

**SASP Summer Institute Electives**  
[www.sasp-science.org/sasp-summer-institute](http://www.sasp-science.org/sasp-summer-institute)

**Tuesday – Wednesday Elective Classes**

**The Fundamentals of NGSS** (Tuesday only)

*Rich Hedman, Sacramento Area Science Project*

During this workshop, you will learn the basic architecture of NGSS (how NGSS is organized around 3-dimensions, connections to Common Core, etc.) and you will be introduced to the instructional shifts necessary for NGSS implementation. This workshop is intended for people brand new to NGSS, the same workshop was presented at Super SIRC and the SASP Summer Institute last year.

**How to Integrate Cross-Cutting Concepts in the Classroom** (Wednesday only)

*Kelli Quan, Elk Grove Unified School District*

This elective will look at the why the cross-cutting concepts are an important part of NGSS and how to integrate them into science instruction in an authentic way. This workshop was presented at Super SIRC in May 2018.

**What the Phenomena-Question-Model Framework looks like in the Classroom**

*Cindy Passmore, UC Davis School of Education*

Explore how to coordinate scientific phenomena, questions about them and the practice of modeling in productive science instruction. This workshop is designed with middle and high school teachers in mind.

**Supporting Science Learning with Purposeful Reading**

*Judi Kusnick, Sacramento Area Science Project*

NGSS is all about students making sense of the world. Reading can be a powerful tool for sense-making. The trick is to choose the right kind of reading, to use reading at the appropriate place in the lesson, and to surround the reading with sense-making opportunities. This session provides guidance in finding and using text that boosts your students' understanding.

**Promoting Equity in Science Classrooms via the (W)holistic Science Pedagogy**

*Alexis Patterson, UC Davis*

As the scientific and technological divide widens, access to quality science instruction has become a civil rights issue: those equipped with the knowledge and skill will remain caretakers of status and power. This inequality is especially salient for students in marginalized communities and schools where stereotypes fuel low expectations for academic achievement and success. For many students the classroom represents their earliest formal experience with both the content and process of science, placing science teachers in a unique and precarious position: getting students excited and engaged about science while simultaneously preparing the next generation of STEM professionals and scientifically literate citizens.

### **University Science (Astronomy) The Big Bang Theory**

*Vera Margoniner, Sacramento State*

Why do astronomers believe that our Universe started 14 billion years ago in a process we call the "Big Bang"? How can we claim to know about events that happened (seemingly) so far away and such a long time ago? The goal of this workshop is to help build your understanding from data so that you can answer these questions with confidence. I will present a variety of scientific evidence that will both help you understand the theory and learn to differentiate between solidly supported ideas versus what is more speculative. This presentation course is not designed to offer a "lesson" to be replicated in the classroom, the focus will be on content knowledge.

### **Collaborative Independent Study**

*Arthur Beauchamp, Sacramento Area Science Project Consultant*

In this elective, individually or in small groups, you will identify a science or teaching-related goal, and then you will make progress toward achieving your goal. We want to provide you with the space and time to work productively on your own agenda. A SASP room host will check in with your group, and will be available to help you if you have any questions or want suggestions.

## **Wednesday – Thursday Elective Classes**

### **Establishing a Classroom Culture for Sense-Making**

*Peggy Harte, Dixon Unified School District and Kathy Gill, Davis Unified (retired)*

With the implementation of scientific practices in the classroom there will be changes in lesson design and delivery. The focus changes from students learning about scientific concepts to students figuring out and making sense of a scientific phenomenon. The change comes in lesson design, but also in class structure and norms, which necessitates looking deeply at how we approached student discovery. This workshop will focus on the question- How has our classroom learning environment changed to accommodate this shift?

### **Designing NGSS Lesson Sequences**

*Rich Hedman, Sacramento Area Science Project and Kelli Quan, Elk Grove Unified School District*

Experience a process for designing NGSS lesson sequences. Start with a DCI, identify and sequence the underlying science ideas, determine the “goal” model statements, then select relevant phenomena, questions, and activities necessary for student model development, application, and/or revision.

### **Critical Thinking Through Engineering**

*Ben Fell, Sacramento State*

Engineering lessons present impactful opportunities to engage students in critical thinking and outside-of-the-box problem solving. This interactive elective will provide insights into engineering within NGSS and demonstrate a lesson to develop critical thinking skills.

## **University Science (Biology) Using the Common Fruit Fly to Investigate Autism Spectrum Disorder**

*Kimberly Mulligan, Sacramento State*

In my research program we use the common fruit fly, *Drosophila melanogaster*, to investigate interactions between epigenetic factors and genes during neural development. The purpose of our research is to identify environmental factors that may confer risk or increase the severity of neurodevelopmental disorders (NDD), like autism, in humans that have genetic risk factors for NDDs. Many of the molecular networks that govern human brain development are conserved in *Drosophila*, meaning this research is relevant to human health and disease. This presentation course is not designed to offer a "lesson" to be replicated in the classroom, the focus will be on content knowledge.

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