LOUISVILLE SCIENCE CENTER

2011-2012 EDUCATION GUIDE

MAGNIFY YOUR TEACHING EXPERIENCE

THOUGHTS WILL Multiply Faster Than Cells

Do science.

The Louisville Science Center understands that science literacy comes from hands-on learning. With every Science Center experience, be prepared to get your hands dirty, expand your mind, and do science.

Contents

[SUPER SCIENCE IT] Look for this symbol to SUPER-SCIENCE your Field Experience with additional programming!

Ready to do science with us? Call 502-561-6100, ext. 6575 or 1-800-591-2203, ext. 6575 to speak with a Louisville Science Center representative.

KNOWLEDGE GROWS WITH EACH RESOURCE

Do science.

Start with a dish of whole or 2% milk. Add four drops of different food coloring. Add a drop of liquid soap to the end of a toothpick and place the end in the center of the milk. What happens?

What's New

> October 1 – January 2

Rock your brain at the Science Center's fall festival of hands-on science! Come noodle things like how color affects your senses, or what happens at the eye of a storm. Can old things turn new again? Learn about the latest technology and meet field experts in coloring, meteorology, and conservation. Imagine a colorful future when you discover science applications and career possibilities in color mixing, weather-forecasting, and recycling. There's something new to dig into with each month's changing focus, and plenty to capture the interest of students who like to think! Don't blink, it'll be gone.

Colorama

> October 1 – 31

Paint the town with us! The world is a more colorful place with you in it, and we want you to splash, mix, spray, view, reflect, and refract with us. Test your hand at color mixing and use cool science tools to be sure your eyes aren't fooling you. Investigate how color plays a role in everything including the food we eat, the clothes we wear, and how animals survive in the wild.

PPG PORTER PAINTS

Sponsored by PPG Porter Paints

Weatherblast

> November 1 – 30

Weather affects us every day. The simple act of looking out our window and determining what to wear is based on weather conditions. Unleash your inner weather scientist by making neighborhood forecasting devices, trying your hand at high-tech weather technology and analyzing weather patterns. Face it, condensation happens.

[SUPER-SCIENCE IT] Add the film *Tornado Alley* to understand the origins and evolution of tornados. See page 7.

Reuseapalooza

> December 1 – January 2

This season, we're going to celebrate the planet by exploring ways to reuse things. Do science, build and tinker with everyday and natural objects around your home. Use your imagination to innovate new uses for old things. Find inventive ways to conserve and make the most of your resources. Go green!

Guitar: The Instrument That Rocked the World

Presented by at&t

> January 22 – April 22

Enroll your students in the school of rock as you experience the cultural impact of one of the world's most recognizable icons, the guitar. Investigate the unique sound of the guitar when you create vibrations, manipulate sound waves, and test decibel levels. Explore cultural changes and advances in technology, electromagnetism and amplification through the unique history and evolution of the guitar. Crowd surfing not required.

[SUPER-SCIENCE IT] Rock out with your students when you add the class *Properties of Sound*. See page 15.

IMAX

Sharks

> Now Showing through October 31

Come face-to-face with a multitude of shark species, including the Great White, Hammerhead, and Whale Shark in a film presented by Jean-Michel Cousteau. Witness them as they really are: not wicked man-eating creatures, but wild, fascinating, and endangered animals that were in existence a million years before dinosaurs roamed the Earth.

[SUPER-SCIENCE IT] Add the program *Animal Antics* to help your students understand the importance of all organisms in a multitude of ecosystems. See page 19.

Shackleton's Antarctic Adventure

> Now Showing

Witness the power of the human spirit as you trace the steps of Sir Ernest Shackleton's legendary adventure of surviving nearly two years trapped in the barren, frigid Antarctic. Although never accomplishing his goal of being the first to cross the icy continent, Shackleton's expedition has become a larger-than-life testament to heroism, fortitude, and leadership.

[SUPER-SCIENCE IT] Students will walk in Shackleton's shoes when you add the *Follow Me!* leadership program. See page 20.

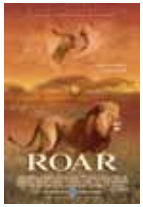
Lewis & Clark: Great Journey West

> Now Showing

It's a true-life adventure that defined a continent and changed the course of a nation's history forever. With stunning aerial cinematography and meticulous recreations, *Lewis & Clark* dramatizes the legendary early 19th-century expedition that crossed the uncharted North American West.

Roar: Lions of the Kalahari

> Now Showing



Join a pride of nature's most captivating and majestic creatures in a film set against the stunning backdrop of Botswana's Kalahari Desert. *Roar: Lions of the Kalahari* tells the story of lions living near an African water hole teeming with wildlife. Witness a battle for life, home, and offspring when a young lion tries to dethrone the lion king and the story of one royal family that struggles to survive in their kingdom, the Kalahari.

[SUPER-SCIENCE IT] Add the class *Biology and Biodiversity* to understand why the lion is king of the jungle. See page 15.

Tornado Alley

> Opens November 1

Follow a daring filmmaker and a team of driven scientists as they seek to encounter one of Earth's most awe-inspiring events—the birth of a tornado. Experience the relentless strength of nature's elemental forces as they literally surround tornadoes, gathering the most comprehensive severe weather data ever collected. This science adventure reveals the beauty and the power of some of our planet's most extreme—and least understood—weather phenomena.

[SUPER-SCIENCE IT] Your students will become *Storm Chasers* when you register them for an Overnight Adventure all about weather phenomena. See page 28.

CREATE THE PERFECT
Formula for a Good Time

Do science.

How many drops of water will fit on a penny? Use a pipette filled with water to add drops, one at a time, to the surface of penny. Were there more, or fewer, drops than you expected?

Field Experience Options

Field Experience

The Basic Field Experience includes general admission to the Louisville Science Center and access to all permanent exhibits: KidZone (reserved time required), The World We Create, The World Around Us, and The World Within Us. This year, general admission to the Science Center also includes access to interactive programming areas on the first floor through December, and access to *Guitar: The Instrument That Rocked the World* beginning in January 2012. See LouisvilleScience.org/exhibits for full descriptions of all permanent exhibits.

Cost: $5.00 per student. $5.00 per chaperone. Teachers are FREE.

IMAX Field Experience

Our four-story IMAX Theatre provides a unique opportunity to visit far-off lands, watch science come to life, or explore nature as never seen before in a giant-screen adventure.

Cost: IMAX-only $5.00 per student or chaperone, $2.00 per teacher.
Add-an-IMAX $2.00 per student, teacher, or chaperone.
Note: IMAX films may be booked separately or bundled with another Field Experience offering.

Lunch Options

After feeding hungry minds, you'll undoubtedly have some hungry bellies. Reserve the lunchroom at the Louisville Science Center and we'll store your sack lunches until it's time to eat!

Cost: $0.50 per student and chaperone. Teachers are FREE.

SUBWAY

Have SUBWAY® delivered and save the hassle of hauling sack lunches. Your pre-ordered lunches will be delivered to our lunchroom on the day of your visit.

A SUBWAY® order form will accompany your pre-visit package.

[SUPER-SCIENCE IT] Enhance your Field Experience with one of our Interactive Classes (page 13), Hands-On Labs (page 16), or Exclusive Programs (page 19)! Or, SUPER-SCIENCE the whole day by scheduling your visit during a Science Celebration (page 23)!

Search for Programs by Grade and Subject

Program	Pre-K	K	1	2	3	4	5	6	7	8	9	10	11	12
ScienTots (page 20) ● ● ●	■	■	■											
Animal Antics (page 19) ● ●	■	■	■	■	■									
The Earth (page 14) ● ●	■	■	■	■	■	■	■	■	■	■				
Energy, Electricity, and Magnetism (page 14) ● ● ●	■	■	■	■	■	■	■	■	■	■				
Health and Human Body (page 15) ● ● ●	■	■	■	■	■	■	■	■	■	■				
Transformation of Matter (page 13) ● ●	■	■	■	■	■	■	■	■	■	■				
Explore Kentucky Package (page 21) ● ● ● ●	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Family Science Nights (page 28) ● ● ●	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Motion and Forces Class (page 13) ● ● ●		■	■	■	■	■	■	■	■	■				
Our Universe (page 14) ● ●		■	■	■	■	■	■	■	■	■				
Properties of Sound (page 15) ● ● ●		■	■	■	■	■	■	■	■	■				
Overnight Adventures (page 28) ● ● ● ●			■	■	■	■	■	■	■	■				
Patterns and Tiling with KMAC (page 20) ● ● ●				■	■	■	■	■	■	■				
Tunneling for Water (page 20) ●					■	■	■	■	■	■				

● Science ● Physical Education & Health ● Math ● Technology ● Social Sciences ● Language Arts ● Arts

Program	Pre-K	K	1	2	3	4	5	6	7	8	9	10	11	12
Biology and Biodiversity (page 15) ● ●						■	■	■	■	■				
Virtual Programs (page 25) ● ● ● ●						■	■	■	■	■	■	■	■	■
IF Kids (page 21) ● ● ● ● ● ● ●								■	■	■				
Build Your Own Lab (page 17) ● ● ● ●								■	■	■	■	■	■	■
Explosions (page 17) ● ●								■	■	■	■	■	■	■
It's Elemental (page 17) ● ●								■	■	■	■	■	■	■
Microscopic Marvels (page 17) ● ● ●								■	■	■	■	■	■	■
Motion and Forces Lab (page 16) ● ● ●								■	■	■	■	■	■	■
Name That Part (page 17) ● ● ●								■	■	■	■	■	■	■
Robotics (page 16) ● ● ●								■	■	■	■	■	■	■
Sizzling Science (page 17) ● ● ●								■	■	■	■	■	■	■
Pulse of Surgery (page 19) ● ● ● ●									■	■	■	■	■	■
University of Louisville Nano Tour (page 21) ● ● ●											■	■	■	■

● Science ● Physical Education & Health ● Math ● Technology ● Social Sciences ● Language Arts ● Arts

Search for Programs by Grade & Subject

Louisville Science Center programs are correlated to national and state (Kentucky and Indiana) standards. For a complete listing of standards met for our programs visit LouisvilleScience.org/teachers.

DISCOVER SOMETHING New in Every Element

Do science.

How long do you have to jump rope to burn off the calories in one cheese puff? Hint: there are 7.6 calories in one cheese puff and you burn an average of 200 calories during every 15 minutes of jumping rope.

Interactive Classes

GRADES PRE-K – 8

New this year! Classes are divided by subject and are appropriate for multiple grade levels. Each class is tailored to fit the needs of your students and will cover the topics listed for each grade level present.

All Interactive Classes include:

- Introduction to the Scientific Method and Scientific Inquiry.
- Introduction to, and the use of, science tools.
- Integrated math.
- Pre- and post-visit extensions.

Cost: $2.50 per student (10 student minimum).
Length: 45 minutes.
Note: Classes are sold as an add-on only. Exhibit or IMAX purchase required.

Transformation of Matter

Go to extremes to examine how hot and cold temperatures affect physical changes and explore the states of matter. See how super-cold liquid nitrogen can change the properties of a substance in chilling demonstrations.

Curriculum Connections

Pre-K: Messy science, sensory awareness, mixtures, fine-motor skill development, senses.

K–3: Properties and states of matter, mixtures, separation, fractional concepts, quantity.

4–5: Properties of matter, physical and chemical change, boiling point, density, volume, comparative data.

6–8: Magnification, conservation of mass, mixtures and compounds, ratios, conversion of measurement.

[SUPER-SCIENCE IT] Schedule your class during Chemistry Week, October 20–22, to give your students even more hands-on chemistry experience. See page 23.

Motion and Forces

Speed into the world of physics when students test the laws of motion using racecars and roller coasters. Manipulate forces to build structures and test their integrity.

Curriculum Connections

K–3: Motion of objects, applied force, simple machines, perimeter, outcomes.

4–5: Change in motion, velocity, gravity, lift, drag, probability, measurement of angles.

6–8: Potential and kinetic energy, friction, force, percentages, radius, predictions from data.

[SUPER-SCIENCE IT] National Engineers Week, February 23–25, is the perfect time to schedule *Motion and Forces*, and will give your students face time with professional engineers. See page 23.

Energy, Electricity, and Magnetism

Students will be shocked with the wonders of energy, electricity, and magnetism as they tinker with circuits, electrons, and charges. Each class begins with an electrifying Van de Graaff generator experience.

Curriculum Connections

Pre-K: Introduction to magnets, scientific questioning, classification of objects.

K–3: Solar energy, circuits, light and reflection, magnetism, likely and unlikely outcomes.

4–5: Electricity, light and heat, conductors, insulators, temperature, estimation.

6–8: Convection and conduction, energy transfer, electromagnetic spectrum, data collection, rate of change.

The Earth

Students will be swept away when they dissect the eye of the storm and explore natural phenomena like tornados, hurricanes, earthquakes, and volcanoes to get to the bottom of some of nature's greatest mysteries.

Curriculum Connections

Pre-K: Bubbles, water investigation, identification of shapes, basic measurement.

K–3: Soil and its properties, rock and mineral investigations, sort, classify and compare.

4–5: Weather, atmosphere, earthquakes, natural resources, units of measure, estimation.

6–8: Layers of the Earth, rock cycle, landforms, plate tectonics, radius, diameter, circumference.

[SUPER-SCIENCE IT] Add the IMAX film *Tornado Alley* to give your students the perspective of real-life storm chasers. See page 7.

Our Universe

Journey through the galaxy to learn more about our solar system, its planets and stars. Trace the movement of the earth and how it affects the weather, the seasons, and even the calendar.

Curriculum Connections

K–3: Seasons, planets, moon phases, comparative measurement of weight and temperature.

4–5: Solar system, shadows, moon and sun cycles, elapsed time, time zones.

6–8: Eclipses, celestial bodies, the Earth's axis, angles, data collection.

Biology and Biodiversity

Play the real game of life when you learn about animals, their habitats, ecosystems, and food webs. See what it takes to survive in the wild when you examine adaptations and survival instincts.

Curriculum Connections

Pre-K: See *Animal Antics* (page 19).

K–3: See *Animal Antics* (page 19).

4–5: Ecosystems, inheritance, environmental impact, adaptation, fossils, symmetry, ratios.

6–8: Cellular organisms, heredity, traits, classification systems, percentages.

[SUPER-SCIENCE IT] Add the IMAX film *Roar: Lions of the Kalahari* to show your students first-hand the importance of habitats, ecosystems, and survival instincts. See page 7.

Health and Human Body

How do different foods help you grow? How does exercise help you stay healthy? Students will investigate the importance of healthy lifestyle choices, fitness, and nutrition.

Curriculum Connections

Pre-K: Nutrition, sort, classify and compare.

K–3: Nutrition, energy from food, developmental growth, sort, classify and compare, fractional concepts.

4–5: Food groups, food pyramid, food labels, percentages, conversion of measurement.

6–8: Body systems, nutrients, diseases and pathogens, ratios.

Properties of Sound

(January – May only)

Discover how vibrations and waves play a key role in your favorite instruments. Make music while students investigate the concepts of pitch and tone.

Curriculum Connections

Pre-K: Vibration, rhythm, patterns.

K–3: Vibration, how sound travels, pitch and volume, patterns.

4–5: Sound and pitch, vibration, sort and compare objects.

6–8: Sound waves as energy, patterns and predictions.

Hands-On Labs

GRADES 6–12

Students will test, touch, tinker, and manipulate in Hands-On Labs. These high-level labs are designed to encourage critical thinking; interest in careers in science, technology, engineering, and math; and interaction with tools in our fully outfitted lab spaces.

All Hands-On Labs include:

- Implementation of the Scientific Method and Scientific Inquiry.
- Experience using state-of-the-art science tools and technology.
- Career connections.
- Integrated math.
- Pre- and post-visit extensions.

Cost: $5.00 per student (10 student minimum).
Length: 60–90 minutes.
Note: Labs are sold as an add-on only. Exhibit or IMAX purchase required.

Motion and Forces Lab

Introduce students to careers in engineering, physics, and architecture as they manipulate structures to understand the physical forces that must be considered in engineering and design.

Content includes: Physics, measurement, physical reactions, engineering, architecture and design.

[SUPER-SCIENCE IT] Schedule your lab during National Engineers Week, February 23–25, where your students will meet professional engineers. See page 23.

Robotics

Your students will be so thrilled to learn about mechanics, engineering, and programming when they design and program their own automated simple machines, they may even do “The Robot.”

Content includes: Engineering, programming, mechanics and design.

Explosions

What's really going on when you watch fireworks or see explosions in a high-paced action film? Investigate combustion reactions and the chemistry behind some of the loudest, brightest explosions around. Lab safety will be stressed.

Content includes: Chemistry, lab safety, combustion and other reactions.

Sizzling Science

All of the greatest chefs will tell you that cooking is a science. See what chemical reactions are occurring when you cook your food, and learn some new cooking techniques using advanced science and chemistry to create exciting new dishes.

Content includes: Molecular gastronomy, liquid nitrogen, cooking, chemistry, nutrition.

Science of cooking related programs are made possible with support from D.D. Williamson.

DDWilliamson
Color With Confidence®

Build Your Own Lab

Design your own lab experience in one of our two state-of-the-art lab spaces to give your students the experience of working in a fully outfitted lab. Topics could include chemistry, dissections, biological systems, and microbiology, plus many more!

Content includes: Chemistry, dissections, biological systems and DNA.

Note: Reservation required a minimum of six weeks before date of program. Cost varies.

It's Elemental

Examine the periodic table and its importance as a chemist's most valuable reference tool. Take a look at some key elements that you encounter on a daily basis.

Content includes: Chemistry, elements and the periodic table, atoms and molecules.

[SUPER-SCIENCE IT] Schedule this lab during Chemistry Week, October 20–22, to interact with representatives from the American Chemical Society and other community partners. See page 23.

Name That Part

What better way to learn about the human body or organ system than by having the real thing in the palm of your hand? Students will identify the parts and functions of a given organ as they handle a sheep brain, pig lung, cow eye, or sheep heart. One organ covered per 60-minute lab. Book multiple labs to cover the body from head to toe!

Content includes: Human body and organs, biological systems, epidemiology, dissection of heart, lungs, brain, or eyes.

Microscopic Marvels

Get up close and personal with microbiology when you learn to use a microscope to examine tiny cells, particles, and organisms. Discover the importance of microbiology across many science fields and hear about the latest microscopic discoveries. Proper microscope-handling techniques will be stressed as students examine and analyze actual specimen.

Content includes: Microbiology, microscopes, bacteria and cultures, laboratory skills.

UNDERSTANDING THE IMPORTANCE OF

All Things Great and Small

Do science.

Just how small is an atom? Cut a sheet of paper in half. Cut it in half again. Do this 29 more times and it will be as small as an atom.

Exclusive Programs

ANIMAL ANTICS

Grades Pre-K–3

Choose from four focus areas designed to introduce young students to animals and their unique characteristics, habitats, and adaptations.

1. Fantastic Flyers

Components include: Classification of the bird family, physical qualities of feathers, flight, differences and structures of eggs, variations of beaks and adaptations for increased survival.

2. Snack Attack

Components include: Differences in animal eating habits, introduction to the terms herbivore, omnivore, and carnivore, animal teeth and skulls, adaptations, metabolic differences between carnivores and herbivores, nutrition and food webs.

3. Daring Defenses

Components include: Students understand the term *adaptation* and understand the benefit of these behaviors and characteristics, mechanisms behind adaptations, hunting, and survival.

4. Animal Architecture

Components include: Exploration and identification of animal habitats and ecosystems, understanding adaptations needed for survival in different environments, habitat design.

[SUPER-SCIENCE IT] Add the film *Sharks* to give your students a glimpse of one of the planet's most magnificent and endangered species. See page 6.

Cost: $2.50 per student, sold only as an add-on. Exhibit or IMAX purchase required.
Length: 45 minutes.

PULSE OF SURGERY

Grades 7–12
> Sept. 14 | Oct. 19 & 26 | Nov. 16 & 30 | Dec. 14 | Jan. 11 & 25 | Feb. 8 & 29 | Mar. 14 & 28 | Apr. 4 & 25 | May 9 & 16

Students at the Science Center link to a live open-heart surgery performed by a medical team at Jewish Hospital. During real-time surgery, students will interact with the surgeon, nursing staff, perfusionists, and others in the operating room, while learning about the procedure, the tools used, and the techniques that must be mastered in order to perform a successful open-heart surgery. Students will meet local experts in health care, learn the importance of studying advanced anatomy and physiology, and explore the state-of-the-art technology that makes medical advancements possible, while being introduced to possible careers in medicine. Program includes pre- and post-visit curriculum guides.

Cost: $10 per student, 30 students minimum. $5 per additional teacher or chaperone, 1 teacher per 30 students free.
Length: 3 hours.
Note: Visit LouisvilleScience.org/pulseofsurgery for sold-out dates and additional information.

Program support from Jewish Hospital & St. Mary's HealthCare, Greater Louisville Medical Society, and Medical Society Professional Services.

SCIENTOTS

Grades Pre-K–1

> October 17, November 14, February 6, March 12

With no big kids in sight, ScienTots is the perfect way to navigate the Science Center with little ones looking for adventure. Package includes activities in all exhibit areas geared toward the early childhood crowd, plus time in KidZone and reservations in the lunchroom.

Cost: $8.00 per student or chaperone.
Length: 9:30 a.m.–12:30 p.m.
Add-an-IMAX: $2.00 per student, teacher, or chaperone.

FOLLOW ME! LEADERSHIP PROGRAM

NOTICE: Men wanted for hazardous journey. Small wages, bitter cold, long months of complete darkness, constant danger, and safe return doubtful. Honor and recognition in case of success." Amazingly, many men replied to Sir Ernest Shackleton's actual job posting for an epic polar expedition. Let your students learn from the trials of these brave individuals as they use the IMAX film *Shackleton's Antartic Adventure* as a springboard to develop leadership, teamwork and communication skills. Lunch included.

Cost: $20.00 per student, $10.00 per teacher and chaperone.
Length: 9:30 a.m.–1:00 p.m.
Note: Minimum 20 students.

PATTERNS AND TILING WITH KENTUCKY MUSEUM OF ART AND CRAFT

KENTUCKY MUSEUM OF ART AND CRAFT

Grades 2–8

Repetition, patterns, and tiling can be seen in nature, geometry, and mathematics, even in the tiniest molecules. Explore patterns and repetition, mathematics, and tangrams in a class at the Louisville Science Center, then head to the Kentucky Museum of Art and Craft for a 90-minute hands-on workshop making artwork using tessellations.

Cost: $12 per student, $5 per teacher or chaperone. Teachers are FREE.
Length: 2.5 hours of class time.
Note: Minimum 15 students.

TUNNELING FOR WATER

Grades 3–8

LOUISVILLE WATER since 1854

It's a first-of-its kind project in the world. Louisville Water Company has built a tunnel to collect ground water for drinking water. Learn the science behind the project and experiment with the materials found deep in the ground. Class taught by Louisville Water Company educators.

Cost: $2.50 per student (10 student minimum).
Length: 45 minutes.
Note: Sold only as an add-on. Exhibit or IMAX purchase required.

[SUPER-SCIENCE IT] Join Louisville Water Company educators at the Science Center on special Fridays to do experiments and activities using water as a basis for learning. Free with admission. Visit LouisvilleScience.org/teachers for dates and times.

EXPLORE KENTUCKY PACKAGE WITH *KENTUCKYSHOW!*

All ages

Investigate your community through the eyes of a scientist in the Science Center exhibits. Encounter local biomedical researchers, who perform work that ultimately touches the life of every citizen in Kentucky. Wander through habitats throughout the region and discover native species. Check out feats of engineering and innovative products manufactured in Kentucky.

Then, walk down Main Street to *KentuckyShow!*, a 30-minute large screen multi-media experience narrated by Ashley Judd that captures Kentucky's people, culture, history, music, spirit, and more! Program is self-guided through Science Center exhibits and includes a Kentucky Exhibit Guide.

Cost: $5.00 per student and chaperone.
Note: Thanks to generous underwriting, there is no cost to attend *KentuckyShow*!

IF KIDS

Grades 6–8

> September 23

Part of IdeaFestival, IF Kids at the Louisville Science Center exposes young thinkers to a wealth of unique and exciting ideas in science, the arts, and everything in between. The program includes discussions with the nation's foremost thinkers, innovators, and performers — the same great minds taking part in IdeaFestival.

Cost: $5.00 per student.
Length: 9:30 a.m. – 1:00 p.m.
Note: Space is limited.

UNIVERSITY OF LOUISVILLE NANO TOUR

Grades 9–12

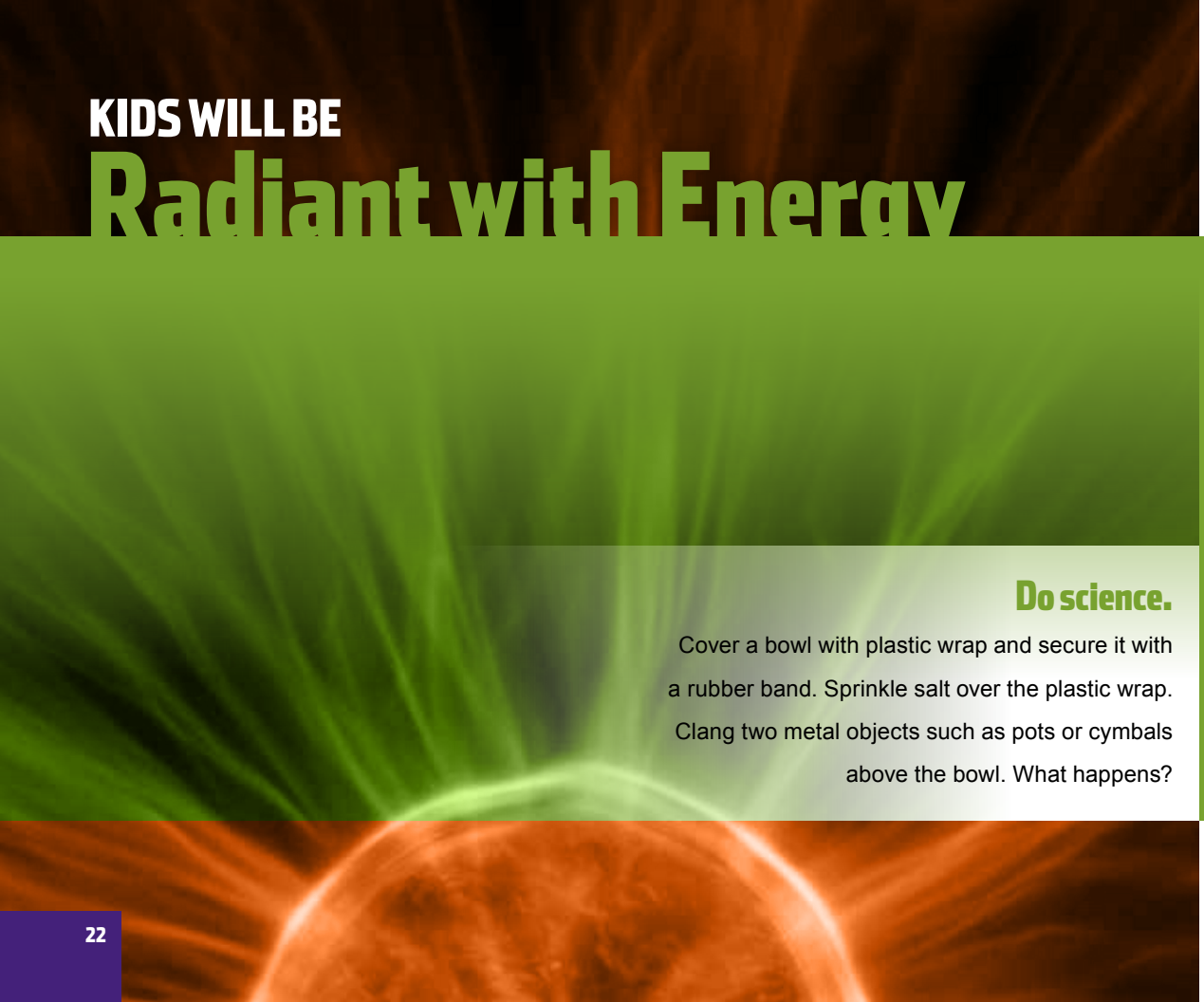
Learn firsthand about the nano world of sensors, integrated circuits, and implantable micro-devices on an exclusive behind-the-scenes tour of the University of Louisville Micro/NanoTechnology Center. High school students are introduced to high-tech careers and engage with a team of researchers while seeing micro/nano-fabrication tools in action.

Cost: $10 per student, teacher and chaperone.
Note: Additional field trip fees apply if adding a visit to the Science Center.

[SUPER-SCIENCE IT] Pair your visit to the nano lab with a nano celebration at the Louisville Science Center, March 30–April 1. See page 23.

KIDS WILL BE

Radiant with Energy



Do science.

Cover a bowl with plastic wrap and secure it with a rubber band. Sprinkle salt over the plastic wrap. Clang two metal objects such as pots or cymbals above the bowl. What happens?

Science Celebrations

FREE with admission!

Science Celebrations bring together a community of scientists, researchers, and professionals to excite students about the importance of science, technology, engineering, and math-related careers. Each celebration includes hands-on activities, powerful demonstrations, and face time with some of our region's greatest innovators.

National Chemistry Week

> October 20–22

In celebration of 2011's International Year of Chemistry, the Science Center joins the American Chemical Society, area universities, businesses, and other community partners to explore the positive impacts chemistry has made on health, hygiene, nutrition, and medicine.

[SUPER-SCIENCE IT] Add the lab *It's Elemental* or the class *Transformation of Matter* to complete your Chemistry Week experience. See pages 17 and 13.

National Engineers Week

> February 23–25

Create, design, manipulate, and construct during National Engineers Week. Learn about the many types of engineers and the massive contributions they are making to our society.

[SUPER-SCIENCE IT] Add the *Motion and Forces* class or lab to build a foundation for tomorrow's engineers. See pages 13 and 16.

NanoDays

> March 30–April 1

Small particles get big treatment during NanoDays. Discover the many uses and applications of nano technology and how they impact your daily life. Speak with local lab professionals who work with these tiny particles to make huge advancements.

National Lab Day

> May 10–12

Join this nationwide initiative to support young creative thinkers, scientists, engineers, and problem-solvers. Tinker in our fully outfitted lab spaces and explore the many ways you can experiment, concoct, and deduce in the world around you.

IMAGINATIONS ARE Sparked

Do science.

If a single grain of salt represents a single star, how much salt would it take to represent all of the stars in our galaxy? It would take approximately 10,000 cylindrical boxes of salt.

Virtual Programs

GRADES 4–12

Bring the Science Center to your students with Virtual Programs. Each program includes an hour-long videoconference session with a Science Center educator, a kit of materials to use during the program, and pre- and post-link activities.

Cost: In-state: $125.00 per program / Out of State: $200.00 per program.
Length: 60 minutes.
Note: Maximum 30 students per hour-long session.

Chemistry Roots

Grades 4–8

From soap making to distillation, fried chicken to coal, explore Kentucky's rich heritage of industry through hands-on chemistry.

Living and Working In Space

Grades 4–12

What kind of physical and mental training do astronauts undergo before blastoff? What are the challenges of working and living in space and how do they overcome them? Learn about the International Space Station while training to be an astronaut.

Transmission Tracker

Grades 4–12

Someone in your class has a deadly disease! Watch it spread and follow its path. Use the tools of an epidemiologist to solve the mystery. Investigate how epidemics are spread and learn how to protect yourself.

The Force Is Right

Grades 4–8

Students learn about the physics of building bridges, skyscrapers, houses, and sculptures as they explore balance, tension, compression, and flexion forces. Then, students use their new engineering skills to build hands-on models and test their structural integrity.

Wave Watch

Grades 4–8

Get ready to catch a wave! Discover the waves around you — light waves, sound waves, water waves, infrared waves, and electromagnetic waves — while exploring the scientific properties of each.

Physics Rules

Grades 4–8

Why do curvy roads have lower speed limits than straight roads? Do rain and ice affect road friction? Discover how Newton's three laws of motion have shaped traffic laws.

Educator Resources

Club-ED

Club-ED is the Science Center's exclusive resource for educators. Sign-up to receive invitations to exclusive educator events, updates about new Science Center programs, exhibits, and IMAX films, and special discounts and offers just for Club-ED members. Visit LouisvilleScience.org/clubed to gain easy access to online resources such as educator guides, pre- and post-visit activities, classroom materials, and more. Club-ED members will also receive a membership card providing eligibility for curriculum-planning visits and a Science Center Gift Shop discount.

Sign-up for Club-ED online at LouisvilleScience.org/clubed.

Early Childhood Teacher Training

Grades Pre-K–1

Teaching science can be intimidating, especially when working with younger students. The Science Center is here to help! We'll show you that teaching science to little ones isn't scary, it's fun. Register your school, Head Start program, or childcare center for an Early Childhood Teacher Training. Programs are led by a Kentucky Credentialed Trainer and can take place at the Louisville Science Center or your site. Trainings include classroom instruction and take-home materials.

Cost:
3-hour training — $28 per teacher.
6-hour training — $43 per teacher.
Note: 10 teachers minimum, 50 teachers maximum. Must be scheduled at least 2 weeks in advance of training date.

Storybook Science: Open your eyes to the world of science using popular children's books.

Squishy Mushy Science: Explore different types of matter, observe chemical reactions, and make gooey concoctions.

The World of Moving Things: Teachers will learn fun and exciting ways to introduce children to how things move and work.

Healthy, Happy Me: Learn about your body from the inside out.

Integrating Science Throughout Your Classroom: Science is everywhere! See how you can teach science in every aspect of your classroom.

Design Your Own: If you don't see a topic listed, or are interested in custom training, design your own topic! Custom programs are available for up to six hours of training. Cost varies based on content and duration.

EDUCATOR EVENTS

Teacher Appreciation Day

> September 24 | 10:00 a.m. – 12:00 p.m.

Kick off the school year in style at Teacher Appreciation Day at the Louisville Science Center! Enjoy an exclusive screening of the film *Lewis & Clark: Great Journey West*, and preview activities from three months of interactive programming beginning October 1. Then, spend the rest of the day exploring Science Center exhibits and planning your next field trip!

RSVP to EdPreview@louisvilleky.gov or 502-561-6100, ext. 6143.

Note: Free for teachers and their immediate families. Must present a valid school ID or pay stub.

American Education Week

> November 12–13

We know that being an educator isn't easy, and we would like to thank you for all that you do. In honor of American Education Week, the Louisville Science Center is celebrating the hard work of educators in our community with free admission for you and one guest.

Show your school ID or pay stub for admittance.

Science Fair

A little healthy competition never hurt anyone, and Science Fairs are no exception. If you are interested in getting your students involved in a Science Fair, we can help! We'll get you started and connect you with local resources to provide students with ideas, tools, and mentors. Contact Science Fair Coordinator Floria Shackelford at floria.shackelford@louisvilleky.gov or 502-560-7167 for more information.

Science After Dark

FAMILY SCIENCE NIGHTS

All Ages

Get your whole school involved during Family Science Nights, the perfect community-building event for teachers, staff, students, and families. Each Family Science Night includes after-hours admission to the Science Center, exclusive programming, and an IMAX film.

Cost: $8 per student, teacher or chaperone, must pay for 200 minimum.
Length: 5:30–8:00 p.m.
Note: Family Science Nights may be scheduled any night of the week based on availability.

OVERNIGHT ADVENTURES

Grades 1–8

Overnight Adventures keep the excitement going all night long. All overnights include after-hours and second-day admission, a science demonstration, program activities, an IMAX film, snack, and breakfast. Students will also participate in a flashlight scavenger hunt. Overnights are aligned to state and national standards. Choose from two available themes.

Cost: $30 per student, teacher or chaperone.
Length: 6:00 p.m. – 9:00 a.m., 2nd day permanent exhibit admission included.
Note: Available to groups of 100 or more any night of the week based on availability. Groups of fewer than 100 may sign up for scheduled open-enrollment dates.

1. Uncharted Territory

> Open-Enrollment Dates: February 10 and April 27

Based on the film *Lewis & Clark: Great Journey West*, journey through history to uncover secrets about amazing artifacts. See if you have what it takes to survive the perils of the uncharted west.

2. Storm Chasers

> Open Enrollment Dates: March 16 and May 18

Journey through the eye of the storm and explore the science behind tornadoes. Investigate weather phenomena and dissect the eye of the storm.

Make a Reservation

	# Attending	Cost	Totals
Exhibits			
Students		$5.00	
Teachers		FREE	
Chaperones (one chaperone per 10 students required)		$5.00	
		TOTAL	
IMAX Only			
Students		$5.00	
Teachers		$2.00	
Chaperones		$5.00	
		TOTAL	
Add-an-IMAX			
Students		$2.00	
Teachers		$2.00	
Chaperones		$2.00	
		TOTAL	
Add a Lunch Reservation			
Students		$0.50	
Teachers		FREE	
Chaperones		$0.50	
		TOTAL	

	# Attending	Cost	Totals
Add KidZone			
Students, Teachers, and Chaperones		FREE	
Add a Class			
Students		$2.50	
Add a Lab			
Students		$5.00	
Additional Programs			
Exclusive Packages			
Other			
TOTAL COST			
		COMPLETE TOTAL	

Schedule your reservation by calling 502-561-6100, ext. 6575 or 1-800-591-2203, ext. 6575. You can also submit an online request form at LouisvilleScience.org/teachers. Your reservation is complete once you have spoken to a Louisville Science Center representative and have received your confirmation package.

Did you know you can order Gift Shop items, IMAX concessions, and lunch from SUBWAY before your visit? Download our Pre-Visit Guide at LouisvilleScience.org/teachers to learn more.

Booking Policies

SCHOOL GROUP RATES

Special school rates apply to groups of 10 or more students and are only available with advance registration.

Chaperones

The Louisville Science Center requires one chaperone per 10 students. Teachers and any adults over the age of 18 are considered chaperones and count toward this ratio.

Classes/Labs

A minimum of 10 students is required to schedule a class or lab. Classes and labs must be scheduled as an upgrade to an exhibit or IMAX package and booked 3 weeks in advance of the visit date. Due to the purchase of specialized supplies, cancelation fees may incur.

Confirmation

Once you have booked your Field Experience or program, a confirmation and pre-visit guide will be sent to you.

Final Changes/Cancelations

You may change or cancel your reservation up to 14 days prior to your scheduled visit. Rain checks will be issued for students and chaperones unable to attend on the day of your visit. Refunds will be issued for reservations canceled due to inclement weather.

Field Experience Payment

Full payment must be received 14 days prior to your visit. Unpaid reservations will be canceled. Science Center memberships are not valid for group visits.

Louisville Science Center accepts cash, check, MasterCard, VISA, Discover, American Express, or a completed Purchase Order.

Family Science Nights Policies and Payment

Minimum: Schools wishing to book a Family Science Night must pay for a minimum of 200 participants.

Cancelation: You may change or cancel your reservation up to 14 days prior to your visit.

Payment: Schools will be billed after the program for the total number of individuals who attend over the 200 minimum.

Overnight Adventures Policies and Payment

Minimum: Small groups will be accommodated on several pre-set open enrollment overnights. Schools wishing to book an exclusive overnight must pay for a minimum of 100 participants.

Deposit: A non-refundable deposit of 50% of your total reservation is due 4 weeks prior to your visit.

Cancelation: You may change or cancel your reservation up to 14 days prior to your visit.

Payment: Full payment must be received 14 days prior to your overnight.

Refunds: No refunds after the 14-day window.

Distance Learning Policies and Payment

Booking: Distance Learning must be scheduled 4 weeks in advance to accommodate the shipping of a program kit to the participating site.

Cancelation: You may change or cancel your reservation up to 14 days prior to your link.

Payment: Full payment must be received 14 days prior to your link.

Refunds: A processing fee of $50 will be deducted in the event of any cancelation. No refunds after the 14-day window.

Pulse of Surgery Policies & Payment

Minimum: A minimum of 30 students is required to schedule a Pulse of Surgery program, with a maximum of 175 students per school.

Cancelation: You may change or cancel your reservation up to 4 weeks prior to your program.

Payment: Full payment must be received 4 weeks prior to your program. Failure to pre-pay by this time will result in forfeiting of the program date. Program materials will be shipped once full payment is received.

Refunds: A processing fee of $50 will be deducted in the event of any cancelation. No refunds will be given after the 4-week window.

LOUISVILLE SCIENCE CENTER

Louisville Science Center
727 West Main Street
Louisville, KY 40202
LouisvilleScience.org
502-561-6100 | 1-800-591-2203

Save the date! Teacher Appreciation Day
September 24, 10:00 a.m. – 12:00 p.m. See page 27 for details.