

## **COURSES FOR SCIENCE TEACHERS • 2001 SUMMER SCIENCE INSTITUTE**

All courses are designed and offered for your Professional Growth as a teacher of science. Become a lifelong learner and a member of UCI's Science Education Program's Network.

- **Elementary Teachers:** the courses will help you teach science in the current California classroom by **referencing all the required Science Standards** in an integrated approach to classroom instruction. Find the science as you teach reading, math and social studies. Earn the *UCI Elementary Certificate of Science Teaching*.
- **Middle & High School Teachers:** the courses are designed to focus on your need to help your students achieve the Science Standards.

### **1. Reading and Art Interfaced with Science, Grades K-5; ONE WEEK, 8/6 - 8/10/01**

Reading is the key to the world. It is the tool for communication of knowledge. Through books, reading on the Internet, newspapers, magazines, etc. we can learn about the world around us.

Science, Literature, and Art are all ways of understanding, knowing and communicating. Scientists, Writers and Artists are seldom thought of as having much in common. Actually all three have a good deal in common. They are all careful observers of natural phenomena. Each makes comparisons of different structures and interactions, and all communicate and evaluate their interpretations.

When students engage in activities that integrate reading, art and science, they learn about the variety of ways through which they can understand and communicate about the world. They also learn the content behind the Standards. Learn how to integrate all these areas in the classroom while your students seamlessly learn the content of the various Standards.

3 Physical Science quarter units.

### **2. Biology for Elementary Teachers, Grades K-7; ONE WEEK, 8/6-8/10/01**

This course will increase your knowledge of strategies for inspiring your students, and fostering excitement with biology demonstrations and "hands-on" participation. Emphasis will be on simple ways to make biology fun while developing an understanding of everyday biological phenomena in a non-threatening, supportive environment. Teachers will be encouraged to actively participate in classroom-tested lessons that can easily be incorporated into the elementary curriculum. Topics will include structure and function of animals, plants, ecosystems, growth cycles, and more. Participants will be given the opportunity to share their favorite science lesson with the rest of the teachers in the program.

3 Biology quarter units.

### **3. Physical Sciences with Mathematics Integration, Grades 3-8; ONE WEEK, 8/6 - 8/10/01**

From Kindergarten through 8th grade the California Science Content Standards (CSES) have physical science content. Stimulate a student's imagination through interesting projects ranging from waterworks to future space settlement. Participants will engage in many hands-on experiences and take back to the classroom user-friendly lessons. The lessons are extensive and all contain the science behind the lesson; mathematical explanations, where appropriate; how to perform the experiments; and a detailed list of the necessary supplies. Many of the lessons were developed by scientists at The Boeing Company.

3 Chemistry or 3 Physics quarter units.

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### **4. Earth Science in the Elementary Classroom, Grades K-6; ONE WEEK, 8/20 - 8/24/01**

This program traces the origin, growth, uses, processing, renewal, and conservation of our natural resources. The class work focuses on the elementary Earth science state content standards. The course will also address the investigation and experimentation that can be used to help students understand the scientific process. With this unit the students will achieve many of the new Standards while developing the skills necessary to accomplish them.  
3 Earth Science quarter units.

### **5. Problem Based Learning, a focus on Life, Earth and Physical Sciences, Grades 6-8; ONE WEEK, 8/13-8/17/01**

Learn a process for classroom instruction that involves an inquiry based approach to students acquiring experience as investigators and the teacher acting as a thinking coach. Problems come from current events based on real world environmental issues. This approach gives disengaged learners a purpose for learning and an application for the science concepts that they uncover. Take away many PBL classroom tested problems; practice them with colleagues and understand the science content standards that support them.  
3 Science quarter units.

### **6. The Ecology of Orange County, Grades K-8; TWO WEEKS, 8/6 - 8/17/01**

Explore the ecology and geology of Orange County through a field studies approach. This highly acclaimed presentation integrates life, earth and physical sciences in an investigation of the unique abiotic and biotic factors of our county. Wear comfortable clothes and walking shoes as **everyday** includes an excursion into the biosphere!  
6 Biology quarter units.

### **7. The Best of the Exploratorium and Lawrence Hall of Science, a focus on Physical Sciences. Grades 7-10; TWO WEEKS, 8/6 - 8/17/01**

Make the physical sciences come alive in your classroom. This course offers fast moving, hands-on, cohesive and meaningful activities covering: Electricity - motors, cars and magnetism; Light - color and sound; Chemistry including a forensics mystery. Time will be spent each day making science materials for your classroom. Participants will receive free curriculum CD ROM's from the Exploratorium. The two instructors have spent 6 summers attending teacher institutes at both locales in San Francisco. **Materials fee may apply**  
6 Physics quarter units.

### **8. MESA: Building the Future Today. Grades 7-12; ONE WEEK, 8/6 - 8/9/01**

Delve into the mathematics, science and engineering concepts behind traditional MESA (Mathematics, Engineering, Science Achievement) activities. Learn the fundamentals of flight to build a better balsa wood glider; experiment with stress and strain related to bridge building; investigate impulse and contact time for successful egg drops. Understand the content standards necessary to support crystal growing, mousetrap cars, brain power, and other projects. Attend this program and then join colleagues at UCLA for a complete week of MESA.  
• Priority given to current or incoming Southern California MESA Advisors.  
3 Physics quarter units.

### **9. Introductory WebQuests. Using Internet Resources in the Classroom, Grades K-12; ONE WEEK, 8/6 - 8/10/01**

The Internet is an integral part of our lives and is emerging as an essential tool for the classroom. This course will show teachers how the Internet may be utilized as a powerful resource. Teachers will have the opportunity to develop their own web pages that incorporate WebQuests. These web-based lessons, which integrate Internet resources, will be published on the UCI server to benefit teachers and students worldwide. *Prerequisites: mouse and keyboard skills; some experience using the Internet.*  
3 Physical Sciences quarter units

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### **10. Advanced WebQuests: Advanced Techniques for Developing Internet Science Resources. Grades K-12; ONE WEEK, 8/13 - 8/17/01**

Go beyond simple WebQuests.

More than 60 participants have created WebQuests at the UCI Summer Institute, many of which are used as valuable resources by K-12 teachers, schools, and other educational web portals.

Building on the skills learned in the introductory course, participants will develop a higher level of expertise in the following areas:

1. Researching and utilizing quality web resources.
2. Incorporating interactivity into webquests.
3. Creating and managing their own space to host your WebQuest.
4. Acting in a leadership role to unleash the power of the Internet as an educational tool for teaching science worldwide. **Prerequisites:** Completion of previous UCI SSI WebQuest / Internet class. Or: Web savvy teacher with experience creating web pages.

### **11. Independent Study, Grades K-12; on your own time**

An opportunity for aligning your curriculum to the Standards, development of a science curriculum unit or a teacher based classroom research project. On your own time (30 hours).

- Preliminary proposal due by 7/31/01.
  - Project completion is negotiable.
- 3 Biology, Chemistry, or Physics quarter units.

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In addition, we offer the following programs:

#### **For those schools, K-8, with a high percentage of ELL students:**

The UCI "Learning English Through Science" project which includes training in deconstruction and reconstruction of science materials with appropriate activities in the ELD language processes, science and literature. Spend time in school based teams and in grade level teams to begin planning how to incorporate language acquisition into your classroom lesson plans. Develop and use effective assessment instruments including concept maps and TIMSS. Experience hands-on life science curriculum based on grade level standards for grades K through 8 together with ELL strategies. \$500 stipend for summer, \$500 for academic year, plus. 4 education quarter units, summer; 8 education quarter units academic year.

**Institute E: 6/16 and 6/18 - 6/22/01, application due 5/18/01**

**Institute F: 7/21 and 7/23 - 7/27/01, application due 6/22/01**

**Institute G: 8/18 and 8/20 - 8/24/01, application due 7/27/01**

**Institute H: 9/15 and 9/17 - 9/21/01, application due 8/24/01**

#### **Middle and high school teachers:**

#### **For those schools, 7-12, with lower API scores, in Orange and Los Angeles County:**

The California Science Project, Orange County - CSPOC. an invitational intensive institute (8/6 - 8/24/01), earth science based with oceanography, cosmology and astronomy as the focus for the three weeks. All content will be mapped to the science standards for grades 7-12. Leadership development and practice will be embedded throughout. Participants earn 9 quarter graduate level science units of credit (for professional growth use only) and a stipend based on participation. Academic year component includes monthly after school meetings held at different school sites, and two Saturday conferences developed by CSPOC teacher leaders. A school site based kit of materials is offered for each participating school.

**Special applications are required for these projects.**