

## COURSES FOR SCIENCE TEACHERS • 1998 SUMMER SCIENCE INSTITUTE

### **K-6 (a) Literature and Art Interfaced with Science (3 science units)**

August 3 - August 7, 1998

Artists and scientists are seldom thought of as having much in common. Artists are creative and intuitive, while scientists are orderly and calculating. Actually both scientists and artists have a good deal in common. Art and Science are both ways of understanding, knowing and communicating about the world around us. The artist and the scientist are both careful observers of natural phenomena. Each makes comparisons of different structures and interactions, and both communicate and evaluate their feelings. The scientist communicates through speaking and writing; the artist through creative writing, painting, drawing and other media.

When students engage in activities that integrate art and science, they learn about the variety of ways through which they can understand and communicate about the world. They learn to bring creativity and insight to the disciplines of arts and science. In this way, students increase their appreciation of the natural world and develop an openness to the wonder and joy of life.

### **K-6 (b) Physics of Toys and the Playground (3 physics units)**

August 10 - August 14, 1998

Enhance your enjoyment of toys and playground activities by learning the science behind their operation. Find out how to apply physics principles to musical sticks, toy cars, jumping rope, hitting or kicking a ball, the teeter-totter, rolling a ball, riding a bicycle, gymnastics, and the rubber ducky. Bring in your own toys, and we will enjoy the physics together!

### **K-6 (c) Chemistry of Matter (3 chemistry units)**

August 17 - August 21, 1998

Tasty kitchen and garden chemistry with common household chemicals tease the palette and the mind. Top this salad off with the chemistry of toys, and one begins to appreciate the physical and chemical changes in the science of everyday life. The basic concepts of chemistry that deal with matter and realistic strategies to teach those concepts will be covered in this fun "hands-on" course. The emphasis will be on simple ways to develop students' conceptual understanding of everyday chemical phenomena. Appropriate activities and materials will be recommended and teachers will actually participate in model lessons that they can incorporate in their elementary classrooms. Topics include structure and states of matter, physical and chemical changes, and the conservation of matter and energy. All participants will also be given the opportunity to share their favorite science lesson with the rest of the teachers in the program.

### **K-8 (a) Ecology of Southern California (6 biology units)**

August 3 - August 14, 1998

**TWO WEEK COURSE**

From the Ocean to the Mountains, from Long Beach to San Diego and into the Classroom. How do abiotic and biotic factors interact to determine ecosystems? Examine methods for student scientific inquiry in the field and in the classroom.

Investigations of ecosystems will be used as the vehicle to demonstrate an integrated approach to science that can be utilized from kindergarten to grade eight.

### **K-8 (b) Leadership Strategies for the Classroom and Beyond (3 edu units)**

August 17 - August 21, 1998

Strategies for effective science learning for all will be explored with such focus topics as: equity and status issues, SDAIE instruction, inquiry-based learning, successful grant writing, developing mini institutes for colleagues, action research, family science, and science fairs. Pedagogical discussions will be integrated with discussion of science conceptual understanding using units from district-adopted materials such as FOSS, Scholastic, and SEPUP.

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### **K-12 (a) Introduction to the Internet & its Science Resources (3 Phy Sci units)**

August 3 - August 7, 1998

Learn how to use a browser to navigate the Internet and find, select and save science resources for your classroom. Practice begins with operating a mouse to navigate, effectively using search engines to quickly find the desired resource, and then progresses to interacting with Java Applets. Each teacher finishes with designing and posting a simple lesson plan on the web at Science Education Programs' popular site.

### **K-12 (b) Create Science Lessons for the Web (3 Phy Sci units)**

August 10 - August 14, 1998

A quick review of the fifteen general categories of Web science resources leads directly to the design and creation of your own science web pages. After editing for multimedia enhancement, if desired, pages will be posted on the web at UCI Science Education Programs' popular site for students and other teachers worldwide.

### **K-12 (c) Independent Study (3 science units)**

An opportunity for development of a science curriculum unit or a teacher based classroom research project. On your own time. Preliminary proposal due by 8/3/98. Project completion is negotiable.

### **7-12 (a) "Make and Take" for Middle and High School Science Lab (3 physics units)**

August 3 - August 7, 1998

Participants will make their own inexpensive devices under the guidance of experienced project builders. Select from more than 20 devices for your classroom, including: musical sticks, water rocket launchers, orange juice battery, DNA electrophoresis platform, wave generator, smoke ring box, potato gun, cheap magnastir, simple circuit boards, world's simplest motor, plasma ball and more. Many of these devices are chosen to be used in the following two courses.

### **7-12 (b) Space Technology (3 physics units)**

August 10 - August 14, 1998

Dynamics of rockets and space vehicles and the aerodynamics of kites, airplanes and parachutes. Applications of Newton's Laws to explain lift, flight, and propulsion will be augmented by examining rotational stability via computer simulations. Participants will construct kites, launch water bottle rockets, and visit the Boeing Company plant in Long Beach. This will be good background material to prepare students for such things as the Pentathlon Science Super Quiz.

### **7-12 (c) Bio-Ecology of Water (3 chemistry units)**

August 17 - August 21, 1998

A local and interdisciplinary look at water in Orange County. Using water as a theme to teach physical, earth and life science. Focusing on the Santa Ana River and drinking water in Orange County; the physical and chemical properties of water; aquatic organisms; fossil formation; and minerals and geomorphology in the basin. Areas which are most neglected and need to be explored will be presented in an activity centered way.

### **7-12-(d) Forensics '98 "Show Me the Mummy" or "Bones Tell Tales" (3 biology, 3 chemistry & 3 physics units - 9 total units)**

August 3 - August 21, 1998 - THREE WEEK COURSE

Need an integrated course? This course is for you: the third in a series of Forensic Science Courses. Forensics '98 promises more intensive lab investigations: the biology, physics, chemistry and medicine for science detectives. Learn basic criminal investigative methods with an emphasis on Anthropology and Pathology. What do forensic anthropologists and diagnostic physicians have in common? How does a forensic anthropologist reconstruct crime scenes?