

| Title  | Description  | Grade Levels | Subjects                               | Instructor(s)                 |
|--|--|--------------|--|-------------------------------|
| Primary STEM Activities  | In this Primary STEM session designed for K-2, teachers will learn how to incorporate hands-on STEM, build a repertoire of demonstrations and experiments, while incorporating writing and art, with a fun trip to BUGS!   | K-2          | Science, Technology, Engineering, Math | Brenda and Jim Mckenzie       |
| Build, Create, and Innovate with Makey-Makey, Edison, Keva and more! | Do you struggle to incorporate STEM into your daily lessons? Is coming up with low-cost, high-interest activities challenging? This strand will walk you through ways to reuse and repurpose low-cost items to get the maximum output. You will build, create and innovate as you explore Scratch, Makey-Makey, building and much more in STEM focused lessons. *This strand is appropriate for informal educators.  | K-8          | Science, Technology, Engineering, Math | Amber McVey and Amber Obert   |
| Monarch Butterfly and Pollinator Conservation in Idaho               | In 2017, Idaho was the fastest-growing state in the nation (2.2% growth rate; US Census Bureau). The housing boom and infrastructure development accompanying this growth is a major threat to wildlife, habitat, and ecosystem resiliency in Idaho. Pollinators are threatened by growing development, yet the Monarch butterfly (Idaho's state insect) appears to be particularly challenged. Western monarch populations have undergone extensive declines since the mid-1990s. Habitat loss and fragmentation has been identified as key contributors to these declines. In this strand, participants will learn how to use monarch butterflies and the current pollinator conservation crisis as an example of a pressing conservation issue to create place-based, experiential, and immersive curriculum to meet Idaho Department of Education Content Science Standards. Strand participants will learn about pollinators, their ecosystem connections, and conservation through classroom education as well as field exercises. Participants will also have the opportunity to learn about, and engage in monarch butterfly conservation activities and citizen science that is transferable to the classroom. This strand will culminate with a workshop designed to aid teachers in the development of individualized curriculum that focuses on monarch butterfly and pollinator biology, ecology, and conservation. | K-12         | Science                                | Dusty Perkins and Dave Draper |

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Junior Botball

Come have fun learning about robotics and how to integrate robotics into the classroom or for after school groups. You will build your robot with the help of instructions and use C++ programming to conquer a variety of programming challenges. You will be amazed at what you will be able to do programming your Junior Botball robot. In addition, we will share about our after school Junior Botball program, grant writing, and how to integrate robotics and problem-based learning. We recommend taking the strand with a colleague so you can share robots after taking the workshop. The robots come with a complete curriculum for easy implementation into the classroom or outside of school. The strand is prepared for elementary level students but can easily be adapted for middle and high school students. Come have a ball with Junior Botball! \*This strand is appropriate for informal educators.

3-6

Science,  
Technology,  
Engineering,  
Math,  
Computer  
Science

Kellie Taylor and  
Gina Kwid

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Integrating Sphero for  
STEAM Learning

Imagine that it's the year 2040, and the man and robot co-exist in harmony. Some robots complete labor-intensive tasks related to construction and industrial distribution. Some humans design, develop, and repair these robots. Others write the programs that control the robots and enable them to carry out their assigned tasks. Are you ready to teach our students to live in this future? You can be as we explore interdisciplinary ways to use Sphero in the classroom. From designing games to painting to building challenge courses that must be solved by programmed robots, we can help students realize their creative potential and explore how science, technology, engineering, art, and math all interconnect in the world around us. The robots themselves represent current trends in technology, but the conversation opens up when we talk about chemistry and mixing paints and how you can program the robots to paint, calculating ratios and distances. When we add challenge courses into the activities, math and physics take center stage, making it easy to talk about how these concepts are related. All participants will receive a Sphero robot, but your own iPad/iPhone or Android tablet/phone is required to control the robot. \*This strand is appropriate for informal educators.

3-12

Science,  
Technology,  
Engineering,  
Math,  
Computer  
Science

Tonya Dousay

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Electrons – Pushing, Using, and Saving Them! How do we make electrons move to create electricity? How do we utilize electrons to transport energy from one place to another? How do we use electrons to power our devices and light our lives? How can we better conserve and use energy more efficiently? From the production of electricity to the primary sources we convert into electricity, learn the science beyond the outlet about how we power our lives. Then, take a ride on a closed loop, otherwise known as a circuit. Learn the basics of series and parallel circuits using #STEMontheCheap equipment and supplies. Bring the mathematics of current, resistance, and voltage into hands-on, inquiry experiments. Finally, learn the difference between energy efficiency and energy conservation. Engage students back in your classroom with the power of data collection and analysis through the lens of energy use both at school and at home. From real-world, relevant STEM applications to the modeling of research-based best practices, learn what inquiry really means and how formative assessment can effectively be used to identify and correct misconceptions. You are guaranteed to walk away from this strand ENERGIZED and empowered to engage your students!

6-11

Science,  
Technology,  
Engineering,  
Math

DaNel Hogan  
and Sara Lilly

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STEM from the Skies This strand is going to bring educators into the realm that many students love. This strand will teach how the world of drones can be incorporated into the classroom and students can learn from one of the fastest growing phenomena to hit STEM education. Drones incorporate science, technology, and engineering through application-based learning experiences. Participants will need to provide their own laptop with the required software downloaded prior to the i-STEM Institute. \*This strand is appropriate for informal educators.

6-12

Science,  
Technology,  
Engineering

Brandi Milliron  
and Nikki Yates

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Your Digital  
Watershed

Through field investigations, classroom activities and professional presentations, teachers will explore topics relating to the themes of understanding the water cycle, coupled human and natural systems, monitoring earth's systems, water management, and adaptive practices. Teachers will be introduced to watersheds, earth science (groundwater) and climate modeling before experimenting with environmental sensors in the field. Field trips include the Boise WaterShed, Diversion Dam, Dixie Drain, and the National Weather Service. Meet water professionals to explore careers and current topics of our watershed as we bike ride along the greenbelt! Teachers will receive a Pocket Lab and a Project WET Curriculum Guide featuring 64 award winning classroom ready interdisciplinary activities. Applicable to 6th – 12th grade teachers. \*This strand is appropriate for informal educators.

6-12

Science,  
Technology,  
Engineering,  
Math

Julie Scanlin,  
Lejo Flores,  
Cindy Busche  
and Kendra  
Kaiser

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