GROUP RATE ADMISSION
Sloan Museum at Courtland Center, Longway Planetarium, and Hands-On Science (20 or more)
• $4.50 per student/$5 per adult.
• Teachers are admitted at no charge.
• Chaperones are not charged for Hands-On Science at Longway Planetarium.

Longway Planetarium’s Changes Demonstration and Ice Cream Activity
• $5 per person.
• Teachers are admitted at no charge.

BOOK MORE THAN ONE PROGRAM AND SAVE!
Book a second or third program for the same day at Sloan Museum at Courtland Center or Longway Planetarium for only $4 per student. You can mix and match programs between the institutions to make your trip twice as educational and twice as fun! This offer is not valid for Changes Demonstration.

RESERVATIONS
• For reservations, call 810-237-3409, weekdays 8:30 a.m.-4:30 p.m.
• A fee will be charged to all groups that give less than 72 hours’ notice of cancellation.
• Groups arriving more than 10 minutes late for their scheduled program will receive the next available timeslot.
• Please request arrangements for special needs students when you make your reservation.

PLEASE NOTE
• All admission monies must be collected by the teacher prior to arrival. Any uncollected admissions will be charged the regular admission rate.
• All programs have minimum admission charges.
• All monies received must be by school-issued check, money order, credit card, or cash. No personal checks, please.

LUNCH
Longway Planetarium
There is limited space available for groups to eat lunch on tables located in the lobby. Arrangements must be made in advance. Availability is on a first-come, first-served basis.
Sloan Museum at Courtland Center Mall
The use of our café space is FREE for students who have scheduled a walk-through of the exhibits at Sloan Museum at Courtland Center. No food or drink is provided. Capacity is limited. Reservations for the café space must be made at the same time as program reservations. Availability is on a first-come, first-served basis.

MUSEUM AND PLANETARIUM STORES
We invite all student groups to shop at the end of their visit. We offer many affordable items that bring home the learning experience of our institutions.

OTHER INFORMATION
• Programs last 45-60 minutes unless otherwise stated.
• Teachers and chaperones are asked to supervise students at all times.
• Please request that chaperones do not bring siblings or additional children.
• Buses may load and unload at the front entrance of Longway Planetarium. At Courtland Center, buses may unload at Mall Entrance A on Court St. next to El Cozumel Mexican Grill.

MASKS
Masks are required within our buildings for all guests and visitors, including students, teachers, and chaperones.

The following programs are available for in-school experiences:

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Call 810-237-3409 to plan your field trip or in-school experience!
TIME TRAVELERS
Grades K-1
Discover how museums play an important role in keeping history alive and exciting for future generations. Students will travel back in time to explore historical objects and learn about people from the past through hands-on activities. Compare and contrast historical artifacts with the objects used in the present, and think about who made or used them?

IT ALL STARTS WITH ME
Grades K-1
Students will explore the past, present, and future from the perspective of their own lives. Join a museum educator for historical storytelling and engage in the past while creating a two dimensional model city. GLCE: K-H2.0.1, K-H2.0.2, K-H2.0.3, K-H2.0.4, 1-H2.0.1, 1-H2.0.3, 1-H2.0.4, 1-H2.0.5, 1-H2.0.6

TRAPPERS AND TRADERS
Grades 2-5
Study the early interactions between the Anishinabek and the first European explorers in Michigan using primary and secondary sources. Learn how the people of the Three Fires Confederacy and the French developed relationships with each other through the fur trade system in order to meet their wants and needs. Explore the incentives and opportunity costs involved with Michigan’s fur trade, and how it impacted life, culture, and the environment. GLCE: 3-H3.0.1, 3-H3.0.2, 3-H3.0.5, 3-H3.0.6, 3-H3.0.7

ANISHINABEK: MICHIGAN’S FIRST PEOPLES
Grades 2-5
Explore how the people of the Three Fires Confederacy (Ojibway, Odawa, and Potawatomi) adapted to and used their environment and natural resources to meet their basic needs for survival. Investigate primary sources, visual evidence, artifacts, and replicas through hands-on activities in order to answer historical questions about daily life for the Anishinabek in the early history of Michigan. GLCE: 3-H3.0.1, 3-H3.0.2, 3-H3.0.4, 3-H3.0.5, 3-G5.0.1, 3-G5.0.2, 4-H3.0.2

HISTORY DETECTIVES
Grades 3-5
Uncover the history behind mysteriously abandoned artifacts from the past. Investigate each object using keen detective skills, historical thinking, visual evidence, and primary and secondary sources. Can you figure out what the mystery objects are, where they came from, when and how they were used, and who made or used them? GLCE: 3-H3.0.1, 3-H3.0.2, 3-H3.0.7, 4-H3.0.4

Call 810-237-3409 to plan your field trip or in-school experience!
Spin the wheel and your adventure is real! Spider webs, jungle vines, swinging bars and more await you in this a-maze-ing Mission Safari adventure that’s both educational and fun. Learn how your favorite animals get around and try their movements on for size while learning about efforts to save their habitats! Can you jump as far as a Kangaroo? Can you glide like a black widow? Find out while learning about biodiversity, conservation, and your favorite animals in this interactive maze experience that’s never the same experience twice!

OCTOBER 2, 2021 – JANUARY 2, 2022

For reservations, call 810-237-3409

Mission Safari
Sloan Museum at Courtland Center
4190 E. Court St. Burton, MI 48509
Call 810-237-3409 to plan your field trip!
HANDS-ON SCIENCE
AT LONGWAY PLANETARIUM

FORCES AND MOTION
Grades Pre-K-1
Use a ramp, a sheep, and a jeep to investigate how pushes and pulls make objects speed up or slow down. NGSS: K-PS2-1, K-PS2-2

WEATHER
Grades Pre-K & K
What’s the weather like? Design a weather report folder to use for observing and describing the weather. Students will see how weather affects our daily lives while drawing clothes on their weather bears. NGSS: K-ESS2-D

PLANTS
Grade K
Students will build their own terrarium to take home while investigating living and non-living things. NGSS: K-LS1-1, K-ESS3-1, K-ESS3-3, 1-LS1-1

SOUND
Grades 1-3
What makes sound? Students will find out as they investigate vibrations, pitch, and loudness with fun hands-on activities. NGSS: 1-PS4-1, 1-PS4-4

LIGHT
Grades 1-3
Investigate the properties of this form of energy, while exploring shadows, mirrors and the light spectrum. Discover how you can block, reflect, and bend light with hands-on activities. NGSS: 1-PS4-2, 1-PS4-3

BUILD YOUR OWN ECOSYSTEM
Grades 1-6
Investigate ecosystems and the water cycle, and learn what living things need to survive. Students will build an independent ecosystem to take home. NGSS: 1-LS1-1, 2-LS2-1, 4-LS1-1, 5-LS1-1

MOON PHASES
Grade 1
Make a glow in the dark moon phase book that will help kids explore the predictable pattern of the shapes of the moon we can see on Earth. NGSS: 1-ESS1-1

THE RESOURCEFUL RED HEN
Grades 2-3
Using her entrepreneurial skills, the Little Red Hen invested natural, capital, and human resources to produce some delicious goods! The cat, dog, and mouse learned a hard lesson about incentives and opportunity costs. Using a reader’s theater format, kids will hear the story of The Little Red Hen. Students will use natural, capital, and human resources to plant wheat seeds to take home. GLCE: E-SE.02.21, 3-G1.0.1, 3-G1.0.2

LANDFORMS
Grades 2-3
Explore Earth! Students will use clay to sculpt mountains, valleys, plains, plateaus, and other major landforms. Investigate where on earth these landforms can be found and what forces help shape our world. Discover the many different landforms that are located in our very own state of Michigan! GLCE: E-SE.02.21, 3-G1.0.1, 3-G1.0.2

MIXTURES
Grades 2-3
Students will make and separate mixtures in this fun, messy, fast-paced activity. Use a variety of measuring and separating tools to separate sand, iron and water. Mix up some concrete to take home. NGSS: 2-PS1-1

WATER TREATMENT
Grades 2-6
Turn on the tap and water comes out. Where did it come from? Where does it go? Take dirty water through the process of water treatment while working with a partner to design and test a filter system. NGSS: 2-ESS2-3

GALACTIC GOO
Grades 2-6
Chemistry at its finest and most fun! Matter, molecules and polymers will be discussed in this hands-on activity. Each student will make and take home a bag of their own goo! NGSS: 2-PS1-1

GROUNDWATER
Grades 2-6
Build and manipulate a model groundwater system, while learning how removing, adding, and polluting water impacts our underground water system. NGSS: 2-ESS2-3

MARKER ROBOTS
Grades 2-6
Using markers, a battery, a motor and a hot glue stick, students will build a simple robot that draws. Will it draw a circle? Dotted lines? You won’t know until you turn it on and let it go! Students will explore electrical circuits and the forces necessary to make their robots move. NGSS: 4-PS3-2

Virtual Field Trips for Classroom Learning: Programs marked with a orange star are available as virtual experiences for in-person learners in their classrooms.
Virtual Field Trips for Remote Learning: Programs marked with a teal triangle are available as virtual at-home experiences for remote learners.

Call 810-237-3409 to plan your field trip or in-school experience! SloanLongway.org
**** Virtual Field Trips for Classroom Learning: Programs marked with a orange star are available as virtual experiences for in-person learners in their classrooms. 
▶ Virtual Field Trips for Remote Learning: Programs marked with a teal triangle are available as virtual at-home experiences for remote learners.

**Hand-On Science Continued on Pages 12-13**

**ICE CREAM**
Grades 1-4
A sweet way to study solids, liquids, and gases! Working in groups, students will use beakers, measuring cups, and measuring spoons to mix up solids and liquids into an ice cream base. Planetarium educators will add the “magic liquid” that changes their liquid into solid ice cream. Each student gets to taste their creation.


**FOSSIL SCIENCE**
Grade 3
Make a plaster fossil model to take home and touch real fossils while learning how fossils are formed and how they provide evidence of life long ago.

NGSS: 3-L24.A

**MOON PHASES & ECLIPSES**
Grades 4-6
Students will make a glow-in-the-dark moon phase book and an eclipse project while exploring the motion of the Earth and Moon.

NGSS: 5-ESS1.B

**PHYSICAL & CHEMICAL CHANGES**
Grades 3-6
Students will explore how matter changes while observing changes in states of matter and making and separating mixtures. Students will follow procedures and look for evidence of chemical changes while measuring and mixing chemicals to create chemical reactions.

NGSS: 5-PS1.A, 5-PS1.B

**BUILD-A-BUGGY CHALLENGE**
Grades 3 - 6
Students will investigate how the shape of a vehicle affects its ability to move through the air. Design and build an aerodynamic buggy and then use a ramp and fan to see how far the buggy can travel.

NGSS: 3-PS2-1, 3-PS2-2

**CRANKY CONTRAPCTIONS**
Grades 3 - 6
Twist, crank, push, pull, spin. Are you ready to create a moving sculpture while investigating forces and interactions while learning about automotive camshafts? Discover patterns of change while designing a cranking mechanism that puts your artwork in motion.

NGSS: 3-PS2-1, 3-PS2-2

**AMUSEMENT PARK SCIENCE**
Grades 3-5
Students will explore forces and motion while recreating some of their favorite amusement park rides. Find out why you don’t fall out when a ride goes upside down. Investigate contact and non-contact forces while designing a tabletop marble roller coaster.


**CATCH A WAVE!**
Energy moves in waves! Students will use duct tape, skewers, and modeling clay to build wave models that demonstrate how energy moves through matter. Kids will explore mechanical waves, wave frequency, and amplitude.


**EYE DISSECTION**
Students will explore the structure and function of an eye while learning how objects are seen when light reflects off the surface and enters the eye. Students will dissect a sheep eye.

MSS/NGSS: 4-PS4.A, 4-LS1.A, 4-LS1.D

**EARTHQUAKE CONSTRUCTION**
Seismic waves move energy through the earth. Students will work in teams to engineer earthquake resistant towers. Kids will test their designs on the earthquake shake table to see if they can survive the quake.


**3rd Grade Motion Lab**
This workshop series provides content experiences that connect to one another, all aligned with NGSS state standards. These workshops can be completed individually or in any combination. You can even choose to complete all three programs in one day.

**4th Grade Energy Lab**
This workshop series provides content experiences that connect to one another, all aligned with NGSS state standards. These workshops can be completed individually or in any combination. You can even choose to complete all three programs in one day.

Call 810-237-3409 to plan your field trip or in-school experience!
SloanLongway.org
Let us bring hands-on learning to your classroom with our in-school programs. These activities have been optimized to deliver engaging learning experiences right in your school. No need to stick to just one grade or subject; we can bring a variety of classes directly to you!

- Programs last one hour.
- $175 per class, $600 for four classes on the same day for schools in Genesee County. For schools outside Genesee County, travel expenses will be charged in accordance with the current IRS standard mileage rate.
- Serves individual classes of 35 students or less.
- Minimum booking is two programs per day.
- A minimum of one teacher from your school will be required to assist the museum educator with the activities.

The following programs are available for in-school experiences:

- Weather (Grades Pre-K & K)
- Plants (Grade K)
- Moon Phases (Grade 1)
- Sound (Grades 1-3)
- Build Your Own Ecosystem (Grades 1-6)
- Landforms (Grades 2-3)
- Galactic Goo (Grades 2-6)
- Marker Robots (Grades 2-6)
- Build-A-Buggy Challenge (Grades 3 – 6)
- Cranky Contraptions (Grades 3 – 6)
- Amusement Park Science (Grades 3-5)
- Moon Phases & Eclipses (Grades 4-6)

Program descriptions on pages 8-11.

CALL 810-237-3409 TO BOOK HANDS-ON PROGRAMS AT YOUR SCHOOL!

Join Longway Planetarium for a fast-paced and fun review of science content expectations with hands-on activity stations.

Book your own evening of hands-on learning—perfect events for PTAs and community organizations! Mix and match science. Choose from one of our STEM themes or customize your own experience by selecting from our collection of station activities. Our educators will work with you to identify activities that meet your school’s needs. All activities support NGSS and are appropriate for students in Kindergarten-6th grades. Host your family night event at your school OR enjoy an evening at Longway Planetarium.

EVENTS AT LONGWAY PLANETARIUM

$450 for 4 stations, and $50 for each additional station. Choose a planetarium show as one of your stations if your event is held at the planetarium!

EVENTS AT YOUR SCHOOL

$550 for 4 stations, and $50 for each additional station. Schools located outside Genesee County will be charged mileage at the current IRS rate. Hands-On STEM serve a maximum of 200 people. Longway Planetarium will provide all supplies and materials. Schools must provide volunteers to work as station helpers. For school visits, museum educators will need tables and access to water and electrical outlets.

VIRTUAL EVENTS

We can work with your school to provide kits with video directions for virtual Family STEM events. Please call for details.
Longway Planetarium’s state-of-the-art Digistar 7 digital planetarium system offers immersive experiences with space and science topics, as well as high-resolution visuals of the night sky during interactive star talks.

Admission is $4.50 per student, or $4 per student when you book a second or third program for the same day at either Longway Planetarium or Sloan Museum at Courtland Center.

**PERFECT LITTLE PLANET**
*Grades 3-4*

Imagine the ultimate space vacation! Discover our solar system through a new perspective: a family from another star system seeking the perfect vacation spot. Fly over the surface of Pluto, our best known Dwarf Planet. Dive over the ice cliffs of Miranda. Sail through the rings of Saturn. Feel the lightning storms of Jupiter. Walk on the surface of Mars. Which destination would you choose? A solar system journey for space travelers of all ages. 50 minutes.

GLCE: E.PN.03.11, P.FM.03.22, E.ST.04.11

**SKIES OVER MICHIGAN**
*Grades 4 & up*

Longway Planetarium’s astronomy experts take you on a tour of the night sky over Michigan in this live planetarium lecture. Topics include the rotation of Earth for day and night; finding the North Star and finding your way around the night sky; what a constellation is and which are visible in the current night sky. Moon phases, the daily and monthly motion of the Moon through the sky, and visible planets and their movement among the stars will also be discussed. 60 minutes.

GLCE: E.ST.04.11, E.ST.04.12, E.ST.04.21, E.ST.04.22, E.ST.04.23, E.ST.04.24, E.ST.04.25, E.ST.05.62, E.ST.05.21, E.ST.05.22, E.ST.05.23

**SUN STRUCK**
*Grades 4 & up*

Discover the wonders of our sun. Its incredible energy has supported life on earth for millennia, but is now threatening our technology and way of life. Travel to the distant future to discover our sun’s connection to the universe’s cosmic cycle of life and death. 50 minutes.

GLCE: E.ST.04.11, E.ST.05.21; NGSS: 5-ESS1-1

**TWO SMALL PIECES OF GLASS: THE AMAZING TELESCOPE**
*Grades 4 & up*

While attending a local star party, two students learn how the telescope has helped us understand our place in space and how telescopes continue to expand our understanding of the Universe. Their conversation with an astronomer enlightens them about the history of the telescope and the discoveries these wonderful tools have made. 45 minutes, includes a star talk.

GLCE: S.IP.M.1, S.IA.M.1, S.RS.M.1, E.ST.05.11, E.ST.05.21

**WONDERS OF THE ARCTIC**
*Grades 4 & up*

The Inuit and their predecessors adapted and thrived for thousands of years in what is arguably the harshest environment on earth. Today, the Arctic is the focus of intense research. Instead of seeking to conquer the north, scientist pioneers are searching for answers to some troubling questions about the impacts of human activities around the world on this fragile and largely uninhabited frontier. This show explores the state of the Arctic today, the crucial role that ice plays in the northern environment, and the changes that are quickly overtaking the people and animals who have adapted to this land of ice and snow. 45 minutes.

NGSS: 5-ESS3-1, MS-ESS3-4, MS-ESS3-5
LET US BRING THE STARS TO YOU!

Longway Planetarium’s traveling program uses an inflatable dome to bring state-of-the-art video technology to your location, immersing your school in a dark, cloudless night sky during the daytime. Your students will experience the wonder of scientific exploration as the inflatable dome is rendered in a realistic model of the night sky over your school’s town on the date that we visit. With the aid of video images and simulations, students will get an up-close look at some of the most distant objects that can be seen from Earth.

RESERVATIONS
Make a reservation by calling 810-237-3409. Groups with young children may include up to 30 students, plus the teacher. A few chairs can be included for adults, but the majority will be seated on the floor.

TRAVEL EXPENSES
Travel expenses are included in the rental fee for locations in Genesee County. Locations outside Genesee County will be charged mileage in accordance with the current IRS standard mileage rate.

TRAVELING DOMES
The fee is $275 for the first show, and $125 for each additional show, with a maximum of 6 shows per day. You may book any combination of available shows for your scheduled day.

VENUE REQUIREMENTS
- 24’0” x 40’4” indoor space for dome
- 13’3” ceiling minimum clear space, no light fixtures
- 2 electrical outlets on a separate circuit from other equipment
- Able-bodied person to help load and unload
- No other activities happening in the same area

Call 810-237-3409 to reserve the portable dome for your school today!

Longway Planetarium
1300 E. Longway Boulevard
Flint, MI 48506
Tel: 810-237-3409
www.sloanlongway.org

IN MY BACKYARD
Grades Pre-K-1
Follow Fred Penner and his assistant, Arnie the Arrow, as they explore the colors of the rainbow and the reason for seasons. Then, join Fred in his backyard to learn about the planets and constellations. 40 minutes.

THE ZULA PATROL: DOWN TO EARTH
Grades 1-4
While on a routine fossil-hunting expedition, the Zula Patrol turns up evidence that the villainous Deliria Delight has been travelling back in time to Earth’s prehistoric past to illegally dump her company’s toxic trash. The Zula Patrollers must find and catch her, before her actions cause catastrophic consequences. In the process, our heroes learn all about the formation and development of Earth, and the life forms who call it home. 25 minutes, includes star talk.

SECRET OF THE CARDBOARD ROCKET
Grades 1-4
Our most popular children’s show has been remade for the full dome environment. Embark on an awesome adventure as two children spend a night touring the Solar System alongside their ship’s navigator, a talking astronomy book. Produced with modern digital animation and spectacular audio effects created at George Lucas’ Skywalker Ranch. 50 minutes, includes star talk.

PERFECT LITTLE PLANET
Grades 4-6
Imagine the ultimate space vacation! Discover our solar system through a new perspective: a family from another star system seeking the perfect vacation spot. Fly over the surface of Pluto, our best known Dwarf Planet. Dive over the ice cliffs of Miranda. Sail through the rings of Saturn. Feel the lightning storms of Jupiter. Walk on the surface of Mars. Which destination would you choose? 45 minutes, includes star talk.

SKIES OVER MICHIGAN
Grades 4 & up
In this live program, students will explore the night sky. Topics include the rotation of Earth for day and night; finding the North Star and finding your way around the night sky; what a constellation is and which are visible in the current night sky. Moon phases, the daily and monthly motion of the Moon through the sky, and visible planets and their movement among the stars will also be discussed. 40 minutes.

TWO SMALL PIECES OF GLASS: THE AMAZING TELESCOPE
Grades 4 & up
While attending a local star party, two students learn how the telescope has helped us understand our place in space and how telescopes continue to expand our understanding of the Universe. Their conversation with an astronomer enlightens them on the history of the telescope and the discoveries these wonderful tools have made. 45 minutes – includes star talk.

THE BODY CODE
Grades 5 & up
Fly through the carotid artery; explore the eye, brain, ear, and heart. Shrink into a cell to see its nucleus and DNA within. Discover how DNA programs the body’s cells to form the circulatory and nervous systems. Watch from inside as we use lasers to fight disease at the cellular level. 25 minutes.
JOIN US FOR GIRL AND BOY SCOUT workshops and overnights at Longway Planetarium. Activities all school year! Visit SloanLongway.org/Scouts for more details.

SHARE WITH YOUR SCHOOLS’ Scout Leaders!

SHARE WITH PARENTS!

EXPLORE SCIENCE ON SATURDAYS THROUGH HANDS-ON FUN!

Choose from science workshops for the following age groups:

- Families (ages 4-104)
- 4-7 years-old
- 1st-3rd grades
- 4th-6th grades
- 9th-12th grade

Sign up at SloanLongway.org/ScienceWorkshops
BOOK YOUR LEARNING EXPERIENCE

Let our educators bring field trips to you.

LOOK INSIDE FOR MORE INFORMATION!