

Peak Area Leadership in Science (PALS)

----- 2024-2025 PALS Hub Meetings Info -----

***** Semester ONE

Title: Teaching Climate Science and Solutions

Day, Date, Time: Saturday, August 24, 2024 Workshop from 7:00 am - 5:00 pm NOTE: Bus will depart at 7:00 from Cheyenne Mountain JHS and return at 5:00 pm. Workshop is from 9 - 3:00.

Contact Hours: 5

Food: Bring a sack lunch. Snacks and drinks provided.

Location: UCAR Center for Science Education
NSF NCAR Mesa Lab, 1850 Table Mesa Drive, Boulder, CO

Presenters: Melissa Rummel, Educational Designer I, Educational Resource Developer and PD Instructor
Robert Payo, Educational Designer III, Mixed Media Learning Team Lead

Description: Climate change discussions don't have to be scary. Together we'll navigate how to teach climate science to middle school and high school science teachers. This session will focus on climate solutions available to us right now and into the future, why that is important, and how it relates to climate in general.

Title: The Wonder of Wolves

Day, Date, Time: Saturday, September 7, 2024 Workshop from 7:30 am - 2:00 pm NOTE: Workshop includes a bus trip to the Colorado Wolf and Wildlife Center

Contact Hours: 5

Food: Bring a sack lunch. Snacks and drinks provided.

Location: Cheyenne Mountain JHS and the Colorado Wolf and Wildlife Center (bus will be provided)

Presenters: PALS Coordinators; Education Guide at the Wolf and Wildlife Center

Description: Learn the science behind wolves through a series of activities from the CSU Natural Sciences Outreach & Education Kit, The Wonder of Wolves. The kit activities simulate wildlife biology techniques, such as observations, tracking, simulations, and scat analysis. They also incorporate the perceptions of different stakeholders that will prompt great group discussions into how humans and wolves could share the landscape as they return to their historical range. Then, explore the Colorado Wolf and Wildlife Center, which is a nonprofit sanctuary that provides natural habitat and care for wolves & wild canines offering guided tours & conservation programs. Join a knowledgeable guide for a one hour walking tour through the sanctuary and see wolves, coyotes, and foxes. Learn about their history, biology, and current issues they face today. The Center's focus is conservation, education and preservation. They also participate in the Species Survival Program for Mexican Grey Wolves and Swift Foxes.

Agenda: 7:30 Registration and Announcements
7:45 - 10:45 Explore the Wonder of Wolves kit activities
10:45 - 11:45 Bus trip to Colorado Wolf and Wildlife Center, Eat lunch on bus.
12:00 - 1:00 Guided walk through the Wolf and Wildlife Center
1:00 - 1:15 Restrooms and Evaluations, board bus
2:00 Arrive back at Cheyenne Mountain JHS

Title: Artificial Intelligence

Day, Date, Time: Wed ,Sept 25,, 2024 4:00 - 7:00 pm Arrive 4:00 for food and networking, Program 4:30 - 7:00 pm

Contact Hours: 2.5

Food: Light dinner (pizza), drinks, and snacks provided.

Location: Library 21C - Create Space; 1175 Chapel Hills Dr,

Presenters: Pat McGuire, UCCS Professor

Description: Bring your web-enabled device and ideas for the 2024-2025 school year. In this interactive session, we will explore a buffet of generative AI platforms (e.g., School AI, Chat GPT, Quizizz, Slidesgo, etc.) and discuss ways these technologies can support teaching and learning in the 6-12 STEM classroom. Practical examples will be shared, and spaces for small group breakout discussions will be provided.

Title: Kombucha Fermentation - Science and Process

Day, Date, Time: Wednesday, Oct 9, 2024 4:00 - 7:00 pm Arrive 4:00 for food and networking, Program 4:30 - 7:00 pm

Contact Hours: 2.5

Food: Light dinner (pizza), drinks, and snacks provided.(Complimentary kombucha tastings provided at workshop start.)

Location: The Campus - 6113 Constitution Ave, Colorado Springs, CO 80915

Presenters: Addison Rhodes (he, him)

Description: Delve into the fascinating world of fermentation science and discover how simple and rewarding it is to craft this delicious, probiotic-rich beverage in your own kitchen. This workshop will guide you through the fermentation process of kombucha (fermented tea), from selecting the right ingredients to understanding the role of the SCOBY (symbiotic culture of bacteria and yeast) in transforming sweet tea into a tangy, effervescent drink. Participants will learn about fermenting tea into kombucha, bottling and flavoring, maintaining brewing supplies, and the many culinary uses for kombucha (cocktail mixers, syrups, salad dressings, and more)! Whether you're a curious beginner or an avid homebrewer, you'll leave equipped with the knowledge and confidence to start brewing your own kombucha at home. Participants will have the option to take home a SCOBY, enabling them to begin brewing right away.

Title: Do you know your 3R's? Radiation, Radioactivity and Radon

Day, Date, Time: Saturday, October 26, 2024, Workshop 8:30 - 2:00 (30 min lunch).

Contact Hours: 5

Food: Bring a sack lunch. Snacks and drinks provided.

Location: The Campus, 6113 Constitution Ave, Colorado Springs, CO 80915

Presenters: Margaret Horton, MPH (she/her/ella), Program Specialist, Colorado Radon Program, CDPH&E, Rae Lyn Young, Course Instructor

Description: Did you know? Radon is a naturally occurring radioactive gas responsible for hundreds of Colorado lung cancer deaths each year. The colorless, odorless, tasteless gas can enter homes through cracks in the foundation or other openings and can accumulate unless properly mitigated. Long-term radon exposure is the leading cause of lung cancer

in nonsmokers and the second-leading cause of lung cancer in smokers. In Colorado, about half the homes have radon levels higher than the U.S. Environmental Protection Agency's recommended action level of 4 picoCuries per liter of indoor air.

Join PALS for this workshop where you will learn about radiation, radioactivity and radon through a sequence of hands-on activities written for students in grades five through twelve. The purpose of the module, "Do You Know Your 3 R's? Radiation, Radioactivity & Radon", is to introduce young people to major science concepts related to radiation, radioactivity, and radon so that they develop a healthy respect for the topic. In this workshop you will use Geiger counters and cloud chambers to 'see' ionizing radiation in our environment, explore basic concepts of radioactivity (nuclear emissions, half-life, decay series), and develop an understanding of radioactive radon's source and effect on humans. After this workshop you will have access to the Teacher Resource kits to use, including geiger counter, cloud chamber, radioactive sources and more!

Title: **The Science of Sensemaking... Building for Durable Change**

Day, Date, Time: Saturday , November 16, 2024, 8:30 am -2 pm

Contact Hours: 5

Food: Bring a sack lunch. Snacks and drinks provided.

Location: Sand Creek High School - 7005 Carefree Cir N, Colorado Springs, CO 80922

Presenters: Tim Blesse - Teacher Programs Consultant , Denver Museum of Nature & Science

Description: In this hands-on and interactive session, we'll look at an evidence-based instructional model shown to both motivate students and increase their long-term memory and transfer of concepts. We will first take a brief look at a couple of the traditional instructional models used to teach science and why they often don't succeed as expected. Then, with:

- Our conceptual change model
- Some "hands-on" exemplars of the learning sequence
- And A little understanding of the "brain-based" principles behind it.

You will be on your way, to strengthening your own thinking and prioritizing in new ways as you "tweek" your current lesson/lab sequences to achieve greater success. Of course, at the heart of this student sense-making model is the process of "Scientific Discourse & Argumentation". Engage in some strategies you can use with your students.

Agenda:

Approx. Time	Current Agenda
8:30 am	Welcome /Introductions/ Establish Relevance of Work
9:00 am	Activity: Explore Before Explain Sequence Pt 1
9:45 am	Morning Break

10:00 am	Deconstruct Sequence 1 (What just happened), Introduce "Explore Before Explain" Conceptual Change Planning Model
11:30-Noon	Lunch
Noon-1pm	Activity: Explore Before Explain Sequence Pt 2
1-1:30 pm	Deconstructing Afternoon Sequence – Reflect on CCPM
1:30-2pm	Afternoon Break & Begin Planning Your Own Lesson Sequence
2 pm	Wrap Up & Reflection

***** Semester TWO

Title:	The Chemistry of Food and Cooking II
Day, Date, Time:	Saturday, January 25, 2025 Workshop from 9:00 am - 2:00 pm NOTE: Participants arrive USAFA no later than 8:15 am, meeting on the south steps of the Cadet Field House. Group is then escorted to Chemistry Conference Room (2N189)
Contact Hours:	5
Food:	Bring a sack lunch. Snacks and drinks provided.
Location:	USAFA Chemistry Department - Meet at Cadet Field House 2169 Field House Dr, Air Force Academy, CO 80840
Presenters:	Dr. Abby Jennings, Associate Professor of Chemistry, USAFA Chemistry Department Dr. Ron Furstenau, Retired Professor of Chemistry, USAFA Chemistry Department Dr. Andrea Kelley, Assistant Professor of Chemistry, USAFA Stacey Lazzelle, Chemistry STEM Outreach Coordinator, USAFA Chemistry Department
Description:	Join us to take a closer look at the chemistry of food. Participants will learn about the chemical reactions behind cooking as well as the taste of a variety of foods. You'll even get the chance to put your cooking (and tasting) skills into action. Like most of the Science HUB activities at the USAF Academy, we'll make sure that we have something for everyone, with emphasis on middle and high School teachers. We will provide activities that (1) expand participants' knowledge base; (2) provide The opportunity to do experiments that can be used in their classrooms, either as a demonstration or student lab; and (3) provide the opportunity to do experiments in a research-style environment using advanced equipment.
Agenda:	<ul style="list-style-type: none"> - Laboratory Experiment #1: Maillard reactions and high versus low temperature cooking and microwave cooking - Laboratory Experiment #2: Fats, oils, emulsions, and marinades <ul style="list-style-type: none"> -- infrared spectra of different cooking oils -- make emulsions with different emulsifiers (e.g. sugar, lecithin, carrageenin) - Laboratory Experiment #3: Putting cooking hints into action - Optional Experiment #4: Why Measuring the Mass of Solid Ingredients is Better than Measuring the Volume: Applying Math to Cooking.

- Measure the mass of 1 Tbsp of granulated sugar; do this 5 times
 - Measure the mass of 1 tsp of baking powder or soda, do this 5 times
 - Find average, range, standard deviation (SD) and percent relative SD
 - Discuss what this means!
- **Presentation #1:** "More Cooking Hints", Dr Andrea Kelley; a continuation of "Cooking Hints" from the 2024 PALS Workshop
 - **Presentation #2:** "Nutrition Science that Everyone Needs", by Unknown. The current proposal would be for someone from the Department of Biology to make a presentation about the science behind good nutrition habits. The idea would be to present information that would be extremely useful to their students.
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Title: **Supporting Multilingual Learners in the Science Classroom**

Day, Date, Time: Tues, February 11, 2025 4:00 - 7:00 pm Arrive 4:00 for food and networking, Program 4:30-7:00 pm

Contact Hours: 2.5

Food: Light dinner (pizza), drinks, and snacks provided.

Location: Coronado High School, 1590 W Fillmore St, Colorado Springs, CO 80904

Presenters: Julie Evans, Science Teacher, Coronado High School

Description: Are you looking for strategies to support your ELL students? Do you want to learn practical techniques that have been tested in the classroom by a veteran science teacher? Join us for an evening of collaboration and a sharing of ideas. Learn about strategies focusing on warm ups, vocabulary, assessments, and time management. Engage with other teachers to brainstorm learning strategies that work in the classroom.

Title: **Tapping the Teenage Brain**

Day, Date, Time: Saturday, March 1, 2025 Workshop from 8:30 am - 2:00 pm

Contact Hours: 5

Food: Bring a sack lunch. Snacks and drinks provided.

Location: The Campus, 6113 Constitution Ave, Colorado Springs, CO 80915

Presenters: Robin Walters, Science Teacher, Falcon Homeschool Academic Program

Description: Humans are fascinated by the mystery of our brain. Wouldn't it be amazing if students could learn about how their brain works at the cellular and electrical level? And then design their own experiment using their own brain? At this hub, you'll be introduced to *Brain Waves*, a student-centered module developed at the University of Connecticut School of Education to help students develop an understanding of how their nervous system works, and then engage in authentic research in the classroom. We'll learn about the structure & function of neurons, functions of different areas of the brain, and how learning and memory occur.

Title: **Introducing OpenSciEd**

Day, Date, Time: Wednesday, March 12, 2025 4:00 - 7:00 pm Arrive 4:00 for food and networking, Program 4:30 - 7:00 pm

Contact Hours: 2.5

Food: Light dinner (pizza), drinks, and snacks provided.

Location: The Campus, 6113 Constitution Ave, Colorado Springs, CO 80915

Presenters: **Jody Bintz**, Associate Director for Strategic Partnerships, Director of Educator Learning, BSCS Science Learning

Description: Are you looking for a curriculum that is phenomena-based and centers on student-led questioning, investigating, and problem-solving, with teachers supporting students as learning facilitators rather than lecturers? *And* is free for all educators and students to use? Developed by leading science researchers and educators, the OpenSciEd instructional model is designed to align with how students learn best. The OpenSciEd Instructional Model uses a storyline approach— a logical sequence of lessons that are motivated by students’ questions that arise from students’ interactions with phenomena. In OpenSciEd classrooms, students learn science through discovery. Join us to learn about and experience this exciting curriculum!

Title: Creating Environmental Stewards In and Outside of the Classroom

Day, Date, Time: Saturday, April 12, 2025 Workshop from 8:30 am - 2:00 pm

Contact Hours: 5

Food: Bring a sack lunch. Snacks and drinks provided.

Location: Ute Pass Elementary School, 9230 Chipita Park Rd, Cascade, CO 80809

Presenters: Miles Groth, 6th Grade Instructor, Colorado Certified Environmental Educator

Description: Join us as we focus on curriculum and experiences that foster environmental stewards in the classroom. We will focus on Trout Unlimited’s nationwide Trout in the Classroom program and see it in action. Additional topics covered will include a Leave No Trace Skills Workshop, integrating Leave No Trace activities and principles into the classroom, and creating meaningful outdoor education programming in secondary education settings.

Agenda: General Plan:

- 8:30-10:15 Trout in the Classroom introduction and some favorite hands-on lessons
- 10:15-10:30 Break
- 10:30-11:00 Fish, fishing, and watershed science in the outdoor classroom
- 11:00-12:00 Leave No Trace Skills Workshop (I’m a Level 1 trainer and our school is the only public school based program in the county with LNT Youth Program Gold Standard Certification. This is a short introduction with some group activities that they could bring to their classroom)
- 12:00-12:30 Lunch
- 12:30-1:00 LNT as a Framework: How it has been implemented through curriculum integration, experiential learning, and field experiences.
- 1:00-2:00 Not 100% sure yet- Q &A, road map for educators, other field experiences, and/or implementation/planning activity.

Title: Moving through the future at the Space Foundation Discovery Center

Day, Date, Time: Thursday, May 1, 2025 4:00 - 7:00 pm Arrive 4:00 for food and networking, Program 4:30 - 7:00 pm

Contact Hours: 2.5

Food: Light dinner (pizza), drinks, and snacks provided.

Location: Space Foundation Discovery Center; 4425 Arrowswest Drive

Presenters: Discovery Center Education Staff

Description:

Experience some of the newest interactive exhibits at the Space Foundation Discovery Center, to possibly include the testing objects in the wind tunnel or navigating drones. Learn about opportunities for teachers to serve as a Teacher Liaison and get the latest updates on student contests.
