risk of extinction actually make it to the lists and obtain legal protection. Many more species become extinct, or potentially will become extinct, without gaining public notice.

During the Endangered Species module students will learn about the endangered animals found in the zoo, their habitats, behavior and the reasons that are causing their demise. Students will understand in depth the world of the jaguar, elephants and hornbill and they will create a campaign to promote awareness to protect these wonderful creatures for future generations.

ENDANGERED SPECIES

Unit	Date	Description	Florida State Standards K-5 th	Florida State Standards 6 th -12 th
Endangered animals	Nov 10-12 or March 22-24	Students will learn which zoo animals are considered endangered and threatened and the reasons why.	L.A.A. 1.1 L.A.C.1.1 L.A.C.3.1 S.C.F.1.1 S.C.G.1.1 S.C.G.2.1 S.C.H.1.1 S.C.H.3.1 V.A.E.1.1	L.A.A.1.3 L.A.A.2.3 L.A.C.1.3 L.A.C.2.3 L.A.C.3.3 L.A.E.2.3 S.C.E.2.3 S.C.F.1.3 S.C.G.1.3 S.C.G.2.3 S.C.H.3.3 V.A.A.1.3 V.A.E.1.3
			L.A.A.1.2 L.A.A.2.2 L.A.C.1.2 L.A.C.3.2 S.C.A.1.2 S.C.D.2.2 S.C.F.1.2 S.C.F.2.2 S.C.G.1.2 S.C.G.2.2 S.C.H.2.2 S.C.H.3.2 V.A.A.1.2 V.A.E.1.2	L.A.A.1.4 L.A.A.2.4 L.A.B.2.4 L.A.C.1.4 L.A.C.2.4 L.A.C.3.4 L.A.E.2.4 S.C.F. 1.4 S.C.G.1.4 S.C.G.2.4 S.C.H.3.4 V.A.A.1.4 V.A.E.1.4
Elephants	Nov 17-19 or April 5-7	This program allows students to investigate Asian and African elephants and why they are endangered. We will also look at some of the fascinating characteristics of this largest land animal in the world.	L.A.A. 1.1 L.A.C.1.1 L.A.C.3.1 S.C.F.1.1 S.C.G.1.1 S.C.G.2.1 S.C.H.1.1 S.C.H.3.1 V.A.E.1.1	L.A.A.1.3 L.A.A.2.3 L.A.C.1.3 L.A.C.2.3 L.A.C.3.3 L.A.E.2.3 S.C.E.2.3 S.C.F.1.3 S.C.G.1.3 S.C.G.2.3 S.C.H.3.3 V.A.A.1.3 V.A.E.1.3
			L.A.A.1.2 L.A.A.2.2 L.A.C.1.2 L.A.C.3.2 S.C.A.1.2 S.C.D.2.2 S.C.F.1.2 S.C.F.2.2 S.C.G.1.2 S.C.G.2.2 S.C.H.2.2 S.C.H.3.2 V.A.A.1.2 V.A.E.1.2	L.A.A.1.4 L.A.A.2.4 L.A.B.2.4 L.A.C.1.4 L.A.C.2.4 L.A.C.3.4 L.A.E.2.4 S.C.F. 1.4 S.C.G.1.4 S.C.G.2.4 S.C.H.3.4 V.A.A.1.4 V.A.E.1.4

			VA.E.1.2	
Hornbill	Dec. 1-3 or April 12-14	Students will learn about this unusual large Asian bird that has been hunted for its gorgeous feathers. In addition they will explore this bird's unique characteristics.	L.A.A. 1.1 L.A.C.1.1 L.A.C.3.1 S.C.F.1.1 S.C.G.1.1 S.C.G.2.1 S.C.H.1.1 S.C.H.3.1 V.A.E.1.1	L.A.A.1.3 L.A.A.2.3 L.A.C.1.3 L.A.C.2.3 L.A.C.3.3 L.A.E.2.3 S.C.E.2.3 S.C.F.1.3 S.C.G.1.3 S.C.G.2.3 S.C.H.3.3 V.A.A.1.3 V.A.E.1.3
			L.A.A.1.2 L.A.A.2.2 L.A.C.1.2 L.A.C.3.2 S.C.A.1.2 S.C.D.2.2 S.C.F.1.2 S.C.F.2.2 S.C.G.1.2 S.C.G.2.2 S.C.H.2.2 S.C.H.3.2 V.A.A.1.2 V.A.E.1.2	L.A.A.1.4 L.A.A.2.4 L.A.B.2.4 L.A.C.1.4 L.A.C.2.4 L.A.C.3.4 L.A.E.2.4 S.C.F. 1.4 S.C.G.1.4 S.C.G.2.4 S.C.H.3.4 V.A.A.1.4 V.A.E.1.4
Jaguar	Dec. 8-10 or April 19-21	In this program participants will learn about this fascinating big cat from South America. These felines, like many of the big cats, are endangered. We will explore the jaguar behaviors and adaptations in the wild.	L.A.A. 1.1 L.A.C.1.1 L.A.C.3.1 S.C.F.1.1 S.C.G.1.1 S.C.G.2.1 S.C.H.1.1 S.C.H.3.1 V.A.E.1.1	L.A.A.1.3 L.A.A.2.3 L.A.C.1.3 L.A.C.2.3 L.A.C.3.3 L.A.E.2.3 S.C.E.2.3 S.C.F.1.3 S.C.G.1.3 S.C.G.2.3 S.C.H.3.3 V.A.A.1.3 V.A.E.1.3
			L.A.A.1.2 L.A.A.2.2 L.A.C.1.2 L.A.C.3.2 S.C.A.1.2 S.C.D.2.2 S.C.F.1.2 S.C.F.2.2 S.C.G.1.2 S.C.G.2.2 S.C.H.2.2 S.C.H.3.2 V.A.A.1.2 V.A.E.1.2	L.A.A.1.4 L.A.A.2.4 L.A.B.2.4 L.A.C.1.4 L.A.C.2.4 L.A.C.3.4 L.A.E.2.4 S.C.F. 1.4 S.C.G.1.4 S.C.G.2.4 S.C.H.3.4 V.A.A.1.4 V.A.E.1.4

What Can I do?	Dec 15-17 or April 24-26	This activity will focus on how one person can make a difference and how to protect and conserve endangered species and their habitats.	LA.A. 1.1 LA.C.1.1 LA.C.3.1 SC.F.1.1 SC.G.1.1 SC.G.2.1 SC.H.1.1 SC.H.3.1 VA.E.1.1	LA.A.1.3 LA.A.2.3 LA.C.1.3 LA.C.2.3 LA.C.3.3 LA.E.2.3 SC.E.2.3 SC.F.1.3 SC.G.1.3 SC.G.2.3 SC.H.3.3 VA.A.1.3 VA.E.1.3
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