

Professional Development Opportunities

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Get ready for spring and summer with these great workshops and trainings. Below are links to some upcoming programs all over the state. For a more complete list visit the [NCSTA Professional Development Calendar](#).

- [Exemplary Science Programs that Illustrate Inquiry](#)
- [The NCCAT Experience](#)
- [The Science House, NC State University](#)
- [Pisgah Astronomical Research Institute](#)
- [NOAA's Teacher at Sea](#)
- [Explorations in Computational Chemistry](#)
- [Promoting Standards in Science and Mathematics](#)
- [SITE 6-12: Content Area Reading in Science and Math](#)

If you know a program that should be included in the next issue of the Science Reflector, [email the editor](#).

Looking for Exemplary Science Programs (ESP) that Illustrate Inquiry

As the 2008 year approaches, the NSTA National Advisory Board (NAB) invites your help in identifying 15 programs for the 2008 Exemplary Science Program Monograph. The sixth monograph in the series now requests nominations for recognizing teachers and schools. Inquiry has become a word that all respect and admire – almost religiously. Most teachers, textbook authors, curriculum developers, and the general public see it important and purport to use it. However, in actual practice it often has a word like guided, completed, or even “directed” used with it as an adjective. But could scientists be so restrained??

The 2008 ESP monograph will focus on teachers and programs which illustrate full (or open) inquiry. This means that it starts with student curiosities and questions followed by student attempts to deal with their own curriculum and attempt to provide answers. Of course the main ingredient for scientific inquiry is collecting evidence from others to evaluate and to establish validity to the ideas and solutions proposed. And, these must be shared and used to resolve the issues. All of this requires contexts (situations) to promote inquiry – which is the stated major goal for science education as indicated in the National Science Education Standards. Specifically the goal called for producing students who “experience the richness and excitement of knowing about and understanding the natural world”.

The NAB looks forward to reviewing nominations and working with at least 15 teacher teams who are involved with real inquiry on the part of students in their classrooms. Nominations should be forwarded to Robert E. Yager, Chair of NSTA's ESP efforts and editor of the ESP Monograph Series (Science Education Center, Room 450 VAN, The University of Iowa, Iowa City, Iowa 52242, robert-yager@uiowa.edu, 319-335-1189).

Teacher Renewal Seminars: The NCCAT Experience

Join us for a North Carolina Center for the Advancement of Teaching (NCCAT) seminar. Teachers of all grade levels and subjects who have been employed full-time in North Carolina public schools for at least three years may apply. Seminar materials, lodging, meals, substitute teacher pay, and most travel expenses are covered **at no cost to the participating teacher or their school**. All seminars are aligned with the NC Standard Course of Study, are multi-disciplinary, and are based on experiential learning principles.



To register call NCCAT Teacher Services at 1-800-922-0482 or email registrar@nccat.org submitting your name, home telephone number, social security number, and seminar choice. Abridged descriptions follow; however, full descriptions of all professional development offerings are available on the NCCAT web page, www.nccat.org.

9440

NASCAR: Science on the Race Track

TBD* (see below): Randleman

The National Association for Stock Car Auto Racing, NASCAR, is a staple of Southern life. Deeply rooted in the region's culture, the sport of auto racing claims a long list of victories that range from aerodynamic triumphs on the track to sold-out stands on race day. Originating as the back-roads mode of transport for moonshine, motor sports in the modern age have created a fast-moving career path for specialists not only in automotive design and performance, but also in technology, economics, marketing, public relations, art, finance, accounting, and tourism. Visit NASCAR team shops and motor speedways to meet those who have helped turn a regional sport into a multimillion dollar national industry. Explore the ways in which math and physics work together on the speedway. Enjoy the tales and stories that made cultural icons of the people driving the race-car movement. You will learn ways to connect motor sports to learning in your classroom while immersing yourself in the world of speed. (Two participants to a room.) **Due to NASCAR schedules, the seminar will be held sometime between January 20 and February 8.*

9595

Sea Level Rise: The Impact of Climate Change on the Outer Banks

February 11–15: Ocracoke

One of North Carolina's greatest resources is its coastal region. With more than 3,300 miles of shoreline, this fragile area is on the frontline if climate change causes the seas to rise. Can we afford to ignore this threat? Few issues today are as controversial and timely as the impact of human activity on climate change. Join us on Ocracoke as we study the complex forces at work causing global climate change. Compare current weather patterns with historical data to assess trends of global warming and cooling. How does human consumption of fossil fuels and the production of greenhouse gases affect climate change? How does climate change impact sea level rise? Explore the beaches and marshes along the Outer Banks for a firsthand look at the effect of coastal storms, which have increased in frequency and intensity, to witness what our state stands to lose. Learn ways we can help our students understand and respond to this complex issue in a responsible and powerful manner as we strive to become better stewards of our world.

9625

Starry, Starry Night

February 18–22: Cullowhee

Look up into the night sky. Feel the wonder, fascination, and awe that our ancestors felt as they were guided by star lore in their planting, building, navigating, and migrations. Learn about the celestial sphere, how the sky seems to move and change, how to identify many bright stars and constellations, why we have seasons, and what causes the cycles of the moons and planets. Explore phenomena such as eclipses, meteors, comets, and satellites. Participate in hands-on activities that awaken the wonderment and mystery of the cosmos. In collaboration with faculty from UNC-Chapel Hill's Morehead Planetarium and Science Center, learn practical methods of stargazing with the naked eye. Master the basics of how to choose and use a telescope to view the evening sky. Discover new and exciting resources to stimulate scientific inquiry in your students. Come experience the stars and see why the sky's the limit!

9730

Space Camp: Your Place in Space!

March 3–7: Huntsville, Alabama

Ten...Nine...Eight...Seven...Six...The countdown for NCCAT's Space Camp experience is on. Realize the childhood dream of becoming an astronaut as you immerse yourself in the wonders of the space program at the U.S. Space and Rocket Center and NASA's Marshall Space Flight Center in Huntsville, Alabama. Relive one of America's most important historical endeavors as you study "the finest rocket collection in the world," according to astronaut John Glenn. Discover a renewed appreciation for Newton's laws of motion while you train as the astronauts do using simulators such as the one-sixth-gravity trainer, the manned maneuvering unit, and the multi-axis trainer. The culmination of our astronaut training will be an intensely realistic simulated mission. The mission applies the basics of shuttle operation and the science and history of the space program, but also will involve leadership skills and teamwork. Through the excitement of space exploration teachers can encourage their students to study math, science, history, and technology. Come and experience the future today. (Two participants to a room.)

9775

Teacher Scholars in Residence

March 9–13: Cullowhee

The Teacher Scholars in Residence program offers educators an excellent short-term residential experience for study and research. Teachers pursuing projects of outstanding intellectual or artistic promise are invited to apply. Teams of up to four educators who seek time and space for collaboration also may apply. Offered at least twice a year, this program provides five days devoted to independent study in a scholarly, supportive environment. Preference is given to teachers with outstanding proposals who are applying to the program for the first time. For more information, contact NCCAT. Call 800-922-0482 or e-mail tscholars@nccat.org.

9820

The Ecology of Barrier Islands

March 16–20: Ocracoke

If our students are going to grow into responsible stewards of North Carolina's critically important coastline, their understanding of this region has to go deeper than sands, tans, and seafood restaurants. Explore the world of the barrier islands. Barrier islands are typically characterized by low sandy islands that are easily affected by wind, tides, and currents and protect the mainland from these forces. What makes North Carolina's barrier islands unique is their distance from the mainland and their close proximity to the continental shelf and the Gulf Stream. Learn about the formation and stability of these landforms, the seasonal effects of storms, and how these islands change over time. How do these islands reflect a world of dynamic equilibrium, a world of constancy and change? Compare and contrast the land of the sound with the land of the sea. How do these two regions of the island differ? Investigate the key plant and animal species associated with these two distinct regions. Gain firsthand knowledge and collect classroom activities related to the ecology of barrier islands.

9885

Crime Scene Investigator: The New Sherlock Holmes

March 31–April 4: Cullowhee

Today's crime scene investigations might cause Sherlock Holmes, Sir Arthur Conan Doyle's legendary sleuth, to retract his analysis of, "Elementary, my dear Watson." In fact, the demands on the investigators are anything but elementary. Investigations require a keen sense of observation, extensive use of the scientific method, and physical and biological expertise. The field is often peopled with multiple investigators, all with their own areas of expertise. Become detectives as we put on the hat of the forensic scientist and determine the facts in a simulated crime scene. Discover how to objectively apply the techniques of physical and natural sciences in examining forensic evidence. Stalk the trail with a famous tracker. Analyze the smallest traces of human evidence using DNA profiling as we become molecular scientists aboard UNC-Chapel Hill's state-of-the-art traveling science laboratory. Work with a world-famous forensic anthropologist who will help us as we "leave no bone unturned."

9930

Wonders of the Appalachian Trail

March 31–April 4: Cullowhee

Marked by white blazes or mountaintop cairns, the Appalachian Trail meanders across scenic ridges and valleys for more than 2,100 miles. From the perceptions of millions of hikers, it has gained a reputation as a place of solitude and natural beauty. Study the history of those whose pioneering vision like Benton MacKaye came to see the trail as a "cultural and national treasure." Explore the diversity of forest growth, flowering shrubs, and wildflowers, as we embark on easy to moderate daily hikes. Experience the trail's magic to the accompaniment of migrating birds overhead and animals that sometimes share the trail. We will become ecologically aware of how to minimize our impact on the backcountry as we hike the Nantahala Gorge, Stecoah

Gap, Wayah Bald, and Siler Bald areas of the Appalachian Trail. The expanded ecological awareness and appreciation for experiential learning we gain on the trail can be shared with students of all ages.

10020

Appalachian Spring Wildflowers

April 21–25: Cullowhee

Come to the mountains at the peak of the spring blooming season and learn how to identify, record, and appreciate the wildflower bounty native to western North Carolina. Take field trips to discover various wildflower habitats in the region, under the able guidance of botanists. Delve into issues related to species diversity, habitat destruction, and wildflower conservation. Learn a logical, systematic approach for identifying wildflowers following a simple, yet precise, key system. Analyze the structure of wildflowers and increase your botanical knowledge and vocabulary. The nature of this seminar makes hiking a necessity, perhaps during soggy or chilly weather, but offers the rare opportunity to gain knowledge of wildflowers while enjoying the beauty of spring in the Great Smoky Mountains.

10155

The Art and Science of Boat Building

May 12–16: Ocracoke

Boat building has a long tradition in coastal North Carolina. Watermen throughout history have refined and mastered the necessary skills to create small and large vessels that ply the sounds and ocean waters. From engaging in coastal trade to pursuing seafood and leisure activities, locally crafted boats represent both form and function. What math and science lessons can we learn from the precise measurements required in boat building? What makes a well-built craft move through the water with grace and ease? Come aboard as we explore Pamlico Sound. Compare and contrast today's recreational and commercial boaters with traditional crafts. Join us on Ocracoke as we participate in the building of a sea worthy wooden skiff, create individual boat models, tour small boat building operations, and learn about the science and art of this age-old tradition.

How do I apply?

Teachers of all grade levels and subjects who have been employed full-time in North Carolina public schools for at least three years may choose a seminar. There is no cost to the teacher. Call NCCAT Teacher Services at 1-800-922-0482 or email registrar@nccat.org submitting your name, home telephone number, social security number, and seminar choice. Or visit the NCCAT Website at www.nccat.org to download an application. If you have any questions about particular seminars, please feel free to contact Renée Coward, 2005 NCSTA President and NCCAT representative.

Teacher Programs at The Science House

Science House Girls Collaborative



A kickoff meeting for The Science House Girls Collaborative will be held on Tuesday, September 18 at the Friday Institute on NCSU's Centennial Campus. Activities at that meeting will include a thorough introduction to the Collaborative, opportunities to meet others with an interest in encouraging girls in STEM careers, and detailed information about mini-grants that are available to partnerships seeking to develop new STEM-related programming for girls. A more detailed agenda will be available closer to the date of the meeting. Driving directions to the Friday Institute are at <http://www.fi.ncsu.edu/contact/index.php>.

We look forward to seeing you there!

Science Olympiad Coaches Clinic

The 5th Annual NC Coaches Clinic will be October 12-13, 2007 at Centennial Campus Middle School on NC State's Centennial Campus. We invite coaches from North Carolina and from across the country to attend this institute. Student versions of the coaches manuals will be provided along with rules for any NC Only events. Learn more and register at http://www.tx.ncsu.edu/science_olympiad/Coaches_workshop/

Fun with Science Workshop in Fayetteville

This hands-on workshop emphasizes simple activities, inquiry and familiar materials in the physical sciences and will be offered October 29 at Reid Ross Classical School in Fayetteville. Learn more about the Physics based Fun with Science Workshop at <http://www.science-house.org/workshops/physicsfunwithscience/>

Place Based Learning Conference

The Rural School and Community Trust, The Science House (NCSU) and River City Community Development Corporation invite teachers, administrators, students, and community members to be a part of a conference that will showcase examples of powerful community-school connections. Northeastern North Carolina schools and communities have been actively involved in developing Place-Based Education initiatives over the last few years with support from the Rural School and Community Trust, the Northeast RESA and the Science House. The event will be held November 8-9, 2007 at Elizabeth City State University. Learn more and register at <http://www.science-house.org/pblconf/>

Bring the Science House Teacher Workshops to Your School

The Science House also provides one or two-day programs to update and refresh teachers' mathematics, science, and Internet skills. These workshops have been taught many times in schools across North Carolina. Our workshop participants learn skills and activities that they can immediately use in their own classrooms. We especially emphasize programs to help meet teacher technology competencies. Each workshop can be tailored to fit local needs. Please visit the workshop web page (www.science-house.org/workshops/) for more information on our workshop or contact Scott Ragan (scott_ragan@ncsu.edu) at The Science House or call (919) 515-6118

Pisgah Astronomical Research Institute (PARI)

School of Galactic Radio Astronomy (SGRA) Teacher Workshops featuring Smiley, our Internet operated 4.6 meter radio telescope

For middle and high school teachers in Buncombe, Henderson and Transylvania counties
we will be offering 4-hour workshops where you can:

- Learn about radio astronomy and radio telescopes.
- Learn to control a 4.6meter (15 feet) radio telescope (nicknamed Smiley) located at Pisgah Astronomical Research Institute (PARI) via the Internet.
- Detect 21-cm radio waves emitted by the center of our galaxy and its spiral arms, supernova remnants, regions of star formation and other celestial sources.
- Observe the skies during the day, rain or shine!
- Receive a \$50 stipend.

For all middle and high school teachers*

Friday, November 30 - Saturday, December 1 we will hold an in-depth 10 hour, overnight workshop at PARI including 10 hours of online Smiley access time, curriculum aligned lesson plans, room and board and a \$100 stipend. Don't turn down this chance to observe at our beautiful and unique site in the middle of the Pisgah Forest with truly dark skies!

[*Teachers from WNC who attend the 4 hour workshop will be accepted first, additional openings will be available on a first registered basis.]



Later this fall 2 additional workshops will be held at science museums across the state. Stay tuned to the web site for dates and locations.

Visit the web site today for details and to register! <http://www.pari.edu/programs/teachers/smiley/>

Please contact [Beth Snoke Harris](#) if you have any questions

NOAA's Teacher at Sea Program

The National Oceanic and Atmospheric Administration offers classroom teachers and museum educators opportunities to experience marine science first-hand by volunteering to join the crew of NOAA research vessels. Cruises range from one to four weeks, depending on the ship's mission. Although most teachers participate during the summer, cruises are conducted year-round. NOAA operates 18 ships conducting research in fisheries and physical oceanography from the North Atlantic to the Gulf of Mexico, and in the Pacific from San Diego to Alaska and Hawaii. NOAA covers all costs, including transportation to and from the ship.

Interested teachers can learn more about the program and how to apply by visiting the Teacher at Sea website. Applications for the 2008 field season should be available online starting October 1, 2007 at <http://teacheratsea.noaa.gov/about.html>

The North Carolina School of Science and Mathematics Distance Learning Technologies Dept. once again presents a workshop via videoconference:

Explorations in Computational Chemistry

Computational chemistry, also known as molecular modeling, is the newest method of doing research in chemistry. Computational chemistry uses computers to build molecules and calculate a wide variety of properties and reactivities about those molecules. North Carolina is the only state to have a dedicated high performance computer available to pre-college students and teachers in computational chemistry. This workshop is funded by the Burroughs Wellcome Fund and the North Carolina Science, Mathematics, and Technology Education Center.

Tuesdays Oct. 2- Nov. 27 except Nov. 20th (Plus Dec. 4 and Dec. 11 the two optional sessions for classroom integration and support for research activities)

Time: 4:15-5:45

Costs: Instruction, computer access and all materials provided free of charge to all North Carolina pre-college teachers and students .

Program Description:

Explorations in Computational Chemistry is a 15 hour workshop via Videoconference designed for both teachers and students with a strong interest in chemistry or molecular biology. The workshop consists of eight (8) 90-minute sessions.

To sign up and arrange a videoconference location contact :

[Peg Kirk](#) at the Distance Learning Department, North Carolina School of Science and Mathematics.

Phone 919 416-2632

Visit our website at http://www.dlt.ncssm.edu/distance_learning

For questions on workshop content, contact:

[Robert R. Gotwals, Jr., Computational Chemistry Educator](#)

Promoting Standards in Science and Mathematics (PSSM)

As part of a comprehensive program of asynchronous online professional development modules for K-12 science and math teachers, the Center for Science, Mathematics, and Technology Education at East Carolina University currently offers science modules for K-12 science. There are four 12-hour modules in each course. Teachers may take one or more modules as their schedules permit. After completing all four modules, teachers may elect to register for graduate credit and complete a summary project in order to receive 3.0 semester hours in science education.

Modules are currently available for: K-2, 3-5, 6th, 7th, 8th, biology, chemistry, physical science, and earth/environmental science. Registration cost is \$40 per module.

Teachers who complete a 4-module course (Level I) have additional options:

1. Apply to serve as an on-line facilitator through the CSMTE
2. Continue professional develop at advanced levels in Advanced Pedagogy and Leadership

For further information, contact Karen Dawkins at dawkinsk@ecu.edu.

SITE: 6-12 Content Area Reading in Science and Mathematics

October 11-12, 2007 at the Carolina Center for Educational Excellence, Chapel Hill

This 5-day institute for teachers of grades 6-12 will focus on focus on strategies for increasing student learning in grades 6-12 by enabling them to cope more effectively with required reading and writing. Instruction will involve analyzing texts participants use in their classrooms, designing lessons to help students use those texts more successfully, and providing ways to use writing to enhance student learning. The examples used during the institute will focus on science and mathematics content, but the strategies are appropriate for any classroom teacher. This course will reflect the tenets of the Reading Apprenticeship program being used by the Science Section of the NC Department of Public Instruction.

Schools or school systems should pay for participant's registration (\$300) and two substitute days during the school year. Optional, but strongly encouraged, are stipends for teachers.

Registration will be on a first-come, first-served basis and is available at <http://unc.edu/depts/cmse/>. Registration deadline: May 1, 2007 or until the institutes

For more information, contact Pat Shane, 919-966-3092, pshane@email.unc.edu; Sally Adkin, 919- 416-2882, adkin@ncssm.edu; or Sherry Coble, 919-962-7232, scoble@email.unc.edu

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