Talcott's Summer of STEM Adventures 2021

Week 1 - June 21 - 25

Gr K-3 Fledglings I, Newton's World Tinker with simple machines, pendulums, waves, spinning things, tops, airplanes & rockets! Actions, reactions, motion, momentum and roller coasters!

Gr K-3 Robotics: Mindstorms NXT The most popular, flexible robot building kit ever, LEGO® Mindstorms™ has decades of robot contests under its belt. You'll build, program and compete on our "Research Roundup!" playing field, solving science problems for robotics bragging rights!

Gr K-3 Future Engineers Are you an inventor? Like to tinker? Take things apart? Build cool stuff? We'll have design contests, speed building, LEGO® prototyping, and new inventions from everyday objects. You can even earn a "Talcott Patent". Bring your busted stuff from home or use ours!

Gr 4-8 Coding Learn the skills needed to create a piece of software from design, algorithms, implementation and analysis, and debugging in procedural and object-oriented programming. Code in ALICE using 3-D objects and JAVA platforms. Along the way students can integrate their skills from science, math and logic to make games, graphics and more!

Gr 4-8 Computers: Game Making Explore the world of computer gaming by building your own! Work on one of several platforms and game tools to create original characters, stories and worlds. You'll end up with your own game to play and share with your friends. Yours could be the next Mario!

Gr 4-8 Geocaching - Treasure Hunt! There are hidden treasures waiting to be found in the mountains, forests, waterways, deserts, cities, or parks near you! High-tech hide-and-seek, a modern scavenger hunt. Around the world, teams have hidden "caches" of items, and it is your job to find them! Learn GPS, and create and find caches. This game makes you the search engine!

Gr 4-8 Girls Rock! Girls rock - not just in geology, but in lots of other neat sciences too! Fun and engaging activities stress discovery skills, from rock/mineral/fossil ID to biology and chemistry labs, and a dissection! Plenty of hands-on STEM can build confidence in young female scientists.

Week 2 - June 28 - July 2

Gr K-3 Fledglings II, Our Earth Find out the how and why of the sky, the wind, the sea, water cycles, rocks & minerals, volcanoes and earthquakes!

Gr K-3 Animation - Claymation! Create animated stories with clay, LEGO® or your favorite toy characters. You'll work in a team to write a story, set up a stage with your characters and create an original video of their adventures!

Gr K-3 Weather Wizards Make snow in the summer, create a model tornado, capture raindrops. You'll feel the winds of a hurricane and mini lightning storms. Create weather instruments to take home for your own personal weather lab!

Gr 4-8 Raspberry Pi Learn how to assemble and program your own Raspberry Pi 3 computer. It runs "Raspbian" Linux, complete with a desktop GUI, USB ports, HDMI to your big screen TV, Java, Wolfram Mathematica, GIMP graphics software and Minecraft! *Additional hardware purchase of a RaspberryPi 3 B single-board computer ($35) at registration.

Gr 4-8 The Science of Magic 4-8 Discover the science behind some great tricks and some cool science that can fool your friends! Use high tech and the web to learn some amazing illusions, plus free admission to our semi-annual Magic Show! Have a great time perfecting your magic tricks and science experiments. Conjure up wondrous illusions, feats of prestidigitation, and legerdemain.

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Gr 4-8 Robotics: Mindstorms EV3 Create & code custom robots with LEGO Mindstorms EV3. You'll work in teams to design, program, test and solve contests and challenges designed to test your skill using one of our FIRST LEGO League playing fields. Our bots, your brains!

Week 3, July 6 - 9 (4 days - no classes Mon Jul 5!)

Gr K-3 Fledglings III, Life! Discover the things that live in the fires, the soil, garden and backyard, ponds, puddles and streams! Explore the lives of plants, bugs, slithering things, birds, critters and more!

Gr K-3 Future Engineers Are you an inventor? Like to tinker? Take things apart? Build cool stuff? We'll have design contests, speed building, LEGO® prototyping, and new inventions from everyday objects. You can even earn a "Talcott Patent". Bring your busted stuff from home or use ours!

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Gr 4-8 Wild Weather Want to forecast the weather? Use computers and our weather station to access data and images, look back at Earth from the GOES satellites and use Doppler radar just like the experts. You'll make green-screen weather forecast videos just like the pros!

Gr 4-8 Lights, Camera, Action! (Week 1 of 2) Ever dream of being a TV producer, director, or star of your own production? Now's your chance! Explore the video medium and produce your masterpiece using our campus and gear. iPads and iMacs allow you to have your own editing suite so you can edit, add effects, and take your movies home!

Gr 4-8 Raspberry Pi Learn how to assemble and program your own Raspberry Pi 3 computer. It runs "Raspbian" Linux, complete with a desktop GUI, USB ports, HDMI to your big screen TV, Java, Wolfram Mathematica, GIMP graphics software and Minecraft! *Additional hardware purchase of a RaspberryPi 3 B single-board computer ($35) at registration.

Gr 4-8 3D Printing 3-D printers have opened up a world of do-it-yourself design and manufacturing, from game pieces to prosthetic arms. Using tools including Sculptris, SketchUp, MakerWare and DaVinci, you'll be able to design, build and print your gadgets and 3-D models!

Week 4, July 12 - 16

Gr K-3 Fledglings I, Newton's World Tinker with simple machines, pendulums, waves, spinning things, tops, airplanes & rockets! Actions, reactions, motion, momentum and roller coasters!

Gr K-3 LEGO Science From cars to catapults, from motors to Mars rovers, you can explore science and technology with LEGO®. Compete in engineering challenges, build skyscrapers, crazy contraptions and dream machines!

Gr 4-8 Lights, Camera, Action! (Week 2 of 2) Ever dream of being a TV producer, director, or star of your own production? Now's your chance! Explore the video medium and produce your masterpiece using our campus and gear. iPads and iMacs allow you to have your own editing suite so you can edit, add effects, and take your movies home!

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Gr 4-8 Computers: Arduino Want to get under the hood of today's electronics? Build circuits that can be used to power gadgets, games, prosthetics and robots? You'll use an Arduino project board, LEDs, sensors, motors and all the parts you need to create cool stuff. Additional purchase of a SparkFun Arduino kit ($49) at registration.

Gr 4-8 Bioengineering Learn about the chemistry and physics that keeps you being you, find out how bones, muscles and prosthetics work, 3D print skeleton parts, experiment with foods and exercise, and use some cool tech to check out your heart, lungs and muscles.

Gr 4-8 Genetics & Genomics Learn about what makes you, YOU! We will do DNA themed games and crafts, fruit DNA extractions, practice transcription/translation of gene sequences, Punnett squares for dragons, and even use our very own PCR and Gel Electrophoresis equipment to solve a "who-done-it" genetic mystery.

Week 5, July 19 - 23

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Gr 4-8 Computers: Animation From classic cels to the latest motion-capture systems, we'll show you how the pros work. You'll create original short animations using hand made animation toys, paper-based and and computer-based techniques, stop-action and "tweening" tools. Showcase your storytelling, artistic and creative talents!

Gr 4-8 Beam Me Up! Have you ever looked up at the night sky and wondered what's out there? Well, a multitude of objects are available to observe through telescopes of modest size, you just need to take the opportunity to do so. Join us to use telescopes to look at the Sun and planets, and all of the other wonders out there. Additional purchase of a telescope kit ($25) at registration.

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Gr 4-8 Green Engineering 4-8 How can the sun power your house? Your car? Can you cook with sunshine? Switch on to solar, wind and water energy! Discover how electrons energize lamps, wires and motors as you build simple circuits and how to tap into nature for power!

Week 6, July 26 - 30

Gr K-3 Fledglings III, Life! Discover the things that live in the fires, the soil, garden and backyard, ponds, puddles and streams! Explore the lives of plants, bugs, slithering things, birds, critters and more!

Gr K-3 It's a Bug's Life They creep, they crawl, they fly! They make sure the flowers grow, they clean up our yards. They can lift hundreds of times their own weight, and can fly across the continent! They're bugs! We'll learn how to find and catch them, observe them with microscopes, do some fun buggy crafts, and even keep some alive in the classroom.

Gr K-3 Pirate Science Fun filled sessions for aspiring buccaneers! Learn how to sail the Seven Seas and what to expect in those waters! Practice your map skills as you explore where you're going to bury the "treasure." You'll find an ocean of activities on board for an exciting week!

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Gr 4-8 3…2…1… Blast Off! Experiment with rocket design and propulsion systems. See how rocket design has changed over the decades. Build your own rocket and launch it to measure how high it goes! You could be the next Dr. Goddard and lead the world into the next space frontier! Additional purchase of an Estes Rocket kit ($15) at registration.

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Week 7, August 2 - 6

Gr K-3 Kitchen Chemistry Do some hands-on chemistry with everyday materials that you use in your kitchen! From volcanoes to dancing raisins, from weather patterns to rocketry, see some very cool science happen with things right off the kitchen shelf!

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Gr K-3 Wild & Crafty Discover your creative talents, using materials found in nature. Experiment with natural dyes. Create pictures and weavings with nature's colors and textures. Recycle paper into beautiful stationery tinted by leaves and flowers. What you make is yours to keep!

Gr 4-8 Computers: Animation From classic cels to the latest motion-capture systems, we'll show you how the pros work. You'll create original short animations using hand made animation toys, paper-based and and computer-based techniques, stop-action and "tweening" tools. Showcase your storytelling, artistic and creative talents!

Gr 4-8 Computer Graphics Unleash your artistic side in computers - great graphics, powerful pictures, 3-D scenes, and fantastic scenes from out-of-this-world! You'll use the power of professional graphics tools to create a digital portfolio full of your original artwork and projects!

Gr 4-8 Cool Contraptions! Engineer and build with a chain reaction contraptions made with a wide variety of supplies. Create a fun complex contraption to do a simple task, and use a lot of physics and engineering along the way.

Gr 4-8 Marine Science Discover the lure of the ocean and learn about nearby Long Island Sound. We will learn about geology, watersheds, tides, sea monsters, shells, and even dissect some squid. Includes a day trip to Hammonasset Beach State Park for a visit to Meig's Point Nature Center, ocean observations, and catch-and-release of some cool creatures!

Week 8, August 9 - 13

Gr K-3 Girls Rock! Girls rock - not just in geology, but in lots of other neat sciences too! Fun and engaging activities stress discovery skills, from rock/mineral/fossil ID to biology and chemistry! Plenty of hands-on STEM can build confidence in young female scientists.

Gr K-3 Kid Coding Learn to code on iPads with easy-to-learn graphical programming apps that let you create graphics, animation, solve problems and create worlds with your drawings and imagination! All apps used are open-source or freeware for use after the course.

Gr K-3 LEGO Science From cars to catapults, from motors to Mars rovers, you can explore science and technology with LEGO®. Compete in engineering challenges, build skyscrapers, crazy contraptions and dream machines!

Gr 4-8 Camp Invention 2020 - Recharge! Students can build confidence, persistence and creative problem-solving skills as they use their imaginations, find inspiration from game-changing inventors and bring their biggest ideas to life. This year's modules: Open Mic City, Duck Chuck Pond, SolarBot Park, and Road Rally Racetrack!

Gr 4-8 Adventures with Arthropods Insects, spiders, crayfish, millipedes, centipedes, copepods... there are arthropods everywhere! Find out how they move, what they do, where to find them and how they make our biomes work. You will learn collecting techniques (nets and traps), current taxonomy (names), how to use microscopes, and how to keep arthropods alive as pets. A major focus will be on making your own pinned insect collection to take home.

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