



**2019-2020**

# **Educator's Guide**

*Buffalo Museum of Science & Tifft Nature Preserve*





# Buffalo Museum of Science

## FIND WHY.

For nearly a century, the Buffalo Museum of Science has been a resource for *why*. Answering many times over. And then asking it again. From exhibits that captivate, to a staff that guides, to a collection that inspires, we are about perpetuating the amazing question of *why* in all who walk our halls.

This is what science is about. And everything is about science. So come explore, discover, wonder, reason, reflect, observe, absorb, realize, dream, and – most important – question.

*Find why at the Buffalo Museum of Science.*

## COMING THIS SCHOOL YEAR

### EDUCATOR OPEN HOUSE

September 26, 4-7 p.m.

Join us at Tifft Nature Preserve to learn all that the Buffalo Museum of Science and Tifft Nature Preserve have to offer. Take in the natural wonder of Tifft and mingle with our program facilitators as they demonstrate the great things available to your classrooms. Zygmunt Digital Planetarium shows will also be available.

Preregistration required by emailing [museumreservations@sciencebuff.org](mailto:museumreservations@sciencebuff.org) or by calling 716.896.5200 x338 by Friday, September 20.

### Golden Mummies of Egypt

February – June 2020

At a time when the Greek, Roman and Egyptian worlds collide and towards the end of the age of the pharaohs, hundreds of glittering gold objects, paintings and mummies were entombed in Egypt. Over 2,000 years later, archaeologists discovered this vast ancient necropolis filled with some of the richest and most artistically sophisticated finds in Egyptian archaeology.

Be among the first school groups to experience the groundbreaking U.S. premier of a rare and unique collection of these materials from the Manchester Museum, including glittering gold mummies and the X-rays and CT scans used to unlock their secrets.

Gain insight into the life of the Egyptian elite and their beliefs about the afterlife when Egypt was part of the Greek and Roman worlds, and explore the fascinating mix of cultures that existed during the Graeco-Roman period.

### BOOK YOUR MUSEUM PROGRAM!

#### ONLINE

Complete our online reservation request form and our Group Reservations Coordinator will contact you.

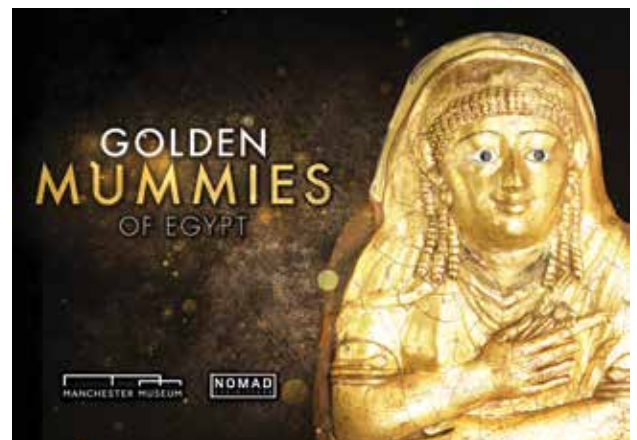
#### PHONE

Call 716.896.5200 x338 to schedule your school or group's reservation.

#### EMAIL

Contact our Group Sales Coordinator at [museumreservations@sciencebuff.org](mailto:museumreservations@sciencebuff.org).

*We recommend placing requests at least one month in advance.*







# Plan Your Visit

## VISIT THE MUSEUM

Join the list of school, preschool, camp and daycare groups that explore our museum offerings every year.

Our state-of-the-art science studios foster hands-on and inquiry-based learning, supporting your STEM curriculum. There's something for everyone!

Want to enhance your students' experiences? Try a museum tour or a hands-on workshop.

We can also customize tours or workshops to suit your needs. If you don't see the topics or activities you are looking for, please contact us.

Visit [sciencebuff.org/educators/field-trips](http://sciencebuff.org/educators/field-trips) for a complete list of programs.

### Program Fees (Per student)

Group Admission.....	\$10
With Guided Tour.....	\$12
With Hands-On Workshop.....	\$15
With Golden Mummies of Egypt.....	\$14
<i>To add Golden Mummies of Egypt to a Guided Tour or Workshop, add \$4 to price above.</i>	

### 3D Cinema

20-minute film.....	\$2 per person
40-minute film.....	\$3 per person

## Chaperones

We require at least one adult for every 10 students. Teachers and chaperones are admitted free of charge, up to 1 adult for every 10 students. Additional adults are \$10 each. Museum memberships and other discounts are not valid for group visits.

*For Golden Mummies of Egypt, all chaperones, including those in the 1:10 ratio, pay an additional \$4*

## Reservation Adjustment Policy

Final group numbers or changes to your reservation must be provided to the Museum a minimum of 48 hours prior to the scheduled visit.

Groups that arrive with fewer people and failed to provide updated numbers 48 hours in advance will be charged the full total due on their initial reservation.

If your program requires an extra supply fee, the number of supplies to be ordered must be finalized three weeks prior to the program. Even if the number of attendants changes, you will still be responsible for the full number of supplies ordered for your program.

## SCIENCE ON WHEELS MUSEUM OUTREACH PROGRAMS

### CLASSROOM PROGRAMS

**Pre-K Programs:**  
*Limit 20 students. 30 - 45 minutes.*

**All Other Programs:**  
*Limit 30 students. 45 minutes - 1 hour.*

*An additional materials fee may apply to some programs.*

### DAYTIME FEES

\$140 for first classroom. \$120 per additional program on the same topic and day.

### EVENING FEES

\$170 for first classroom. \$150 per additional program on the same topic and day.

### ASSEMBLY PROGRAMS

**Limit 300 people.**  
*45 minutes - 1 hour.*

### DAYTIME FEES

\$325 for first assembly. \$250 per additional assembly on the same topic and day.

### EVENING/WEEKEND FEES

\$400 for first assembly. \$250 per additional assembly on the same topic and day.

### ZYGMUNT DIGITAL PLANETARIUM

Up to five 20-minute sessions. Limit 25 students per session. Large space (25'x25') and high ceilings (12ft) needed, such as a gym or cafeteria. *Requires 45 minutes before and after the program for set up and take down.*

Due to the weight of the planetarium's components, set-up locations must be fully accessible by wheeled carts. Please call 716.896.5200 x338 for more details.

### DAYTIME FEES

\$400 for a two hour program.

### EVENING FEES

\$500 for a two hour program.

### SCIENCE FUN FESTIVALS

*Limit 200 people. 2 hours maximum. Includes four stations.*

### DAYTIME FEES

\$800

### EVENING FEES

\$1000



# At The Museum

## WORKSHOPS

Enrich your field trip with special themed activities with our team of facilitators. Workshops are approximately 45-60 minutes unless otherwise noted.

### SUGGESTED GRADES K-2

#### NEW DISCOVERING DINOSAURS

Discover animals that lived long ago! From dinosaurs to mastodons and more, students will examine fossils and make connections between extinct creatures and those that live today.

#### LIGHT AND SOUND

What makes a sound loud or soft? How does light help us see? Explore the properties of waves, light and sound with these exciting, hands-on activities.

### SUGGESTED GRADES 2-8

#### WEATHER WHYS

Investigate weather's impact on the world around us! Through demonstration and experimentation, students will develop an understanding of the basics of weather, including temperature, density, and pressure.

#### DYNAMIC EARTH

Discover the science and wonder of rocks and minerals. Examine the geologic processes that make up the rock cycle, including plate tectonics, erosion, and more.

#### CIVILIZATIONS

Discover major world civilizations around the world using artifacts they left behind. Compare traditions, beliefs, language and geography using items from the Museum's collection.

#### HEALTHY BODIES

Explore YOU. Investigate the body systems and how they are interconnected. Examine how the lifestyle choices people make impact their quality of life.

## GUIDED TOURS

Join our docents on an engaging tour through the Museum's science studios. Guided tours are suitable for all ages and take approximately 45-60 minutes.

### ALL GRADE LEVELS

#### EVERY OBJECT TELLS A STORY

Explore the world using pieces from the Museum's array of items and artifacts. You may choose two or three science studios to visit during this interactive tour, or let our docents choose for you.



## WORKSHOPS

### SUGGESTED GRADES 2-8

#### STARS AND THE SOLAR SYSTEM

Explore our solar system and understand the motions of objects across the sky. Discover different planets, stars, and constellations in the night sky and understand our place in space.

#### WILD ADAPTATIONS

From the Arctic to tropical rainforests, discover ecosystems from around the world. Investigate the adaptations that allow plants and animals to survive in their natural habitats and how changing environments affect living things.

### SUGGESTED GRADES 5+

#### DISSECTIONS

Choose from a wide selection of specimens. Investigate body systems and visualize how structure relates to function. Additional lab fees apply depending on specimen chosen. Book a minimum of four weeks in advance.

#### ENGINEERING DESIGN CHALLENGES

Inspire your students to make changes in their world. Using an assortment of everyday items, students will work as a group to engineer a solution to a given problem.

**MAROONED** | What would you do if you were stranded in the wilderness? Work as a team to brainstorm and innovate creative ways to survive and get rescued.

**ENERGY CONSERVATION** | How do you use energy in your everyday life? Learn about energy use and conservation by using various material to insulate a cardboard "house" and test its efficiency.

## BOOK YOUR MUSEUM PROGRAM!

### ONLINE

Complete our online reservation request form and our Group Reservations Coordinator will contact you.

### PHONE

Call 716.896.5200 x338 to schedule your school or group's reservation.

### EMAIL

Contact our Group Sales Coordinator at [museumreservations@sciencebuff.org](mailto:museumreservations@sciencebuff.org).

*We recommend placing requests at least one month in advance.*



# Outreach to Your Site

## SCIENCE ON WHEELS

### LET US BRING THE MUSEUM TO YOU.

Can't make it to the Museum? We can visit you! Our experienced facilitators will bring a unique educational experience right to your school, library or community center through hands-on Classroom Programs, large-scale Assembly Programs, or exciting Science Fun Festivals.

We can also customize our outreach programs. If you don't see the topics you are looking for, please contact us at 716.896.5200 x338 or at [museumreservations@sciencebuff.org](mailto:museumreservations@sciencebuff.org) to discuss your needs.

## CLASSROOM PROGRAMS

See pricing and capacity guidelines on page 2 (Plan Your Visit).

### SUGGESTED GRADES K-2

#### DIGGING DINOSAURS

What can fossils tell us about dinosaurs? What did they eat? How big were they? Become a paleontologist and examine the fossils of creatures that lived long ago.

#### INSECTIGATION

Get up close to some incredible insects! Examine live insects and other critters, observing their anatomy and behavior.

### SUGGESTED GRADES 3-8

#### IT'S ELECTRIC

Explore electricity in a safe and hands-on way! Investigate insulators and conductors, build a circuit with your body, and feel the power of our Van de Graaff static electricity generator.

#### SCIENCE MATTERS

Explore the three states of matter, with dry ice and liquid nitrogen, and the phase changes between them all. Learn about the energy it takes to make atoms move and how scientists use that power. *Material fee required.*

#### SUPER SCIENTIST

Inspire the inner scientist in your students! Experiment with slimy science, chemical reactions, and more in this hands-on program. An available sink is required for this program. *Material fee required.*

#### CRIME INVESTIGATION

Analyze clues to help solve a crime! In this immersive lab, students will learn how to identify fingerprints, decipher chromatography, and decode DNA.

## ASSEMBLY PROGRAMS

Get your students excited about science with these unforgettable and interactive large-group assembly programs. See pricing and capacity guidelines on page 2 (Plan Your Visit).

### SUGGESTED GRADES K-2

#### BUBBLE BLAST

Explore the science of soap. Students will witness exciting experiments that set the stage for bubble science. *Stage show only.*

### SUGGESTED GRADES 3-8

#### SCIENCE MAGIC

Expect the unexpected and explore the "magic" of physics and chemistry with incredible demonstrations about polymers, inertia, and more! *Can be adapted as a classroom program.*

#### FORCES AND MOTION

Who knew physics could be so fun? Witness the science of motion and energy with thrilling mind-boggling demonstrations! *Stage show only.*

#### SCIENCE BELOW ZERO

Chill out during this super cool liquid nitrogen demonstration! Explore the phases of matter, as well as kinetic energy in amazing ways. *Can be adapted for a classroom program. Materials fee required.*

## PLANETARIUM

See pricing and capacity guidelines on page 2 (Plan Your Visit).

### ZYGMUNT DIGITAL PLANETARIUM

Show the students the night sky by stepping into our new digital planetarium.

## SCIENCE FUN FESTIVALS

See pricing and capacity guidelines on page 2 (Plan Your Visit).

Science, exploration and discovery come to your school for a day or evening event. Possible topics include electricity, color, environment, crime investigation, and more! Choose four engaging stations. Call 716.896.5200 x338 for more details.

## BOOK YOUR MUSEUM PROGRAM!

### ONLINE

Complete our online reservation request form and our Group Sales Coordinator will contact you.

*We recommend placing requests at least one month in advance.*

### PHONE

Call 716.896.5200 x338 to schedule your school or group's reservation.

### EMAIL

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# Tifft Nature Preserve

## Pricing & Capacity Guidelines

### DISCOVERY VISITS

Advance registration required for groups of 10 or more. We reserve the right to turn away self-guided groups that do not make a reservation as they may interfere with other programming.

### FEES

\$3 per person.

### GUIDED TOURS

Maximum 80 students. Minimum 10 students. One adult required for every 10 students. Adults in 1:10 ratio and required aides are free. Pre-K & K Tours approx. 1 hour. All other grades approx. 1-1.5 hours.

### FEES

\$8 per student & \$8 per additional adult (July - March). \$10 per student & \$10 per additional adult during peak season (April - June).

### WORKSHOPS

Maximum 60 students. Minimum 10 students. Pre-K & K workshops: 2 - 2.5 hours.

All other grade level workshops: 2.5 - 3 hours.

*One adult required for every 10 students. Adults in 1:10 ratio and required aides are free.*

### FEES

\$11 per student & \$8 per additional adult (September - March). \$13 per student & \$10 per additional adult during peak season (April - June).

### TIFFT OUTREACH

Pre-K Programs: Limit 20 students. 30 - 45 minutes. All

Other Programs: Limit 30 students. 45 minutes -

1 hour. *Due to the hands-on and interactive nature of our programs and to ensure the best possible quality experience, we ask that you respect our class size limits. If limits are exceeded, an additional fee of \$100 (daytime program) or \$120 (evening/weekend program) will be added. Additional mileage fee will be added for round trip travel.*

### DAYTIME FEES

\$120 for first classroom. \$100 per additional program on the same topic and day.

### EVENING FEES

\$150 for first classroom. \$130 per additional program on the same topic and day.

## Schedule Your Tifft Program

### ONLINE

Complete our online reservation request form and our Group Reservations Coordinator will contact you.

### PHONE

Call 716.825.6397 to schedule your school program. Office hours are Monday - Friday, 8:30 a.m. - 4:30 p.m.

### EMAIL

Contact our Group Sales Coordinator at [tifftreservations@sciencebuff.org](mailto:tifftreservations@sciencebuff.org).

*Book early! We recommend placing requests at least one month in advance.*

## GUIDED TOURS

*Explore the outdoors with a knowledgeable facilitator on a guided tour of Tifft Nature Preserve. These tours support learning standards and enhance science curricula for all grade levels through inquiry-based outdoor learning experiences. College student and adult tours available. Indoor activity alternatives may be offered in the event of inclement weather.*

### CUSTOM TOUR

*Seasonal availability dependent on topic*

Have a unit of study approaching and there isn't a tour or workshop in our offerings that fits that topic? Let us help you customize your visit to make the most of your time at Tifft. Content is adjusted to suit each grade level. Specific content may be requested. Some topics may also be available as a workshop, upon request. *Topics include: Adaptations, Biodiversity, Birds, Classification, Conservation, Food Webs, Invasive Species, Nature Journaling, Senses, Predator-Prey Relationships, Trees & Plants, and Observation.*

### ANIMAL HOMES & HABITATS

**ALL GRADE LEVELS | YEAR ROUND**

Learn how local animals adapt to their preferred environments. Students will compare characteristics of the Preserve's various habitats, including grasslands, woodlands and aquatic ecosystems.

### EXPLORING NATURE

**ALL GRADE LEVELS | MARCH - NOVEMBER**

Venture on a sensory-based journey to actively investigate the Preserve's seasonal characteristics. Students will explore plant-animal interactions and real wildlife clues through observation, smell, touch and listening skills, as well as inquiry, direct experiences and drawing conclusions.

### NATURE IN WINTER

**ALL GRADE LEVELS | DECEMBER - FEBRUARY**

Discover how plants and animals adapt to our region's winter conditions. Students can hone their observation skills while searching for wildlife clues. Indoor activity alternatives to the tour may be offered in the event of inclement weather. *Snowshoes may be requested (\$2 per person), weather permitting.*

### LIFE CYCLES

**ALL GRADE LEVELS | MAY - AUGUST**

Explore the Preserve in search of real animal and plant life cycles in action. This customizable tour will give students a look into insect and frog metamorphosis.

### TIFFT HISTORY & HUMAN IMPACT

**SUGGESTED GRADES 4 - 12 | YEAR ROUND**

Discover how Tifft's past, present and future are linked to our region's history. Students will read Tifft's landscape to understand the impact of human activity on the environment and ways of lessening our impact through resource conservation and habitat restoration. *This tour can include a PowerPoint presentation on the history and future of Tifft. Please let the reservationist know if you are interested in this presentation. This tour is also ideal for college classes and adult groups.*



# Tifft Nature Preserve

## WORKSHOPS

*In-depth science activities give students hands-on experiences both indoors and outdoors. Workshops include interactive activities as well as a guided tour of the Preserve. Indoor activity alternatives to the tour may be offered in the event of inclement weather. Engage your class in a unique, inquiry-based learning opportunity that supports the New York State Learning Standards. Workshop content is adjusted to suit different grade levels. See pricing and capacity guidelines on page 5 (Tifft).*

### WHAT'S THE NICHE?

**GRADES PRE-K - 2 | SEPTEMBER - JUNE**

Investigate real animal homes and various habitats of Tifft. Through hands-on explorations and a guided tour, students discuss survival needs, work together to construct animal homes, and match animals to their proper habitats.

### SEEDS & NEEDS

**GRADES PRE-K - 2 | SEPTEMBER - JUNE**

Explore the needs of seeds, plant parts and species diversity. Through hands-on activities and a guided tour, students investigate the shape and function of real plant seeds, create an imaginary seed designed for dispersal and plant seeds in pots to take back for observation.

### WINTER SCIENCE

**GRADES 3 - 12 | DECEMBER - FEBRUARY**

Compare winter animal survival adaptations. Students will use weather monitoring instruments, conduct an experiment, and search for evidence of animal survival on an outdoor hike. *Indoor activity alternatives to the tour may be offered in the event of inclement weather. Snowshoeing may be requested (\$2 per person), weather permitting.*

### ECOSYSTEMS & ADAPTATIONS

**GRADES 3 - 12 | SEPTEMBER - JUNE**

Compare and contrast the diversity of ecosystems that make up Tifft while on a guided tour of the Preserve. Inside, students will examine bird biofacts to learn about adaptations up close and work in groups to design their own imaginary species.

### AQUATIC ECOLOGY

**GRADES 3 - 12 | APRIL - OCTOBER**

Discover our essential connection to water and water habitats of the Great Lakes region. Through hands-on water quality testing and macroinvertebrate sampling, students will discuss watersheds, aquatic biodiversity and human impact. *To include fishing, add \$2 per student. This informative program is ideal for older students interested in an immersive study of the waters of the Great Lakes region.*

### NATIVE AMERICAN LIFE & LORE

**GRADES 3 - 12 | SEPTEMBER - JUNE**

Explore the history and culture of the Haudenosaunee. Through indoor hands-on exploration and a guided tour, students will investigate and implement real tools and artifacts while discovering Seneca survival strategies and daily life activities.

### WILDERNESS SURVIVAL

**GRADES 4 - 12 | SEPTEMBER - JUNE**

Discuss survival needs and venture on a guided journey indoors and outdoors in search of shelter, water, food, and fire building materials. Students can implement team-building skills while constructing a survival shelter, as well as learn knot-tying, the importance of fire and wayfinding techniques.

## DISCOVERY VISITS

*Choose a Discovery Visit for an unstructured, self-guided tour and discover Tifft Nature Preserve at your own pace! With 264 acres to explore, you and your group will be amazed by the abundant flora and fauna that you'll discover. Nature scavenger hunt available upon request.*

### DISCOVERY VISIT PRICING & INFORMATION

*\$3 per person. Advance registration required for groups of 10 or more. We reserve the right to turn away self-guided groups that do not make a reservation as they may interfere with other programming.*

## OUTREACH TO YOUR SITE

*Can't come to Tifft? Bring nature into your classroom! These hands-on programs will bring items from the Buffalo Museum of Science and Tifft Nature Preserve's education collection to your students for a learning experience like no other. Choose from a variety of topics to support your desired curriculum.*

*If you don't see what you're looking for, don't hesitate to contact us at 716.825.6397 or [tifftreservations@sciencebuff.org](mailto:tifftreservations@sciencebuff.org) to learn how we can customize a program to meet your needs.*

### STORIES IN HAND | GRADES PRE-K - 1

Share in a hands-on, nature-themed storytime. Stories will be brought to life for young learners with real biofacts of animal fur, bones and wildlife clues to see, feel, and investigate. *Program length is 45 minutes.*

### NATURE DETECTIVES | GRADES PRE-K - 5

Put on a detective hat and use sight, smell, hearing and touch to investigate real clues left behind by different local animals. Students will learn lessons in habitats, adaptations and food webs.

### ANIMAL ARCHITECTURE | GRADES 1 - 5

Investigate real animal shelters such as bird and insect nests, small burrows and plant galls from the Tifft Education Collection. Students can work in teams to create their own small shelter in the classroom from natural materials, investigate the importance of shelters in various habitats, and the adaptations of the animals that made them.

### MEASURING MAMMALS | GRADES 4 - 8

Use measurement, observations and inquiry to explore real furs, skulls and mammalian characteristic of local species. Through this hands-on process, students will compare features and adaptations of carnivores, omnivores and herbivores.

### ENERGY EXPLORATIONS | GRADES 5 - 8

Understand why energy is vital to the world and all the people who live in it. Students will investigate what energy is and how we all use energy, plus explore renewable and non-renewable resources and the impacts of energy-related choices.



Buffalo Society of Natural Sciences  
 1020 Humboldt Parkway  
 Buffalo, NY 14211  
 716.896.5200

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**FIND  
 WHY.**



Valuing Nature's Wisdom



*The programs of the Buffalo Society of Natural Sciences are supported in part by public funds from the County of Erie; City of Buffalo; New York State Office of Parks, Recreation and Historic Preservation; and our members and friends.*

## Buffalo Museum of Science

1020 Humboldt Pkwy  
 Buffalo, NY 14211  
 sciencebuff.org

**PHONE** 716.896.5200  
**TOLL FREE** 866.291.6660

### MUSEUM HOURS

Monday - Tuesday	10:00 a.m. - 4:00 p.m.
Wednesday	10:00 a.m. - 9:00 p.m.
Thursday - Sunday	10:00 a.m. - 4:00 p.m.

## Tifft Nature Preserve

1200 Fuhrmann Blvd  
 Buffalo, NY 14203  
 tiff.org

**PHONE** 716.825.6397

### VISITOR CENTER HOURS\*

Wednesday - Saturday	10:00 a.m. - 4:00 p.m.
Sunday	12:00 p.m. - 4:00 p.m.

### TRAIL HOURS

Open daily from dawn until dusk.

## FOLLOW US...



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