Home School Science 2015-2016

Welcome to the 2015-2016 Home School Science program at Sci-Quest!

Sci-Quest invites families to participate in Home School Science, a program designed specifically with the homeschooler's needs in mind. We are offering a ***new*** format based on feedback from parents.
First, Sci-Quest is offering 8-week STEM (science, technology, engineering, and mathematics) clubs for elementary (pp. 2-3), middle (p. 4), and high school (p. 5) students on Wednesdays throughout the school year.

In addition, computer labs (p. 6) are offered for children ages 9 and up in Sessions I and II (early and late fall, 2015) and for children ages 11 and up in Sessions III and IV (winter and spring, 2016). These labs allow children to learn at their own pace.

STEM Clubs

This 8-week club format will allow students to go into depth on a number of STEM topics in a collaborative, student-centered environment. Each club features hands-on activities, make-to-take home materials and in many of the clubs, children have time to use what they have learned to design and create their own personal projects. All Home School Science courses are correlated to National Science Standards and Common Core.

Computer Labs

Children in these clubs will progress (with help) through the activities and projects at their own pace - building their own personal skill set as well as computer skills. Labs will be held in Sci-Quest's computer lab.

Schedules and Prices

Days: Wednesdays
Class Length: 2 hours
(Morning labs and clubs start at 9:30 AM.; afternoon labs and clubs start at 12:30 PM)

Session Dates:

Session I: August 26-October 14
Session II: October 21-December 16 (no class November 25th)
Session III: Jan 13-March 2
Session IV: March 9-May 4 (no class March 16)

Cost

$140 per session (8 classes)
$18 drop in rate (single class)

Home School Science

2015-2016
At a Glance Chart

	Session	Times	Elementary	Middle School	High School	Computer Labs
2015	I August 26-October 14	9:30-11:30 **AM**	STEM Sampler	General Science (Middle School)		Scratch Programming (Ages 9+)
		12:30-2:30 **PM**	Zoology Jr. Chemists	Engineering Design	Aircraft Designer	
	II October 21-December 16 (No class November 25)	9:30-11:30 **AM**	Astronomy	Biology		Scratch Programming II (Ages 9+)
		12:30-2:30 **PM**	Switches, Sparks and Static Elementary Engineers	Electronics	Chemistry (High School)	
2016	III January 13-March 2	9:30 -11:30 **AM**	STEM Sampler	Techno Chef		3D Modeling and Design (Ages 11+)
		12:30-2:30 **PM**	Mechanics and Motion Earth Movers		Physics (High School) Fashion Tech	
	IV March 9-May 4 (No class March 16)	9:30-11:30 **AM**	Science in the Ancient World Inside the Human Body	Astrobiology	Aerial Photography	
		12:30-2:30 **PM**	Kinesthetic Connections Weather Watchers		Zoology (High School)	Digital Sound (Ages 11+)

sci-Quest Hands-on Science Center

Elementary (Kindergarten-Grade 5)

Session I: Wednesdays, August 26-October 14, 2015

Morning Clubs (9:30–11:30 AM)

STEM Sampler (also offered in Session III)
Is your child just wild about all sorts of science? If so, this is the club for you! Each week club members will explore a different type of science with hands-on investigations. This is the perfect club for a child just getting started in homeschooling who wants a wide variety of science activities.

AUG 26	Stars and Constellations	SEP 9	Crime Science	SEP 23	Catapult Design	TBD*	Animal Science
SEP 2	Light and Sound	SEP 16	Bubble Chemistry	SEP 30	Electrical Connections	OCT 14	Rockets

Afternoon Clubs (12:30-2:30 PM)

Zoology
Are animals your thing? In this club, we will uncover the mysteries of the animal kingdom through dissections, a trip to the local creek, and Sci-Quest's resident reptiles. Club members will create biological models, see live animals and learn skills necessary for good animal care at home.

AUG 26	Biological Classification	SEP 23	Worms
SEP 2	Cells	SEP 30	Bony Fish and Sharks
SEP 9	Life in a Pond	TBD*	Reptiles
SEP 16	Insects and Arachnids	OCT 14	Mammals/ Animal Care

Jr. Chemists
Mix it, mash it and make something new, the science of change just might be for you! Learn how chemists change the world around them by examining the different states of matter, polymers, and even food chemistry. Children will experiment their way through chemistry topics in a fun and interactive way.

AUG 26	States of Matter	SEP 23	Kitchen Chemistry
SEP 2	Solutions and Mixtures	SEP 30	Fizzy and Foamy
SEP 9	Density	TBD*	Polymers and Plastics
SEP 16	Acids and Bases	OCT 14	Candy and Chocolate

Session II: Wednesdays, October 21-December 16, 2015 (No class November 25)

Morning Clubs (9:30–11:30 AM)

Astronomy
Blast off into outer space as we visit the moons of our solar system, find out how scientists are searching for life on other planets, and learn the life cycle of a star. Club members will use lenses to learn how a telescope works, create a "comet" using dry ice and examine images from our most distant space probes.

OCT 21	Telescopes	NOV 4	Stars and Galaxies	TBD*	Outer & Dwarf Planets	DEC 9	Exoplanets
OCT 28	Our Sun and Other Stars	NOV 11	Inner Planets	DEC 2	Asteroids, Meteors & Comets	DEC 16	Space Exploration

Afternoon Clubs (12:30-2:30 PM)

Elementary Engineers
This club, supported by the Toyota USA Foundation, is a creative introduction to applying the engineering design process and engineering concepts to meet design challenges. Club members will make things that move, learn how to use hydraulics, create moving model cars and then put their design knowledge together to create their own project.

OCT 21	Engineering Design	TBD*	Car Design I
OCT 28	Flying and Floating Things	DEC 2	Car Design II
NOV 4	Cranks, Cams, and Gears	DEC 9	Personal Projects
NOV 11	Pneumatics & Hydraulics	DEC 16	Personal Projects

Switches, Sparks, and Static
Let's get turned on to electricity in this fun club exploring the science of electron flow. Learn about the nature of electricity, types of electricity, series and parallel circuits and of course, make some really great projects. This club will feature time for the kids to make a personal electrical project to take home.

OCT 21	What is Electricity?	TBD*	LEDs
OCT 28	Static Electricity	DEC 2	Motors
NOV 4	Current s and Circuits	DEC 9	Personal Projects
NOV 11	Switches	DEC 16	Personal Projects

***These dates may need to be rescheduled due to Sci-Quest events. Parents will be notified in advance.**

ALSO CHECK OUT "COMPUTER LABS", p. 6 (for children 9 and up)

sci-Quest Hands-on Science Center

Elementary (Kindergarten-Grade 5)

Session III: Wednesdays, January 13-March 2, 2016

Morning Clubs (9:30–11:30 AM)

STEM Sampler (also offered in Session I)
Is your child just wild about all sorts of science? If so, this is the club for you! Each week club members will explore a different type of science with hands on investigations. This is the perfect club for a child just getting started in homeschooling who wants a wide variety of science activities.

JAN 13	Stars and Constellations	JAN 27	Crime Science	FEB 10	Catapult Design	FEB 24	Animal Science
JAN 20	Light and Sound	FEB 3	Bubble Chemistry	FEB 17	Electrical Connections	MAR 2	Rockets

Afternoon Clubs (12:30-2:30 PM)

Mechanics and Motion
This club is an excellent introduction to physical science and physics as we investigate forces, friction, Newton's Laws and simple machines. Children will make examples of simple machines, experiment with rolling cars and create their very own light show to take home.

JAN 13	Measuring Motion	FEB 10	Simple Machines I
JAN 20	Velocity & Acceleration	FEB 17	Simple Machines II
JAN 27	Forces & Friction	FEB 24	Magnetism
FEB 3	Newton's Laws	MAR 2	Light & Color

Earth Movers
This club will take a dynamic look at the Earth under our feet. Children will compare rocks to minerals, test rocks for different properties and grow crystals. They will also look at those powerful forces that move and shape the Earth.

JAN 13	Rocks & Minerals	FEB 10	Fossils
JAN 20	Inside the Earth	FEB 17	Volcanoes
JAN 27	The Rock Cycle	FEB 24	Earthquakes
FEB 3	Gemstones & Crystals	MAR 2	Tsunamis

Session IV: Wednesdays, March 9-May 4, 2016 (No class March 16)

Morning Clubs (9:30–11:30 AM)

Science in the Ancient World
Let's dig up the past as we explore the science and technology of ancient civilizations. Unravel the mysteries of Egypt, the wonders of China, and the glories of Rome and Greece. We will make models of ancient artifacts, build bridges and aqueducts and create chemical reactions. Your children will double their learning as we connect social studies to science in this club.

MAR 9	Ancient cultures	APR 13	Greece and Rome I
MAR 23	Mesopotamia	APR 20	Greece and Rome II
MAR 30	Egypt I	APR 27	China I
APR 6	Egypt II	MAY 4	China II

Inside the Human Body
Ever wonder why you burp? Why blood is red? Or maybe you're just curious about how your brain works. If so, we have the club for you! Each week we'll examine a different system of the human body and discover exactly how our insides (and outsides) function. You'll love this camp from head to toe! NOTE: Week 6-8 will include demonstration dissections.

MAR 9	Body Organization	APR 13	Muscles
MAR 23	Cells	APR 20	Circulatory System
MAR 30	Digestive System	APR 27	Nervous System
APR 6	Bones	MAY 4	Senses

Afternoon Clubs (12:30-2:30 PM)

Kinesthetic Connections
Enter dramatically as you discover the science of music, dance, and the visual arts. Craft using new age technology, discover the hidden geometry in movement--you may find a new appreciation for the world around you. Express yourself in this club and make the world a little brighter.

MAR 9	Right Brain Left Brain	APR 13	Wearables and Textiles
MAR 23	Ancient Appreciations	APR 20	Robo Picasso
MAR 30	Muscles and Movement	APR 27	Personal Projects
APR 6	Ratios and Rhythm	MAY 4	Personal Projects

Weather Watchers
In this club, children look at the dynamic and changeable weather patterns that we are all too familiar with in this area. Club members will learn about the atmosphere, make a weather station for taking observations at home and learn about severe weather.

MAR 9	Parts of the Atmosphere	APR 13	Air Masses/Fronts
MAR 23	Measure the Atmosphere	APR 20	Thunderstorms
MAR 30	Make a Weather Station	APR 27	Tornadoes
APR 6	Humidity, Clouds and Condensation	MAY 4	Hurricanes

ALSO CHECK OUT "COMPUTER LABS", p. 6 (for children 9 and up)

sci-Quest Hands-on Science Center

Middle School (Grades 6-8)

Session I: Wednesdays, August 26-October 14, 2015

Morning Clubs (9:30–11:30 AM)

General Science
In this club we explore a wide variety of science topics including simple machines, Earth science and the human body. Through hands-on laboratories and take-home projects, children will test mechanical advantage, compare different types of rocks, understand the basic building blocks of life, and study the systems of the human body.

AUG 26	Simple Machines	SEP 23	Circulatory System
SEP 2	Geology	SEP 30	Digestive System
SEP 9	Fossil Record	TBD*	Muscles & Skeleton
SEP 16	Life	OCT 14	Nervous System

Afternoon Clubs (12:30-2:30 PM)

Engineering Design
This club will give children a look at the many different kinds of engineering careers. With generous support from the Toyota USA Foundation, children will learn about the engineering design method and each week do design challenges based on different engineering disciplines.

AUG 26	Engineering Design	SEP 23	Computer Engineering
SEP 2	Mechanical Engineering	SEP 30	Chemical Engineering
SEP 9	Bioengineering	TBD*	Aerospace Engineering
SEP 16	Electrical Engineering	OCT 14	Personal Project

Session II: Wednesdays, October 21-December 16, 2015 (No class November 25)

Morning Clubs (9:30–11:30 AM)

Biology
Your child will be introduced to the study of living things in this club. Children will learn how the scientific method works, observe preserved and live organisms, go to the local creek to collect samples, create biological models and do lab investigations.

OCT 21	Monera & Protozoa	TBD*	Arthropods
OCT 28	Fungi & Aquatic Life	DEC 2	Chordates
NOV 4	DNA and Cells	DEC 9	Birds and Mammals
NOV 11	Invertebrates	DEC 16	Reptiles

Afternoon Clubs (12:30-2:30 PM)

Electronics
This club is perfect for a child who loves to tinker! We will learn about the components of electronics including LEDs, resistors, capacitors, and inductors and then, do a series of labs to solder and create personal circuit projects. NOTE: This club uses hot soldering irons in weeks 4-8

OCT 21	Electronics & Circuits	TBD*	Motors & Radios
OCT 28	Basic Components	DEC 2	Integrated Circuits
NOV 4	Ohm's Law	DEC 9	Personal Projects
NOV 11	Simple Soldering	DEC 16	Personal Projects

Session III: Wednesdays, January 13-March 2, 2016

Morning Clubs (9:30–11:30 AM)

Techno Chef
Your budding chef will really have a blast in this club exploring the science behind your favorite foods and cooking. Club members will do a cooking style investigation every week on a different topic and learn how to really improve their cooking with a dose of science!

JAN 13	Taste & Cooking	JAN 27	pH in Cooking	FEB 10	Chocolate Science	FEB 24	Playing with Viscosity
JAN 20	Cookie Testing	FEB 3	Candyology	FEB 17	Gels & Spheres	MAR 2	Cooking with Liquid N_2

Session IV: Wednesdays, March 9-May 4, 2016 (No class March 16)

Morning Clubs (9:30–11:30 AM)

Astrobiology
Join us as we venture through our solar system to worlds and stars beyond and learn about current science in astrobiology. How do we find alien worlds? What do we know about the stars? And just how long will it take to get there? Please note: One class session (date TBD*) will be a night visit to the Von Braun Astronomical Society Planetarium to work with their telescopes.

MAR 9	Scale of the Universe	MAR 30	Comparative Geology	APR 13	Atmospheric Science	APR 27	Extremophiles
MAR 23	Stars and Suns	APR 6	Telescopes	APR 20	Supporting Life	MAY 4	VBAS Field Trip*

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ALSO CHECK OUT "COMPUTER LABS", P. 6

sci-Quest Hands-on Science Center

High School (Grades 9-12)

Session I: Wednesdays, August 26-October 14, 2015

Afternoon Clubs (12:30-2:30 PM)

Aircraft Designer

Using design software and 3D printers create and then print prototypes of your own. Learn about wing design, drag and stability as you make your unique creation in this one of a kind club experience. Note: Children may wish to bring personal laptops to this club, but it is not required.

AUG 26	Forces of Flight	SEP 9	Wing Design & Lift	SEP 23	Propulsion	TBD*	Personal Projects
SEP 2	Airplane Flight Lab	SEP 16	Stability and Control	SEP 30	3D modeling	OCT 14	Personal Projects

Session II: Wednesdays, October 21-December 16, 2015 (No class November 25)

Afternoon Club (12:30-2:30 PM)

Chemistry

This club will make chemistry come alive for your child as we cover all the major concepts in a high school chemistry course including bonding theory, stoichiometry, and major types of chemical reactions all using hands-on investigations and chemistry demonstrations.

OCT 21	Energy Flow Lab	NOV 4	Atomic Bonding	TBD*	Acid/Base Chemistry	DEC 9	Thermodynamics
OCT 28	Atomic Structure	NOV 11	Stoichiometry	DEC 2	Solutions and Gases	DEC 16	Redox Reactions

Session III: Wednesdays, January 13-March 2, 2016

Afternoon Clubs (12:30–2:30 PM)

Physics (High School)

Let's have some fun with physics as we do hands-on labs for all the major concepts covered in a high school physics course. We will do some classic experiments with free fall and gravity, calculate vectors, and experiment with lasers.

JAN 13	Motion: Free Fall	FEB 10	Waves
JAN 20	Motion: Projectiles	FEB 17	Optics
JAN 27	Newton's Laws	FEB 24	Electrical Potential
FEB 3	Work, Energy, & Collisions	MAR 2	Circuits/ Magnetism

Fashion Tech

This club will focus on the intersection of fashion, costume design, electronics and jewelry. Club members use upcycling plastic waste, jewelry making skills and circuit design to create wearable creations of their own. The focus will begin with skill building leading to the creation of personal projects at the end of the club. Note: Needle- and round nose pliers will be needed for weeks 3-8.

JAN 13	Upcycling Fashions	FEB 10	Soldering Basics
JAN 20	Sewing Circuits	FEB 17	Soldering Jewelry
JAN 27	Switches/Jewelry Basics	FEB 24	Personal Projects
FEB 3	3D Printed Earrings	MAR 2	Personal Projects

Session IV: Wednesdays, March 9-May 4, 2016 (No class March 16)

Morning Club (9:30–11:30 AM)

Aerial Photography

Learn the science and art of photography as we design an aerial photography rig that can really fly! Discover digital photography tricks, play with GoPro Cameras and even fly a quadcopter taking aerial photographs. Note: Children may bring cameras and laptops to this program.

MAR 9	Using the Camera	APR 13	Build Aerial Flyer
MAR 23	Perspective Tricks	APR 20	Process Pictures
MAR 30	Taking Pictures	APR 27	Field Trip (TBD*)
APR 6	Design Aerial Flyer	MAY 4	Digital Scrapbook

Afternoon Club (12:30-2:30 PM)

Zoology

From the everyday to the exotic, animals can teach us a lot about ourselves, so join us as we dig a little deeper into the animal kingdom. We will do some specimen collecting and a few dissections along the way.

MAR 9	Classification	APR 13	Crustaceans
MAR 23	Microzoology	APR 20	Fish & Amphibians
MAR 30	Insects and Arachnids	APR 27	Birds & Mammals
APR	Worms & Snails	MAY 4	Reptiles

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ALSO CHECK OUT "COMPUTER LABS", p. 6

sci-Quest Hands-on Science Center

Computer Labs

Children in these clubs will progress (with help) through the activities and projects at their own pace - building their own personal skill set as well as computer skills.

Session I: Wednesdays, August 26-October 14, 2015

Morning Lab (9:30–11:30 AM)

Scratch Programming (for ages 9 & up)
This club introduces children to the essential building blocks behind object-oriented programming by creating fun, interactive stories, and simple games. Learn programming basics with Scratch (a project from the MIT Media Lab) through interactive storytelling. Think creatively while learning how to program individualized stories, games, and animations.

Session II: Wednesdays, October 21-December 16, 2015 (No class November 25)

Morning Lab (9:30–11:30 AM)

Scratch Programming II (for ages 9 & up)
Itching for more? Scratch is a very capable program environment, able to produce and sort data, follow complex commands, even make a platformer! Learn how far you can go in Scratch while building up a base in real computational thinking skills.

Session III: Wednesdays, January 13-March 2, 2016

Morning Lab (9:30-11:30 AM)

3D Modeling and Design (for ages 11 & up)
3D modeling has never been easier. Learn how to design structures and models in 3D and even bring a few of them to life with our new 3D printer! Learn about design basics, make scale models, and learn how digital 3D design is changing the field of industry. No previous experience with computer aided drawing necessary and you will take home all or your creations!

Session IV: Wednesdays, March 9-May 4, 2016 (No class March 16)

Afternoon Lab (12:30–2:30 PM)

Digital Sound (for ages 11 & up)
Explore making music with a geeky twist. Learn how today's music is made and improved electronically, discover how sound editing works and create digital music to share with your friends and family.