

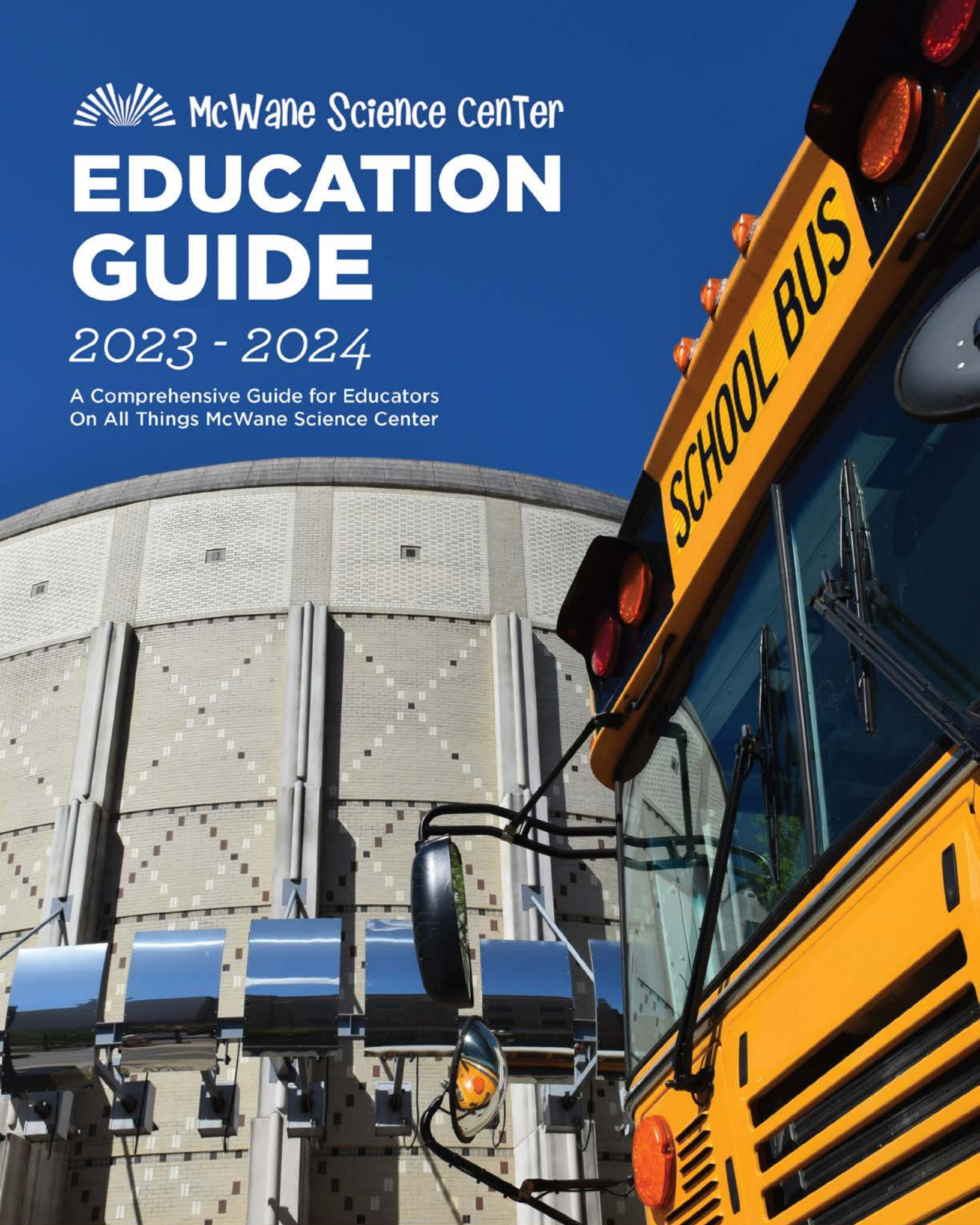


McWane Science Center

# EDUCATION GUIDE

2023 - 2024

A Comprehensive Guide for Educators  
On All Things McWane Science Center







## SCIENCE, LEARNING, FUN!

Every school day you lead your students down an educational path teaching them the required science, technology, engineering, and math (STEM) learning concepts relevant to their grade level. We know the challenges of incorporating hands-on, engaging experiences. McWane Science Center wants to be a part of the science education journey with you and your students this school year. Together, we can make learning a fun and engaging adventure for all students.

The newest 2023-2024 Education Guide showcases the various standards-based programs we offer, serving Pre-K through 12th grades. Inside you will find helpful information about McWane field trip programs as well as exciting opportunities that can take place in your own classrooms. You'll also learn about the exhibits, IMAX documentaries, teacher resources, and additional learning experiences that will make STEM relevant for your students. Please reach out to me directly for comments or questions, and I look forward to getting to know you this school year. I can be reached at [pchowning@mcwane.org](mailto:pchowning@mcwane.org).

*Peggy Chourning*

# Contents

The McWane Resource Directory is your one-stop shop for planning your science learning adventures! Read about everything McWane Science Center has to offer in science education, exhibits, special programming, and events.

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*McWane Science Center is a  
501(C)(3) nonprofit organization.  
Our mission is to spark wonder and curiosity about our  
world through hands-on science experiences.*



Fall 2023 - Spring 2024

# Calendar

2023

Sept 19	Teacher's Night Out
Oct 11-15	Earth Science Week
Oct 18-22	National Chemistry Week
Oct 27-29	Spooky Science
Dec 6-10	Computer Science Education Week

2024

Feb 21-24	Engineers Week
Feb 23	Engineering Showcase
March 2	Read Across America
March 28-30	Brain Awareness Days
March 25-29	Spring Break
April 10-14	Robotics Week

## TEACHER'S NIGHT OUT

Tuesday, Sept 19, 2023 | \$5 per person

To say thank you for being loyal friends to McWane Science Center, you are invited to join us for a special evening. Explore the Adventure Halls, see a special screening of *Secrets of the Sea* on the IMAX Dome, enjoy refreshments, and enter to win great door prizes, including a one-year family membership to McWane Science Center!

Guests must be 18 years or older. Register at [mcwane.org](http://mcwane.org) using the promo code **TNO2023** by Sept 15, 2023. Contact [pchowning@mcwane.org](mailto:pchowning@mcwane.org) for questions.

## CELEBRATE SCIENCE

Attention all 3<sup>rd</sup>-5<sup>th</sup> grade teachers!

You and your students are cordially invited to apply for McWane Science Center's year long exhibit design competition, Celebrate Science! Your students will become exhibit designers and compete against other schools by creating innovative exhibit prototypes. The project will help incorporate STEM across curriculum with a chance to win cash prizes! The winning prototype will be on display at McWane Science Center for a full year!

Deadline to apply is Sept. 29, 2023. Contact Norman Schmitz at (205) 714-8402 or [nschmitz@mcwane.org](mailto:nschmitz@mcwane.org) for more information.





## Community Support



# SCIENCE IS FOR *Everyone*

McWane Science Center's Educational Scholarship Fund can be used to assist with the cost of field trips and McWane on the Move outreach programs. Funds are limited and will be offered on a first-come, first-served basis for Title I and other qualifying schools and organizations in Alabama. The scholarship will cover the cost of admission into the Adventure Halls for students, as well as an optional education program (subject to availability).

Educational Scholarship Funds will NOT cover parking, bus costs, and other McWane Science Center options such as IMAX® films, group lunches, concessions, etc.

**To see if your school or organization is eligible for the Education Scholarship Fund, fill out the forms on [mcwane.org](http://mcwane.org) under Field Trips & McWane on the Move.**

### Thank You to Our Educational Program Supporters!

McWane Foundation • City of Birmingham • PNC Financial Services Group • Argosy Foundation • Hill Crest Foundation, Inc. • Honda Manufacturing of Alabama, LLC • Medical Properties Trust • Protective Life Corporation • Publix Super Markets Charities • Robert R. Meyer Foundation • Blue Cross Blue Shield of Alabama / The Caring Foundation • Hugh Kaul Foundation • Kinder Morgan Foundation • Shelby County Commission • Susan Mott Webb Charitable Trust • Jefferson County Commission • Alabama Power Company • Harbert Management Corporation • Vulcan Materials Company • Walker Area Community Foundation • Wells Fargo • City of Vestavia Hills • Leon Aland Family Foundation • Jefferson County Community Services Fund • Better Place Foundation • Charles and Estelle Campbell Foundation • Joseph S. Bruno Charitable Foundation • Labcorp Charitable Foundation • Mercedes-Benz US International, Inc. • Spire • The Coca-Cola Bottling Co. United Inc. • M.R. Metzger Family Foundation • The Nall-Whitley Foundation • Altec/Styslinger Foundation • Brasfield & Gorrie, LLC • CRC Group • Dunn-French Foundation • GCP • Oakworth Capital Bank • Vulcan Industrial Contractors • Walmart Alabaster • Walmart Bessemer • Walmart Gardendale • Walmart Hoover - Highway 150 • Walmart Neighborhood Market - Palisades



# IMAX Dome Theater

**Don't Just  
Watch  
the Movie.**  
*Experience It!*



## Arctic: Our Frozen Planet

Now Playing | Leaves October 2023

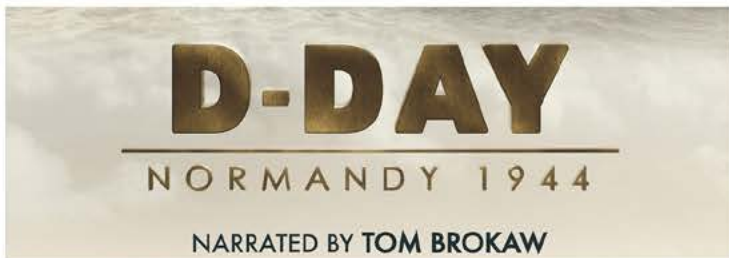
Embark on a yearlong adventure across the seasons and three continents. As the planet's climate is experiencing rapid changes, so is the Arctic. Join a breathtaking expedition across the Earth's other pole in *Arctic: Our Frozen Planet*



## Secrets of the Sea

Now Playing | Leaves April 2024

*Secrets of the Sea* takes you face-to-face with an astonishing array of marine critters, showing the fascinating ways they interact with each other and their environment.



## D-Day: Normandy 1944

Opens Oct 27, 2023 | Leaves Nov 17, 2023

Returns May 24, 2024 | Leaves Jun 7, 2024

*D-Day: Normandy 1944* pays tribute to those who gave their lives for our liberty...a duty of memory, a duty of gratitude.



## Train Time

Opens Nov 17, 2023 | Leaves Feb 26, 2024

*Train Time* propels audiences through the rugged beauty and vastness of the American landscape, revealing the brutal challenges of railroading, as well as secrets of the art and science of running the greatest trains.



## Cities of the Future

Opens Feb 16, 2024 | Leaves Nov 2024

Imagine stepping 50 years into the future and finding smart cities designed to be totally sustainable. *Cities of the Future* is produced by MacGillivray Freeman Films in association with the American Society of Civil Engineers, the same award-winning team that brought you *Dream Big: Engineering Our World*.

Learn more about our state of the art IMAX®  
Dome Theater at [mcwane.org/imax-dome](http://mcwane.org/imax-dome)



IMAX SEASON LOCALLY PRESENTED BY



# Inside the Museum

# Four Floors of *Fun!*



Explore all four levels of our Adventure Halls and experience engaging, live science demonstrations. Sometimes interaction is key to *getting it*. Seeing truly is believing!

At McWane Science Center, we believe that nothing satisfies the curiosity as much as learning in a hands-on environment, and that is what you will find in every exhibit throughout our Adventure Halls.

**Check out what experiences we have available during the 2023-2024 school year!**

## Upcoming New Exhibits

- 1 The Questioners: Read. Question Think. PLAY!**  
*Coming Dec 1, 2023 | Leaving Jan 28, 2024*  
This exhibit will inspire children with STEAM principles by bringing the beloved characters of Andrea Beaty's books to life.
- 2 Earth Matters: Rethink the Future**  
*Coming Jan 14, 2024 | Leaving May 13, 2024*  
This exhibit covers topical themes such as biodiversity and global warming, asking visitors to find new answers to big questions.

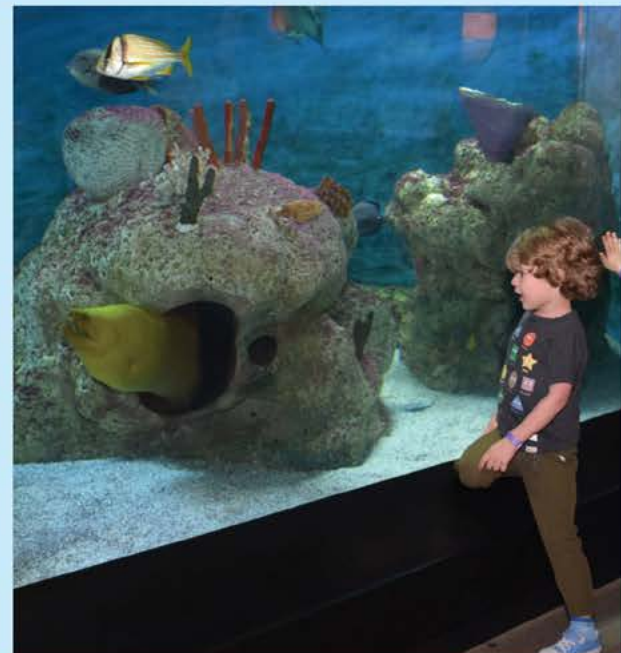


## Under the Sea

Explore our aquarium, which features over 50 species of aquatic life in a wide variety of salt and fresh water tanks. Highlights of Alabama's largest aquarium include the popular Shark and Ray Touch Tank, the Jellyfish Tank, the Cahaba River Biorama, and a variety of fresh water fish.

## Shark and Ray Touch Tank

Soak up the science at the Shark and Ray Touch Tank! This aquarium features a large, unique tank where visitors can observe sharks and rays. It is a great opportunity to learn about these fascinating creatures up close.



LOWER LEVEL



# LEVEL ONE



## So Much Science!

Your students can lie on the Bed of Nails, learn about simple machines on the Pulley Chairs, experiment with bubbles, and more on the floor level of the Adventure Halls.

## GENEius Lab

GENEius is an engaging, day- long laboratory experience in molecular biology and genetics designed for grades 9-12. *Learn more about GENEius Lab on page 11.*

## Rushton Theater

Rushton Theater houses many of our most exciting science demonstrations! Be sure to reserve a program in Rushton to enhance your field trip. *Learn more about available programs on page 10.*



## Dino-Fever!

Level 2 is where you will find the Alabama Dinosaur & Alabama Ice Age exhibits, featuring rare finds, like the Alabama tyrannosaur. You will also meet the faces and fins that swam in Alabama's oceans 80 million years ago in the Sea Monsters of Alabama exhibit.



## Itty Bitty Magic City

Discover STEM around every corner in McWane's early learning exhibit, Itty Bitty Magic City. In familiar city scenes with play-based interactives, children will explore concepts such as force & motion, colors & patterns, & cause & effect. Itty Bitty Magic City welcomes kindergarten and below field trip groups on a first come, first served basis. A chaperone count of 1 adult per 3 children is required for entry.

## Explore Lab

McWane is not only a science museum; it also houses the state's largest fossil collection. Many of these specimens can be seen in the Explore Lab.

# LEVEL TWO



## Art & Tech

Discover exciting, interactive exhibits about Art & Technology, like the popular Shadow Walls and the updated, digital Walking Piano!

## Class Time

The third floor is home to a variety of classrooms designed to provide the best science education. *Learn on page 18 how to book programs in the McWane Classrooms.*



## Rotating Exhibits

Each year, McWane Science Center hosts a number of traveling or temporary exhibits, like the holiday favorite, Magic of Model Trains, which are located on the 3rd floor. *Check out the previous page for info on upcoming exhibits.*



# LEVEL THREE



# Teacher Professional Resources



## BE BETTER *Together* with



**Did you know?** Teachers can visit McWane Science Center for FREE! Just bring a valid teacher's ID and you will be granted admission into the Adventure Halls. Let us show you what we have to offer you and your school.

### Educator Advisory Committee

This committee works to foster collaboration and learning among teachers and they are an advocate for our mission, sparking wonder and curiosity about our world through hands-on science experiences. Members are involved in evaluating, piloting, and developing programs produced by McWane's Education Department. Educators must be willing to serve on the Advisory Committee and meet three times per year, for a two year term. Teachers will receive one free McWane on the Move classroom program and a one-year family membership to McWane Science Center.

Contact Peggy Chowning at [pchowning@mcwane.org](mailto:pchowning@mcwane.org) to receive an application. Deadline to apply is Oct. 13, 2023.

The Educator Advisory Committee is open to all classroom teachers, Pre-K to 12<sup>th</sup> grade, college professors, informal educators with teaching experience, and community representatives working directly with children ages 0-18.



## Professional Development Workshops

McWane Science Center can help you infuse your teaching with innovative ideas and strategies to engage students in science learning. Workshops may be held at your school or at McWane Science Center. These workshops are PowerSchool Credit Continuing Education Units (CEU).

**Cost: \$150 per workshop for up to 30 teachers. Scholarship funds may be available for Title 1 schools.**

### PreK - 2<sup>nd</sup> Grade:

#### **New! Pieces of STEM: Exploring STEM Through Loose-Parts Play**

Have you ever watched a child use a familiar object in an unusual way? Through loose-parts play, children form connections to objects based on shape, color, texture, function, and space. In other words, children are building critical thinking and creative problem-solving skills just by being their playful, curious selves. In this educator workshop, learn how to pair educational concepts with loose-parts play to enrich your lessons and encourage early exploration of science, technology, engineering, and mathematics

**Duration: 1.5 hours**



### 3<sup>rd</sup> - 8<sup>th</sup> Grade:

#### **Design Challenge in the Classroom**

The Engineering Design Process is an essential skill for creative problem solving. In this workshop, we will discuss how to run successful and relatable Design Challenges--engineering activities that use this process to guide students through critically approaching solutions to real-world problems

### Coming Summer 2024!

#### **McWane Summer Science Institute**

Come learn with us at McWane Science Center during our multi-day professional development workshop, focused on turning science concepts into hands-on opportunities for 2<sup>nd</sup>-5<sup>th</sup> grade students. Join the education team and invited presenters for this engaging and interactive workshop!

**For more information on our Professional Development Workshops & scholarship availability for them, contact Peggy Chowning at [pchowning@mcwane.org](mailto:pchowning@mcwane.org)**

*Pictured below: Reggie White, 2022-2023 Alabama Teacher of the Year, & Peggy Chowning, McWane Science Center VP of Education*





# Learn at McWane

## Science Education *Designed* for **Your Students**



When scheduling your class field trip to McWane Science Center, choose one of the educational programs listed on the following pages. These programs are for specific grades and meet Alabama Course of Study, Next Generation Science Standards, or Alabama Performance Standards for 4-year-olds (APKS) as established by the Alabama Department of Children's Affairs, Office of School Readiness.

**Cost: \$2 per student**

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

NOTE: Maximum capacity for grades K-2 is 25 students per program. Programs are 30 minutes long.

#### Curious Critters

**Discipline: Life Science**

Join us as we introduce you to a wild world of fur, scales, and exoskeletons. With hands-on activities and a special meet-and-greet, we'll explore the diets and habitats of some of McWane's animal friends.

**Science: Grade K: 3, 4; Grade 2: 7**

**ASELD: SEK Biological Science 1bOP-2, 1bOP-3**

#### Frantic Friction

**Discipline: Physical Science**

Have you ever wondered why a racecar has smooth wheels? Learn how texture impacts speed as your car zooms (or slows) across our all-terrain ramps. The race is on!

**Science: Grade K: 2; Grade 2: 2**

**ASELD: SEK Physical Science 1cYP-1, 1cOP-1**

### Grades 3<sup>rd</sup> - 5<sup>th</sup>

NOTE: Maximum capacity for grades 3-5 is 25 students per program. Groups of 2 or more children may be partnered for activities. Programs are 60 minutes long unless otherwise noted.

#### Jr. Robotics

**Duration: Program is 90 minutes**

**Discipline: Technology/Physical Science**

Explore technology as we build and program robots using the LEGO WeDo 2.0 kits. These STEM-based challenges will help build teamwork, problem-solving skills, and critical thinking.

**Science: 3.3, 3.4, 4.2, 5.5, 5.7**

**Technology: 3rd-5th grade: 1,2,3,7,12**

**Digital Literacy Standards: R4, Grade: 3:2, 3, 4, 5, 7, 18, 19; Grade 4: 3, 4, 7, 17; Grade 5:2, 6, 8**

#### Adventures in Chemistry

**Discipline: Physical Science**

Chemistry matters! Gear up with goggles and gloves as we explore chemical interactions and reactions.

**Science: Grade 3: 4**

#### Energy in Motion

**Duration: Program is 45 minutes**

**Discipline: Physical Science**

Put your engineering skills to the test! Explore gravity, potential energy, kinetic energy, and so much more as we build and test innovative devices.

**Science: Grade 3: 1; Grade 4: 1, 3, 5**

#### Vet Tech

**Discipline: Life Science/Engineering**

Students will take on the role of biomedical engineers. Using the engineering design process, they will build tools for real-world veterinary surgical challenges.

**Science: Grade 3: 5, 6 & 9**

#### Oceans of Energy

**Discipline: Earth Science/Engineering**

The ocean is a great source of renewable energy! Students will create energy farms over a model ocean. As various obstacles arise, they must use their critical thinking skills to adapt and harvest as much energy as they can.

**Science: Grade 3:5, 9, 11, 12 & 15; Grade 4:1, 2, 3, 4, 5, 11 & 17; Grade 5:14, 16, 17**





## Ingenious Geology

**Duration:** Program is 45 minutes

**Discipline:** Earth Science

Rocks and minerals have a story. To discover it, prepare to engage all of the senses and employ scientific tools like microscopes and magnifiers, ultraviolet light, electricity, and density tests. Students will examine the properties of rocks for texture, shape, color, smell and more. By testing local rocks from Alabama and samples from distant locations, they'll become true junior geologists.

**Science:** 3.9, 4.12, 4.14, 5.3, 6.4, 6.5, 6.6, 6.8, 6.10

### Grades 6<sup>th</sup> - 8<sup>th</sup>

NOTE: Maximum capacity for grades 6-8 is 25 students per program.

## Engineering Challenge: Bridges

**Duration:** Program is 60 minutes

**Discipline:** Physical Science

Put those engineering skills to the test! Through this hands-on engineering challenge, students will design and build bridges to resist the pull of gravity. Their success depends on innovation, ingenuity and what they can make with a given set of supplies.

**Science:** Grade 8:8, 9, 10

## Robotics Challenge

**Duration:** Program is 90 minutes

**Discipline:** Physical Science

Using the versatile Edison robotics system, students can program in multiple languages, like Scratch or Python, make their robots respond to visual and sound sensors--or other robots. Can they steer them through a series of challenges in a robo-obstacle course?

**Science:** Grade 8:8, 9, 10

**Technology:** 6th - 8th grade: 1

**Math:** Grade 6:20 (6-EE9); Grade 6:5, 6; Grade 7:3, 5; Grade 8:3, 5

## Under the Scope

**Duration:** Program is 60 minutes

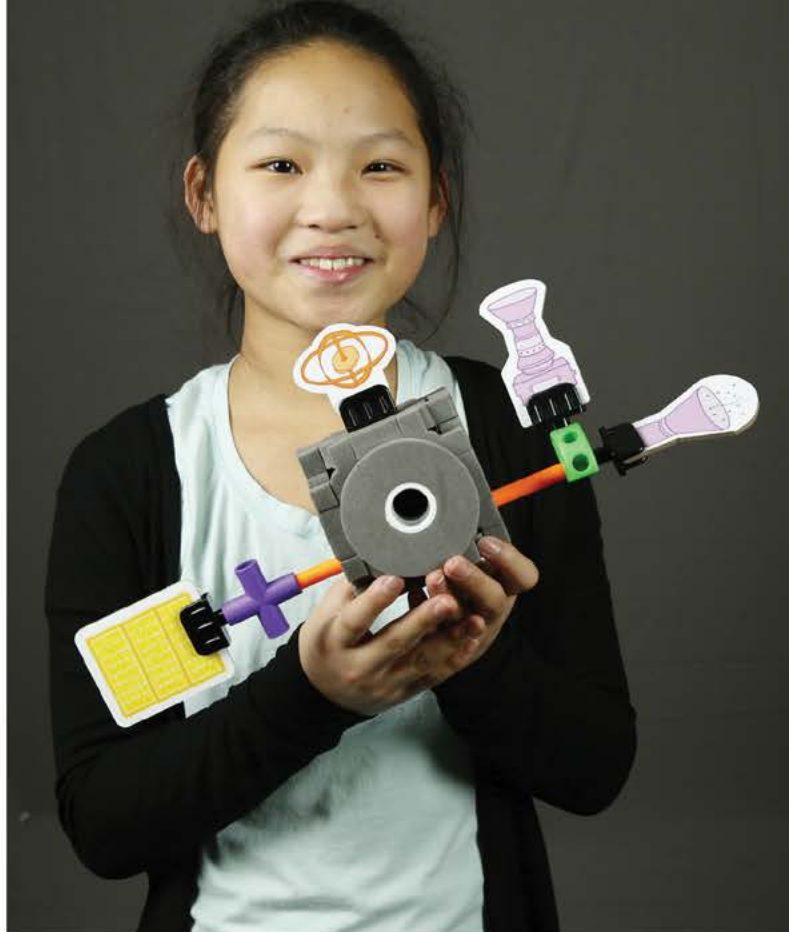
**Discipline:** Life Science

Students will use microscopes to explore life on a much smaller scale. While investigating what's under the scope, they will create tools and present their findings to the class.

**Science:** Grade 7:2

**Technology:** 6th - 8th grade: 1

**Digital Literacy:** Grade 6:19, 20, 23, 26, 30; Grade 7:5, 7, 20, 22, 23, 27, 30; Grade 8:16, 21, 23, 25



### Grades 9<sup>th</sup> - 12<sup>th</sup>

NOTE: Maximum capacity for grades 9-12 is 25 students per program. Programs are 90 minutes long.

## Robotics Lab

**Discipline:** Physical Science

Using the versatile Edison robotics system, students can program in multiple languages like Scratch and Python, make their robots respond to visual and sound sensors, - and other robots. They'll program their robots to successfully complete a series of challenges.

**Physics:** 1

**Technology:** 2, 10

**Digital Literacy Standards:** (HS) R4, 3, 6, 9, 10

**NSES:** Science as Inquiry. Science and Technology

## The Rube Challenge

**Discipline:** Physical Science, Physics

Take the Rube Challenge! Use the properties of physics to design a complex way to solve a simple problem. Explore the engineering process from start to finish in this fun-filled, hands-on program.

**Physical Science:** 11, 12

**Physics:** 5





# Specialty Programs

## Rushton Theater

The Rushton Theater hosts many of our most amazing programs. These large scale demonstrations will leave students wowed by science!

**NOTE:** Many Rushton Theater programs involve loud noises and flashing lights and may not be suitable for younger audiences or those with sensory processing disorders. Headphones are provided. For a sensory-friendly experience, geared towards younger students, please consider the Fire and Ice Program.

**Seating Capacity:** Max 100 | Min 50

**Pricing:** \$2 per student

**Duration:** Programs are 30 minutes long, unless otherwise noted

### **New!** Fire and Ice

**Discipline:** Physical Science

**Grades:** K4 - 1<sup>st</sup>

It's heating up and cooling down in this program that explores the extreme temperatures of hot and cold. Join us for a series of thermal demonstrations as we investigate icy concoctions and colorful flames.

**This program is sensory-friendly and contains no loud noises or sudden flashes of light.**

**Duration:** 20 minutes

**Science:** Grade 1.1

**ASELD:** SEK Scientific Inquiry 1aYP-4, 1aOP-3

### **New!** May the Forces Be with You

**Discipline:** Physical Science

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

From gravity to air pressure, forces constantly surround us, pushing and pulling, affecting how everything moves (or doesn't). Explore the laws of motion, friction, and other physics concepts, as McWane unleashes surprising demonstrations of rocket launches, bouncing, and the world's fastest pencil.

**Science:** 3.1, 5.6, 8.8, 8.9, 8.10

### **Sonic Science**

**Discipline:** Physical Science

**Grades:** 2<sup>nd</sup> - 12<sup>th</sup>

Learn about the science of sound: vibrations, waves, pitch, frequency, and more! You'll hear strange ways of making sounds, the effects of resonance, and watch sound waves affect light.

**Science:** Grade 1.1, 4.6, 8.17

### **Lightning Strikes**

**Discipline:** Physical Science

**Grades:** 2<sup>nd</sup> - 12<sup>th</sup>

Delve into the power of electricity, as we explore the attractive (and repulsive) nature of electromagnetic forces, while comparing alternating and direct current. Students will see the hair-raising power of static from the Van de Graaff generator, light up fluorescent tubes without the use of wires, and witness our incredible giant Tesla coils.

**Science:** 3.3, 4.2, 5.1, 8.12



### **Science Spectacular**

**Discipline:** Physical Science

**Grades:** 2<sup>nd</sup> - 12<sup>th</sup>

Brace yourself for our most incredible demonstrations, featuring high voltage electricity, red-hot combustion reactions, and super-cold liquid nitrogen.

**Science:** Grade 2.4, 3.3, 4.2 & 2b, 5.3, 8.5

**Physical Science:** 3

**Physics:** 5 & 11

## LabWorks

LabWorks is a series of engaging experiments designed especially for middle school students. Developed through a partnership between UAB's Center for Community Outreach Development (CORD) and McWane Science Center, these labs include modern scientific protocols and equipment that enable students to investigate contemporary questions in biology, chemistry, and physics.

**Reservations:** (205) 714-8454 | [labworks@mcwane.org](mailto:labworks@mcwane.org)

**Times:** 9 - 11 AM or 12 - 2 PM

**Capacity:** 25 students

### **Toothpaste Chemical Engineering**

You do it every day, but how much do you really know about brushing your teeth? In this minty fresh lab, students take the role of chemical engineers to design and test out their own toothpaste. One of the most mundane daily routines becomes one of the most fun activities your students have ever done in the lab!

**Science:** Grade 8:2, 3; 5; MS Engineering



## A Light in a Dark Room

How do we know what the universe is made of? In this lab, students explore the connections between elements and light as they investigate pigment, fluorescence, invisible ink, and even stars all while learning about chemical reactions and wavelength.

**Science: Grade 8:1, 2, 5, 17, 18**

## The Eyes Have It

Have you ever wondered how we know if everyone sees the same colors? How do we know what colors animals can see? Are there colors out there we can't see? Students will explore these questions and find answers as they participate in simulations, test out illusions, and dissect a real sheep eye. This eye-opening day in the lab is one students will be sure to remember.

**Science: Grade 7:3, 6, 8, 10**

## Isn't That a Crime?

One of McWane's most beloved animals has gone missing and we need help getting it back! In this exciting forensic lab, students learn to analyze multiple pieces of evidence including DNA, blood, and fingerprints. Put their critical thinking to the test in this fast-paced lab!

**Science: Grade 7:12, 13**

## Superbugs!

Are antibiotic resistant genes in recycled water from a treatment plant a threat to human health? Students will interpret graphics that illustrate how bacteria can become resistant to multiple antibiotics and work together to explain how their presence in wastewater may lead to the evolution of multi-drug resistant bacteria known as "superbugs!"

**Science: Grade 7:2, 3, 6, 7, 9, 11, 12, 13, 14, 18**

## Carter Creek Mystery

Business is booming at the local paper and plastic factory that employs most of the city. But there's a big problem - the city's water source has been polluted and the factory is being blamed. In this lab, students are called in as EPA agents to test the water, solve the mystery, and save the day!

**Science: Grade 6: 7, 15, 16**

## Sea Otter Forensics

Why are sea otters dying? Students follow a real life scenario to investigate this tragedy on the California coast. They will analyze evidence to determine cause of death and test for toxins. They will interpret lab tests, maps, and photos to explain the source of this deadly toxin. Students will understand how humans impact the environment and how the ecosystem is interconnected, including how we may harm ourselves by polluting our environment. Teachers will be given a follow-up lesson for students to take action in a meaningful project.

**Science: Grade 6:7, 15, 16 and Grade 7:4, 5, 6, 7, 8, 11**

# GENEius Lab

GENE-ius is an engaging, day-long laboratory experience in molecular biology and genetics designed for high school biology students in grades 9-12. Using state-of-the-art equipment, participants work in small groups with guidance from UAB students and faculty to complete a challenging hands-on lab experiment. Students also have access to McWane Science Center exhibits and programs throughout the day.

**Reservations: (205) 714-8479 | [geneius@mcwane.org](mailto:geneius@mcwane.org)**

**Times: 9AM - 2PM**

**Capacity: 25 students**

**Discipline: Life Science**

## Huntington's Disease Lab

Students learn structure and function of the human brain as they work in small groups to dissect a sheep brain and test their olfactory systems. After discussing the genetics of Huntington's disease, students act as medical examiners and determine the extent of damage in the caudate nucleus and its effect on the bodily systems.

**Science: Human Anatomy and Physiology: 1, 4, 8; Biology: 1, 7, 8; Zoology: 1; Genetics: 5, 6, 7**

## DNA Fingerprinting and Exploration Lab

Can we use DNA to predict an observable trait? Students focus on genetic diversity and use contemporary techniques in molecular biology to isolate DNA from their cheek cells, use PCR to amplify the gene for PTC taste and employ gel electrophoresis to analyze samples. Then they will compare their predicted result to their phenotype and hope for sweet (or in this case, bitter) success!

**Science: Biology: 1, 7, 8; Genetics: 3, 7, 8, 9; Forensic Science: 2, 4, 5**

## Sickle-Cell Anemia: Tracking Down an Inherited Trait

The molecular basis of this hereditary disease is the main focus as students use electrophoresis to analyze differences in the normal and sickle-cell hemoglobin at the protein and DNA levels. By cutting the patient samples with restriction enzymes, students will determine and diagnose the patients sickle cell status. Gene editing, such as CRISPR, is discussed as student learn of new techniques to cure patients of this disease.

**Science: Human Anatomy and Physiology: 9; Biology: 1, 7, 8; Genetics: 2, 5, 6, 7, 8**

## HIV Detection and Medical Cures Lab

Students explore the life-cycle of HIV and perform an Enzyme-linked Immunosorbent Assay (ELISA) to determine the viral status in simulated patient samples. They will address the public health issues related to HIV/AIDS through a series of small group discussions, activities and a mock fluid exchange.

**Science: Human Anatomy and Physiology: 1, 4, 8; Biology: 1, 7, 8; Zoology: 1; Genetics: 5, 6, 7**





# Education Resources

## Check Out Our *Awesome* STEM Kits



Looking for ways to cover curriculum standards with your students? McWane can help with our free library of science kits. These free loaner kits contain directions for activities, background information, equipment, and materials. Kits may be checked out for three weeks. Some materials are consumables, and others must be returned in a good condition.



### Kit Subjects:

#### Chemistry and Conservation of Mass

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

**Standards:** 5.1, 5.2, 5.4; 8.5, 8.6

This kit includes enough chemicals, laboratory equipment, and other materials to accommodate one class of 32. There are 3 activities in total. One demonstrating the Law of Conservation of Mass for physical changes (takes up to 30 minutes to complete) and two demonstrating the Law of Conservation of Mass for chemical changes (each takes up to 45 minutes to complete).

#### Light and Sound

**Grades:** 1<sup>st</sup>, 4<sup>th</sup>, & 8<sup>th</sup>

**Standards:** 1.1, 1.2, 1.3, 1.4; 4.6, 4.7, 4.8; 8.17, 8.18, 8.19

This kit includes prisms, lenses, color filters, tuning forks, and other materials for 6 lessons, each taking between 30 and 60 minutes to complete.

#### Water Testing

**Grades:** 5<sup>th</sup> & 6<sup>th</sup>

**Standards:** 2.1; 5.1, 5.3, 5.4; 6.15, 6.16; 8.2

This kit includes laboratory plastic-ware, refractometers, pH/nitrate testing strips, dissolved oxygen testing kits, household chemicals, and worksheets to accommodate 30 students. There are materials for 5 activities, each taking approximately 60

#### Natural Selection

**Grades:** 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup>, & 7<sup>th</sup>

**Standards:** 3.7, 3.8, 3.10, 3.11; 4.9; 5.11; 7.6, 7.7, 7.8, 7.10, 7.18

This kit provides enough materials for a class containing 32 students. This will include seeds, worksheets, forceps, and artificial fur. There are four different activities, covering the heredity of traits and natural selection, which will take approximately three hours to complete.

For information on reserving a kit, contact  
Jonah Cohen at [jcohen@mcwane.org](mailto:jcohen@mcwane.org)





## McWane on the Web

# Get Connected with **McWane's** *Virtual Programs*

## SCI\*SPARKS

How do you spark a love of science in kids (and adults too?). At McWane Science Center, we make science exciting, fun, entertaining, and "WOW-worthy!" One of our newest programs is Sci-Sparks, a Youtube Science Show that features our McWane Science Center educators demonstrating some cool, hot, and electrifying science experiments.

Subscribe to McWane Science Center's Youtube Channel to get the newest episode as soon as it airs (new episode every other Wednesday during the school year), and you can also check out our past episodes as well as other fun features.

**Thanks for watching and be sure to comment, share, and let us know what you want to learn about next.**



[youtube.com/c/McWaneScienceCenter](https://youtube.com/c/McWaneScienceCenter)



Follow @McWaneScience on our other social media to stay up to date on all the new things happening in the museum!

## Live Streams

Connect with us live to explore exciting demonstrations with follow-up activities for you to complete in class.

**Price: \$75 per session**

**Contact Jonah Cohen at [jcohen@mcwane.org](mailto:jcohen@mcwane.org) for more information on booking.**

### Dissection Live

**Discipline: Biology**

**Grade: 4<sup>th</sup> - 12<sup>th</sup>**

**Duration: 45 minutes**

Explore animal specimens inside and out. We will identify and investigate the general functions of the major systems and structures of a preserved organism such as a squid, frog, or an eyeball.

**Science: 2:1**

**APKS: S.P. 1.1, 1.2, 2.2**

### Surgical Systems

**Discipline: Biology**

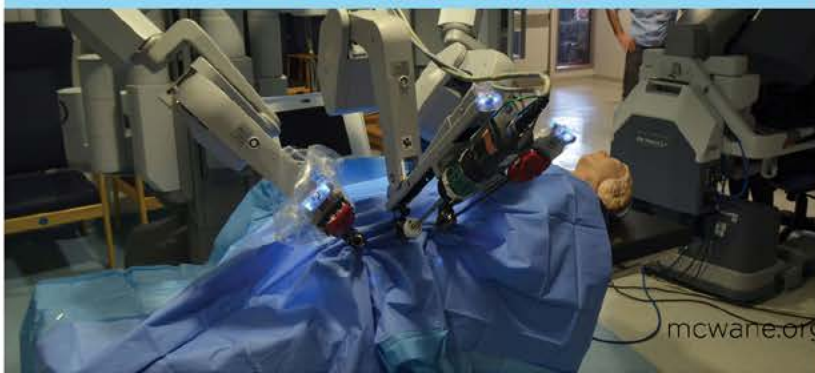
**Grade: 6<sup>th</sup> - 12<sup>th</sup>**

**Duration: 60 minutes**

This virtual program is a collaboration between McWane and the UAB Department of Surgery. Students will get a chance to learn about anatomy, STEM careers in medicine, robotics, and more! Connecting via Zoom, or other online meeting software, we'll talk live with a surgeon from UAB Hospital, this expert will take you through the steps of a surgical procedure, using a variety of surgical techniques. You will see the human body as you've never seen it before with footage from a real, pre-recorded surgery.

SURGERY

**UAB MEDICINE**





# McWane on the Move



## Can't Come to McWane? Order Science on the Go!

McWane on the Move provides hands-on, interactive programs that meet or supplement curriculum objectives throughout the state of Alabama and spark students' scientific curiosity. Our mobile programs are perfect for classrooms, assembly programs, libraries, and other community events.

**Duration:** Programs are 45 minutes unless otherwise noted

**Price:**

- 1 classroom (maximum of 30 students program is \$150.)
- Each additional classroom program is \$125. (It must be the same program and be on the same day for discount to apply.)
- Mileage charge for outreaches outside of Jefferson County is 63 cents per mile.

### Programs:

#### **New!** Measure Up

**Discipline:** Mathematics

**Grades:** PreK - K

**Duration:** 30 minutes

Get ready to rule the school as we explore the foundations of measurement! Using non-standard units, we'll tip the scale and find the height to investigate the concepts of equal, more, and less.

**Math:** Grade K: 16, 17

**ASELD:** SEK Math 4aYP-2, 4aOP-5

#### **Build-a-Bug**

**Discipline:** Life Science

**Grades:** PreK - K

**Duration:** 30 minutes

Let's uncover the world of insects! Meet one of McWane's 6-legged friends and assemble your own unique species as we learn the numbers and patterns that help us identify some of the world's smallest creatures.

**Science:** Grade K: 3, 4

**ASELD:** SEK Technology 2dYP-2, 2dOP-2

#### **Sun Blocks**

**Discipline:** Physical Science

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

**Duration:** 30 minutes

We're catching some rays in a design challenge that combines sun safety and engineering. Using a variety of materials, you'll construct shady shelters that protect UV-sensitive critters from sunburn.

**Science:** Grade K: 7, 8; Grade 1: 3; Grade 2: 2

**ASELD:** SEK Physical Science 1cYP-4, 1cOP-4

#### **Amazing Animals**

**Discipline:** Life Science

**Grades:** K - 12<sup>th</sup>

**Duration:** 30 minutes

Bring animals right into your classroom! Students will learn about each animal's natural habitat, diet, adaptations, and what makes them different from other living things.

**NOTE:** This program cannot travel more than 30 miles from McWane Science Center

**Science:** K: 3, 4; Grade 1: 6, 7; Grade 2: 6, 7; Grade 3: 5, 7,

10, 11; Grade 4: 9, 11; Grade 7: 6, 8, 10

**Biology:** 9-12

#### **Enlightening Electricity: Circuits**

**Discipline:** Physical Science

**Grades:** 2<sup>nd</sup> - 6<sup>th</sup>

It's electric! Students will explore circuits and how they work in order to create a functioning electrical systems.

**Science:** Grade 4: 2, 4



## **New!** Inventive Engineering

**Discipline:** Physical Science

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

Students will need to use creativity, determination, and the engineering design process when they face off in a kinetic and potential energy challenge. Get ready to plan, build, and test a motion machine in this highly interactive program.

**Science:** 3.1, 4.1, 4.3, 4.5

## Reactions in Action

**Discipline:** Physical Science

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

Students will get fired up about science as we explore combustion and dazzle them with color-changing reactions. These fascinating experiments teach students about chemical and physical changes.

**Science:** Grade 2:1, 2, 3, 4; Grade 4:4; Grade 5:1, 3, 4; Grade 8:2, 3a, 4, 5

## A-MAZE-ing Robots

**Discipline:** Physical Science

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

Experience the world of computer coding using Ozobots, one of the world's smallest programmable robots.

**Technology:** Grade 3<sup>rd</sup>-5<sup>th</sup> 3, 7

**Digital Literacy:** Grade 3:2, 3, 4, 5, 7, 18, 19; Grade 4:2, 3, 4 & 7; Grade 5:2, 4, 5, 6; Grade 6:6, 15, 21, 30; Grade 7:5; Grade 8:5

## Solids and Liquids: The Science of Slime

**Discipline:** Physical Science

**Grades:** 1<sup>st</sup> - 5<sup>th</sup>

Prepare to examine the strange chemical chains called polymers, as students make their own long-lasting slime – and get to keep it! Is slime a solid? Or a liquid? Only testing for the properties of the different states of matter will tell.

**Science:** 2.1, 2.3, 2.4, 5.1



## Assembly Programs:

**Price:** \$300 | 150 student maximum

**Each additional assembly program is \$225.**

**This must be the same program and on the same day for the discount to apply.**

## **New!** Recipe for a Storm

**Discipline:** Earth Science

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

Forecasts call for wet, windy, and wild weather as we reveal the secret ingredients behind our planet's most extreme weather. Students will marvel at the meteorology of subzero temperatures, gale-force winds, and more as they learn what it takes to brew up a storm.

**Science:** 3.15, 6.13a

## Alabama Scientists

**Discipline:** Physical Science, Life Science

**Grades:** 2<sup>nd</sup> - 8<sup>th</sup>

From electricity to rocket science, medicine to ecology, Alabama has a rich scientific heritage! Students will get an exciting introduction to famous Alabama scientists and amazing discoveries from our home state.

**Science:** Grade 2:2; Grade 3:3, 9; Grade 8:3, 18

## Superhero Science

**Discipline:** Physical Science, Chemistry

**Grades:** 2<sup>nd</sup> - 8<sup>th</sup>

In this super-powered presentation, we'll use exciting demonstrations to explore the science behind super heroes!

**Science:** Grade 2:4; Grade 3:3; Grade 4: 2a; Grade 5:1, 3, 4; Grade 8:2, 4, 5, 11, 12





# Homeschool Labs



## Science Labs for *Every Child*

Are you a parent looking for a way to spark a love of science in your child? Our homeschool labs are designed to supplement what children are learning at home, giving them the opportunity to safely engage with scientific equipment, experiments, and principles in ways that aren't easily executed in the home classroom. Let us help you introduce your child to the wonders of the universe with our hands-on labs!

### Program Schedule:

★ Fall 2023	1st & 2nd	3rd & 4th	5th & 6th	7th & 8th	9th - 12th
9/6/23	Oceans	Let's Get Moving	Polymer Chem	Earth Ecosystems	Photosynthesis + Respiration
9/13/23	Landforms	Force Be With Us	Chem Reactions	Chemical Cycles	Cellular Processes
9/20/23	Seasons	Waves: Ocean Motion	Biochemistry + Life	Botany	Natural Macro Molecules
9/27/23	Weather	Engineering Einsteins	Chemistry + Energy	Climate	Natural Selections
★ Winter 2024	1st & 2nd	3rd & 4th	5th & 6th	7th & 8th	9th - 12th
1/3/24	Human Anatomy	Rocky Road	Solar System	Classifying Living Things	Periodic Table
1/10/24	Plant Life	How's the Weather	Inside Earth	Phylogeny Trees	Chem Reactions
1/17/24	Animals	Helping Hand	Explore the Universe	Anatomy + Physiology	Acid + Bases
1/24/24	World Biomes	Where in the World	Earth Science	Adaptions + Natural Selection	Gases + Gas Laws



# Overnight Adventures



## *Spend the Night* **at McWane Science Center**

### Features:

- Dinner
- Continental Breakfast
- After-hours Admission to Adventure Halls

Base Price: \$50 per person

McWane Science Center offers Overnight Adventure programs year-round for groups! We tailor the experience to fit the needs of school groups, scout groups, church groups, and families. Groups are required to have a minimum of 100 people for an Overnight Adventure. Open Nights are scheduled on select nights to accommodate multiple smaller groups.

### Customizations:

- IMAX Movie  
+\$10 per person
- Concessions
- Science Program  
+\$150

### Overnight Adventure Group Requirements:

- Minimum of 100 people
- Children must be kindergarten age or older
- 1 adult is required for every 5 children





## Plan Your Trip

# Want to Book a Trip to McWane Science Center? It's as easy as 1, 2, 3!

1

### Let Us Know!

If you are a school, academy or other educational organization providing care for children and students, **visit [mcwane.org/learning/teachers/field-trips](https://mcwane.org/learning/teachers/field-trips)** for information about our field trip offerings and complete our easy **Field Trip Online Form**.

If you are not affiliated with a school or an educational organization and would like to book to a trip to McWane Science Center, **visit [mcwane.org/non-school-field-trip-request-form](https://mcwane.org/non-school-field-trip-request-form)** and complete our equally as easy **Non-School Group Field Trip Request Form**.

2

### Look for an Email!

Once we receive your form, we will reach out to you within 72 hours to confirm your request and work through the details of your trip.

After our conversation and the details are correct, we will book your reservation, collect your educational organization's purchase order, and then send you a confirmation email with the final details.

3

### Come Visit Us!

We will reach out to you 1 week before your arrival. It will be the last opportunity to update your attendance numbers before you arrive.

On your day of visit, please bring your final payment. We will help you check in and collect your tickets. Plus we will have information waiting for you, such as: itinerary, maps, and most of all FUN!

#### Confirmation & Communication Standards:

A valid email address for confirmation documentation will be required. A confirmation email will be sent within 72 hours of receipt of all required information. Final follow-up will be sent 5 days prior to your date. Cancellation notices will be emailed if we have not received any communications 5 days prior to field trip date. All cancellations must be submitted in writing to **[reservations@mcwane.org](mailto:reservations@mcwane.org)**. Schools & groups who do not have an Alabama Tax Exemption form are not eligible for tax exemption at McWane Science Center.

## Price Breakdown

**Payment can be made with check or credit card.**

#### Field Trips with Adventure Halls Only\*

- Students: \$8
- Teachers: Free!
- Adult Chaperones: \$5 when included with group reservation

#### Field Trips with IMAX Documentary Only\*

- Students: \$8
- Teachers: \$7
- Adult Chaperones: \$7

#### Field Trips with Combo IMAX Documentary & Adventure Halls\*

- Students: \$13
- Teachers: \$7
- Adult Chaperones: \$12

#### Add-on Options

- Educational Programs: \$2 per student
- Concession Package: \$7 (popcorn & 12oz soft drink)

#### Additional Costs

- Parking is \$5 per vehicle (Buses not included)

\*Price adjustments are planned for June 1st 2024. If you are planning a field trip after this date, please ask a reservation specialist for updated pricing.



# What defines a field trip vs. a group?

**Field trips:** Directly related to educational organizations or groups that provide care for students during the school year and in the summer. This includes schools & academies. These groups may or may not request educational programming.

**Groups:** individual groups, families, and social organizations such as sororities, fraternities, YMCA groups, churches, community groups, and business organizations.

## Booking information

### Group Size Requirements

- General Admission/IMAX Reservations: 15 people min
- Classroom Programs: 10 students min
- Rushtom Programs: 50 people min

### For Last Minute Bookings

Bookings made within 2 weeks (14 days) of arrival date are based on availability. Bookings made within 1 week (7 days) of arrival date require special approval.

## Chaperone requirements

School staff are included in chaperone count

- **Pre K-Kindergarten:** 1 adult for every 3 students
- **Elementary School (1-5 grade):** 1 adult for every 6 students
- **Middle School (6-8 grade):** 1 adult for every 8 students
- **High School (9-12 grade):** 1 adult for every 10 students

**NOTE:** Ratio of chaperones to students should not exceed 1 chaperone for every 2 students. Additional fees may apply. McWane Science Center reserves the right to reject booking requests and entry into the center should your group not meet chaperone requirements.

## Educational program information

Reserved educational programs are available for booking Wednesday-Friday during the normal school year. Educational programs are not available during school breaks or summer.

Reserved educational programs are limited and are booked on a first come, first served basis and are subject to approval by the McWane Science Center Education Department.

Educational Programs Price: \$2 per student

For more information, see pages 8-11 for a full list of educational programs offered.

## Lunch policies

Lunch times must be scheduled for use of McWane Science Center lunchrooms (subject to availability). Scheduled lunchtimes are 30 minutes.

Lunches may be brought from home or school. No commercial food delivery is allowed.

## Pre-purchased concessions

If your group is planning on purchasing concessions during your visit to the IMAX Theater, consider pre-ordering your concessions. Pre-purchased concession packages assist in providing snack to larger groups quickly. Packages are prepared ahead of time and ready for pickup by your group as they enter the IMAX Theater.

Pre-purchased concession packages must be requested a minimum of 2 weeks before date of arrival and paid in full at the time of booking. Concession Package: \$7 for a small popcorn & 12oz soft drink. No substitutions.







200 19TH STREET NORTH — BIRMINGHAM, AL 35203 — [WWW.MCWANE.ORG](http://WWW.MCWANE.ORG)