

Aurora Lipper presents...

SUPERCHARGED SCIENCE WORKSHOPS

*Focusing on wonder, discovery and innovation
through hands-on science education classes.*

Supercharged Science Workshops are packed with loads of totally fun activities that are also educational. Your students will have a total blast learning about the real world around them in a fun and meaningful way that won't seem like regular school work to them. Your students will be excited, engaged, and learning science skills.

We have over 200 science classes, projects, experiments, and activities to choose from. Instead of overwhelming you with options, here are the most popular workshops for you to consider (below). All classes can be scaled to fit the size of your group of at least 50 kids.

Aeronautics Flight Lab

Soar, zoom, fly, twirl, and gyrate with these amazing hands-on classes which investigate the world of flight. Students create flying contraptions from paper airplanes and hang gliders to multi-cell kites.

Topics: flight, air pressure, flight dynamics, wing design, and Bernoulli's principle. Age range: 6-12 years. Location requirements: Indoor with tables and chairs, outdoor area for flying. Class time: 45-75 min.



Astrophysics, Black Holes & Star Show (with Star Gazing)

Take an intergalactic tour of the universe without leaving your seat! Discover massive black holes, spinning neutron stars, quasars, blazars, magnetars, supernovae, and more with this amazing science class taught by a real astronomer! Listen to pulsars, explore black holes, and make the plasma in your kitchen.

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Topics: solar system, nebulae, galaxies, star formation, supernovae, and more. Age range: 7-18 years. Location requirements: Indoor or outdoor with chairs, and the location must be dark and equipped with a large projector screen or white wall. Power source required. (Optional: if your class is in the evening, telescopes can be set up and used with your group.) Class time: 60-120 min.



Chemistry Magic Show

Ooze, bubble, and slurp your way through the periodic table as you grow dinosaur toothpaste, coagulate slime, crystallize molecules, shake up ice cream, blast cannons and make a liquid freeze by heating it up. Plus, you will learn about 5 states of matter (the first 3 are solid, liquid and gas), supercooling, chemical kinetics, phase shifts, atoms, molecules, chemical reactions, and much more.

Topics: chemical kinetics, molecules, elements, atoms, chemical reactions. Age range: 6-14 years. Location requirements: Indoor area with chairs for demonstrations, outdoor space with tables, near a water source for experiments. Class time: 45-90 min.

Civil Engineering Challenge



We're going to discover what it's really like to be a civil engineer, learn how engineering works, and build bridges, buildings, skyscrapers by working our way through several engineering challenges, including making simple bridges out of popsicle sticks that can hold over 50 pounds of weight! Taught by a real engineer.

Topics: bridges, buildings, tension, compression, building materials, projects, and engineering fields. Age range: 6-14 years. Location requirements: Indoor area with chairs and tables, near a power and water source for experiments. Class time: 45-90 min.

Electricity & Robotics Lab

Spark together electric motors, build homemade burglar alarms, wire up circuits and build your own robot! Create your own whizzing, hopping, dancing, screeching, swimming, crawling, wheeling, robot by the end of this class to take home.

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Topics: electricity, magnetism, electrical charges, chassis construction, sensors. Age range: 6-14 years. Location requirements: Indoor area with tables and chairs, tile or cement floor (no carpet) preferred, must have power and water sources available. Class time: 50-90 minutes.

Geology Rock Hunt Field Study



We are about to discover the world of rocks, crystals, gems, and minerals by moving beyond just looking at pretty stones and really being able to identify, test, and classify samples and specimens you come across using techniques that real field experts use. You will learn how to fluoresce minerals, chemically react rocks, streak powders, scratch glass, and play with atomic bonds as you learn how to be a real field geologist. You'll explore how rocks can make light on impact, react to

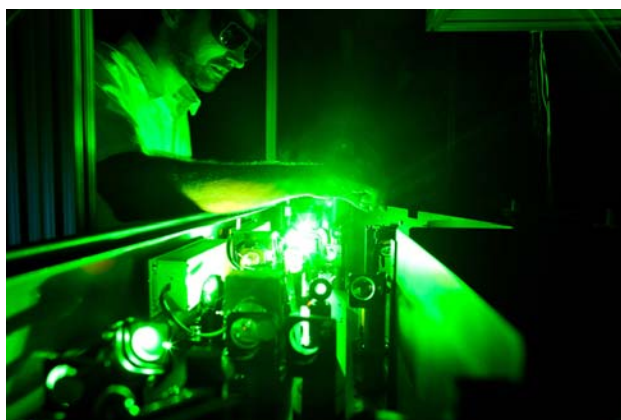
acids, float on water, and be able to tell which rocks really come from space. You'll also grow different kinds of crystals, identify rocks, minerals, crystals and gems, and learn how popcorn rock was discovered by trying to make rocks disappear!

Topics include: rock cycle, types of rocks, minerals, gemstones, crystals, meteorites, geologist career, sample identification techniques. Age range: 6-12 years. Location requirements: tables, chairs, dark room for fluorescence studies. Class time: 45-90 minutes.

Light, Lasers and Hologram Lab

We're going to learn about the wild world of light that has baffled scientists for over a century. You'll be twisting and bending light as we learn about refraction, reflection, absorption, and transmission using lenses, lasers, mirrors, and optical filters with everyday stuff like gummy bears, paperclips, pencils and water!

We're going to learn how to build a projection hologram out of piece of old plastic, make a laser microscope so you can see tiny little microscopic creatures, bend laser light to follow any path you want without using mirrors, and finally understand how glow in the dark toys really work on the subatomic level.



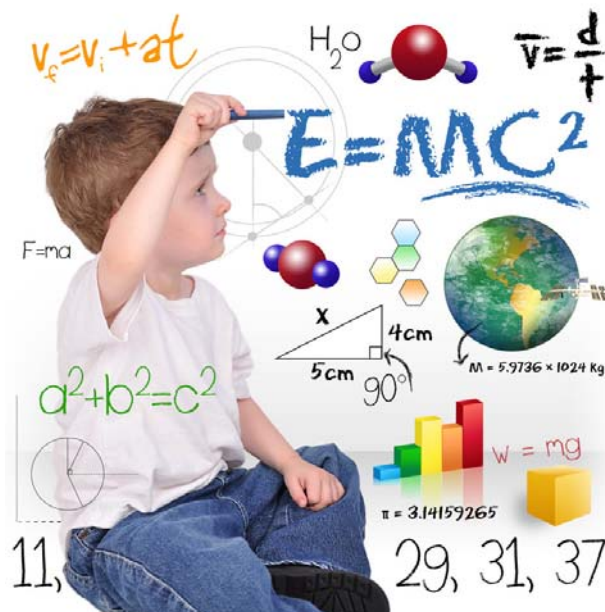
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Topics include: light speed, wavelength, frequency, intensity, polarization, phase, electromagnetic spectrum, absorption, transmission, reflection, refraction, diffraction, fluorescence, photoelectric effect, holograms, measurement techniques, fiber optics and communication. Age range: 6-12 years. Location requirements: tables, chairs, access to power and water, dark room conditions. Class time: 45-90 minutes.

Mathemagic Lab

We're going to focus on the side of math that is fun, innovative, creative, and designed to make you think by teaching you how math is a tool for solving real-world problems. Math isn't just about numbers – you'll learn how to solve challenging puzzles, learn how two-fingered aliens count to 10, step through sheets of paper, make fish swim in any direction, jailbreak handcuffs, decode secret messages, quickly calculate in your head and so much more.

Topics include: numbers, games, logic, geometry, and more. Minimum math level of students: 12 times tables. Age range: 7-12 years. Location requirements: tables, chairs, pencils, paper. Class time: 45-90 minutes.



Magnetism Lab

You can feel how two magnets can push against each other when you bring them close together, but what IS that invisible force, and why is it there? And how come magnets stick to the fridge and not a soda can, even though both are metal? Discover how sliding magnets defy gravity, how grapes twist around to align with magnets, how magnets can lose their grip, the scariest magnets in the universe, learn how to build a linear accelerator, a unipolar motor, and construct your own electromagnetic crane using electric circuits and magnet wire.

Topics include: magnetism, electromagnetism, electricity, magnetic poles, Curie temperature, magnetic brakes, magnetars, and diamagnetic, paramagnetic and ferromagnetic materials. Age range: 6-12 years. Location requirements: tables, chairs, access to power. Class time: 45-90 minutes.

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Marine Biology Lab

If you love whales, aquariums, and underwater volcanoes, and you also love to watch everything that swims, crawls, or moves in the sea, then this is the area of science for you. Learn how to study the creatures that live in the sea in their natural environment by building a live-cell microscope in addition to exploring erupting chemical volcanoes, and so much more! You'll get a hands-on experience of what it's really like to be a marine biologist.



Topics include: ocean zones, temperature, pressure, salinity, marine plants and animals, exploration techniques, submarines and submersibles. Age range: 6-12 years. Location requirements: tables, chairs, access to power and water, dark room for power-point presentation, large blank white wall or projector screen. Class time: 45-90 minutes.

Microscope Field Study Lab



Uncover a whole new world of tiny critters and amazing organisms as you dust off your microscope and learn how to get the best use of out of this prime scientific instrument. Learn magnification optics and compound microscope anatomy as you learn to prepare wet and dry mount specimens, perform staining techniques, and fire heat fixes.

Topics: optics, lenses, magnification, light, slide preparation, and microscope care and use. Age range: 6-14 years. Location requirements: Indoor with tables and chairs, outdoor field area to collect specimens (optional), Must have power source. Important: Each student pair must have their own compound microscope. Class time: 60-90 min.

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Renewable & Alternative Energy Lab

Discover the ground-breaking world of alternative and renewable energy by learning how different energy sources work on our planet, including solar cells, wind turbines, geothermal devices, and hydroelectric power. We're going to look at how to get energy from the sun, wind and water as well as unlocking the energy in chemical bonds and much more. During class, you will build your own marshmallow roaster, steam-powered boat and solar cookie oven!

Topics: molecules, chemical reactions, electricity, fuels, solar, wind, nuclear, fuel cells, and phase changes. Age range: 6-14 years. Location requirements: Tables and chairs indoors for demonstration and building, power source, water source, and outdoor space to test steamboats. Class time: 45-90 min.

Roller Coast Physics



Zoom along roller coaster tracks as you learn about velocity, acceleration and g-force! Construct corkscrews, camel-backs, loops, twists, and banked turns with our long tracks and tunnels.

Topics: velocity, acceleration, Newton's Laws of Physical Motion, force, friction, and dynamics. Age range: 6-12 years. Location requirements: Tables, chairs, and lots of room with wall space we can use with non-marking masking tape. Class time: 45-60 min.

Rocketry & Space Flight Lab

Blast your imagination with this super-popular class on oxidation, combustion, and rocketry! Kids learn about chemical reactions, hybrid and solid-state rocketry, and the myths about oxygen. Students create several different types of rockets by learning about pneumatics, chemical reactions, air pressure, flight dynamics, and rocket fin design. Class is taught by a real rocket scientist!



Topics: molecules, exothermic chemical reactions, fuels, rocket design, safety. Age range: 6-14 years. Location requirements: Tables, chairs, power source, water source, and lots of outdoor space to launch. Class time: 45-90 min.

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Sonic Vibrations Lab

Investigate sound and resonance by discovering how to vibrate molecules to create waves of energy by creating slingshot harmonicas, buzzing hornets, and air horns to annoy your parents! Learn how sound travels through rock, air and underwater, how glass shatters



when hit with a sound wave, and what happens if you travel faster than the speed of sound. You'll also learn how sound can cause huge structures to crumble, and how radio telescopes work.

Topics: frequency, wavelength, resonance, natural frequency, energy, molecules. Age range: 6-12 years. Location requirements: Tables, chairs, power source, and outdoor space. Class time: 45-90 min.

Thermodynamics Lab

Discover how to make it rain indoors, boil room temperature water without heating it up, and make an engine from soda cans with this class on heat, thermal energy, and thermodynamics! Discover how to make a fire balloon that never pops, how to have water freeze and boil at the same time, and make your own steam generated propulsion vehicle.

Topics: heat, energy, thermal energy, temperature, molecules, phase changes, pressure. Age range: 6-12 years. Location requirements: Tables, chairs, power source, water source and outdoor space. Class time: 45-90 min.

HOW TO BOOK A CLASS

Make your next student program sensational and educational by inviting Aurora to teach your next assembly, camp or workshop class by calling Supercharged Science at:

(805) 617-1789

or by sending an email request to: **aurora@SuperchargedScience.com**
We look forward to working with you!