

DATE WITH DATA

DESCRIPTION OF THE SESSIONS

MATH AND SCIENCE SESSIONS

PREK-1



Penguins and Their Young

4 activities. Young children love learning about penguins. With this kit and your guidance they discover what penguins look like, what they eat, where they live, and how they care for their young. Students even get to compare themselves to a life-size poster of a 4-ft-tall Emperor Penguin! This kit weaves life science, physical science, and math in a format ideal for young students.

Standards: NS.1, LS.2, PS.5, and ESS.8



Elephants and Their Young

4 activities. Elephants—their huge size, unique body structure, and fascinating social behavior—appeal to our sense of wonder. This kit draws on this interest to teach mathematical and physical science concepts, including measurement, weight, volume, and comparisons.

Standards: NS.1, LS.2, PS.5, and ESS.8

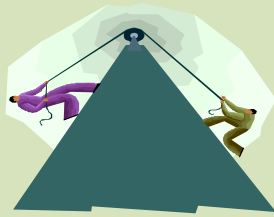


Involving Dissolving

4 activities. Students learn about the concepts of dissolving, evaporation, and crystallization by using familiar substances to create homemade gelatin, colorful disks, and crystals that emerge on black paper to make a starry night.

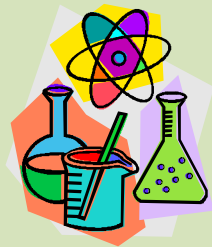
Standards: NS.1, and PS.5

GRADES 2-4



Force and Motion

We will use the Delta Science Reader Force and Motion. The students read about the relationship between force, motion, and work. They discover how the six simple machines: lever, wheel and axle, pulley, inclined plane, wedge, and screw, help people do work by moving objects easier, faster, or farther. They also read about people in science "bicycle inventors" and how they created ways to make the bicycle an increasingly more complex (and safe) machine. Finally, students find out how the waterwheel works and how friction affects motion.



Mystery Festival

10 sessions (5 per mystery). This kit contains 2 mysteries, one for young students and the other for older students, making it ideal for K–8 elementary schools since 2 or more grades can share the same kit. Students become detectives as they learn to observe, conduct crime lab tests, analyze results, and apply their knowledge to solve the mystery. Crime lab tests include thread tests, powder tests, DNA, chromatography, fingerprinting, and many more.

Standards: NS.1, and PS.5

SCIENCE SESSIONS

GRADES 5-8



Solar Energy

The Solar Energy module consists of four investigations that allow students to experience solar energy firsthand and to investigate the variables that affect solar-energy transfer. Students will become aware of the potential of solar energy, an inexhaustible source, as an alternative energy source to fossil fuels, a nonrenewable source, observe differences in size and position of shadows as a result of the relative positions of Earth and the Sun, gain experience using a compass to orient objects on Earth, observe solar-energy transfer in a variety of situations,, design solar water heaters and passive solar space heaters, apply mathematics in the context of science and acquire vocabulary associated with solar energy and energy transfer.

Variables

Some of the most important scientific concepts students learn are the result of their ability to see relationships between objects and events. Relationships always involve interactions, dependencies, and cause and effect. The Variables Module has four investigations that help students discover relationships through controlled experimentation. Students will fling, float, fly, and flip objects as they discover relationships in each investigation. Students will gain experience with the concept of variable and system, design and conduct controlled experiments, acquire some understanding of the behavior of pendulums, buoyancy, use data to make predictions, apply mathematics in the context of science, record and graph data concretely, pictorially, and symbolically to discover relationships, acquire the vocabulary associated with controlled experimentation and use scientific thinking processes to conduct investigations and build explanations: observing, communicating, comparing, organizing, and relating



Science Fair Projects: Getting your students to learn science by doing science.

Research indicates that students learn science best if they do what scientists do (no volcano projects here!). Learn how to get involved, and how to get your students started in the International Science and Engineering Fair (ISEF) system - from project selection to filling out paperwork. Presented by experienced and successful teachers from around the state.



Lunar and Solar modules

This course is designed to be a content rich course for science teachers. The areas covered in the lunar module are lunar history, Lunar geology and structure, and Lunar exploration. Formation scenarios for the Moon, the geologic history of the Moon and its interaction with Earth will be addressed. The areas covered in the solar module are the formation history of the Solar System, the Sun our "lab rat star", Planetary Geology, Planetary Satellites & Comets. The feasibility of a Solar System exploration and habitation program will be discussed. Students will be encouraged to develop classroom activities and lesson plans during the course and share these with class mates.

INTEGRATED SCIENCE SESSIONS

GRADES 6-10

Force and Pressure

This session is for teachers teaching integrated sciences. We will explore the concepts of pressure and hydraulics. We will observe and be able to build a simple hydraulic system that will act as a demonstration of the relationship between pressure, force and area. Knowledge about partial pressures using a CO₂ diffusion experiment will be explored. We will observe a pressure demonstration using a soda can and a garbage bag that will demonstrate respiration and plant water transport. Participants will relate the concept of pressure to height and will observe how pressure changes occur in the human body by building a model of a lung.

Light

This session is for teachers teaching integrated sciences. We will explore characteristics of additive color and converging light. We will mix the primary colors of light and make observations between the difference between additive and subtractive color mixing. We use a magnifying glass as a converging lens and find the focal length by forming a real image and make observations of this image which will describe characteristics of the real images of lenses. An eye model will be used to make a real image using a mirror. We will discuss how different wavelengths of light affect the rate of photosynthesis and observe how different wavelengths of light are absorbed by different plant pigments in the process of photosynthesis.

TECHNOLOGY INTEGRATION SESSIONS



GRADES K-12



Teaching with Technology Integration

The objective of this two day course is to train educators on how to set up/manage their own web site for the dissemination of course material. We will give you the tools to post groovy sound clips, to set up links to educational videos from YouTube or other websites, to create online student quizzes and other useful text applications, and to ultimately make your web page an exciting educational resource for your students. that exists in text, audio, or video formats.



Creating Effective Digital Notes via SmartBoard

Electronic presentations (i.e., PowerPoint) have strengths and weaknesses: they can be posted to the web; they can include complicated charts and pictures; they free the students from the labor of note-taking. But they often limit student involvement; they can result in loss of student engagement. The use of partially completed notes via the SmartBoard allows the creation of digital notes that can be posted online and that can maintain student involvement and engagement. Techniques for creating and using effective partially completed notes and uploading them to a website will be presented.



21st century: Teach Paperless

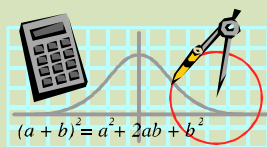
Today's educators are being asked to integrate more and more technology into their schools and classrooms. Google Apps and Google Docs offer a variety of tools to make it easy for educators to communicate with other teachers and students. The objective of this one day course is to train educators on how to use these Google tools to create a more interactive learning environment in your school and to use Google Apps to improve teaching and research. Some ideas presented include: Introducing students to scientific methods, collaborating on various projects, surveys, gathering feedback and evaluations, making grading/rubrics easier with Google.

MATH SESSIONS



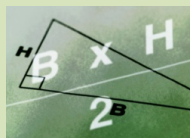
Grades 5-8 Math

Data collection and analysis play a key role in developing or applying students' knowledge of many topics in middle grades mathematics, such as probability, rational numbers, linear and non-linear variable relationships, relationships among measurement units, discovery of geometric properties, and measures of central tendency. Activities will revolve around the linkage that data provides in the middle grades curriculum.



Algebra I

A major purpose of Algebra is to recognize and generalize the patterns in how two varying quantities affect each other. What better way to explore how two variables relate than to collect data about how they behave and apply algebraic thinking to understand them?



Geometry

The examination of data is about recognizing patterns. In geometry, one can collect data about the relationships between measurements in order to develop formulas, and use visualization, spatial reasoning, and geometric modeling to solve probability problems through data gathering.



Algebra II/Precalculus

In order to help students see the relevance of a further study of mathematics, a connection to the world through data is helpful. Through data collected from real phenomena, more sophisticated mathematical models such as exponential, power, piece-wise, logistics, and inverse functions reveal themselves.

Special Session

Special Session for K-4 Teachers “Microscopic World”

Limited to 20 K-4 teachers. The workshop will focus on incorporating technology in content-rich curriculum-based science and math-investigations and provide an opportunity to learn about career opportunities in STEM areas. The "Microscopic World" project uses well developed and researched "Proscope" HR easy to use digital technology.

The project involves:

1. A two-day training session in the month of June (21-22),
2. One day visit to UCA biology department to see the confocal and scanning electron microscopes and learn about the careers in microscopy and
3. Follow-ups school visits during the academic year to assist the teachers to teach the lesson that they developed during the two-day training session.

Each participant will receive \$350 worth Proscope HR 50x lens Kit* and materials to implement the activities in their classrooms and 20 hours of PD credit including 6 hours of technology credit.