



 McWane Science Center

EDUCATION GUIDE

2024 - 2025

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 2024-2025 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.

Peggy Chourning

Vice President of Education,
McWane Science Center

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.

Calendar	1
Community Support	3
IMAX Dome Theater	4
Inside the Museum	6
Teacher Professional Resources	9
Labs at McWane	11
Education Resources	15
McWane on the Web	16
McWane on the Move	17
Homeschool Labs	19
Plan Your Trip	20

*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 2024 - Spring 2025

Calendar

2024

- Sept 19 Teacher's Night Out
- Oct 16-15 Earth Science Week
- Oct 23-26 National Chemistry Week
- Oct 30-31 Spooky Science
- Dec 11-15 Computer Science Education Week

2025

- Feb 19-22 Engineers Week
- Feb 21 Engineering Showcase
- March 26-30 Brain Awareness Days
- March 24-28 Spring Break
- April 9-12 Robotics Week

TEACHER'S NIGHT OUT

Tuesday, Sept 17, 2024 | \$5 per person
4 - 6:30 PM

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 *T. REX* 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. Visit mcwane.org/events to learn more. Contact pchowning@mcwane.org for questions.

CELEBRATE SCIENCE

Attention all 3rd-5th 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. 27, 2024. Contact Norman Schmitz at (205) 714-8402 or nschmitz@mcwane.org for more information.



Meet Our Education Team

At the heart of our science center is an exceptional team of science communicators and educators, dedicated to sparking wonder and curiosity about our world through hands-on science experiences. Our Education team boasts expertise in a wide variety of STEM fields. With backgrounds ranging from physics and biology to engineering and anthropology, our educators are uniquely equipped to deliver engaging, accurate, and cutting-edge content.

Our team's qualifications extend beyond their impressive academic credentials. They are passionate storytellers, adept at transforming complex STEM concepts into accessible and captivating experiences for learners of all ages. Whether leading interactive workshops, dynamic demonstrations, or immersive educational programs, our educators use their deep knowledge and enthusiasm to make STEM subjects come alive.

Where To Find Us:

You can find our educators throughout the science center ready to share their passion for STEM:

- Public Programs - Engage in workshops and demonstrations on every floor of the museum.
- Labs - Participate in hands-on experience and innovative projects in our McWane Field Trip Labs.
- Exhibit Interpretation - Look out for our educators around our exhibits for insightful explanations and answers to your questions.
- McWane on the Move - Our commitment to STEM education extends beyond our walls! Our educators can also be found bringing the McWane magic to schools and community events.

This team's dedication ensures that every visitor leaves our center not only with a greater understanding of science, technology, engineering, and math, but also with a sense of wonder and a desire to explore further. We believe in the power of hands-on learning and inquiry-based education and our staff is committed to creating a world where everyone can use science to enrich and improve their lives and communities.



SCIENCE IS FOR

Everyone

Because of so many wonderful supporters, McWane Science Center offers scholarships to Title I and other qualifying schools and youth-serving organizations across Alabama. Students may enjoy McWane on the Move outreach programs or field trips to the science center. And we thank the wonderful contributors listed on this page for making science and wonder possible for Alabama students!

Scholarship funds are used for Adventure Hall admission, educational programs, and outreach programs (all based on availability). Funds are limited and accessed on a first-come, first-served basis. Scholarships are not typically in support of transportation, food service or IMAX movies so we encourage you to plan for covering these other costs.

To see if your school or organization is eligible for the Education Scholarship Fund, fill out the forms on 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 • Regions Bank • Innovate Alabama • Argosy Foundation • STEM Learning Council/Alabama AIDT • Community Foundation of Greater Birmingham • 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 • Joseph S. Bruno Charitable Foundation • Mercedes-Benz US International, Inc. • Spire • The Coca-Cola Bottling Co. United Inc. • M.R. Metzger Family Foundation • The Nall-Whatley Foundation • Altec/Styslinger Foundation • Brasfield & Gorrie, LLC • Dunn-French Foundation • Vulcan Industrial Contractors • Walmart Center Point Neighborhood Market

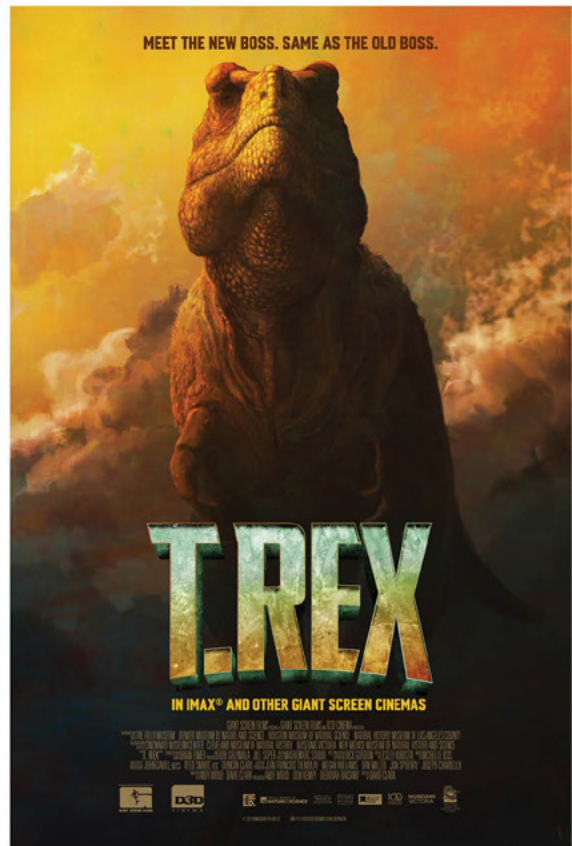
IMAX Dome Theater

Don't Just Watch the Movie.
Experience It!



Cities of the Future

Imagine stepping 50 years into the future and finding smart cities designed to be totally sustainable. What would those cities look like? *Cities of the Future* follows a team of middle schoolers brainstorming the answers to that exact question while they participate in the annual Future Cities Competition, an international contest that challenges more than 60,000 students to engineer their own future city. *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*.



T.REX

For over a hundred years dinosaurs have inspired and thrilled audiences, commanding blockbuster status in museums and at the box office. But among them towers a king — a tyrant lizard king. Working with top tyrannosaurus scientists, a coalition of natural history institutions, and pioneering paleo and visual effects artists, GSF's original giant screen production on this iconic dinosaur — and its carnivorous Cretaceous cousins — the film will explore the interplay between speculation and evidence, and reveal how the process of science refreshes and reimagines our understanding of this legendary dinosaur.



Jane Goodall: Reasons for Hope

Drawing on decades of work by the world's most famous living ethologist and environmentalist, Jane Goodall-Reasons for Hope, is an uplifting journey around the globe to highlight good news stories that will inspire people to make a difference in the world around them. Throughout, the film reinforces Jane's four pillars of hope that signal tremendous hope for the future: the amazing human intellect, the resilience of nature, the power and dedication of young people, and the indomitable human spirit.

Jane Goodall revolutionized how we view the world around us. Join her on this adventure of inspiration and hope.

To learn how to add an IMAX documentary to your field trip, check out page 21. Concessions can also be booked in advance.



What is so Special About Our IMAX® Dome?

Nestled within McWane Science Center, the IMAX® Dome boasts a captivating setup, with its 250 seats positioned beneath a mammoth 5-story, 79' diameter tilted dome screen, engineered to engulf your entire field of vision. This immersive marvel employs specialized filming techniques, utilizing a fisheye lens camera to capture a remarkably distorted anamorphic 180° field of view onto the 65 mm IMAX film,

ensuring that films envelop viewers in a wrap-around experience. Comprising hundreds of meticulously crafted, reflective, and lightweight perforated aluminum panels, the screen serves as the canvas for the IMAX® Laser technology projection system, which renders images with unparalleled contrast, clarity, and luminance. Adding to the sensory feast, the theater features six channels of ultra-high fidelity digital surround sound, enveloping audiences in crystal-clear audio. This distinctive cinematic journey is a hallmark of McWane's offerings, providing an unparalleled theater experience found nowhere else in Alabama.

Learn more about our state of the art IMAX® Dome Theater at mcwane.org/imax-dome

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 2024-2025 school year!



New Exhibit Coming in Spring 2025



SACRED PLACES

Take your class on a globe-hopping adventure in our newest exhibit, Sacred Places, where you will explore sites that are sacred to communities around the world.

While sacred sites look different across religions and cultures—and even vary from person to person—these places hold deep meaning and significance. Our experiences in sacred places have the power to shape our perspectives of ourselves and our world. When we understand the sacred places of the people we live, work, and play with, we are better able to communicate with and respect each other and to appreciate the diverse tapestry of beliefs and traditions that exists in our world.

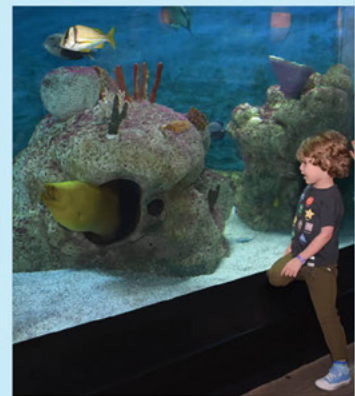
Sacred Places highlights over 20 sites from around the world, each one revered—and spectacular—in its own way. Six of the sites are presented as immersive environments with guides who share about their experiences. Here, we'll meet those guides, learn what they do in their place and discover how that ritual makes them feel.

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

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.

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 13.*

GENEius Lab

GENEius is an engaging, day-ong laboratory experience in molecular biology and genetics designed for grades 9-12. *Learn more about GENEius Lab on page 14.*



LEVEL ONE



LEVEL TWO

Dino-Fever!

Level 2 is where you will find the Alabama Dinosaur & Alabama Ice Age exhibits, featuring rare finds, like the Alabama tyrannosaurus. 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 5 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.



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 21 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 page 6 for info on upcoming exhibits.*



Teacher Professional Resources



**BE
BETTER
Together**

with

**McWane
Science Center**



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 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 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 to receive an application. Deadline to apply is Oct. 4, 2024.

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

Professional Development Workshops

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

Cost: \$200 per workshop for up to 30 teachers. Scholarship funds may be available for Title 1 schools.

PreK - 2nd Grade:

New! Storybook STEM: Accessing STEM through Storytime

Step into a world of imagination with Storybook STEM. From rescuing the Little Blue Truck to crafting a structure to withstand the big bad hairdryer, storytime can present an accessible entry into STEM exploration. This hands-on workshop introduces techniques that empower educators to expand and approach storytime with intentionality. Leave with a framework to develop your own STEM activities that enrich your lessons and encourage early exploration of science, technology, engineering, and math.



3rd - 8th Grade: Design Challenge in the Classroom

Discover effective strategies for seamlessly integrating engineering design challenges into your teaching practice. Examine real-world problems that inspire your students to think critically and find innovative solutions. You'll leave with a toolkit of ready-to-use challenges and the know-how to develop your own, transforming your classroom into a hub of creative exploration!

9th - 12th Grade

New! Tech Talks: Navigating Classroom Conversations about Future Technology

Embrace the uncertainty of our ever-changing technological landscape with Tech Talks. In this workshop, participants engage in dynamic activities to navigate the complexities and the impact of evolving technologies. Through gameplay, reflection, and discussion, educators will grapple with ethical dilemmas, examine diverse values and perspectives, and build the confidence to guide classroom conversations about technology and our future.

McWane Summer Science Institute June 23 - 25

Get ready to spark curiosity, ignite creativity, and amplify STEM opportunities in your classroom with our multi-day professional development workshop. Join McWane's team of educators and subject-matter experts to explore techniques for incorporating STEM into your curriculum with standards-based activities, challenges, and more.

For more information on our Professional Development Workshops and scholarship availability, contact Abby Gwinn at agwinn@mcwane.org



Science Education *Designed* For Your Students

Embark on an unforgettable educational journey with your students at McWane Science Center. These hands-on learning experiences are tailored to grade level to align with Alabama Course of Study Next Generation Science Standards (NGSS) and Alabama Performance Standards for 4-year-olds (APKS). Choose from our diverse range of program topics designed to spark wonder and curiosity and enrich the McWane field trip experience.

Cost: \$3 per student

Grades K - 2nd

NOTE: Maximum capacity for grades K-2 is 25 students per program; minimum is 10 students. 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 3rd - 5th

NOTE: Maximum capacity for grades 3-5 is 25 students per program; minimum is 10 students. Groups of 2 or more children may be partnered for activities. Programs are 60 minutes long unless otherwise noted.

New! Molecular Mysteries

Discipline: Physical Science

Unravel a molecular mystery with your team of lab detectives. Student sleuths will suit up with goggles and gloves to examine physical and chemical properties, mix solutions, collect data, and use their new-found knowledge to crack the code of chemical reactions.

Science: Grade 5: 2, 3, 4.



3-5 grade programs cont.

Jr. Robotics

Duration: Program is 90 minutes

Discipline: Technology/Physical Science

Imagination meets innovation with LEGO robotics. Junior Robotics will ignite curiosity and creativity and students use our favorite building blocks to build and program their own robots. These STEM challenges encourage teamwork, problem solving, 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

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

Ingenuous 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 6th - 8th

NOTE: Maximum capacity for grades 6-8 is 25 students per program; minimum is 10 students.

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

Spark curiosity and build coding prowess with our versatile Edison robotics system. From programming in multiple coding languages, like Scratch or Python, and to completing a variety of challenges, students will embark on a journey of exploration and innovation. Engage in hands-on experimentation, problem-solving, and teamwork as they navigate through the 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

Magnify your curiosity with Under the Scope. Learn biotechnology skills with hands-on experience of real lab tools to observe and prepare slides, capture images, and uncover the hidden wonders of the microscopic world.

Science: Grade 7:2

Technology: 6th - 8th grade: 1



Grades 9th - 12th

NOTE: Maximum capacity for grades 9-12 is 25 students per program; minimum is 10 students. Programs are 90 minutes long.

New! From Concept to Creation: Exploring 3D Printing

Discipline: Technology

Explore the fascinating world of 3D printing from basic principles to the tech's far-reaching impacts across industries. This project-based workshop encourages creativity, develops critical thinking skills, and empowers students to discuss the ethical and social implications of this groundbreaking technology.

New! Robotics Lab

Discipline: Physical Science

Ignite innovation in our advanced robotics lab with cutting edge VEX robotics. This lab immerses students in hands-on, project-based lessons that tackle real world STEM challenges and help students develop essential problem-solving and teamwork skills.

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: \$3 per student

Duration: Programs are 30 minutes long, unless otherwise noted

New! Sound of Science

Discipline: Physical Science

Grades: 3rd - 8th grade

See frequency, feel amplitude, and grab a front-row seat to an electrifying performance of musical lightning. From sounds that make a splash to bizarre tricks of the mind, experience the science of sound like never before.

Science: Grade 4.6, 8.17

Fire and Ice

Discipline: Physical Science

Grades: K4 - 1st

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



May the Forces Be with You

Discipline: Physical Science

Grades: 3rd - 8th

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

Lightning Strikes

Discipline: Physical Science

Grades: 2nd - 12th

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: 2nd - 12th

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

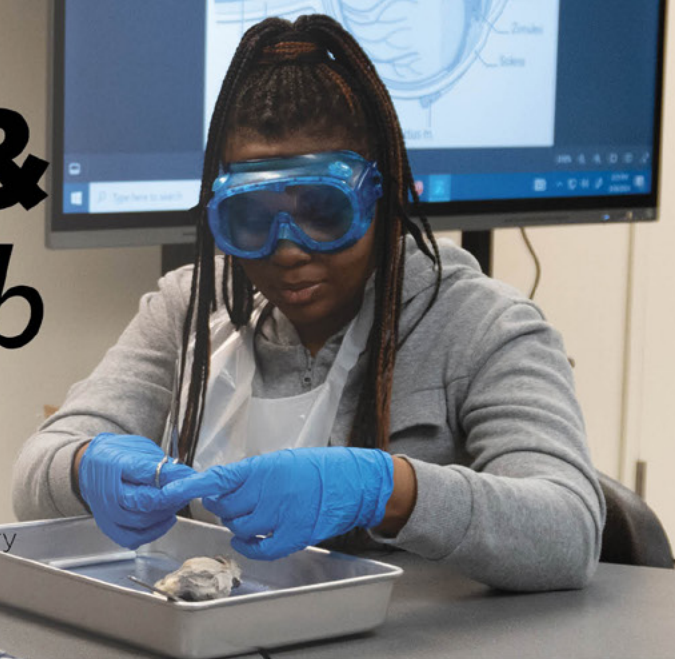


LabWorks & GENEius Lab

LabWorks & GENEius are a series of engaging experiments designed especially for middle school & high 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: geneius@mcwane.org

Capacity: 25 students



LabWorks Programs

Grades: 6th - 8th

Times: 9 - 11 AM or 12 - 2 PM

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

GENEius Programs

Grades: 9th - 12th

Times: 9 AM - 1:30 PM

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

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

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: 5th & 8th

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: 1st, 4th, & 8th

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: 5th & 6th

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 minutes to complete.

Natural Selection

Grades: 3rd, 4th, 5th, & 7th

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
Abby Gwinn at agwinn@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



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: \$100 per session

Contact Abby Gwinn at agwinn@mcwane.org for booking information and questions.

Dissection Live

Discipline: Biology

Grade: 4th - 12th

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: 6th - 12th

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 brings the magic of McWane to you! These interactive learning experiences are tailored to grade level to align with Alabama Course of Study Next Generation Science Standards (NGSS) and Alabama Performance Standards for 4-year-olds (APKS). Choose from our diverse range of program topics designed to spark wonder and curiosity while enriching the experience in classrooms, assembly programs, libraries, and community events.

Classroom Programs:

Duration: Programs are 30 or 45 minutes unless otherwise noted

Price:

- 1 classroom (maximum of 30 students) program is \$200.
- Each additional classroom program is \$175. (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.

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 - 2nd

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 - 12th

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 60 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: 2nd - 6th

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

Science: Grade 4:2, 4

Inventive Engineering

Discipline: Physical Science

Grades: 3rd - 5th

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: 3rd - 8th

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: 3rd - 8th

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

Technology: Grade 3rd-5th 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: 1st - 5th

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: \$325 | 150 student maximum

Each additional assembly program is \$250.

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

Recipe for a Storm

Discipline: Earth Science

Grades: 3rd - 8th

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: 2nd - 8th

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: 2nd - 8th

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





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!

Details

Price: \$80 | For McWane Members: \$60
Time: Fall & Winter | 9:30 AM - 11:30 AM
Children must be at least 6 years old by September 1st to attend Homeschool Labs.

Visit mcwane.org/learning/parents/homeschool-labs to learn more about the 2024 - 2025 Homeschool Labs offered.



Plan Your Trip



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

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.

Features:

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

Base Price: \$50 per person

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



Your One Stop Shop for *everything cool*

Stop by the Cool Stuff Store during your visit. We offer a wide range of cool science experiments, dinosaur & nature related merchandise, and small mementos to remember your visit!

Note: Children must be supervised while inside the Cool Stuff Store.

Contact Matt Diffie at (205) 714-8332 for more information on group packages and pricing.

Ready to Book Your Group Trip?



START HERE

Visit our website by going to mcwane.org/learning/teachers/field-trips/ or scan the QR code



School Groups

Fill out the "School Form" field trip request form

All Other Groups

Fill out the "Non-School Form" field trip request form

Field Trip Reservation Consultation

Within 48 hrs of receiving your form, a McWane Reservation Specialist will contact you to work through the details of your field trip.

Booking Your Reservation

After this conversation, we will book your reservation. Be sure to keep an eye out for a Confirmation Email from us. This email will include the details of your visit.

Finalizing Your Field Trip

We will reach out 1 week before your scheduled field trip. This will be your last opportunity to adjust field trip attendance numbers.

Communication Standards:

- Deposits are not required to book a field trip.
- Please provide a valid email address & cell phone number.
- A confirmation email will be sent within 48 hours of receipt of request form.
- A member of our team will reach out 1 week prior to your visit to get your final attendance numbers.
- Cancellation notices must be submitted in writing to reservations@mcwane.org.
- If a field trip has been rescheduled more than once, a \$50 fee will be added to your account.
- Alabama schools and groups will need to provide a State Tax Exemption form to be tax exempt. Out of state schools may provide their state tax exemption form.
- It is recommended that you submit your forms early, as space is booked on a first come, first served basis.

Price Breakdown

Payment can be made with check or credit card.

Field Trips with Adventure Halls Only*

- Students: \$9
- Teachers: Free!
- Adult Chaperones: \$6 when included with group reservation within the 1 adult per 2 student ratio. After this ratio is met, adult chaperone tickets are \$10.

Field Trips with IMAX Documentary Only*

- Students: \$9
- Teachers: \$8
- Adult Chaperones: \$8

Field Trips with Combo IMAX Documentary & Adventure Halls*

- Students: \$14
- Teachers: \$7
- Adult Chaperones: \$13

Add-on Options

- Educational Programs: \$3 per student
- Concession Package (popcorn & 12oz soft drink): \$7
Pre-ordered packages must be paid in full 2 weeks before scheduled visit

Additional Costs

- On-site parking

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 to receive discounted pricing
- Classroom Programs: 10 students min
- Rushtom Programs: 50 students; less than 50 students will be a flat rate of \$100

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 5 students
- **Elementary School (1-5 grade):** 1 adult for every 10 students
- **Middle School (6-8 grade):** 1 adult for every 15 students
- **High School (9-12 grade):** 1 adult for every 20 students

NOTE: Discounted chaperone pricing limited to 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: \$3 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. Lunches may also be purchased from Beansprouts Cafe located inside the museum. Learn about their hours and menu at mcwane.org/bean-sprouts-cafe/

Pre-purchased concessions

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

Pre-ordered concession packages must be requested a minimum of 2 weeks before date of arrival and paid in full 2 weeks prior to your visit.

Concession Package: \$7 for a small popcorn & 12oz soft drink. No substitutions.





200 19TH STREET NORTH — BIRMINGHAM, AL 35203 — WWW.MCWANE.ORG