# HOMESCHOOL CLASS SCHEDULE

## AT DISCOVERY PLACE SCIENCE

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<tr>
<th>DATES</th>
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<th>GRADES 1-2</th>
<th>GRADES 3-4</th>
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<td>September 9</td>
<td>Storybook Science</td>
<td>Animals Around the World</td>
<td>MAKE: Survival Skills</td>
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<td>September 23</td>
<td>Secret Lives of Bugs</td>
<td>a-MAZE-ing</td>
<td>DIY Rocketry</td>
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<td>October 7</td>
<td>Stuck On</td>
<td>Rainforest Explorers</td>
<td>Motors, Circuits, Arts</td>
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<td>October 21</td>
<td>Recipe for a Rainforest</td>
<td>Small Science</td>
<td>Sewing and Embroidery*</td>
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<td>November 4</td>
<td>Space Race</td>
<td>Candy Chemistry</td>
<td>Sewing and Embroidery*</td>
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<tr>
<td>November 18</td>
<td>Color Investigation</td>
<td>Grab on to Gravity</td>
<td>You are what You Eat</td>
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<tr>
<td>December 2</td>
<td>Conquering the Cold</td>
<td>What on Earth</td>
<td>Circulatory Highway</td>
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<tr>
<td>December 16</td>
<td>Bouncing Bubbles</td>
<td>Invention Studio</td>
<td>Take a Breath</td>
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<td>January 6</td>
<td>Crack the Code</td>
<td>Wonders of Water</td>
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<td>January 13</td>
<td>Exhibit Design</td>
<td>Dazzling Defenses</td>
<td>Science of Exercise</td>
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<td>February 3</td>
<td>Mysterious Matter</td>
<td>Food for Thought</td>
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<td>February 10</td>
<td>Eat What?</td>
<td>Machine Shop</td>
<td>Electricity</td>
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<td>March 2</td>
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<td>Peculiar Plants</td>
<td>Earth &amp; Moon</td>
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<td>Tiny Tinkering</td>
<td>Lights, Colors, Action</td>
<td>Force &amp; Motion</td>
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<td>April 6</td>
<td>Sticky, Slimy Science</td>
<td>Animal Architects</td>
<td>Basic Robotics</td>
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<td>April 20</td>
<td>STEAM</td>
<td>Our Planet</td>
<td>Earth Structures</td>
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<td>May 4</td>
<td>Float Your Boat</td>
<td>Power Up</td>
<td>Fossil Fun</td>
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<td>May 18</td>
<td>Fascinating Flora</td>
<td>Seasonal Science</td>
<td>Animal Behavior &amp; Adaptation</td>
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<td>June 1</td>
<td>Animal Olympics</td>
<td>Toy Lab</td>
<td>Invertebrate Investigation</td>
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<td>June 8</td>
<td>Looking Up</td>
<td>Looking Up</td>
<td>Frog Dissection</td>
</tr>
</tbody>
</table>

*Indicates a 2 or 3 class series. Participants are encouraged to take all classes in the series but are permitted to only take the first class or to join at the second class.

## REGISTRATION INFORMATION

For more information please call 704.372.6261 x300, Monday – Friday 8:00 a.m. - 5:00 p.m.

See a full listing of our Homeschool programs at discoveryplacescience.org
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<th>GRADES 9-12</th>
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<tbody>
<tr>
<td>September 9</td>
<td>Secret Life of Plants</td>
<td>Advanced Robotics I*</td>
<td>Transforming Bacteria</td>
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<tr>
<td>September 23</td>
<td>Operation Fungi or Mycology</td>
<td>Advanced Robotics II*</td>
<td>Fruit Fly Genetics</td>
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<tr>
<td>October 7</td>
<td>Mammal Study</td>
<td>Are We Alone</td>
<td>Cell Membrane Transport</td>
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<tr>
<td>October 21</td>
<td>Investigating Climate</td>
<td>Chemistry of Combustion</td>
<td>Cancer Study</td>
</tr>
<tr>
<td>November 4</td>
<td>Ins &amp; Outs of H2O</td>
<td>Waves of Sound</td>
<td>Detecting GMO’s</td>
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<tr>
<td>November 18</td>
<td>DIY Wooden Charging Station</td>
<td>Plant Diversity</td>
<td>Elemental Flame Test</td>
</tr>
<tr>
<td>December 2</td>
<td>3D Modeling and Hydro Dipping*</td>
<td>Soil Science</td>
<td>Stoichiometry</td>
</tr>
<tr>
<td>December 16</td>
<td>3D Modeling and Hydro Dipping*</td>
<td>Animal Diversity</td>
<td>Work on an Inclined Plane</td>
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<tr>
<td>January 6</td>
<td>Advanced Sewing and Embroidery*</td>
<td>Vertebrate Zoology</td>
<td>Hooke’s Law</td>
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<tr>
<td>January 13</td>
<td>Advanced Sewing and Embroidery*</td>
<td>Animal Relationships</td>
<td>Acceleration of a Falling Object</td>
</tr>
<tr>
<td>February 3</td>
<td>Intro to Biotech Tools</td>
<td>Jewelry Making*</td>
<td>Concepts of Chromatography</td>
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<tr>
<td>February 10</td>
<td>Histology for Beginners</td>
<td>Jewelry Making*</td>
<td>Microbiology</td>
</tr>
<tr>
<td>March 2</td>
<td>Heart Healthy</td>
<td>Mold Making and Casting</td>
<td>Isopod Behavior</td>
</tr>
<tr>
<td>March 16</td>
<td>Brain Games</td>
<td>Advanced 3D Modeling w/ Circuits</td>
<td>Mammal Anatomy</td>
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<tr>
<td>April 6</td>
<td>Intro to Genetics</td>
<td>Digital Embroidery</td>
<td>Demography Lab</td>
</tr>
<tr>
<td>April 20</td>
<td>Aerospace I*</td>
<td>Take a Cellfie</td>
<td>3D Printing on Textiles</td>
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<tr>
<td>May 4</td>
<td>Aerospace II*</td>
<td>Forensics</td>
<td>Laser Cutting 101*</td>
</tr>
<tr>
<td>May 18</td>
<td>Programming Basics</td>
<td>Biochemistry of Cells</td>
<td>Laser Cutting 101*</td>
</tr>
<tr>
<td>June 1</td>
<td>Energy Efficiency</td>
<td>Genetics</td>
<td>CNC Routing</td>
</tr>
<tr>
<td>June 8</td>
<td>Architectural Engineering</td>
<td>Viruses, Fungi, and Bacteria Oh My!</td>
<td>Cosplay 101</td>
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HOMESCHOOL OFFERINGS
AT DISCOVERY PLACE SCIENCE
Homeschool students can enjoy engaging science classes offered in state-of-the-art labs taught by trained science educators.

CLASSES
With classes covering three different age groups, siblings can all have unique, age-appropriate experiences.

<table>
<thead>
<tr>
<th>90 Minutes</th>
<th>$15 Member</th>
<th>$20 Non-Member</th>
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<tbody>
<tr>
<td>1:30 - 3:00 p.m.</td>
<td>10 Classes</td>
<td>$140 Member</td>
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<tr>
<td>Monday Afternoons</td>
<td>20 Classes</td>
<td>$250 Member</td>
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</tbody>
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GRADES PRE K - K

STORYBOOK SCIENCE
SEPTEMBER 9
Can your house stand up to the Big Bad Wolf? Can you build a bridge over the river? Use engineering skills to test the science behind some of your favorite stories.

SECRET LIVES OF BUGS
SEPTEMBER 23
Enter the bug world and explore amazing adaptations, mysterious metamorphosis and lots of legs. Learn about lifecycles and the benefits of bugs.

STUCK ON
OCTOBER 7
Investigate the pull magnets have on objects, discover what can resist that pull and test the strength of magnets in this action-packed class.

RECIPE FOR A RAINFOREST
OCTOBER 21
Unearth the basic ingredients needed to create these tropical treasures. Explore rainforest layers, investigate animal adaptations and discover the forest’s abundant resources.

SPACE RACE
NOVEMBER 4
How would you land on Jupiter when there is no solid ground? How could you stay cool on a trip to Venus? Learn about each of the planets in our solar system, then design a space craft to explore your favorite planet.

COLOR INVESTIGATION
NOVEMBER 18
Reveal the inside of a rainbow as you explore and experiment with light and color. Mix colors and learn how light hides all the colors.

CONQUERING THE COLD
DECEMBER 2
Get ready for winter by testing out cool adaptations used by plants and animals (and people) to survive the winter or any icy environment.

BOUNCING BUBBLES
DECEMBER 16
Peak inside a bubble and find the science hiding inside. Quick before the bubble bursts!

CRACK THE CODE
JANUARY 6
Escape the maze, solve the puzzle and crack the code in this exciting class that develops science and observation skills in a unique hands-on way.

EXHIBIT DESIGN
JANUARY 13
Go on a scavenger hunt for simple machines and then use them to recreate an exhibit in the classroom.

MYSTERIOUS MATTER
FEBRUARY 3
Use your 5 senses to uncover the secret of the mystery matter. What is it? What does it do? Work on observation and problem-solving skills in this imaginative class.

EAT WHAT?
FEBRUARY 10
Look inside your favorite foods and discover what your body needs to grow big and strong. Learn ways to make smart food choices and build the perfect plate.

SPRING SCIENCE
MARCH 2
Bees are buzzing, flowers are blooming and spring is in the air. Time to take a look into the science behind our favorite signs of spring.

TINY TINKERING
MARCH 16
It’s tool time for our tiny tinkerers. See what you can create using real toys and materials. Go through the design process to turn your idea into a creation.
STICKY, SLIMY SCIENCE
APRIL 6
Squid ink, snail slime and spider silk oh my! Discover the squishy secrets of slimy science and where it is used in nature.

STEAM
APRIL 20
What’s the A in STEAM? Art! Connect art and science in this unique class that uses science to create art.

FLOAT YOUR BOAT
MAY 4
Will it sink or float? It’s up to you as we experiment with different materials and build a boat to race through the water table.

FASCINATING FLORA
MAY 18
Are plants alive? Find out as you examine the parts of plants and discover how they allow plants to survive.

ANIMAL OLYMPICS
JUNE 1
Compete against some amazing animal athletes to see who will win the gold. Who jumps longest? Runs fastest? Travels the farthest?

LOOKING UP
JUNE 8
Explore the night sky inside our inflatable Starlab Planetarium. Look up to see the stars, the moon and the planets that light up our night sky.

GRADES 1-2
ANIMALS AROUND THE WORLD
SEPTEMBER 9
Travel around the world as we discover animals from across the globe. How can animals live in some of the harshest conditions on our planet? Find out as we explore different habitats and the adaptations needed to live there.

A-MAZE-ING
SEPTEMBER 23
Navigate through mazes to help inspire you to to create your own maze.

RAINFOREST EXPLORERS
OCTOBER 7
Explore the rainforest and discover what makes this environment so special. Meet rainforest animals and learn how you and the rainforest are connected.

SMALL SCIENCE
OCTOBER 21
Can you imagine experimenting with things too small to see? Welcome to the nanoscale where we will try our hand at some of the smallest science and technology. Learn how things change when you shrink them down to the size of molecules.

CANDY CHEMISTRY
NOVEMBER 4
Too much Halloween candy? Use it for science! These sweet chemistry experiments are even better than eating candy.

GRAB ON TO GRAVITY
NOVEMBER 18
Gravity is the force that is always pulling things down to Earth. Can you stop it? Engineer contraptions and test ways to fight the pull of gravity.

WHAT ON EARTH
DECEMBER 2
Learn to read a map and use a compass as you explore Earth’s land forms. Discover how land forms are made and work on forming your own.

INVENTION STUDIO
DECEMBER 16
Use some of the world’s most impressive inventions as inspiration to design and build your own invention prototype.

WONDERS OF WATER
JANUARY 6
Take a closer look at the substance that covers over 70% of our planet - water!

DAZZLING DEFENSES
JANUARY 13
Why is a poison dart frog so brightly colored? Why does a porcupine have such sharp quills? Make connections between senses and animal defenses as you reveal how animal senses differ from your own and discover ways that animals defend themselves.

FOOD FOR THOUGHT
FEBRUARY 3
The foods you eat and the games you play all help you stay strong and healthy. Learn ways to make healthy choices and find out what is inside foods and how they help you to grow.

MACHINE SHOP
FEBRUARY 10
Even the coolest, most complicated things were built using simple machines. What can you build using simple machines? Find out in this hands-on class that explores mechanical advantage and construction.

PECULIAR PLANTS
MARCH 2
Unearth the peculiar adaptations that plants use for survival and defense. Dissect the parts of a plant and discover their purpose.

LIGHTS, COLORS, ACTION
MARCH 16
Figure out what a rainbow is made of and explore the color wheel. Use light to make things glow and see things that make their own light.

ANIMAL ARCHITECTS
APRIL 6
Could you build a dam like a beaver or weave a nest like a bird? Take a look at some amazing animal builders and try to build your own animal structure.

OUR PLANET
APRIL 2
Celebrate the 50th anniversary of Earth Day by looking below the surface to find out what the Earth is made of and ways we can help keep our planet healthy.

POWER UP
MAY 4
Test out different ways to make and use electricity as we explore where electricity comes from and how it powers our world.

SEASONAL SCIENCE
MAY 18
It’s almost summer, but what happened to winter? Explore why the seasons change and the cool science that happens throughout the year.
TOY LAB
JUNE 1
Make a toy that uses science - spinning tops and balancing birds. Learn about science concepts as you learn about science concepts in this fun hands-on class.

LOOKING UP
JUNE 8
Explore the night sky inside our inflatable Starlab Planetarium. Look up to see the stars, the moon and the planets that light up our night sky.

GRADES 3-4

MAKE: SURVIVAL SKILLS
SEPTEMBER 9
Thinking of taking a trip into the great outdoors soon? Learn basic skills to thrive using nature’s resources.

DIY ROCKETRY
SEPTEMBER 23
Learn how rockets work, build your own and test it out!

MOTORS, CIRCUITS, ARTS
OCTOBER 7
Using markers, motors and basic crafting tools, make a robot that can draw.

SEWING AND EMBROIDERY: PART 1
OCTOBER 21
Learn a variety of sewing techniques using Thinker Space tools and materials.

SEWING AND EMBROIDERY: PART 2
NOVEMBER 4
Continue trying your hand at different sewing techniques using Thinker Space tools and materials.

YOU ARE WHAT YOU EAT
NOVEMBER 18
Gain a better understanding of why we need vitamins, minerals and exercise in our daily lives. Investigate nutritional labels and learn how calories give us energy.

CIRCULATORY HIGHWAY
DECEMBER 2
Explore how nutrients are delivered throughout your body by your heart and blood vessels. Learn the importance of balanced nutrition and a healthy lifestyle for your heart.

TAKE A BREATH
DECEMBER 16
Explore how humans get the air they need to survive. Learn more about the importance of a healthy lifestyle and your lungs.

SENSES
JANUARY 6
Examine the five senses and what they tell our brains about the world around us.

SCIENCE OF EXERCISE
JANUARY 13
Study the body in motion and gain a better understanding of exactly what it takes to finish that race, make that basket or score that goal. Discover the importance of the human body and nutrition in active play.

WHAT’S THE MATTER?
FEBRUARY 3
Don’t let the phase fool you - it’s all matter. Explore density and molecular motion as you investigate the phases of matter through a series of hands-on experiments that emphasize lab directions and phase changes.

ELECTRICITY
FEBRUARY 10
Our whole world is powered by a particle too small to see. Discover how it works and how to control the source of lightning through building circuits. Finish by investigating the connection between electric fields and magnetism.

ANIMAL BEHAVIOR & ADAPTATION
MAY 18
Observe, experiment and discover some of the fascinating behaviors and adaptations of animals and how various factors affect them. Students explore a variety of living things and participate in guided-inquiry activities on this adventure. Live animal encounters will enhance the learning experience.

INVERTEBRATE INVESTIGATION
JUNE 1
Invertebrates account for 97% of all living things! Analyze this diverse group of organisms that span over 8 phyla, meet some of our fascinating bugs and learn how these creepy crawlies have adapted to life on land, under water and even in space.

INVERTEBRATE INVESTIGATION
APRIL 6
Robots are becoming more and more common, especially in our homes. Learn the basics of control and programming to open the doors to the future.

EARTH STRUCTURES
APRIL 20
Exploding volcanoes, moving faults and water erosion! Unearth our planet’s unique physical features through various hands-on activities including model building, map reading and diagrams. Learn how water shapes and changes our Earth utilizing a stream table.

*Participants are encouraged to take both classes but may join at the second class.
FROG DISSECTION
JUNE 8
Investigate the diverse class of amphibians. Get an up-close look at our cold-blooded vertebrates and how they’ve adapted to life in various ecosystems. Learn about frog anatomy and how it is similar to our own.

GRDES 5-6

SECRET LIFE OF PLANTS
SEPTEMBER 9
Investigate the basic structure of green plants and how they adapt to both biotic and abiotic factors, as well as influence the cycles through which energy and matter flow.

OPERATION FUNGI OR MYCOLOGY
SEPTEMBER 23
Uncover the secret world of molds, fungi and yeast unlocking what environments allow this macroscopic life to thrive. Learn the anatomy of fungi with a mushroom dissection and learn how to clone a mushroom.

MAMMAL STUDY
OCTOBER 7
How do researchers study mammals in the wild? Investigate the world of mammals and learn about the internal anatomy of a rat through dissection.

INVESTIGATING CLIMATE
OCTOBER 21
Learn how climate is regulated by complex interactions of Earth and its inhabitants. Analyze how human activities impact Earth’s climate by creating your own greenhouse effect and observing how this increase in CO2 affects our oceans.

INS & OUTS OF H2O
NOVEMBER 4
Students will learn how water moves through the water cycle and gets to your sink. Learn about different types of water pollution and participate in an interactive case study to find the source of pollution.

DIY WOODEN CHARGING STATION
NOVEMBER 18
Using the human-centered design process, create a personalized wooden object to house your accessories. Participants will learn basic CAD software and CNC routing skills.

ADVANCED 3D MODELING AND HYDRO DIPPING: PART 1
DECEMBER 2
Using Blender, participants will create a vase. In our second workshop, we will customize our 3D prints.

ADVANCED 3D MODELING AND HYDRO DIPPING: PART 2
DECEMBER 16
After creating a vase in the first part of this series, we will use a process known as hydro dipping to transfer graphics onto our 3D prints using water and hydrographic film.

ADVANCED SEWING AND EMBROIDERY: PART 1
JANUARY 6
Learn a variety of sewing techniques using Thinker Space tools and materials.

ADVANCED SEWING AND EMBROIDERY: PART 2
JANUARY 13
Continue to hone sewing techniques using Thinker Space tools and materials.

INTRO TO BIOTECH TOOLS
FEBRUARY 3
Get introduced to a wide variety of tools used by scientists. Explore how these tools are used in the exciting world of biotechnology.

HISTOLOGY FOR BEGINNERS
FEBRUARY 10
Get introduced to the microscopic study of human tissue. Compare human tissue slides and discover the importance of histology to science.

HEART HEALTHY
MARCH 2
Explore what it takes to keep your heart healthy. Build a better understanding of the importance of this powerful organ.

BRAIN GAMES
MARCH 16
Explore the electric world of your nervous system. Learn more about reflexes, balance and how your brain works.

INTRO TO GENETICS
APRIL 6
Get introduced to the science of inherited traits by discovering why organisms are similar to their parents.

AEROSPACE I
APRIL 20
In almost half a century, humans went from first flight to the moon. We’ll start with airplanes, from the very first to the modern and figure out how they fly.

AEROSPACE II
MAY 4
Make one small step for yourself by learning rocketry’s history and space travel’s future. Learn the basics of rockets and build one to try and escape Earth. Requires Aerospace I

PROGRAMMING BASICS
MAY 18
More than just lines of code, programming is its own living language that can make robots move, work and dance. Learn how to control your own robot by starting to learn this language.

ENERGY EFFICIENCY
JUNE 1
How can you save money at home by making a few simple changes? What’s with those new curly lightbulbs? Let’s be more efficient together by sifting through what’s practical and what’s myth when it comes to green energy and how to conserve it.

ARCHITECTURAL ENGINEERING
JUNE 8
Bridges and buildings need to hold up a lot of weight and withstand the elements. Can you build one that survives catastrophe? What forces are at constant war with human structures and how did engineers overcome them to make our tallest and most impressive buildings?

*Participants are encouraged to take both classes but may join at the second class.
**GRADES 7-8**

**ADVANCED ROBOTICS I**

**September 9**

Learn to program a Lego EV3 robot to complete a series of challenges designed to test your critical thinking skills.

**ADVANCED ROBOTICS II**

**September 23**

Continue our challenge and build on your robotics skills by including sensors for your robot to interact with its environment. Requires Advanced Robotics I.

**ARE WE ALONE?**

**October 7**

Discuss the current theories and possible locations of life outside our planet and what scientists and amateurs alike are doing to find life inside and outside our solar system. Whether we are or aren't alone, both answers are equally interesting.

**CHEMISTRY OF COMBUSTION**

**October 21**

Fire is more complex than the fire triangle and harder to make than you think. So, let's try. Using a series of hands-on experiments you’ll attempt to start the chain reaction and discover how to control it.

**WAVES OF SOUND**

**November 4**

You think your hearing is good? Not compared to other animals. What can they hear that we can’t and how can we see sound?

**PLANT DIVERSITY**

**November 18**

Learn the basics characteristics of ten plant phyla, observe the body plans of liverworts, mosses, ferns, gymnosperms, and angiosperms; compare the morphology of monocots and dicots through plant dissection. Make your own slides and investigate cellular respiration.

**SOIL SCIENCE**

**December 2**

Examine a soil profile from different environments, learn the effects of topography on the soil moisture in these habitats and compare using qualitative and quantitative methods. Explore Uptown Charlotte's urban environment and determine our soil profile.

**ANIMAL DIVERSITY**

**December 16**

Investigate nine animal phyla by observing and comparing different animal forms, functions and habitats. Recognize the major animal phyla, meet a representative organism from each one and create a cladogram.

**VERTEBRATE ZOOLOGY**

**January 6**

Take an in-depth look at the Chordata phylum, learn all about the different vertebrate taxonomic groups and what characteristics led scientists to group them this way. Meet some of our favorite vertebrates from the Explore More Life lab.

**ANIMAL RELATIONSHIPS**

**January 13**

Each organism plays an important role in its ecosystem. Investigate the symbiotic relationship between mites and cockroaches and use a compound microscope to explore the gut bacteria of termites.

**JEWELRY MAKING: PART 1**

**February 3**

Learn how to pierce sheet metal, shape wire and weave with beads.

**JEWELRY MAKING: PART 2**

**February 10**

Continue your work of art - pierce sheet metal, shape wire and weave with beads!

**MOLD MAKING AND CASTING**

**March 2**

Learn how to create molds and cast them in a variety of materials like chocolate, soap, resin and more.

**ADVANCED 3D MODELING W/ CIRCUITS**

**March 16**

Using Tinkercad, we will 3D model and print designs that can house LEDs.

**DIGITAL EMBROIDERY**

**April 6**

Learn about computerized embroidery and create designs using CAD design software.

**TAKE A CELLFIE**

**April 20**

Delve into the human cell and explore the different organelles and how they all contribute to the basic functions of life. Understand how cells form tissues, organs and body systems.

**FORENSICS**

**May 4**

Hone your detective skills as you learn the science of fingerprinting, DNA analysis and blood detection. Exercise your powers of deduction to solve the crime.

**BIOCHEMISTRY OF CELLS**

**May 18**

Dig a little deeper into the cells that make up our body. Learn the basics about carbohydrates, lipids, proteins and nucleic acids and how our cells use them.

**GENETICS**

**June 1**

Explore genotypes, phenotypes, alleles and traits. A variety of guided-inquiry experiments and investigations build a better understanding of genes and heredity.

**VIRUSES, FUNGI AND BACTERIA OH MY!**

**June 8**

Learn about various invaders to our human body and how our body fights them off. Grow your own bacteria and be disgusted by what’s around you!

**GRADES 9-12**

**TRANSFORMING BACTERIA**

**AP level lab**

**September 9**

We will explore the concepts of genetics and information transfer through this hands-on experiment. Then use Biotechnology skills to learn how genetic engineering can be used to manipulate genetic information.

**FRUIT FLY GENETICS**

**AP level lab**

**September 23**

Learn about the basic patterns of heredity using fruit flies in a variety of crosses. Create your own genetic crosses to identify various phenotypes in flies.

*Participants are encouraged to take both classes but may join at the second class.*
CELL MEMBRANE TRANSPORT
**AP level lab**
**October 7**
Explore the concepts of diffusion and osmosis by observing cellular functions in living cells. Design your own experiment to observe how external factors affect homeostasis.

CANCER STUDY
**AP level lab**
**October 21**
Enhance your biotech skills as you study the relationship between mitosis and cancer. Learn about the role of the p53 gene in the cell cycle.

DETECTING GMO’S
**AP level lab**
**November 4**
Use your biotech skills to perform a series of tests on certain foods to detect genetically modified foods. Use gel electrophoresis to analyze specific DNA patterns.

ELEMENTAL FLAME TEST
**AP level lab**
**November 18**
Explore the many elements that produce a characteristic color when burned in a flame which directly relates to an electron’s energy loss. Calculate this energy loss in Group 1 and 2 metals and some transition metals.

STOICHIOMETRY
**AP level lab**
**December 2**
Stoichiometry concerns mass relations in chemical formulas and chemical reactions. Determine the mass relation of two chemical compounds and practice mass percent and mole calculations.

WORK ON AN INCLINED PLANE
**AP level lab**
**December 16**
Ramps are one of the basic simple machines, but how specifically does a ramp change the way work occurs? Calculate force of kinetic friction, gravitational force and potential energies at a variety of different angles.

HOOKE’S LAW
**AP level lab**
**January 6**
Springs and bands have given amounts of stretch or elasticity. Calculate these numbers using Hooke’s Law and data logging software.

ACCELERATION OF A FALLING OBJECT
**AP level lab**
**January 13**
You’ll work to calculate the acceleration of a falling object and compare the result to the accepted value of the acceleration of a freely-falling object near the surface of the Earth.

CONCEPTS OF CHROMATOGRAPHY
**AP level lab**
**February 3**
Explore how a chromatograph of pigments is formed from both paper and thin layer chromatography through hands-on experimentation. Isolate and identify some of the various pigments in spinach and other plants.

MICROBIOLOGY
**February 10**
Get introduced to the wonderful world of microorganisms. Learn microbiological techniques like serial dilution and plating, isolating bacteria and identifying common bacteria.

ISOPOD BEHAVIOR
**AP level lab**
**March 2**
Become an ethologist by observing and recording the behavior of pillbugs. Build a behavior chamber to analyze and track how they respond to stimuli and then design your very own experiment.

MAMMAL ANATOMY
**March 16**
Get an in-depth look at the class Mammalia through hands-on activities including a mink dissection. Learn how the Mustelidae family use their physical adaptations to survive in their environment.

DEMOGRAPHY LAB
**AP level lab**
**April 6**
Learn how factors such as advances in medicine and environmental protection may have affected human demography over the past 150 years; how human demography might change in the future based on the current socio-political reality and the presence of incurable diseases. Collect cemetery data and construct a survivorship curve. Parent permission slip required.

3D PRINTING ON TEXTILES
**April 20**
Learn techniques using a variety of textiles and three primary printing techniques to create innovative wearables.

LASER CUTTING 101: PART 1
**May 4**
Laser cutters are every maker’s dream. Participants will learn to use vector-based software to create 2D patterns and designs. Using 3D modeling software, participants will also fabricate complex 3D objects on the laser.

LASER CUTTING 101: PART 2
**May 18**
Laser cutters are every maker’s dream. Participants will learn to use vector-based software to create 2D patterns and designs. Using 3D modeling software, participants will also fabricate complex 3D objects on the laser.

CNC ROUTING
**June 1**
Learn about subtractive manufacturing and the pipeline from design, to prototype, to finished product using a CNC router.

COSPLAY 101
**June 8**
Step into a world where pop culture, fashion and digital fabrication collide! Create props and wearables with real life cosplayers.
WORKSHOPS

AT DISCOVERY PLACE SCIENCE

Multi-session workshops are 90-minute programs over five days focusing on a single science topic. Exciting and educational, workshops allow students to explore a subject in-depth.

3D PRINTING
October: 2, 9, 16, 23, 30
2:30-4:00 p.m.
Utilize freeware and additive manufacturing to explore concepts of 3D modeling and 3D printing. Learn a variety of innovative 3D printing techniques and post-processing methods.

ROBOTICS
October: 2, 9, 16, 23, 30
1:00-2:30 p.m.
Work with LEGO® NXT robots to explore the concepts of robot assembly, simple motion programming, utilization of sensors, loops and switches. Then devise creative solutions to complete a set of robot challenges.

HUMAN ANATOMY
May: 6, 13, 20, 27 June:3
1:00-2:30 p.m.
Compare and contrast the human body with other animals. Through dissections you will discover how the body is divided into different systems and learn about organs and their function.

LASER PRINTING
May: 6, 13, 20, 27 June:3
2:30-4:00 p.m.
If you enjoy the combination of science and art, this is the workshop for you. Learn to design and laser cut a variety of 2D and 3D objects using CAD programs, Adobe Illustrator and other vector based programs.

WORKSHOPS AT DISCOVERY PLACE SCIENCE

90 Minutes
1:00 – 2:30 or 2:30 – 4:00 p.m.
Wednesday Afternoons
See grade specific times below

$ 1 Workshop
$75 Member  $100 Non-Member
5 Workshops
$250 Member  $350 Non-Member
EDUCATIONAL FILMS

PANDAS
March 29 – September 27, 2019
Come along on an exciting and educational journey that offers an up-close look at a species loved the world over – Giant Pandas. Pandas follows a researcher at Chengdu Panda Base in China where scientists are dedicated to protecting the species by breeding adult Giant Pandas in order to introduce the captive-born cubs into the wild. The researcher’s passion leads her to initiate a new technique inspired by a black bear rehabilitator in rural New Hampshire. What starts as a cross-cultural collaboration becomes a life-changing journey for one special panda named Qian Qian. Join Qian Qian on her breathtaking new adventure in the mountains of Sichuan as she takes her first steps outside her protected habitat, discovering her true animal nature.

SUPERPOWER DOGS
June 29 – December 27, 2019
In this inspiring true story, our best friends are also real-life superheroes. Journey around the globe to meet remarkable dogs who save lives and discover the powerful bond they share with their human partners. Follow ‘Halo’, a rookie puppy training to join one of the most elite disaster response teams in America. Meet ‘Henry’, an avalanche rescue expert in the Canadian Rockies, ‘Reef’, a Newfoundland lifeguard with the Italian coastguard, ‘Ricochet’, a Californian surf legend helping people with special needs, and the Bloodhound brothers, ‘Tipper and Tony’, who are leading the fight to save endangered species in Africa. As we discover the incredible abilities of dogs and the astonishing science behind their superpowers, we’ll never look at our best friends the same way again!

Approximately 40 minutes
See website for showtimes
$5 with class or workshop (IMAX only tickets available)