Workshops and Hands-On Inquiry
- **Investigate Labs:** Your students will use scientific tools and museum specimens to answer questions and solve problems. Open for short lab activities when available or you can schedule a class workshop beginning November 2019!
  - **The Nature Lab** features hands-on collections inquiry, highlighting specimens from paleontology, zoology, botany, geology, and anthropology.
  - **The Micro Worlds Lab** offers opportunities to use microscopes and lab equipment to inquire into molecular, cellular, and developmental biology.
- **Stream Table Workshops** where students use the museum’s 10-foot stream simulation table to learn about rivers, watersheds, and landforms.
- **Early Childhood Workshops - PreK and K** are designed especially for very young children and feature hands-on activities with real scientific specimens.

Presentations
- **Science Demonstrations** are live presentations in the Science Forum. We use real specimens and phenomena to stimulate curiosity and excitement!
- **Planetarium & Dome Theater** shows are presented live and use advanced technology and a luxurious new learning environment to bring the universe to you! Content includes the solar system, sky motions, our Moon, history, and more.

Special Field Trip Days
- **Learn it! Do it! Days** are themed extravaganzas on popular topics. Students participate in hands-on activities and experiments throughout the museum, and even take home some of the products they create.
- **Explorer Days** offer an enriched self-guided experience, with hands-on discovery stations in the galleries, scientist presentations, and interpretation outside a visible lab. The two Investigate Labs are available for select short hands-on activities.

Self-Guided Visits
Self-guided visits include a host to greet your group, hands-on discovery stations in select galleries, and age-appropriate Discovery Guides to focus student observation. Your group may want to download the museum app, UMMNH, from the App Store, or check out an iPad when you arrive. **All Ages.**
## Overview of Offerings

<table>
<thead>
<tr>
<th>Nature Lab Workshops pg 3</th>
<th>Grades</th>
<th>Pre-K</th>
<th>K</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dinosaur Adaptations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Cycle Rocks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owl Pellets: An Ecosystem Key</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A Species Problem</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Bones in Our Bodies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ocean Acidification</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Micro Worlds Lab Workshops pg 4</th>
<th>Grades</th>
<th>Pre-K</th>
<th>K</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Biologist’s Tool Kit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DNA and Electrophoresis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disease Detectives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gassy Microbes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Powerhouse of the Cell</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stream Table Workshops pg 5</th>
<th>Grades</th>
<th>Pre-K</th>
<th>K</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water, Weather, and a River Community</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How Water Shapes the Land</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protecting Our Watersheds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Early Childhood Workshops-Pre-K and K pg 5</th>
<th>Grades</th>
<th>Pre-K</th>
<th>K</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is a Dinosaur?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creature Features</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incredible Insects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Science Demonstrations pg 6</th>
<th>Grades</th>
<th>Pre-K</th>
<th>K</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Cycles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How to Become a Fossil</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life: How Do We Find It?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cow Eye Dissection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Planetarium &amp; Dome Theater Shows pg 7</th>
<th>Grades</th>
<th>Pre-K</th>
<th>K</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musical Sky</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Sky Tonight: Star Talk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patterns in the Sky</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Solar System Live!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sun, Earth, and Moon</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mix and Match</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Big History</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special Field Trip Days pg 8</th>
<th>Grades</th>
<th>Pre-K</th>
<th>K</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild Weather Extravaganza</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geology Rocks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explorer Days</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Schedule Today!**

Visit page 9 for scheduling information
Dinosaur Adaptations
Grades 1-4
Explore the world of dinosaurs and other prehistoric animals by observing their many adaptations. Learn what these adaptations tell us about the lifestyles of these prehistoric animals. Take a closer look at actual teeth, claws, and protective gear from our collection!
Key Concepts: adaptations, fossils, structure and function

The Cycle Rocks
Grades 2-6
Explore the rock cycle through hands-on inquiry and investigation. Discover the difference between igneous, metamorphic, and sedimentary rocks, and learn about the composition of rocks and minerals.
Key Concepts: rock cycle, types of rocks, minerals

Owl Pellets: An Ecosystem Key
Grades 3-5
This program uses owl pellets to explain recent research reconstructing ancient ecosystems. Explore how samples left over from the past can be used to understand ecosystems of the past.
Key Concepts: ecosystems, habitats, food chain

A Species Problem
Grades 3-6
Learn some of the criteria researchers use to distinguish one organism from another. Students will explore three different species concepts and learn under what conditions they are used.
Key Concepts: speciation, taxonomy

The Bones in Our Bodies
Grades 5-8
The history of our lives is written in our bones. Learn what bones are made of, how they grow, how they change when we exercise, and how they can provide clues about skeletal adaptations in our evolutionary history.
Key Concepts: growth and development, structure and function, evidence in archaeology

Ocean Acidification
Grades 6-10
Explore the interconnectedness of Earth’s systems. This program focuses on the cascading effects of atmospheric climate change by detailing the effects of CO₂ below the surface of the ocean.
Key Concepts: climate change, Earth systems, data analysis, human impact, water chemistry
Micro Worlds Lab Workshops

30 students * 45 minutes unless noted

The Micro Worlds lab is an interactive space where students use scientific tools to explore topics such as the biodiversity of microscopic organisms, cells, genetics, and developmental biology. Students learn about current research on how the smallest organisms can have large impacts on our lives.

**A Biologist’s Tool Kit**
Grades 3-4
Examine soil and pond water to learn about some of the tools that biologists use to observe and measure the world to solve problems. How do those tools support the scientific process? This program will explore the basics of data use and measurement skills.
Key Concepts: scientific method, data usage, making observations, taking measurements

**DNA and Electrophoresis**
Grades 4-12
AATTATTGCGCGAT. What does that mean? Learn how scientists unlock the code written in our genes through this hands-on activity using the same techniques scientists use.
- Grades 4-6 will extract DNA, explore what DNA is, and how it is used in research. **45 minutes.**
- Grades 7-12 will complete gel electrophoresis and learn about genetic technologies. We’ll find out how subtle differences in the genetic code allow researchers to make big discoveries. **90 minutes**
Key Concepts: genetics, DNA, lab technologies

**Disease Detectives**
Grades 5-8
Discover vector epidemiology: how diseases can jump from animals to us. Learn and use techniques that epidemiologists use to track down the causes of diseases and keep us safe.
Key Concepts: pathogens, animal vectors, data interpretation, data-based arguments

**Gassy Microbes**
Grades 6-8
Take a close-up look at how microbes metabolize to see how they make such a big stink! This program explores photosynthetic bacteria and their effect on the history of life, and perhaps, on its future.
Key Concepts: metabolism, photosynthesis, fossil evidence, climate change

**The Powerhouse of the Cell**
Grades 6-8
Students look at the evolution of two of the most important organelles in eukaryotic cells, mitochondria and chloroplasts. Explore the evidence for the development of these sets of evolutionary cousins, and their functions in the cell.
Key Concepts: cell anatomy and function, evidence for evolution, microscopy
Early Childhood Workshops

Pre-K & K
30 minutes * 25 students

These programs are designed especially for young children and feature hands-on activities with real scientific specimens. They take place in the Community Room.

**What is a Dinosaur?**
Explore the world of dinosaurs with stories, songs, and hands-on fossils. Learn what a dinosaur is and what paleontologists do.

**Creature Features**
Learn about animals that have fur, feathers, and scales! Find out what makes amphibians, reptiles, birds, and mammals similar and different.

**Incredible Insects**
Learn about the incredible world of insects. Dress up your instructor as an insect and take a closer look at the different types of insects.

---

Stream Table Workshops

1 hour * 30 students

Students use the museum’s 10-foot stream simulation table to learn about watersheds, rivers, and landforms! Students work in small groups and record their observations in accompanying student journals. These programs take place in the Community Room.

**Water, Weather, and a River Community**
Grades K-3
Where does water come from, and where does it go? Students explore what happens to water when it rains, model flood dangers in a river community, conduct experiments about water flow, and discuss life in and around a river.

**How Water Shapes the Land**
Grades 2-6
Students discover how flowing water causes erosion and sedimentation, shaping and creating various landforms. They explore how human activities influence erosion and test various methods of erosion control.

**Protecting Our Watersheds**
Grades 3-8
What is a watershed and why is it important? Students explore how various human activities affect water quality both in a stream and as groundwater.
Science Demonstrations
20 to 30 minutes* 30 students

These live, engaging demonstrations on a scientific topic take place in the Science Forum. Presenters use real collection objects and show phenomena to stimulate curiosity and excitement!

Life Cycles
Grades K-2
Discover the stages in the life cycle and metamorphosis of a variety of different animals! Students get to see how these animals change throughout their lifetimes through a demonstration and by looking at actual collection items!
Key Concepts: life cycles, structures and functions

How to Become a Fossil
Grades 2-7
In this demonstration, you’ll explore how fossils are created. What parts of an animal become fossilized? How old are the earliest fossils? Students will discover how things fossilize and how fossil casts are made in the museum! This short program offers exciting information about fossils and real fossils you can touch!
Key Concepts: fossils, extinction, biodiversity

Life: How Do We Find It?
Grades 3-5
Discover how scientists search for life on other planets. Students will learn about the field of astrobiology and re-evaluate their definition of life. Observe a recreation of an experiment from the Mars Viking Lander expedition.
Key Concepts: life requirements, survival

Cow Eye Dissection
Grades 5-8
Watch a cow eye dissection and take a closer look at the organ that helps us see the world. How is it different from our eyes and those of other animals? Learn the parts of the eye and how they work together to illuminate our sight.
Key Concepts: light, systems
Musical Sky  
Grades PreK and K  
30 minutes  
Explore the sky through pictures, constellations, and songs! Learn about rockets, astronauts, the Moon, and what’s visible in the night sky. Choose between a night-focused or planet-focused version.

The Sky Tonight: Star Talk  
Grades 1 & up  
We look at the current night sky including bright stars, constellations, planets, and other interesting astronomical objects. As we go, we’ll explore mythologies and observe sky motions.

Patterns in the Sky  
Grades 1 & 2  
We’ll introduce the daily motions of the sky, the phases of the Moon, and the changing night sky. How do the motions of the Sun and Earth result in changing seasons? Why do we see the planets that we do?

The Solar System Live!  
Grades 2 & up  
Take your class on a tour of our solar system, discussing planets, asteroids, motions, and more! We’ll zoom in to each planet in detail, enjoying breathtaking visualizations. Returning to Earth, we explore the night sky for any visible planets.

Sun, Earth, and Moon  
Grades 3 & up  
Explore the daily motions of the sky, the phases of the Moon, eclipses (if requested), and the changing night sky. How do the motions of the Sun and Earth result in changing seasons? Why do we see the planets that we do?

Mix and Match  
Grades 1 & up  
The Dome’s new technology can take you almost anywhere in the visible Universe, and create the perfect program for your curricular goals. After scheduling, the planetarium manager contacts you to plan up to five custom topics for discussion.

Big History  
Grades 7 & up  
Zoom through the history of the universe, from its origins to the formation of the world we know. Explore the development of life and what led us to become “us.” Hang on!
Learn It! Do It! Days *Beginning January 2020*

On Learn It! Do It! Days, museum educators welcome your students at hands-on stations throughout the museum. Students explore these stations in small chaperone-led groups, participate in hands-on activities, experiments, and presentations, and even take home some of the products they create.

**Wild Weather Extravaganza**  
Grades 1-4  
January 31, 2020 and March 11, 2020  
Build a working weather station, explore extreme weather, and travel through the water cycle.  
**Planetarium add-on:** You can add on a 14-minute show about the weather on our planet and other planets.  
**Key Concepts:** changes in weather, severe weather, weather instruments

**Geology Rocks**  
Grades 2-6  
February 21, 2020 and March 27, 2020  
Learn the differences between rocks and minerals, find out which minerals hide in everyday objects, learn how earthquakes happen, and touch a two-billion-year-old rock!  
**Planetarium add-on:** You can add on a 14-minute fulldome video about our active Earth. Grades 5 and 6.  
**Key Concepts** include formation, the crust, plate tectonics, earthquakes, and volcanism

**Explorer Days** *Beginning January 2020*

Grades 2 & up  
On Explorer Days, students get up close to the scientific process as they participate in an enriched self-guided experience, with hands-on Discovery Stations in the galleries, scientist presentations, and interpretation outside a visible lab. The two Investigate Labs will be available for selected short hands-on activities.

**Available Dates:** January 24, 2020, February 7, 2020, March 25, 2020 and April 3, 2020

---

**Have a very large group and need a different date?**  
Book your own Learn It! Do It! Day. Call 734-764-0480 for details and availability.
How to Schedule

Schedule now by sending us an email at ummnh.office@umich.edu or by phone at 734-764-0480 (9:00 a.m.–5:00 p.m. weekdays).

You will need
- Multiple possible dates and times for your visit.
- Number of children and adults.
- Activities you would like to schedule.
- School address and phone number.

We highly recommend at least one chaperone for every 10 students. Teachers are FREE.

Pricing Info

Group Admission
$3/person
Please call to schedule groups of 10 or more. Price includes group host, self-guided visit to all galleries, and hands-on discovery stations in select galleries.

Guided Program Add-ons
- Investigate Lab Workshop: $7 (45 minutes)
- Investigate Lab Workshop: $9 (90 minutes)
- Stream Table Workshops: $8 (60 minutes)
- Early Childhood Workshops: $5 (30 minutes)
- Early Childhood Planetarium: $3 (30 minutes)
- Planetarium: $5 (45 minutes)
- Science Demonstrations: $2 (20-30 minutes)

Special Field Trip Days (prices include admission)
- Explorer Days (on select dates): $7 (2 hours)
- Learn It! Do It! Day (on select dates): $10 (2 hours)
- *Add-on Planetarium Show: $2 (20 minutes)

Lunchroom
$20 for up to 30 people, for 25 minutes

Scholarships
Financial assistance is available. Call 734-764-0480 to ask about availability and how to qualify. Scholarship funds are limited, so call as early as possible.
Visit the new Museum Store!
Students can visit the Museum Store to purchase a memento of their visit. Many items are available for under $5, and the store is conveniently located on the first floor.

UMMNH App
Enhance your visit to the U-M Museum of Natural History with self-guided tours, helpful maps, and event information!

The UMMNH app will educate and entertain, prompting you to explore the exhibits through interactive inquiry and giving you a behind-the-scenes look at the museum with image galleries.

Payment
- Payment is due in full at least two weeks prior to visit. Payment confirms your visit.
- We reserve the right to cancel services for any program for which payment is not paid two weeks prior to visit.
- We accept all forms of payment.
- Refunds will not be given for overpayments of $20 or less.

For more information
For questions or booking information, please call our main office at 734-764-0480 or email ummnh.office@umich.edu.
Educator Preview Night!

October 22, 2019
4:00-7:00 p.m.

We’re opening two hands-on Investigate Labs on November 10, but you and your family can preview the new labs and all of our new programming before the public opening! This event is free and is open to educators and their family members. Pizza and refreshments will be served.

Please register by October 15. Register online at ummnh.org or by calling the museum’s main office at 734-764-0480.