

2016.2017

EDUCATOR GUIDE

The Ultimate Guide for Educators

USE THIS BOOK
to plan your next
learning experience
with Cranbrook
Institute of
Science

80+

PROGRAMS ARE OFFERED!

- Anthropology & Social Sciences
- Astronomy & Space Science
- Entertainment in the Planetarium
- Physical Science
- Life Science
- Earth Science
- Ecosystems Fluid Earth
- Bats & Live Animals

Programming aligned with the new Michigan K-12 science standards as well as grade level content expectations.



CRANBROOK
INSTITUTE OF
SCIENCE

Michigan's Museum of Natural History

science.cranbrook.edu

PLAN YOUR FIELD TRIP

PLANNING A FIELD TRIP WITH CRANBROOK INSTITUTE OF SCIENCE IS EASY. WE OFFER PROGRAMS AT OUR BEAUTIFUL BLOOMFIELD HILLS MUSEUM, AT YOUR SCHOOL OR VIRTUALLY THROUGH VIDEOCONFERENCING.

Registration Begins August 29, 2016

FIELD TRIP PROGRAMS AVAILABLE OCTOBER 4, 2016-JUNE 9, 2017
SCIENCE ON THE GO PROGRAMS AVAILABLE
SEPTEMBER 19, 2016-JUNE 9, 2017

REGISTER ONLINE AT SCIENCE.CRANBROOK.EDU

REGISTER OVER THE PHONE 8AM-4PM, MONDAY-FRIDAY 248 645.3210

A 50% NON-REFUNDABLE DEPOSIT IS REQUIRED AT TIME OF BOOKING

FIELD TRIPS ENCOURAGE AND SUPPORT CLASSROOM LEARNING



In order to make the registration process as easy as possible, use the handy tear-out planning worksheet for taking notes and exploring options. We'll gather all the necessary details on the phone.



Field trips play an important role for students and educators. A new learning environment provides the opportunity to build team and small group skills and engage students on an intellectual, social and physical level.



By integrating classroom learning with physical objects and hands-on experiences, students have an opportunity to better understand curriculum concepts and how they connect to the world around them.

CHAPERONES + ADULT VISITORS



TEACHER AND CHAPERONE INVOLVEMENT IN THE VISIT GREATLY IMPROVES THE STUDENTS' EXPERIENCE.

- Cranbrook requires a ratio of:
1 chaperone: 3 students for Preschool and Kindergarten
1 chaperone: 5 students for grades 1-12
- Additional chaperones (beyond the recommended ratio) are always welcome at an additional fee of \$10 per person.
- Due to classroom space limitations, additional chaperones may not be able to attend all programming.
- Please brief your chaperones in advance so they will feel comfortable and know what is expected of them and the students in their charge. We ask that all chaperones supervise and stay with their group during the entire visit.

We reserve the right to shorten your group's visit due to behavioral issues that impact our guests or museum property.

HELPFUL HINTS

- Programs start on the hour and run 45 minutes.
- Due to limited space, we are only able to store coats and lunches.
- Food and beverages are only permitted in designated areas.
- Chewing gum is not permitted in the museum.

PLANNING WORKSHEET

HERE'S THE INFO WE'LL ASK YOU ON THE PHONE. REGISTER AT 248 645.3210

- Interested in Science on the Go! field trips at your school? See pages 24 - 25 for more information.
- Interested in Science on the Screen! videoconferencing field trips at your school? See page 26 for more information.

1 TELL US ABOUT YOU

Name
Email
Phone
Alternate Phone

School Name
District
School Office Phone
Street
City
State + Zip

County

2 WHEN WOULD YOU LIKE TO VISIT?

1ST CHOICE

| | | |
|------|--------------|----------------|
| DATE | ARRIVAL TIME | DEPARTURE TIME |
| | | |

DATE ARRIVAL TIME DEPARTURE TIME

2ND CHOICE

| | | |
|------|--------------|----------------|
| DATE | ARRIVAL TIME | DEPARTURE TIME |
| | | |

DATE ARRIVAL TIME DEPARTURE TIME

3 TELL US ABOUT YOUR GROUP

GRADE _____ # STUDENTS _____ # TEACHERS _____ # CHAPERONES _____

CRANBROOK CHAPERONE RATIO MINIMUMS: PK & K = 1 FREE CHAPERONE PER 3 STUDENTS. GRADES 1-12 = 1 FREE CHAPERONE PER 5 STUDENTS.

NOTE: DUE TO CLASSROOM SPACE LIMITATIONS, SOME CHAPERONES MAY NOT BE ABLE TO ATTEND ALL PROGRAMMING.

WHICH PROGRAMS ARE YOU CONSIDERING?

PROGRAM #1 _____ PROGRAM #3 _____

PROGRAM #2 _____ PROGRAM #4 _____

NOTE: See page 4 for an overview of all programs and pages 8 - 26 for detailed descriptions of each program.

4 LET'S WORK OUT LOGISTICS

(Cafe lunches are \$5.25 per person. See page 30 for details and menus.)

- WILL YOU NEED SPACE FOR LUNCH? YES NO
- STUDENTS WILL: BRING THEIR LUNCHES TEACHER WILL PRE-PURCHASE LUNCH FROM THE CAFE
- DOES YOUR GROUP HAVE ANY SPECIAL NEEDS? YES NO EXPLAIN _____
- WILL YOU ARRIVE: BY CAR BUS
- WILL ANYONE BRING A WHEELCHAIR? NO YES HOW MANY? _____
- DO YOU AUTHORIZE CRANBROOK TO PHOTOGRAPH YOUR STUDENTS FOR PROMOTIONAL PURPOSES? YES NO

5 PAYMENT OPTIONS

PER STUDENT PRICING

1 PROGRAM \$12
2 PROGRAMS \$15
3 PROGRAMS \$17
4 PROGRAMS \$19

SOME PROGRAMS HAVE AN ADDITIONAL FEE.

SEE PRICING & PAYMENT ON PAGE 5 FOR COMPLETE LISTING.

PLEASE NOTE: CRANBROOK INSTITUTE OF SCIENCE MEMBERSHIP DOES NOT APPLY TO FIELD TRIPS.

EXTRA CHAPERONES + \$10 PER PERSON.

REGISTERING ONLINE:

A NON-REFUNDABLE 50% DEPOSIT IS REQUIRED WHEN SUBMITTING YOUR REGISTRATION.

REGISTERING BY PHONE:

A NON-REFUNDABLE 50% DEPOSIT IS DUE A MINIMUM OF 30 DAYS PRIOR TO YOUR GROUP VISIT.

IF REGISTERING WITHIN 30 DAYS OF YOUR VISIT, A NON-REFUNDABLE 50% DEPOSIT WILL BE REQUESTED AT TIME OF REGISTRATION.

- CHECK
 CREDIT CARD
 CASH IN PERSON

BALANCE DUE NO LATER THAN DAY OF VISIT.

6 EXTRAS AND ADD-ONS

- RECEIVE OUR FREE TEACHER E-NEWSLETTER YES NO
- INTERESTED IN SCIENCE-RELATED PROFESSIONAL DEVELOPMENT (SEE PAGE 27) YES NO
- BECOME A MEMBER AT CRANBROOK INSTITUTE OF SCIENCE (SEE PAGE 29) YES NO

PROGRAMS AT A GLANCE CRANBROOK: SUPPORTING YOUR CURRICULUM GOALS!

CRANBROOK INSTITUTE OF SCIENCE MAKES IT EASY TO RELATE FIELD TRIPS TO THE NEW MICHIGAN K-12 SCIENCE STANDARDS AND GRADE LEVEL EXPECTATIONS.

| SUBJECT | PROGRAM | GRADES | |
|---|--|---|--|
| ANTHROPOLOGY & SOCIAL STUDIES Pages 8 - 9 | ARCHAEOLOGY EXPEDITION | 3 4 5 6 | |
| | COLONIAL MICHIGAN | K 1 2 3 | |
| | FUR TRADE HISTORY ALIVE! | 3 4 5 6 7 8 9 10 11 12+ | |
| | MICHIGAN IN THE CIVIL WAR | 4 8 | |
| | MONEY! | 3 4 5 6 7 8 | |
| | THE PEOPLE OF THE THREE FIRES | 3 4 5 6 | |
| | THE FIRST AMERICANS | K 1 2 3 4 5 6 7 8 9 10 11 12+ | |
| | ASTRONOMY & SPACE SCIENCE Pages 10 - 12 | COSMIC COLORS – AN ADVENTURE ALONG THE SPECTRUM | 7 8 9 10 11 12+ |
| | | DINOSAURS AT DUSK (planetarium program) | 3 4 5 6 7 8 9 10 11 12+ 8 9 10 11 12+ |
| | | EVOLUTION OF THE STARS | 3 4 5 6 7 8 9 10 11 12+ |
| FROM DREAM TO DISCOVERY | | 6 7 8 9 10 11 12+ | |
| NATURAL SELECTION | | 1 2 3 4 5 6 7 8 9 10 11 12+ | |
| NIGHT SKY OBJECTS AND BEYOND | | P K 1 2 3 | |
| ONE WORLD, ONE SKY: BIG BIRD'S ADVENTURE | | 4 5 6 7 8 9 10 11 12+ | |
| REASON FOR THE SEASONS | | 4 5 6 7 8 9 10 11 12+ | |
| SEASON CHANGES & MOON PHASES | | 4 5 6 7 8 9 10 11 12+ | |
| SECRET OF THE CARDBOARD ROCKET | | K 1 2 3 4 | |
| SOLAR SYSTEM EXPLORATION | | 4 5 6 7 8 9 10 11 12+ | |
| STARS OF THE PHARAOHS | | 3 4 5 6 7 8 9 10 11 12+ | |
| STORIES IN THE STARS | | 5 6 7 8 9 10 11 12+ | |
| WORLDS OF WEATHER | | 4 5 6 7 8 9 10 11 12+ | |
| ENTERTAINMENT IN THE PLANETARIUM Page 13 | | YOUNG STARGAZERS SKY JOURNEY | P K 1 |
| | | CHRISTMAS LIGHTS! | K 1 2 3 4 5 6 7 8 9 10 11 12+ |
| | | LET IT SNOW | P K 1 2 3 4 5 6 7 8 9 10 11 12+ |
| | | MYSTERY OF THE CHRISTMAS STAR | 3 4 5 6 7 8 9 10 11 12+ |
| | SPACEPARK360 | K 1 2 3 4 5 6 7 8 9 10 11 12+ | |
| | SPACEPARK360: LUCID DREAMING EDITION | K 1 2 3 4 5 6 7 8 9 10 11 12+ | |
| | EARTH SCIENCE Pages 14 - 15 | CONTINENTAL DRIFT TO PLATE TECTONICS | 5 6 7 8 9 10 11 12+ |
| DINOSAURS | | 3 4 5 6 7 8 9 10 11 12+ | |
| DINOSAURS AT DUSK | | 3 4 5 6 7 8 9 10 12+ | |
| DINOSAUR TALE | | P K 1 2 | |
| EARTH SYSTEM SCIENCE | | 5 6 7 8 9 10 11 12+ | |
| JOURNEY TO THE CENTER OF THE EARTH | | 1 2 3 4 5 6 7 8 9 10 11 12+ | |
| ORIGIN OF THE GREAT LAKES | | 4 5 6 7 8 9 10 11 12+ | |
| ECOSYSTEMS/FLUID EARTH Pages 16 - 17 | | GREAT LAKES FOOD WEB | 4 5 6 7 8 9 10 11 12+ |
| | | HOW WE USE WATER | 2 3 4 5 6 7 8 9 10 11 12+ |
| | | I LIVE IN A WATERSHED | 5 6 7 8 |
| | MICHIGAN ECOSYSTEMS | 4 5 6 7 | |
| | YOU, ME, AND THE BLUE PLANET | 4 5 6 7 8 9 10 11 12+ | |
| | LIFE SCIENCE Page 18 - 19 | ANIMAL DIVERSITY | 4 5 6 7 8 9 10 |
| LIFE CYCLES, HEREDITY, AND THE HUNT FOR OBSERVABLE DATA | | P K 1 2 3 4 | |
| NATURAL SELECTION (planetarium program) | | 6 7 8 9 10 11 12+ | |
| OUTDOOR SCAVENGER HUNT | | P K 1 2 3 4 | |
| PHYSICAL SCIENCE Pages 20 - 21 | | ELECTRICITY AND MAGNETISM | 2 3 4 5 6 7 8 |
| | | ENGINEERING: LEVERS TO LIFT OFF | 5 6 7 8 9 10 11 12+ |
| | FORCES AND MOTION | K 1 2 3 4 5 6 | |
| | INQUIRY INVESTIGATION | P K 1 2 3 | |
| | LIGHT AND SOUND | 1 2 3 4 5 6 7 8 | |
| | MATTER AND ENERGY | 1 2 3 4 5 6 7 8 | |
| | PEGBOARD CHALLENGE | 5 6 7 8 | |
| | PHYSICS OF FLING! | 2 3 4 5 6 7 8 9 10 11 12+ | |
| | WEATHER | 4 5 6 7 8 | |
| BATS & LIVE ANIMALS Pages 22 - 23 | ANIMAL ADAPTATIONS | 2 3 4 5 6 7 8 9 10 11 12+ | |
| | BASICALLY BATS | P K 1 | |
| | BAT BEHAVIOR: INQUIRY LEARNING | 2 3 4 5 6 7 8 9 10 11 12+ | |
| | BATS OF MICHIGAN | 6 7 8 9 10 11 12+ | |
| | BATS OF THE WORLD | 2 3 4 5 6 7 8 9 10 11 12+ | |
| | BAT ZONE TOUR | P K 1 2 3 4 5 6 7 8 9 10 11 12+ | |
| | BIODIVERSITY AND YOU | 3 4 5 6 7 8 9 10 11 12+ | |
| | CREATURE COVERINGS | P K 1 | |
| | GARDENING FOR WILDLIFE | 6 7 8 9 10 11 12+ | |
| | NIGHT CREATURES | P K 1 | |
| | AT YOUR SCHOOL Pages 24 - 26 | SCIENCE ON THE GO! | P 1 2 3 4 5 6 7 8 |
| | | SCIENCE ON THE SCREEN! | 2 3 4 5 6 7 8 9 10 11 12+ |

PLAN YOUR FIELD TRIP PRICING & PAYMENT

FIELD TRIPS AT CRANBROOK INSTITUTE OF SCIENCE

Prices include admission, all exhibits, parking and chaperone resources for exploring the museum.

| | PER STUDENT |
|------------|-------------|
| 1 PROGRAM | \$12 |
| 2 PROGRAMS | \$15 |
| 3 PROGRAMS | \$17 |
| 4 PROGRAMS | \$19 |

| UPCHARGE FEES | PER STUDENT/PERSON |
|------------------------|--------------------|
| ARCHAEOLOGY EXPEDITION | +\$2 |
| ADDITIONAL CHAPERONES | +\$10 |

PHYSICS OF FLING! (MAX 30 STUDENTS PER PROGRAM)

| | |
|---------------------------------------|-------|
| IF PROGRAM FACILITATED AT CRANBROOK | \$400 |
| IF PROGRAM FACILITATED AT YOUR SCHOOL | \$550 |
| IF PROGRAM SPLIT BETWEEN BOTH VENUES | \$450 |

ENGINEERING: LEVERS TO LIFT-OFF THIS IS A THREE PROGRAM OFFERING

\$17

SCIENCE ON THE GO!

| | |
|---|-------|
| SMALL GROUPS (MAX 30 STUDENTS PER PROGRAM) | \$275 |
| FOR EACH ADDITIONAL PROGRAM | \$175 |
| LARGE GROUPS (MAX 150 STUDENTS PER PROGRAM) | \$325 |
| FOR EACH ADDITIONAL PROGRAM | \$200 |

CALL FOR MULTI-PROGRAM PRICING AT 248 645.3210

FAMILY SCIENCE NIGHT (MAX 300 PARTICIPANTS PER PROGRAM) \$675*

*BASED ON STATION SELECTIONS, ADDITIONAL MATERIAL FEES MAY APPLY

SCIENCE ON THE SCREEN! (MAX 30 STUDENTS PER PROGRAM, PRICE PER PROGRAM) \$125

AT THE TIME OF REGISTRATION:

- A non-refundable deposit of 50% of your total invoice is due.
- You are responsible for providing a final attendance count to the Institute's Scheduling Office no less than 21 business days prior to the day of your visit.
- Due to space limitations, only pre-registered attendees are guaranteed a program and additional chaperones may not be able to attend programming.
- Cranbrook memberships do not apply to field trip admission fees.

FOR CANCELLATIONS MADE MORE THAN 30 CALENDAR DAYS FROM DATE OF VISIT:

- Reschedule with no additional fees.
- Your 50% non-refundable deposit will be credited towards a future field trip occurring before June 9, 2017.
- Remaining pre-payment greater than 50% will be refunded by check to the person who completed the reservation.

CANCELLATIONS MADE LESS THAN 30 CALENDAR DAYS FROM DATE OF VISIT:

- Your 50% deposit is forfeited.

COMING IN FEBRUARY 2017:

"Wonderful Things" From The Pharaoh's Tomb

The Institute's exact replica of King Tutankhamun's throne pictured on cover was commissioned by Cranbrook Founders George and Ellen Booth during their visit to the tomb in Egypt the 1920's, and is on view in the Story of Us exhibition. In February 2017 *Tutankhamun: "Wonderful Things" From The Pharaoh's Tomb* will open at the Institute of Science. Featuring 131 replicas of the pharaoh's sacred and personal artifacts, grouped in 5 chambers according to aspects of his life, this exhibition vividly recreates the enigmatic, opulent age of 18th Dynasty Egypt. "Wonderful Things" is included with every field trip to the Institute of Science at no extra charge.



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WELCOME TO CRANBROOK INSTITUTE OF SCIENCE

FOUNDED BY DETROIT PHILANTHROPISTS GEORGE AND ELLEN BOOTH
IN 1904, CRANBROOK'S 319-ACRE CAMPUS IS ONE OF THE
WORLD'S LEADING CENTERS OF EDUCATION, SCIENCE AND ART.

200,000
ARTIFACTS & OBJECTS IN THE
INSTITUTE'S COLLECTIONS!

IT'S EASY TO PLAN
A FIELD TRIP
TO CRANBROOK
INSTITUTE OF
SCIENCE.

Cranbrook Institute of Science is Michigan's Museum of Natural History. As a natural history and science museum, Cranbrook fosters in its members and visitors a passion for understanding the world around them. Drawing from its vast collection of more than 200,000 objects and arti-

facts, the Institute offers public programs, exhibits, events and lectures throughout the year. School trips to Cranbrook offer the chance to meet science professionals active in their fields and the opportunity to interact with a unique, world-class collection of objects and artifacts.

- The Institute of Science offers over 80 field trip programs as well as special and permanent exhibits, planetarium shows, and seasonal events.
- All programming at the Institute is aligned with the New Michigan K-12 Science Standards and Grade Level Content Expectations (GLCEs) and emphasis is placed on your group's grade level.
- Our registration experts work with you to customize a field trip experience unlike any other. With options such as interacting with hands-on artifacts, a planetarium visit, lunch at the Institute, and even a visit to our gift shop, we can help plan a memorable experience for your students.

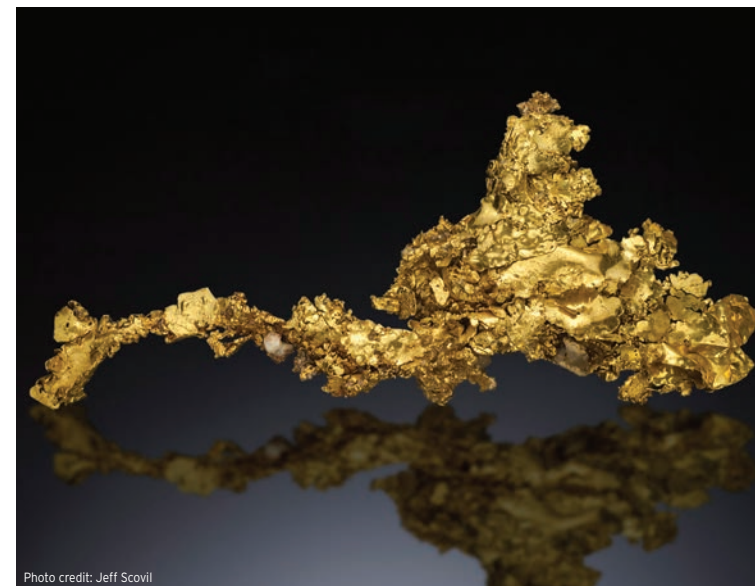


Photo credit: Jeff Scovil



ANTHROPOLOGY & SOCIAL STUDIES

WHAT DOES IT MEAN TO BE HUMAN?

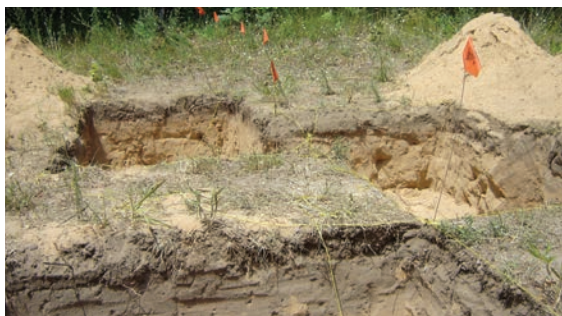
EXPLORE THE HUMAN EXPERIENCE ACROSS TIME AND PLACE.

ARCHAEOLOGY EXPEDITION

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Participate in a simulated archaeological dig! Just like professional archaeologists, students excavate a site to unearth artifacts. After mapping, recording and interpreting their findings, students piece together what life was like for the earliest inhabitants of Michigan and present the results of their inquiry. All students take home an expedition souvenir.

Offered Oct. 4-Nov. 22, 2016 and Apr. 11-June 9, 2017. Program occurs outdoors; dress appropriately for the weather. There is a \$2 up charge per student for this program.



COLONIAL MICHIGAN

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Explore a time of great change in late 18th Century Michigan as fur traders, Native Americans, farmers, shopkeepers, soldiers, tradesmen and servants mingled on city streets and rural pathways. Educators in period costume use hands-on materials, historical documents and artwork to bring Michigan's community history to life with a focus on labor, community roles and land use.



FUR TRADE HISTORY ALIVE!

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Explore the world of the 18th Century French fur trader and his Native American counterpart in the Great Lakes. This program takes place in an authentic Great Lakes wigwam and includes hands-on experiences with tools and fur pelts to reveal the delicate interplay between two very different cultures.

Program occurs outdoors; dress appropriately for the weather.

MICHIGAN IN THE CIVIL WAR

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Michigan's soldiers and industry were critical to the Union Cause in the Civil War. Abraham Lincoln famously said "Thank God for Michigan!" Michigan soldiers, such as Custer's "Wolverine Brigade" fought in many battles, while Michigan abolitionists worked with others on the Underground Railroad to help enslaved African Americans gain their freedom. Artifacts and relics bring this critical period of the history of our State and Nation to life.

This program is designed especially for Grades 4 and 8.

ANTHROPOLOGY & SOCIAL STUDIES

THE PEOPLE OF THE THREE FIRES

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Enter the world of the Ottawa, Ojibway and Potawatomi tribes of Michigan. Artifacts, interactive games and activities combine to reveal the history of Michigan's First Peoples. The program touches upon language, sports and games, arts and cultural ideals—both past and present—of the tribes known as "The People of the Three Fires".

THE FIRST AMERICANS

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Authentic artifacts and hands-on activities help students discover how Native Americans interacted with the natural world to meet their daily needs. Investigate the contrast between Southwest and Northwest Coast tribal groups. Experience the saga of the Plains tribes and their clashes with the United States.



MONEY!

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Students learn how economics impacts their lives every day. Using collaborative activities, this program illuminates barter and money economies. Students operate their own stores, participate in trade networks and apply math skills to develop an understanding of the importance of fiscal responsibility.



ASTRONOMY & SPACE SCIENCE

WHAT'S OUT THERE?

SPACE SCIENCE TAKES US EXPLORING IN OUR OWN GALAXY—AND BEYOND!

These programs take place in the Institute's state-of-the-art Acheson Planetarium.

DINOSAURS AT DUSK

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Take to the skies and discover the origins of flight with a father and his teenage daughter who share a fascination for all things that fly. Navigate with them across continents, meet the ancestors of modern-day birds – the feathered dinosaurs – and experience the cataclysmic “last day” of the dinosaurs.

EVOLUTION OF THE STARS

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

This intense, informative program is a look at the evolution of stars in general and the Sun in particular. From the turbulent cauldron of their birth through the multitude of cataclysmic ways they can meet their end, students will discover the many secrets stars hold.

This is a partially live-narrated program.

FROM DREAM TO DISCOVERY: INSIDE NASA ENGINEERING

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Experience the challenges of the next generation of space exploration in this brand-new immersive program in the *Acheson Planetarium*. By using exciting real-life projects like NASA's James Webb Space Telescope and the New Horizons mission to Pluto, the show highlights the extreme nature of spacecraft engineering and the life cycle of a space mission – from design and construction to the rigors of testing, launch, and operations. Blast off and take the voyage with us! This program also contains an interactive segment that allows participants to assist in the design of a virtual space mission.

From Dream to Discovery is made possible by the generous support of the Baiardi Family Foundation.

NATURAL SELECTION

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Join the young Charles Darwin on his adventurous voyage of exploration. Witness the thrill of scientific discovery through Darwin's eyes, make observations of the most beautiful natural scenery, and see the pieces of the scientific puzzle fall into place. Darwin himself reveals the simple and most beautiful mechanism that explains the evolution of all life on Earth: Natural Selection.

NIGHT SKY OBJECTS AND BEYOND

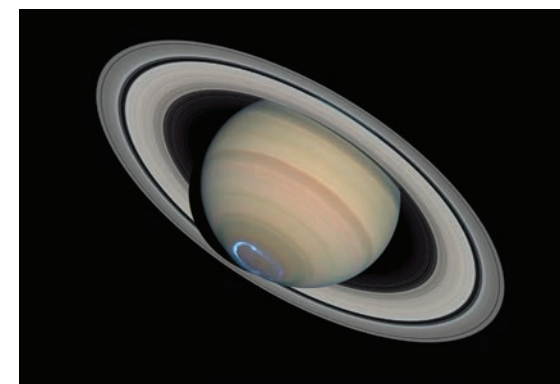
GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

The emphasis is on all-around sky viewing. Find the Big Dipper, North Star, planets and constellations in the current sky. Observe the apparent motion of the sky. Venture into interstellar space to explore our starry home – the Milky Way Galaxy – in stunning three-dimensions! Note: This partially live-narrated program is updated weekly to reflect the latest astronomical discoveries or topics of interest.

REASON FOR THE SEASONS

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

This exciting live presentation demonstrates why the start of the seasons depends on your location on Earth as well as Earth's position around the Sun. Observe the Sun's altitude and daily motion from various latitudes. Discover why your favorite constellations aren't visible every night. Could the seasons and the ever-changing sky at night be linked? Find out!



SEASON CHANGES & MOON PHASES

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Discover the reason for the seasons in this exciting live presentation! Learn why the start of the seasons depends on your location on Earth as well as Earth's position around the Sun. Observe the Sun's altitude and daily motion from various latitudes and visit Mars! Discover the phases of the Moon and uncover the mysteries of both solar and lunar eclipses.

SECRET OF THE CARDBOARD ROCKET

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

What is the secret of the cardboard rocket? Two young adventurers turn an old cardboard box into a rocket and blast off on an awesome adventure to the most amazing places in the solar system! Join them as they visit the planets to learn what makes each one unique and what makes Earth such a special place to live.

This program is available in either a 30- or 40-minute format. Specify your preferred format length when registering.

ONE WORLD, ONE SKY: BIG BIRD'S ADVENTURE

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Join Big Bird, Elmo and Hu Hu Zhu on an exciting discovery of the Sun, Moon and stars. Find the Big Dipper and the North Star. Take an imaginary trip that explores the differences between the Moon and Earth. Join them back on Earth to celebrate the idea that even though they live in different countries, they still share the same sky.

SOLAR SYSTEM EXPLORATION

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Explore the planets in our solar system, from their formation billions of years ago to the current robotic missions sent to unlock their secrets in this live presentation. Learn about the latest discoveries of comets, moons and icy bodies in the Kuiper Belt and beyond. See what the planets look like in the night sky and how they move along their orbits over time.



STARS OF THE PHARAOHS

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Travel to ancient Egypt to see how astronomy was used to tell time and align huge buildings. Learn about the connection the ancient Egyptians felt with the stars and various astronomical phenomena and see some of the most spectacular temples and tombs of the ancient world recreated in their original splendor.

COSMIC COLORS - AN ADVENTURE ALONG THE SPECTRUM - NEW

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Cosmic Colors will take you on a wondrous journey across the entire electromagnetic spectrum in this brand-new immersive program in the *Acheson Planetarium*. Discover the many reasons for color—like why the sky is blue and why Mars is red. Take a tour within a plant leaf and journey inside the human eye. Investigate x-rays by voyaging to a monstrous black hole and then back at your doctor's office. You will even see the actual color of a dinosaur—based on recent evidence. Get ready for an amazing adventure under a rainbow of cosmic light!

WORLDS OF WEATHER

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

What's the difference between climate and weather? Is Earth the only planet in our solar system that has varying climates and changing weather patterns? How does Earth's climate and weather compare to other planets in our solar system? By studying and comparing Earth's unique position within the solar system, we answer these and other climate and weather related questions.

This is a live-narrated program.

YOUNG STARGAZERS SKY JOURNEY

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Make the sky turn dark and sprinkle it with stars! Embark on an exciting and educational journey through the night sky, viewing constellations and visiting the planets. *This is a live-narrated program.*

STORIES IN THE STARS

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Travel to the Isle of Crete where the legends of Zeus, Hercules, Orion, Perseus, Medusa and many others come to life in this live-narrated presentation. The Ancient Greeks and Romans may not have understood the nature of the stars, but they certainly had vivid imaginations as they created their mythological legends and stories looking at them.



CHRISTMAS LIGHTS!

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Dazzling state-of-the-art digital effects are choreographed to favorite wintry tunes and Christmas music, including: Wizards in Winter (Trans-Siberian Orchestra), Jingle Bell Rock (Bill Haley & The Comets), Merry Little Christmas (Tony Bennett), Rudolph the Red-nosed Reindeer (Gene Autry), White Christmas (Bing Crosby), Winter Wonderland (Dean Martin), and more.

Offered Nov. 1-Dec. 22, 2016.

LET IT SNOW

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

"Let it Snow" features a variety of festive classics from Frank Sinatra and Chuck Berry to Burl Ives and Brenda Lee, and includes a stunning multimedia finale by the Trans-Siberian Orchestra. The soundtrack is visually enhanced with thematic animation and all-dome scenery in the audio-visual setting of the *Acheson Planetarium*. This 32-minute program is a fun and entertaining experience for all ages.

Offered Nov. 1-Dec. 22, 2016.



MYSTERY OF THE CHRISTMAS STAR

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Journey back to Bethlehem as we examine the possible scientific explanation for the Star the Magi followed to find the baby Jesus. Using recorded sightings of significant astronomical occurrences during related historical events, we'll investigate possible dates for the birth of Jesus. This astronomical look at the Christmas story will charm and captivate audiences of all ages.

Offered Nov. 1-Dec. 22, 2016.

SPACEPARK360

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Riders dip toward molten pools on Io, dodge flying particles in the rings of Uranus, do a loop-the-loop through the canyons of Mars and more on nine different "rides." Set to popular music by White Zombies, U2, Stealers Wheel, Lenny Kravitz and others, SpacePark360 is an immersive, all-ages experience unlike any other.

SPACEPARK360: LUCID DREAMING EDITION

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

The same great visuals as SpacePark360 but this time set to the infectious music of A Burning Century, an Atlanta-based alternative-rock-electronica band with a sound that combines soaring melodies with hard-hitting rhythms.

Lucid Dreaming, the debut album from A Burning Century, is available for purchase in the Science Shop.



EARTH SCIENCE

**EVER WONDER WHAT'S
BELOW THE GROUND WE SEE?**

FROM CRUST TO CORE, EARTH SCIENCE EXPLORES OUR HOME.

CONTINENTAL DRIFT TO PLATE TECTONICS

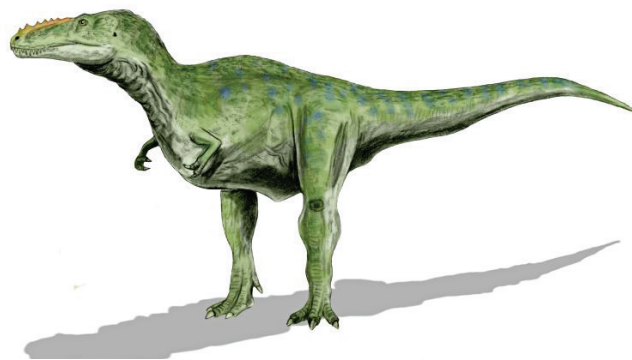
GRADE P K 1 2 3 4 **5 6 7 8 9 10 11 12**

Explore and evaluate Alfred Wegener's evidence for continental drift and the existence of the supercontinent Pangaea with numerous rocks, fossils and casts from Antarctica, Africa and Australia. See how new technology and exploration of the deep oceans provided further evidence for the theory of plate tectonics, including how the theory explains the present day distribution of earthquakes, volcanoes, mountains, rift valleys, rocks and minerals—including plate tectonic events that occurred in Michigan over 1 billion years ago!

DINOSAURS

GRADE P K 1 2 **3 4 5 6 7 8 9 10 11 12**

Use scientific reasoning to explore the behavior, biology, ecology and evolution of dinosaurs through examination of fossil bones, eggs and casts, including complete skeletons and large skulls. Evaluate the evidence for dinosaur extinction theories and the relationships between dinosaurs, birds and reptiles. Use the geologic time scale to trace the range of dinosaurs and humans in Earth history.



DINOSAURS AT DUSK

GRADE P K 1 2 **3 4 5 6 7 8 9 10 11 12**

Take to the skies and discover the origins of flight with a father and his teenage daughter who share a fascination for all things that fly. Navigate with them across continents, meet the ancestors of modern-day birds – the feathered dinosaurs – and experience the cataclysmic “last day” of the dinosaurs.

This program takes place in the Acheson Planetarium.

DINOSAUR TALE

GRADE **P K 1 2** 3 4 5 6 7 8 9 10 11 12

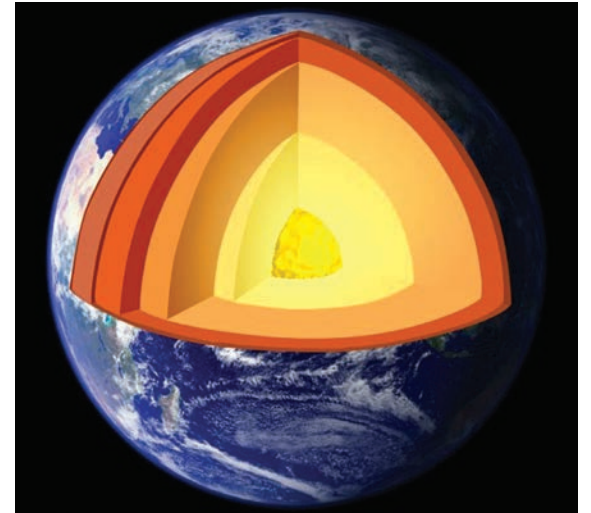
Travel back in time to visit the land of the dinosaurs. Students gain hands-on experience with genuine coprolites, bones, and teeth, and casts of claws, spikes, skulls, and more. Students simulate a fossil dig and learn the skills and tools of the Institute's paleontologist.



EARTH SYSTEM SCIENCE

GRADE P K 1 2 3 4 **5 6 7 8 9 10 11 12**

Compare Earth to the other rocky planets and use satellite images and rock and mineral specimens to better understand our planet as a system driven by the Sun and internal geothermal heat. Discover how aspects of physical and chemical changes and solid Earth processes – plate tectonics, volcanism and rock weathering – are linked to the atmosphere, oceans, biosphere and global climate, including the growing role of humanity as a major force in the system.



JOURNEY TO THE CENTER OF THE EARTH

GRADE P K **1 2 3 4 5 6 7 8 9 10 11 12**

Take an incredible customized 4,000 mile journey from the site of your school to the center of the Earth. See the sediments and handle the rocks, minerals, gems and fossils that would be encountered along the way. Discover how geologists interpret geologic evidence and what the rocks and sediments reveal about Earth System history and natural resources in your community. Evaluate how and what we know about the deep structure and origin of our planet, its source of internal heat and magnetic field.

ORIGIN OF THE GREAT LAKES

GRADE P K 1 2 3 **4 5 6 7 8 9 10 11 12**

Use rocks, fossils and geologic maps to discover how ancient continental rift valleys, shallow tropical seas, folded rock layers and great flowing ice sheets combined to produce the Great Lakes basins. Discover the fascinating story of the postglacial evolution of local watersheds and related ecosystems, including the extinct mastodon community and early Paleo-Indian hunters. Evaluate the importance of these unique freshwater lakes and the potential problems posed to this resource and its biota by invasive species, diversion, and pollution.



ECOSYSTEMS/FLUID EARTH

WHAT DOES NATURE MEAN?

AMAZING AND DIVERSE ECOSYSTEMS ARE ALL AROUND US.

GREAT LAKES FOOD WEB

GRADE P K 1 2 3 **4 5 6 7 8 9 10 11 12**

A complex food web connects plants and animals in the Great Lakes. Students discover producers, consumers and decomposers and how they are linked to one another. They discuss how habitat loss, invasive species and pollution have affected animals, and what can be done to protect and restore the Great Lakes for them.



HOW WE USE WATER

GRADE P K 1 **2 3 4 5 6 7 8 9 10 11 12**

Take a journey through the water cycle from the Earth's surface to atmosphere and back again. Students learn about the Great Lakes as the most significant freshwater ecosystem on Earth. Demonstrations and hands-on activities reveal how precious the Earth's freshwater is and what we can do to conserve it.

YOU, ME, AND THE BLUE PLANET

GRADE P K 1 2 3 **4 5 6 7 8 9 10 11 12**

Did you know that our actions impact the quality of water in the lakes, rivers and streams in our communities, and the Great Lakes? From Zebra Mussels to Phragmites and microbeads, many plants, animals, and foreign substances have been introduced to the Great Lakes region with harmful effects to its ecosystems. Learn how WE can work together to protect our most precious resource, Water. Students will examine samples collected throughout Michigan and consider ways they can help.

MICHIGAN ECOSYSTEMS

GRADE P K 1 2 3 **4 5 6 7 8 9 10 11 12**

Investigate the diversity of Michigan's ecosystems. Students work in groups to design a food web in one of six different ecosystems. They explore the interrelationships between biotic and abiotic factors and how energy flows through food webs to sustain life in any ecosystem.



I LIVE IN A WATERSHED

GRADE P K 1 2 3 **4 5 6 7 8 9 10 11 12**

Learn about your watershed and how to protect it from pollution. Working in groups, students create a model community to develop an understanding of the ways in which land use impacts the water quality of local rivers and streams, and ultimately, the Great Lakes.





LIFE SCIENCE

WHAT IS BIODIVERSITY?

LIFE SCIENCE REVEALS THE INTERCONNECTEDNESS OF ALL LIVING THINGS.

ANIMAL DIVERSITY

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

What are the most numerous animals on Earth? Learn about different animal groups and their relative abundances. Examples from the Institute's collections illustrate the wide variety of life forms. Students sort and identify groups to discover Earth's least appreciated, but most diverse organisms.

NATURAL SELECTION

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Join the young Charles Darwin on an adventurous voyage of exploration circumnavigating the world with the HMS Beagle. Witness the thrill of scientific discovery by seeing the world through Darwin's eyes, make observations of the most beautiful natural scenery and let the pieces of the scientific puzzle slowly but surely fall into place. Allow Darwin himself to reveal this simple and most beautiful mechanism that explains the evolution of all life on Earth: natural selection.



LIFE CYCLES, HEREDITY, AND THE HUNT FOR OBSERVABLE DATA

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Students dive into the world of fauna and flora as they construct knowledge about the natural world around them. Through classroom participation, observations, and current scientific data, as well as the use of specimens from the Institute's vast collection, participants discuss the life cycle of animals and plants and identify the characteristics passed from one generation to the next.



OUTDOOR SCAVENGER HUNT

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Explore the Institute's trails on a guided hunt and observe what plants and animals need to survive in an ecosystem. From fall's browning leaves to springtime buds and blooms, students discover the diversity of life and observe seasonal changes. They look for evidence of human impact on the living and non-living components among Cranbrook's 319 acres.

Offered Oct. 4-Nov. 22, 2016 and Apr. 11-June 9, 2017. Program occurs outdoors; dress appropriately for the weather.





PHYSICAL SCIENCE *HOW DOES THAT WORK?*

DISCOVER THE SCIENCE OF THE WEATHER, PHYSICS, MATTER AND ELECTRICITY THAT SURROUNDS US EVERY DAY.

ELECTRICITY AND MAGNETISM

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Examine the properties of magnets and how they act with common materials and with each other. Investigate the discovery of electricity and its connection with atoms. Create a human magnet and a human circuit, perform a hair-raising experiment, and generate lightning to observe how electricity and magnetism interact with matter.

FORCES AND MOTION

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Investigate matter and the qualities scientists use to classify it as solid, liquid or gas. Understand how to make work easier by applying pushes and pulls on simple machines like levers, pulleys and inclined planes. Lots of activities including student volunteers and hands-on demonstrations make this a "moving" experience!

LIGHT AND SOUND

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Focus on the physics of waves as we explore and describe the properties of light and sound. Discover how these forms of energy are created, measured and controlled. Hands-on activities and student participation with percussion tubes, spectrum tubes, and more reveal the fascinating facts about these everyday phenomena.

MATTER AND ENERGY

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Learn how scientists classify common materials through an emphasis on water, then explore "weird" substances that blur the boundaries between states of matter. Apply light, heat, electricity and other forms of energy to matter and behold the results. Finish with a BANG when we change chemical potential energy into kinetic energy!



WEATHER

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

See how solar energy drives our climate and discover the circumstances that influence our daily weather. Become a meteorologist by using current Internet data to create a forecast. Explore violent weather and learn how to protect yourself during storms. Watch lightning strike before your very eyes!

SPECIAL PROGRAMS

PHYSICS OF FLING!

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Demonstrate the power of physics using the Institute's three-ton trebuchet. Capable of launching a large pumpkin the length of a football field or more, Cranbrook's trebuchet is an awesome tool to demonstrate the principle of conservation of energy, the mathematical nature of projectile motion and the basic laws of kinematics in engaging and inspiring ways.

This amazing program is offered in three ways:

1. Two hours at your school
2. Two hours at the Institute of Science
3. One hour at your school and one hour at the Institute (on separate days).

Each program includes a classroom component that involves the use of a model trebuchet as well as the hands-on use of the full-scale trebuchet. This program requires even terrain and approximately 75 yards of down-range distance. Some classroom components for lower grades are not transportable and require a museum visit.

See page 5 for pricing information.

PEGBOARD CHALLENGE - NEW

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Learn about one of NASA's greatest problem-solving moments when engineers fit a "square peg into a round hole" and saved the Apollo 13 lunar mission crew. Then test problem-solving skills by assembling a track to guide a ball around obstacles and across a board using a limited set of tools. This program stresses engineering skills and thinking out-of-the-box.

INQUIRY INVESTIGATION

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Utilize this inquiry-based experience to explore the concept of what causes objects to move. As students study cause and effect relationships, they will practice the scientific process by asking questions, making observations, exploring different materials, and communicating their ideas.

ENGINEERING: FROM LEVERS TO LIFT-OFF

GRADE P K 1 2 3 4 5 6 7 8 9 10 11 12

Engineering: From Levers to Lift-off is an education-focused program that explores many of humanity's engineering accomplishments throughout recorded history. This exciting program explains each STEM focus area (Science, Technology, Engineering and Math) through real-world applications—from the development of the simple lever and the catastrophic power of medieval siege engines to space flight.

Set in the Institute's *Acheson Planetarium* and other demonstration areas, Engineering: From Levers to Lift-off will take students on a journey of discovery and investigation to help them better understand how humanity achieved amazing engineering feats by using imagination and know-how.

Specialty program priced at \$17 per student.

Engineering: From Levers to Lift-off is equivalent to three regular programs at the Institute of Science and is made possible by the generous support of the Baiardi Family Foundation.



BAT ZONE TOUR

GRADE **P** **K** **1** **2** **3** **4** **5** **6** **7** **8** **9** **10** **11** **12**

Take a personal, behind-the-scenes tour with a bat expert at the NEWLY RENOVATED Bat Zone and experience bats in flight, flying squirrels, owls, a two-toed sloth and the largest species of bat in the world. Students also meet a colony of Vampire bats! Learn about these unique nighttime animals as you explore this nocturnal wildlife sanctuary.

BATS OF MICHIGAN

GRADE **P** **K** **1** **2** **3** **4** **5** **6** **7** **8** **9** **10** **11** **12**

Explore the fascinating world of Michigan bats! You will learn why bats are important to the state, where bat species are located and how to identify them. We will talk about the greatest threats facing Michigan bat populations and what we all need to do in order to protect these important creatures.



BATS & LIVE ANIMALS *WHY SAVE WILDLIFE?*

FROM VAMPIRE BATS TO FLYING SQUIRRELS, THE ORGANIZATION FOR BAT CONSERVATION, WITH THE HELP OF OUR ANIMAL AMBASSADORS, WILL REVEAL WHY A DIVERSE ECOSYSTEM KEEPS US HEALTHY.

MORE INFORMATION AT BATCONSERVATION.ORG

BASICALLY BATS

GRADE **P** **K** **1** **2** **3** **4** **5** **6** **7** **8** **9** **10** **11** **12**

Can you fly with your hands? Bats can! Meet live bats from around the world and observe the many similarities and differences between these flying mammals. Engage early learners in a positive first experience with bats.



BATS OF THE WORLD

GRADE **P** **K** **1** **2** **3** **4** **5** **6** **7** **8** **9** **10** **11** **12**

Bats play an important role in the health of local and global ecosystems. Students learn to identify the unique features of bats around the world such as echolocation, flight and feeding habits. Understand how environmental changes are impacting bat populations. Meet live bats and become inspired to protect these misunderstood creatures.

BAT BEHAVIOR: INQUIRY LEARNING NEW!

GRADE **P** **K** **1** **2** **3** **4** **5** **6** **7** **8** **9** **10** **11** **12**

In this two-part program, students will make their own observations, formulate questions, then get a chance to meet the bats and discuss their observations with a bat expert. Learn data recording, fundamental research methods, and how bats have adapted behaviors to survive in their natural environment!



ANIMAL ADAPTATIONS

GRADE **P** **K** **1** **2** **3** **4** **5** **6** **7** **8** **9** **10** **11** **12**

Discover the fascinating features and adaptations of Michigan's native nocturnal animals. In this program, students learn what adaptations are, how they are formed and why animals develop these amazing tools for survival. This program may include an owl, a bat, a flying squirrel and a skunk.

BIODIVERSITY AND YOU

GRADE **P** **K** **1** **2** **3** **4** **5** **6** **7** **8** **9** **10** **11** **12**

Explore the amazing variety of wildlife on planet Earth. Discover the relationship between plants and animals and identify the features of the global ecosystem. Learn how human beings impact biodiversity and how people can protect biodiversity amidst environmental changes. Live animals may include a large fruit bat, a snake, an owl and/or a flying squirrel.

CREATURE COVERINGS

GRADE **P** **K** **1** **2** **3** **4** **5** **6** **7** **8** **9** **10** **11** **12**

Fur, feathers, scales and slime! Learn how animals are classified by their body coverings and discover basic differences between mammals, birds, reptiles and amphibians. Meet a large fruit bat, a snake, an owl and a frog.

NIGHT CREATURES

GRADE **P** **K** **1** **2** **3** **4** **5** **6** **7** **8** **9** **10** **11** **12**

What big eyes you have! Uncover the secrets to life after dark in this interactive program for young children. Students encounter an owl, a bat and other nocturnal animals as they learn about the fascinating adaptations and survival tools of nighttime creatures.

GARDENING FOR WILDLIFE

GRADE **P** **K** **1** **2** **3** **4** **5** **6** **7** **8** **9** **10** **11** **12**

Discover the connection between plants and backyard wildlife including birds, butterflies, bees and bats. Learn about the animals that rely on backyards and how you can use your backyard to attract and sustain important pollinators and insect-eaters. Live animals include a Big Brown bat, an owl and a flying squirrel.

SCIENCE ON THE GO

WE'RE HAVING A FIELD TRIP AT OUR SCHOOL!

Cranbrook Institute of Science comes to you to host a field trip in your school! Institute educators share their excitement of science with investigative materials and fun props that promise to engage your students!

SMALL GROUP PROGRAMS

Small group programs work well for up to 30 students. Choose from a variety of topics, covering anthropology, astronomy, earth science, fluid earth, physics and life science.

DINOSAURS

GRADE PK-3

Hold a dinosaur fossil, learn how dinosaurs adapted to their surroundings and dig for fossils like a paleontologist in this program designed for younger students.

ELECTRICITY

GRADE 3-6

Examine the nature of electricity by modeling electron flow, building circuits and exploring generators. Investigate the many ways that electricity impacts our lives and how different forms of energy are converted into electrical energy.

CONTINENTAL DRIFT TO PLATE TECTONICS

GRADE 5-12+

Explore and evaluate Alfred Wegener's evidence for continental drift and the existence of the supercontinent Pangaea with numerous rocks, fossils and casts from Antarctica, Africa and Australia. See how new technology and exploration of the deep oceans provided further evidence for the theory of plate tectonics, including how the theory explains the present day distribution of earthquakes, volcanoes, mountains, rift valleys, rocks and minerals—including plate tectonic events that occurred in Michigan over 1 billion years ago!

HOW WE USE WATER

GRADE 5-8

Learn about the Great Lakes as one of the most important freshwater resources on Earth. Join us on a journey through the water cycle from the Earth's surface to atmosphere and back again. Demonstrations and hands-on activities reveal how vital the Earth's fresh water is and what we can do to conserve it. *For more information about water, curriculum, and links visit greatlakeswatershed.org.*

I LIVE IN A WATERSHED

GRADE 5-8

Learn about your watershed and how to protect it from pollution. Working in groups, students create a model community to develop an understanding of the ways in which land use impacts the water quality of local rivers and streams, and ultimately, the Great Lakes.

INQUIRY INVESTIGATION

GRADE PK-3

Utilize this inquiry-based experience to explore the concept of what causes objects to move. Students practice the scientific process by asking questions, making observations, exploring different materials, and communicating their ideas.

INVESTIGATING LIGHT

GRADE 1-6

Students conduct experiments that illustrate principles of light, shadows, color, reflection, refraction and more in this brilliant program.

IT'S A SMALL WORLD!

GRADE PK-3

Investigate the small world of insects and arachnids. Use models, microscopes, and live samples to explore the similarities and differences between insects and arachnids. Develop an understanding of the importance of the small living world around us.

MICHIGAN ECOSYSTEMS

GRADE 4-7

Investigate the diversity of Michigan's ecosystems. Explore 6 different Michigan Ecosystems and construct a food web among the biotic and abiotic factors in the ecosystems. Examine the interrelationships between these factors and how energy flows through the food webs to sustain life in any ecosystem.

MONEY!

GRADE 2-5

Beg, barter and buy with this enjoyable introduction to the principles of economies and fiscal responsibility.

THE PEOPLE OF THE THREE FIRES

GRADE 2-6

Discover Michigan's rich culture and history of the Ojibway, Ottawa and Potawatomi tribes through interactive activities and authentic artifacts.

ROCKS, MINERALS & FOSSILS

GRADE 3-8

Using Cranbrook's world-class rock and mineral collection and authentic fossils, students will learn about the formation of rocks and minerals. They will also engage in an activity investigating the rock cycle.

SCIENTIFIC PROCESS

GRADE 1-8

Students will discover the process that scientists use to understand the world around us. They will engage in a small group collaborative experiment using the steps of the scientific process.

STARLAB

GRADE K-8

Enter our portable planetarium and journey through the night sky discovering distant stars, planets and constellations. Immerse yourself in the lore behind the pictures in the sky.

WATER, WATER, EVERYWHERE

GRADE 2-4

Act out the water cycle, make a cloud in a bottle, see the effects of pollution on groundwater and understand the many ways that we use water with this interactive program that's bound to make a splash.

LARGE GROUP PROGRAMS

Large group programs work well for groups of up to 150 students and provide an up-close look at the physical sciences.

FORCE AND MOTION

GRADE K-8

Examine the how and why of motion, including forces, velocity, momentum, and laws of motion by using a trebuchet, hovercraft, sonar unit and more.

MATTER AND ENERGY

GRADE 2-8

Learn how scientists classify common materials with emphasis on water, and then explore "weird" substances that blur the boundaries between states of matter. Apply light, heat, electricity and other forms of energy to matter and observe the results. We finish with a BANG when we change chemical potential energy into kinetic energy!

SIMPLE MACHINES

GRADE K-5

Find out how simple machines can help us perform work in this stage show with large props and audience participation.

SPECIAL EVENTS

Bring your school community together to share in a fun and educational hands-on experience! Cranbrook Institute of Science can meet the variety of needs and interests in your school, your classroom, and your community. Our Science on the Go programs are S.T.E.A.M. focused and perfect for school events, extracurricular clubs, after school programs, and community and neighborhood events.

CUSTOM SCIENCE FESTIVALS

GRADE PK-8

Personalize your Cranbrook experience by developing a custom event that's just right for your school. Expand students' learning from S.T.E.M. into S.T.E.A.M. by incorporating some customized activities that involve the "A"rts along with the Science, Technology, Engineering, and Mathematics. These festivals can occur either during or after school. Students and teachers can rotate through the programs as a whole class or as small groups. The stations can run from 10 minutes to 30 minutes. Allow us to help you develop an engaging and interactive science day at your school!

FAMILY SCIENCE NIGHTS

GRADE PK-8

Students and parents can investigate the scientific world in an engaging and exciting after school event. Bring families into your school to cultivate an interest in science and extend your students S.T.E.A.M. learning by having us set up stations based on various branches of science. Events typically last two hours and require at least 12 volunteers. Now you can customize your Family Science Night by selecting your stations from over forty engaging options.

SCIENCE ON THE SCREEN!

THIS IS KNOWLEDGE - IN HIGH-DEFINITION.

Through videoconferencing technology, we bring high-quality science programs right into your classroom.

VIRTUAL FIELD TRIPS

Using the latest High-definition videoconferencing technology with chroma-key effects, Cranbrook Institute of Science brings quality science programs directly to your classroom!

- Distance learning enables students to connect with our scientists and become active participants in the learning experience.
- Programs address national standards and align with the Michigan GLCEs. Each 45-minute program includes teacher resource information, a session outline and any required activity kits. You must have videoconferencing equipment in your school or district to participate in Science on the Screen! virtual field trips. Connections are available via ISDN or IP.

For alternate connection options, please call 248 645.3235.

ASK THE EXPERT

GRADE 2-12+

Give your students the opportunity to meet a scientist and discover what it's like being a paleontologist, archaeologist or other museum professional. Every program is unique, as each expert uses multi-media programs, artifacts, and their own personal experiences and research to bring their life's work to your classroom.

ANIMAL ADAPTATIONS

GRADE 2-12+

Discover the fascinating features and adaptations of Michigan's native nocturnal animals. In this program, students learn what adaptations are, how they are formed and why animals develop these amazing tools for survival. This program may include an owl, a bat, a flying squirrel and a skunk.

BATS OF THE WORLD

GRADE 2-12+

Bats play an important role in the health of local and global ecosystems. Students learn to identify the unique features of bats around the world such as echolocation, flight and feeding habits. Understand how environmental changes are impacting bat populations. Meet live bats and become inspired to protect these misunderstood creatures.



BIODIVERSITY AND YOU

GRADE 3-12+

Explore the amazing variety of wildlife on planet Earth. Discover the relationship between plants and animals and identify the features of the global ecosystem. Learn how human beings impact biodiversity and how people can protect biodiversity amidst environmental changes. Live animals may include a large fruit bat, a bearded dragon and a sugar glider.

NATIVE AMERICA

GRADE 3-12+

Explore the history and culture of the tribes/nations of your State or Province using artifacts drawn from the Institute's collections, historical photographs and documents. This program is tailored to each group's interests based upon grade level and educator requirements.

THE PEOPLE OF THE THREE FIRES

GRADE 3-12+

Enter the world of the Ottawa, Ojibway and Potawatomi tribes of Michigan. Artifacts, graphics and commentary combine to reveal the history of Michigan's First Peoples. The program touches upon language, history, arts and cultural ideals—both past and present—of the tribes known as “The People of the Three Fires”.

THE ICE AGE AND YOUR SCHOOL: HOW COOL WERE YOU?

GRADE 4-12+

Explore the world of the ice age and investigate the evidence of that remarkable past in the local landscape and prehistoric biota to place your school and community in a global context. Evaluate theories for past and present changes in global climate with a geologist that has explored the Antarctic ice sheet, including the South Pole. This program is tailored to your geographic location. Emphasis is placed on the benchmarks for your group's grade level.

PROFESSIONAL DEVELOPMENT & OTHER PROGRAMS



Looking for something new and exciting in the sea of professional development offerings? Institute scientists and educators have spent years developing engaging programming in support of classroom curriculum. Enhance how science is taught through inquiry and interdisciplinary sessions and leave with ideas and activities that make teaching science more exciting than ever.

THE FUNDAMENTALS OF INQUIRY

Explore the role of inquiry to create powerful student experiences in science education, including best science practices, guiding learners in developing questions and facilitating student-driven investigations at any age. This workshop supports best science practices in the classroom and is available as a half-day or day-long session.



Call us at 248 645.3035 to discuss a custom session for your group.

SCIENCE IS ALIVE ALL YEAR AT THE INSTITUTE OF SCIENCE!



HALLOWEEN SCIENCE

October 21-23, 2016
Halloween Science is the Institute's most popular annual event. Join us for one of three sessions as we investigate the science behind the spooky through demonstrations, interactive activities, and more. Each session features all ages, not-too-scary experiences, and attendees are encouraged to don their costumes for this event.



GOBBLE UP SCIENCE!

November 23, 25 & 26, 2016
Prepare to feast on a smorgasbord of science! Learn how alligators and sharks hunt in low visibility, examine fossilized dung and discover where it's found and what can be gleaned from it, make a cast of a variety of shark teeth that you can take home, design and build a boat to see if you can keep your crew out of the shark infested waters below, and much more!



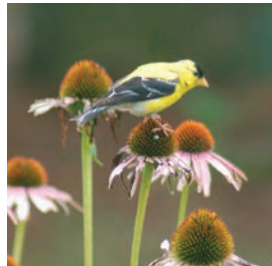
WORLD OF PREDATORS

December 26-30, 2016
Visit the Institute during the holiday season and experience the greatest predators of all time. For a start how about the prehistoric terror of the oceans-the 50' shark *Megalodon*.



DARWIN'S BIRTHDAY

February 12, 2017
Cranbrook Institute of Science is celebrating Charles Darwin's Birthday! This event features a variety of hands-on activities centered around Darwin's work. Be a biologist and classify species by their physical characteristics, see how the predator/prey relationship creates an evolutionary arms race with each trying to one-up the other, and learn how genes influence the lives of creatures large and small.



SPRING INTO SCIENCE

April 3-7, 2017
April is the month that we celebrate the Earth and all the resources that help us in our everyday lives. Join us to learn about our natural world and how we can help protect Mother Earth. Recycled Arts and Crafts, live insects and more!

See details and register online at science.cranbrook.edu or call 248 645.3210.



VOLUNTEER OPPORTUNITIES

Are you curious about what it's like to work at a museum? Are you a retired teacher who is missing the classroom? Do you have some spare time to share your experience and expertise?

If you answered YES to any of our questions, then we have an opportunity for you! Field trips at the Institute of Science are facilitated by education and content experts just like you! Volunteers are a vital part of what we do.

Opportunities for volunteers include:

- Facilitating field trip lessons in natural history disciplines
- Leading tour groups
- Working with visiting families
- Helping with special events
- Assisting with artifacts in collections
- Using your talents, skills and ideas

Contact 248 645.3748 to learn more about volunteer opportunities.

MEMBERSHIP

A YEAR'S WORTH OF REASONS TO BECOME A MEMBER!

Membership to Cranbrook Institute of Science is a great way to open the door to discovery and explore the world of science with your family and friends. Our exceptional exhibits, innovative programming and engaging planetarium shows promise to provide you with a day of education and inspiration. **JOIN TODAY!**

MEMBER BENEFITS



FREE

- Admission to all permanent exhibits
- Parking
- Subscription to Science Scope & E-newsletter



EXCLUSIVE

- Invitations to members only events
- Access to nearly 300 science & technology museums worldwide



DISCOUNTS

- Admission to all Changing Hall Exhibits
- Gift Memberships
- Science Shop purchases
- Reflections Cafe purchases
- Planetarium tickets
- Bat Zone tickets
- Guest tickets
- Camps, lectures, parties and more!

Upgrade to a Premium Level Membership to receive free access to the Changing Hall exhibit.



WHAT IS ANNUAL FUND?

Did you know...YOU make a difference at Cranbrook Institute of Science!

Cranbrook Institute of Science is committed to providing the best scope and scale of science education possible for you, your family, and those in and around the community; but we can't do it alone. This important work is done in large part because of the success of the Cranbrook Institute of Science Annual Fund. The Institute relies on the support of individual like you to assist us in influencing the scientists of tomorrow.

With your support we are able to provide:

- Unique, hands-on activities for guests
- Comprehensive educational programming
- Maintenance to one of the most extensive natural history collections the country
- The opportunity to inspire more than 200,000 guests annually

Please consider supporting us by making a gift today. You can be assured that every gift, no matter what size, will be warmly received and greatly appreciated.

MAIL YOUR GIFT

Cranbrook Institute of Science
Attn: Annual fund
PO Box 801
39221 Woodward Avenue
Bloomfield Hills, MI 48303

CALL US

Stephen Pagnani
Director, Annual Giving Programs
248 645.3228

MAKE YOUR GIFT ONLINE

Visit us at
science.cranbrook.edu
& click on the Give Now button

[Give Now](#)

SCIENCE SHOP

The Science Shop at Cranbrook Institute of Science provides a wonderful opportunity to enhance the learning experience with a personal artifact that reinforces scientific concepts and provide a positive memory of the visit.

Teachers and Chaperones receive a 10% discount off their purchases at the Science Shop.

NO TIME TO SHOP? CALL AHEAD AND PICK YOUR ORDER UP DURING YOUR VISIT! 248 645.3207 HINT! GO ONLINE TO SEE SPECIFIC PRODUCTS AND PRICES.



LUNCH AT THE INSTITUTE OF SCIENCE



BRING YOUR LUNCH

- Lunchrooms are available on a pre-scheduled basis.
- Each child should bring a lunch container identified with the student's name.
- Food and beverages, including gum, are not permitted in the museum.

ORDER LUNCH FOR YOUR STUDENTS

The Institute offers lunch catering for students. Lunches must be pre-ordered at least two weeks in advance for delivery to the school's designated lunchroom area at the time of the visit.

A. \$5.25 PER PERSON

B. Orders require a 50% non-refundable deposit at the time of order.

C. Additional a la carte items are available for an extra charge: chips, cookies, bottled water. Call for group pricing of these items. Specify at time of ordering if anything extra will be purchased.

D. Reflections Cafe accepts cash, credit cards (Visa and MasterCard) and checks (payable to Chartwells).

PLACE LUNCH ORDERS AND MAKE PAYMENT THROUGH THE CAFE DIRECTLY AT 248 645.3201



CHOOSE ONE MEAL OPTION FOR YOUR ENTIRE GROUP.

MEAL 1

Fresh pizza slice
(cheese or cheese and pepperoni)
Pretzels
Cookie
Applesauce
Juice Box

MEAL 2

Turkey and Cheese or
Ham and Cheese Sandwich
Cheese stick or pretzels
Cookie
Applesauce
Juice Box

Special requests? Food allergies? Ask us! We can accommodate most requests and regularly offer special dietary menus for gluten, nut and other food allergies.

ONE TEACHER/CHAPERONE EATS FREE WHEN MINIMUM OF 25 ORDERS ARE CONFIRMED.

PERMANENT GALLERIES & INSTALLATIONS

Cranbrook Institute of Science houses eleven permanent galleries that cover topics related to anthropology, astronomy, ecosystems, earth science, fluid earth, life science and physical science. Include a stop to one or many of our galleries as part of your field trip and help students see the interconnections with everything around them.

THE STORY OF US

The Story of Us showcases the very best of the Institute's nationally-regarded anthropology collection and offers an immersion experience unprecedented at Cranbrook. Visitors will experience the exhibition with the help of a virtual holographic-like personal guide and use individual touch-screen interfaces to learn more about objects that interest them.

LIFE CHANGES OVER TIME

Come face to face with a full-sized *Tyrannosaurus rex* skeleton cast and examine natural selection and evolution by exploring the question "Are birds the descendants of dinosaurs?"

ICE AGES COME AND GO

This exhibit presents climatic variations that have buried Michigan under ice over and over again. Hands-on interactives and visual diagrams help visitors explore issues like seasons, heat distribution and how heat travels across the globe.

MASTODONS DID NOT SURVIVE

This exhibit examines extinction through the example of the mastodon, which used to be plentiful in Michigan during the last ice age.

By NATIVE HANDS

The rich culture of Great Lakes native peoples reflects a complex connection between objects, practices and the environment.

READING OBJECTS

Every object—a pair of shoes, a necklace, a flag—holds different meanings for different people, and how we decode objects varies depending on culture, previous experience and prior knowledge.

WOODLANDS DEN

Retained as originally created, these dioramas of Michigan plant associations capture both a reminder of the Institute's past and a glimpse of habitats increasingly threatened throughout the state.

THE MOTION GALLERY

Lose your fear of physics with hands-on experiments that demonstrate the basic yet profound concepts of matter in motion.

EVERY ROCK HAS A STORY

Was Michigan once located in the tropics? Will California crumble into the Pacific Ocean? The earth is constantly changing right under your feet and the exciting results range from earthquakes and volcanoes to granite and diamonds.

ASTRONOMY LOBBY

The Astronomy Lobby includes ViewSpace, a self-updating exhibit from the Space Telescope Science Institute.

MINERAL STUDY GALLERY

Cranbrook founder George Booth started this mineral collection in 1926 with only a few hundred specimens. Since then, it has grown to more than 11,000 specimens.

ACHESON LIGHT LAB

Light Lab, an ingeniously subtle science lesson, is a space designed to encourage curiosity.

WATER IS LIKE NOTHING ELSE

See the power of water on the bed of an ancient sea, make a storm, and work with an interactive kiosk to explore freshwater issues.

ACHESON PLANETARIUM

The planetarium at Cranbrook Institute of Science is an intimate theater that allows you to explore and experience the universe.

CRANBROOK OBSERVATORY

Three new telescopes, architectural changes in the viewing space, a new dome, and compatibility with the planetarium offer an astronomical experience unparalleled anywhere in the Midwest. The Observatory is open weekends throughout the year.

THE ERB FAMILY SCIENCE GARDEN

Featuring a dynamic garden of Michigan native plants that change with the seasons and a water feature highlighting water in its vapor, liquid and solid states, the Erb Garden is open seasonally.

CHANGING EXHIBITIONS



**OCTOBER 2, 2016-
JANUARY 3, 2017**

Megalodon - Largest Shark that Ever Lived is a 5,000-square-foot traveling exhibit highlighting the evolution, biology and misconceptions of the enormous prehistoric shark that once cruised all the world's oceans. Related to the modern great white and mako sharks, Megalodon was a dominant marine predator for 15 million years before vanishing 2 million years ago. **Free with every Field Trip to the Institute of Science.**

Megalodon: Largest Shark that Ever Lived was produced by the Florida Museum of Natural History with support from the National Science Foundation.

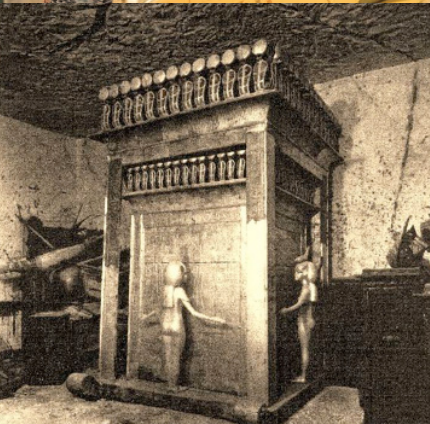


"WONDERFUL THINGS" FROM THE PHARAOH'S TOMB

FEBRUARY 3, 2017-SEPTEMBER 3, 2017

From the artisans of the Pharaonic Village in Giza, Egypt and the Metropolitan Museum of Art, this dazzling collection of reproductions of Tutankhamun's legendary treasures recreates the richest archaeological find of all time. Grouped in 5 chambers according to aspects of the pharaoh's life, 131 replicas of the pharaoh's sacred and personal possessions including such spectacles as the golden and his magnificent state chariot, vividly brings to life the enigmatic, opulent age of 18th Dynasty Egypt.

Free with every Field Trip to the Institute of Science.

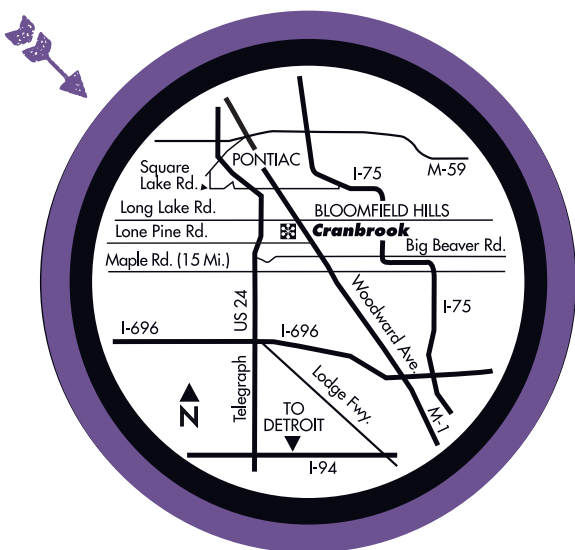


TRANSPORTATION & MAPS

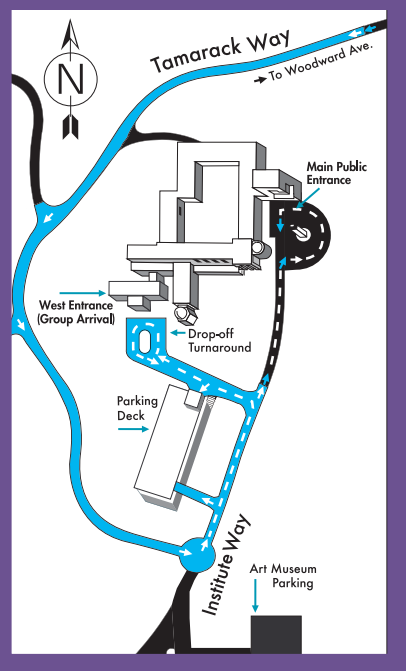
PLEASE STAY ON YOUR BUS AND A STAFF MEMBER WILL COME TO GREET YOUR GROUP AND PROVIDE INFORMATION FOR THE DAY'S VISIT.



DESTINATION MAP



CAMPUS MAP



SCOUT PROGRAMS

Workshops at Cranbrook Institute of Science provide Scouts the chance to work with professional scientists who are active in their fields and the opportunity to interact with a unique, world-class collection of objects and artifacts.



| BOYS | | GIRLS | | BOTH |
|-------------------|-----------------------|----------------------------|------------------------|----------------------|
| CUB SCOUTS | WEBELOS | BOY SCOUTS | DAISY | OVERNIGHTS |
| TIGER | Engineer | Archaeology | Using Resources Wisely | All Scout Astronomy |
| Sky is the Limit | Into the Woods | Astronomy | Flowers Jeweler | Juniors/Cadettes CSI |
| WOLF | Earth Rocks! | Chemistry | BROWNIES | |
| Finding Your Way | Walkabout | Electricity | Bugs | |
| Air of the Wolf | Adventures in Science | Environmental Science | Hiker | |
| BEAR | | Fish + Wildlife Management | Home Scientist | |
| Make it Move | | Geology | Potter | |
| Forensics | | | Senses | |
| Super Science | | | Water | |

WORKSHOPS

WORKSHOP INFORMATION

- Workshops include general admission to the Museum
- Schedule multiple workshops on the same day to receive a discount
- Lunch available—see page 30

OVERNIGHT WORKSHOPS INCLUDE

- 2 hour workshop
- Planetarium program
- Evening snack
- Continental breakfast
- Auditorium physics program (excluding CSI)



Preview programming and register online at science.cranbrook.edu or call 248 645.3210. Advance registration required.



SUMMER CAMP

Campers entering kindergarten through 5th grade utilize Cranbrook's 319-acre outdoor laboratory and the resources of a museum to explore science and create a lifetime of memories and learning experiences. Week-long day camps run during summer months.



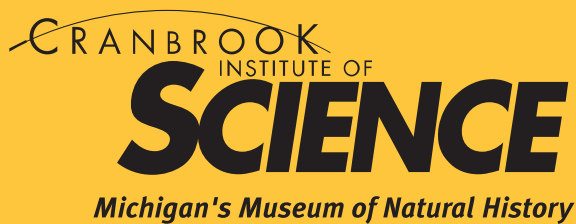
HOMESCHOOL PROGRAMS

Programming at Cranbrook Institute of Science greatly enhances the homeschool curriculum. From the hundreds of specimens and artifacts on display, to the many programs facilitated each day, any homeschool classroom comes alive with a visit to the Institute! Contact our scheduling office to hear more about how you or your group can register for a field trip.

PLAN A BIRTHDAY PARTY

Let Cranbrook Institute of Science host your next birthday party! Choose from staff-led or self-guided parties. From room rentals to dinosaur digs, museum tours, and private planetarium shows, we have many customizable options! Schedule today by calling 248 645.3193.

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