- Build a Mini-Hovercraft, Society of Women Engineers at Boise State – **3rd Floor Atrium, All Ages (O)** – Explore engineering by building your own hovercraft.
- Extreme Weather Science, NOAA/National Weather Service – **Room 313, Ages 10-Adult, Capacity 30, (45 Minutes: 9:30, 10:30,11:30, 1:00, 2:00, 3:00) (S)** – Meteorologists will discuss the science of extreme weather in the context of a "Weather Jeopardy" game. Two teams will compete to be the Weather Jeopardy Champions and various scientific weather demonstrations will be conducted during the course of the game. In addition, weather safety information will be provided in a fun and interactive way.
- Jelly Bean Binary, Micron Foundation – **Room 335, Ages 5-10, Capacity 25, (30 Minutes: 9am, 9:45 am, 10:30am, 11:15am, 12noon, 1pm, 1:45 pm, 2:30pm, 3:15pm) (S)** - Learn the language of computers. Learn how the computer uses binary code and how to encode and decode with it. Then, using "1s", "0s", and jelly beans you will be able to write your name in binary code.
- Sustainable Energy and Materials, Boise State Materials Science & Engr – **Room 314, Ages 8-14 (D)**
- How to Use Your Laptop to Design New Materials, Boise State Micron School of Materials Science and Engineering – **Room 336, All Ages (D)** – Can you use your own computer to design a new material for desired applications? Yes, you can. It is straightforward and free! This activity will demonstrate how to use advanced computer modeling tools to design your own materials. Come to join this event to play with atomic structures, nanomaterials, and 3D molecules, and to design your own materials for next generation.

MICRON ENGINEERING CENTER (MEC)

- Build a Bridge using West Point Bridge Design Software, Boise State Civil Engineering Club – **Room 103, Ages 8-Adult, Capacity 25 (D)** – Design a bridge utilizing software, and test to see if it would succeed or fail. Participants can review the components of their bridge to make modifications and improvements.
- Tie Dye Chromatography, Micron Foundation – **Room 106, Ages 5-14, Capacity 50 (45 min: 9:30am, 10:30am, 11:30am, 1pm, 2pm, 3pm) (SU**)** – Use permanent markers to experiment with the concepts related to chromatography and color separation.
- Catapult Launch, Boise State Engineering and Innovation College – **Room 114, Ages 5-14, 30 minutes (D)** – Design and build a catapult using spoons, popsicle sticks, and tape. Test your design on a tower of cups!
- Materials Science Exhibits, Micron School of Materials Science & Engineering, **Room 210, All ages (D)**
- Snap Circuits, Electrical and Computer Engineering Department at Boise State University – **Room 307, Ages 10-Adult, Capacity 30 (D)**
- Taming the Dragon, Mechanical & Biomedical Engineering at Boise State – **Room 408, All ages, Capacity 30, 10-11am and 1-2pm (S)** - Everyone is invited for a colorful experience to visualize aerodynamics around a dragon using a large wall-size display with 100MPixels. Participants experience how simple concepts from geometry are used in scientific visualization. Explore the aerodynamics of a dragon on a wall-sized display using supercomputers. Hands-on!

CIVIL ENGINEERING BUILDING (CE)

- Outdoor Science Exploration, McCall Outdoor Science School - Test your engineering skills on wildfire simulation boxes, avalanche board demonstration, and animal tracking demonstration.
- Wind Tunnel and Aerodesign, Boise State - Experience the breeze of a wind tunnel which tests aerodynamic shapes, lift and drag, how models of buildings behave in wind, and how air flows around scale models. Plus the remote controlled airplane designed and built by ME students.
- ***NEW*** NASCAR K&N Race Car, The Patriot Motorsports Group in Garden City, Idaho - Learn how many, many areas of engineering impact the design of this handcrafted, authentic, 185mph 650hp purpose built race car. Chat with the NASCSAR driver, BSU Pre-Engineering student Stafford Smith and his BSU Student crew as they give you hands-on insights into its construction, operation, setup, and analysis. Hop in the driver's seat for a picture with the team's unofficial mascot, the Idaho Potato Spuddy Buddy.
- Solar Go-Kart Display, Greenspeed Research Inc.

ENVIRONMENTAL RESEARCH BUILDING (ERB) – Open House Research Labs

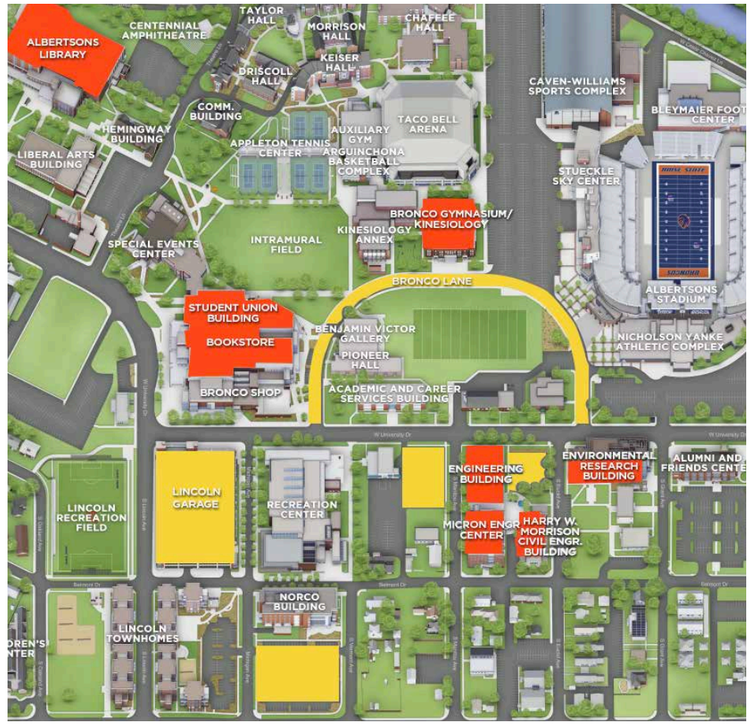
- Exploring Explosive Eruptions with the Liquid Nitrogen Volcano Experiment, Boise State Geosciences – **Outside behind ERB, All Ages, (10am, 10:30, 11am, 11:30am, 12noon, 12:30, 1pm, 1:30pm) (O)**
- Experiments Explaining Volcanic Processes, Boise State Geosciences – **Lobby, All Ages (O)**

Thank you to our sponsors:

- Food vendors open in the Student Union Building
- Suggested ages listed
- Sessions fill on a first come basis
- Thank you to all the volunteers and sponsors that bring the Engineering & Science Festival to our community

Parking

Event Locations



Sessions filled on a first come basis. Five ways to participate: Sign Up (SU) (sign up at activity location); Scheduled (S) (activities have specific beginning and end times); Drop-In (D); Open Demonstrations (O); Interactive Science Shows (I). Ages listed are suggested, but not required.**

STUDENT UNION BUILDING (SUB) – Food Vendors Open on First Floor

- STEMbusUSA.org – **Parked Outside, All Ages (D)** – Explore the interactive STEM bus featuring hands-on activities including virtual reality, circuitry, robotics, and more!
- Treasure Valley Photo Booth – **Jordan Lobby,** Get your photo taken with fun science and engineering props!!

Simplot Ballroom

- NASA Astronaut, Steve Swanson – **All Ages,10:00am (60 minutes) (I)** – NASA's retired astronaut has flown 2 shuttle flights, STS-117 in 2007 and STS-119 in 2009, and launched to the International Space Station as a member of Expedition in 2014. Learn more about his experiences at NASA and in space.
- World's Fastest Juggler Attempts another Guinness World Record, DavidRush4STEM.com – **All Ages, 1:00pm (60 minutes) (I)** – David Rush is an MIT graduate and local technology professional who has broken 11 Guinness World Records. Come listen to him share his STEM story as he juggles, balances, entertains and inspires culminating with an attempt to break another Guinness World Record live for the audience: Fastest 10 meters balancing a cue on the chin. The current record is 3.02 seconds.

Jordan Ballroom – Open Demonstrations for ALL AGES

- ***NEW*** Imagine STEM, Girl Scouts of Silver Sage and Meridian unBound – Come learn how Girl Scouts do STEM and try out fun hands-on activities provided by the Meridian unbound Tech Lab!
- Ornithology Unleashed! Intermountain Bird Observatory – Meet some real life Ornithologists and learn about the creatures they study. That's right, we're talking about birds! How much does a hummingbird weigh? How does an owl see in the dark? How far can a Long-billed Curlew fly? Learn all this and more at the Intermountain Bird Observatory's interactive touch-table.
- Radio Demonstration, HP Amateur Radio Club - It's not your father's Amateur Radio! We cover the world and even space with voice, data and images.... Learn how much you depend on radio and may not even know it. At the top of each hour participate in hands on experiments that illustrate the magic of how radio works.
- Robots and Land Rovers, The Boise Robotics Group (BoRG) – Learn how the BoRG makes and programs their robots and how you can do the same.
- High Altitude Balloons, NearSys – What can you do with $150 worth of balloon and helium? You can send experiments into near space! While conducting experiments in atmospheric and cosmic ray studies, remote sensing of the Earth's surface, radio wave propagation, and astronomical and technological evaluations, we discover more about the world around us. Near space is the poorman's space program. See how missions are performed and how students can do experiments in this close analog to outer space.
- Language Sciences, Linguistics Lab at Boise State University – Come learn about the scientific study of language - linguistics - through activities sponsored by the Mary Ellen Ryder Linguistics Lab at Boise State.
- Robots, Structures & Other Thrills! PCS EdventuresLab – Program Robots, Build Bridges and Fair Rides, Develop Video Games, the possibilities of STEM exploration are endless at PCS EdventuresLAB, a STEM after-school program for grades 4-12.
- Fun with Engineering! Idaho National Laboratory – Experience a variety of hands-on STEM activities using an electric Vandegraff, a hand-crank powered generator to power two different types of light bulbs, programming Ozobots, hand-made rockets, and the Bernoulli Principle.
- Join Curious George for Great Science Fun, Idaho Public Television and PBS
- The Science of Printing, and Play-Dough Circuits, HP
- ***NEW*** STEMotion Website Building 101, STEMOTION – Be inspired to try new things about website design
- ***NEW*** Creative Technologies Association Showcase, Boise State University – Learn about cutting-edge technology and how it can be used to create new forms of multimedia entertainment experiences for audiences of all sizes. Come see the CTA's current and coolest projects!
- ***NEW*** Aviation and You, Idaho Division of Aeronautics – Learn about development and fostering of Idaho's system of airports and active aviation community, and the annual ACE Academy and Aviation Art Contests
- Virtual Reality Experience, Boise State Space Broncos - Explore the ocean or outer space with our virtual reality headsets and learn how virtual reality is used to train astronauts!
- Chemistry is Chool, Boise State Chemistry Club
- ***NEW*** Fins, Furs, and Feathers Deer Flat National Wildlife Refuge – How well do you know your Idaho wildlife? Visit this interactive touch-table to test your wildlife ID skills, learn about some of the critters that call southwest Idaho home, keep resources in "balance" as you play Ecosystem Jenga, and more.
- ***NEW*** Build a Bubble-Powered Rocket! Boise State Microgravity Team - Build your own rocket using fizzing tablets! Watch it lift off and see how high it can go!

SUB Rooms – Drop-In or Scheduled

- ***NEW*** Science and Technology at the City of Boise, City of Boise – **Hatch CD (D)** – Several departments from the City of Boise will be showcasing how science and technology is used across the City. Activities are being conducted by Public Works, Library, and Information Technology. Topics include geothermal technology, watershed management, 3-D printing, robotics, geographical information sciences and a variety of other technologies that help run our city.
- 15,000 Volt Demonstration, Idaho Power – **Hatch B, Capacity 40 (30 Minutes: 9am, 10am, 11, 12, 1pm, 2pm, 3pm) (S)** – Designed to illustrate the properties of electricity. The demonstration will prove the theory that electricity always seeks the quickest path to earth.
- What's a Watt? Idaho Power – **Hatch B (O)** – Ride a bicycle that generates power. Feel the energy that powers a light bulb, a computer, and a television.
- Build a Super BristleBot Robot, Reuseum Educational, Inc. – **Hatch A, Ages 5-14 (D)** – Use ordinary materials including popsicle sticks, micro motors, batteries, toothbrushes and googly eyes and turn them into self-powered little robots that kids can build themselves and take home.
- Physics Demonstrations, Boise State Physics and Astronomy Club – **Cataldo (D)**
- ***NEW*** Tomb Detectives: Case of the Mystery Mummy, Boise State Anthropology Dept. – **Farnsworth Room, (10am – 4pm) (D)** –Secrets don't always remain buried. What can we learn about the past people and societies from unearthing what is left behind? Get your hands dirty in a mock dig of a burial, ex;ore a tomb in 360 degree virtual reality, analyze artifacts from the grave, learn Egyptian hieroglyphics, and take on the role of a bone detective in this CSI: Ancient Egypt edition.
- Earthquake Table and Tower Building, Treasure Valley Math and Science Center – **Trueblood, Ages 5-14 (D)**
- Ride a Segway, Society of Hispanic Professional Engineers at Boise State – **Ah Fong, Ages 8-Adult (D)** - Learn about the Segway, a self-balancing, personal transportation vehicle that uses computerized gyroscopes and tilt sensors to maintain balance and make riding fun!
- ***NEW*** Have Fun With STEM! STEM Educators' Club, Boise State University – **Boyington (D)**
- ***NEW*** Design Challenge: Paper Airplanes! Rich Stowell Consulting – **Barnwell, Ages 13-Adult, Capacity 40 (75 Minutes: 9am, 10:30am) (S)** – This is a fun, experiential workshop. Following an introduction to basic aerodynamics, participants work in small teams to design their own paper airplanes. Teams test fly their designs, record flight data, and provide evaluations. Experience Newton's principles. See some cool paper airplanes. Get inspired by the record-breaking accomplishments of other paper airplane designers and pilots.
- ***NEW*** Build And Test a Catapult – **Brink, Ages 7-12 (D)**

ALBERTSONS LIBRARY (ALBR)

- ***NEW*** Family STEAM Day, Albertsons Library at Boise State – **All Ages (D)** – Build, make, and play at Albertsons library. Engage with a variety of fun STEAM-based toys and activities for all ages. Build with blocks of all shapes and sizes. Make buttons and other take-home projects. Play with robot toys, including Code-a-pillars, Cubelets and Ozobots. Create with straws & connectors, Knex, and MagnaTiles. Check out the Library's MakerLab and see the 3D printers in action. And join us for storytimes at 9:30, 11:30 and 1:30, featuring new STEAM-themed books. Families can pick up a free copy of "The Everything Kids' Science Experiments Book" to take home.

KINESIOLOGY BUILDING (OLD GYM) - Open Demonstrations (O) for ALL AGES

- ***NEW*** What Can Drones Do? Rapid Aerial LLC – Learn about unmanned aerial vehicle technology
- ***NEW*** Design within Constraints using LEGO Bricks, Idaho LEGO Users Group and IDEABRICKWORKS - Engineers and scientists work to investigate and solve problems every day. They work within constraints of technology, time, access, funding, knowledge, and oh so many things. But that is not a limitation, it is part of the reward. Come and build a tower with LEGO bricks in a fun and engaging way and see how you do under the constraints of time and material. We will be having several rounds of this competition during the day and awards will be provided after each round. And the prizes are...you might have guessed...LEGO! You will build a tower with LEGO and be judged on height, number of bricks used, and stability. The secret is balancing those constraints to form YOUR winning solution!
- ***NEW*** Designing a Highway Interchange, Transportation You, WTS – Design a highway interchange that allows drivers to approach from any highway and leave by any highway without crossing any lanes of traffic.
- Robots in Action, Treasure Valley FRC Teams: The Bullbots, NaSkCo Scorpions, Team Taters, and V.E.R.N. - Learn about these exciting programs and competitions for students from kindergarten through and high school!
- Pinewood Derby Track, Oregon Trails
- Seatbelt Demonstration, Federal Highway Administration – Live demonstration highlighting the importance of wearing your seatbelt.
- ***NEW*** Magnetics of Materials Science, Boise State Materials Science Club – Explore six different demonstrations including: Super conducting levitation, magnetic springs, magnetic elements of a hard disk drive, magnetic levitation, magnetic shape memory micro-pumping, and power generation.
- Surveying , Idaho Society of Professional Land Surveyors - Look through a total station, and learn about cool careers in land surveying.
- Making Waves with LIGO, LIGO Hanford Observatory – Exploring gravitational waves and more with LIGO.

ENGINEERING BUILDING (ENGR)

- Airheads Unite with Dr. Picklestein and Lady Argentum, Boise State Chemistry Dept. - **Room 110, All Ages, 10am, 12pm, 2pm (45 minutes) (I)** – Examine different substances (and their properties) in the air that surrounds us. There will be explosions involved, and a few favorite demonstrations performed.
- ***NEW*** How to Prepare for the 2017 Eclipse, Boise State Physics Department – **Room 110, All Ages, 11am (45 minutes) (I)**
- Airplane to the Moon, Discovery Center of Idaho – **Room 110, All Ages, 1pm and 3pm (45 minutes) (I)**
- An Introduction to Computer Science Using Scratch, Idaho Technology Council – **Room 111, Ages: 8 and up, younger (6+) with Adult assistance, Capacity 25 (D)** – Hands-on programming experience with the basics of Scratch, and learn about careers and education in the field of Computer Science.
- Beyond the Looking Glass: Seeing at the Nanoscale, Boise State Materials Science & Engineering - Learn how scientists and engineers "see" things too small to be seen in an optical microscope! **Room 104, All Ages (D)**
- Bugs Under a Microscope! Boise State Materials Science & Engineering – **Room 108, Ages 8 – Adult (D)**
- Infrared Cameras, Boise State Energy for Society – **Room 225, (D)** – We will provide demonstrations using a number of IR (Infrared) cameras. Experience the ability to see heat and cold. Have your IR picture taken and email it to yourself.
- Build and Eat an Edible Aquifer, Department of Environmental Quality and SUEZ – **Room 215, Ages 5-14, Capacity 30 (45 minutes: 9am, 10am, 11am, 1pm, 2pm, 3pm) (SU**)**. Learn how ground water is stored in aquifers, how what we do can affect our groundwater and drinking water, and how good engineering helps keep our water clean.
- Programming with Blockly, Boise State ACM-W - **Room 238, Ages 8-Adult (D)**
- Play with Keva Blocks, Discovery Center of Idaho – **2nd Floor Atrium, All Ages (O)**
- Ride a Segway, Boise State IEEE – **Room 213, Ages 8-Adult, (As space permits, wait in line) (O)**