4-H Science, Engineering, and Technology E-News
December 2010

4-H science, engineering, and technology (SET) projects engage youth in experiential and inquiry-based learning in a positive youth development environment. Through participation, youth improve their science, engineering, and technology knowledge, skills, and confidence. The goal of 4-H SET is to increase the number of youth pursuing education and careers in science, engineering and technology. [http://www.ca4h.org/Projects/SET/](http://www.ca4h.org/Projects/SET/).

REGISTER TODAY!
2011 4-H SET Workshops

Counties are invited to send a team of 4-H teen leaders, 4-H volunteers, 4-H staff, and afterschool partners to the 2011 4-H SET Winter Workshops. The workshops emphasize experiential and inquiry-based learning, providing practical examples of incorporating hands-on activities that invite youth exploration, promote active questioning, and application to the real world. These workshops will assist in increasing the knowledge, skills, competencies, and confidence levels of adult volunteers, teens and staff to provide engaging 4-H SET learning experiences. Flyer available at [http://www.ca4h.org/files/63643.pdf](http://www.ca4h.org/files/63643.pdf)

Locations and Curricula:
Humboldt County (Eureka)
- Biosecurity in 4-H Animal Science (presented by Sandy Sathrum), max 30 people
- Junk Drawer Robotics “Give Robots a Hand” (presented by Jessica Paine), max 25 people
Tehama County (Red Bluff)
- Youth Experiences in Science (presented by Rita Boyes), max 24 people
Butte County (Oroville)
- TechXcite: Discover Engineering “Quest for Speed” (presented by Matthew Portillo), max 40 people
Yolo County (UC Davis)
- There’s No New Water! (presented by Steven Worker), max 30 people
- Youth Experiences in Science (presented by Marianne Bird), max 24 people
- Biosecurity in 4-H Animal Science (presented by Martin Smith), max 30 people
Merced County
- Junk Drawer Robotics “Give Robots a Hand” (presented by Richard Mahacek), max 40 people
Santa Cruz County (Watsonville)
- TechXcite: Discover Engineering “Quest for Speed” (presented by Lynn Schmitt-McQuitty), max 30 people
Kern County (Bakersfield)
- There’s No New Water! (presented by John Borba), max 30 people
Los Angeles County (Mt. San Antonio College)
- Exploring your Environment (presented by Cynthia Barnett), max 30 people
- Biosecurity in 4-H Animal Science (presented by Steve Dasher), max 30 people
- TechXcite: Discover Engineering “Quest for Speed” (presented by Keith Nathaniel), max 30 people
GEMS Space Science Sequence


Interested in exploring nationally field-tested activities for teaching about the Solar System and beyond? The Center for Science Education at UC Berkeley’s Space Science Laboratory is pleased to partner with GEMS (Great Explorations in Math and Science) to provide professional development for educators on the GEMS Space Science Sequence for 6-8th graders. Teacher guides, background information, and interactive CD-ROMs (a $150 value!) will be provided to all participants. Kits including the materials for teaching the units will be available for future check out, free of charge. The workshop will be held January 8th and 22nd, 2011, 8:30am – 4:00pm (one single workshop spread over two Saturdays) on the UC Berkeley campus.

Mark your calendar for professional development opportunities in 2011:

- **State 4-H Field Day, May 28, 2011 at UC Davis** – Since 2002, the State 4-H Field Day takes place annually on the Saturday of Memorial Day weekend at the UC Davis campus from 8:00am until 6:00pm. The event is open to all 4-H members, volunteers, staff, and parents. During the event, 4-H members may participate in a variety of contests and educational activities. [http://www.ca4h.org/Programs/Events/SFD/](http://www.ca4h.org/Programs/Events/SFD/)

- **4-H State Leadership Conference, July 28 – 31, 2011** at UC Davis – “Oh, the Places You’ll Go!” The Conference brings together high school youth from across California in a four-day leadership training, networking, and learning experience. The conference will feature many 4-H SET educational sessions! Registration will open in April 2011. [http://www.ca4h.org/Programs/Conferences/SLC/](http://www.ca4h.org/Programs/Conferences/SLC/)

- **State 4-H Leaders’ Forum, November 11 – 13, 2011** at Asilomar Conference Center – “The Magic of 4-H – Transformation”. The Forum provides a weekend retreat for 4-H volunteers across California to gather for networking, education, relaxation, and fun. Registration will open in winter 2011. [http://www.ca4h.org/Programs/Conferences/SLF/](http://www.ca4h.org/Programs/Conferences/SLF/)

Expanding Trees and Ponds

Ages 10-14 years old
Free

The Educational Development Center (EDC), an innovative nonprofit, has created an excellent curriculum called “Exploring Trees and Ponds.” This year-long curriculum, organized in a set of downloadable .pdf files, is the result of a four year project supported by the National Science Foundation. This offers youth the perfect
opportunity to “learn-by-doing” through with a series of field trips, labs, and other fun activities surrounding this topic. Check out the curriculum at [http://treesandponds.edc.org/](http://treesandponds.edc.org/) and consider adopting this as a club activity for the year. Please feel free to contact 4HMT at 4milliontrees@gmail.com or Bernie Zubrowski at bzubrowski@edc.org if you are interested in organizing a training seminar.

**Project Butterfly Wings**  
Grades 4<sup>th</sup> – 8<sup>th</sup>  
$7.95  
[http://www.4-hmall.org/Category/4-hcurriculum-butterfly.aspx](http://www.4-hmall.org/Category/4-hcurriculum-butterfly.aspx)  
Youth explore butterfly habitats, learn how to identify common butterflies, become a citizen scientist and contribute data as they enter their findings on the web site. Youth create investigations to answer questions or solve problems and share their findings with others.

**Exploring Your Environment**  
Middle school  
$5.95  
[http://online.4-hcurriculum.org/curriculum/environment/](http://online.4-hcurriculum.org/curriculum/environment/)  
The National 4-H *Exploring Your Environment* series provides opportunities for youth to engage in learning about environmental science through hands-on, experiential learning experiences in the natural sciences and technology. In addition, facilitators are instructed in planning, managing and teaching environmental concepts to youth through indoor and outdoor activities on their own and with others.

### Resources

**Understanding Science** is pleased to announce the development of a new resource for their teachers’ area:  
**Educational research on teaching the nature and process of science.** Educational research suggests that the most effective instruction on the nature and process of science is explicit and reflective, and provides multiple opportunities for students to work with key concepts in different contexts. This document summarizes the methods and findings of 12 important studies from the education research literature. Find it at [http://www.understandingscience.org/teaching/educational_research.php](http://www.understandingscience.org/teaching/educational_research.php) or visit [http://www.understandingscience.org](http://www.understandingscience.org) to access this and many other tools for teaching and learning about how science works.

The **Coalition for Science After School** has launched [howtosmile.org](http://howtosmile.org), a database of science and math activities developed by leaders in the informal education field. SMILE stands for Science and Math Informal Learning Educators and provides activities that can be used in informal environments such as afterschool programs. The database includes activities such as spaghetti bridges, polyhedron cats, and a virtual tectonic vacation. Educators can register (it’s free to join!) and post their own activities too. If you register soon, you'll be entered for a chance to win an iPad!

The **Afterschool Alliance**, National AfterSchool Association and the National Summer Learning Association have pledged to make **2011 the Year of Science in Afterschool**. Through a generous grant from the Noyce Foundation, these three leading afterschool and summer learning organizations have made a commitment to promote STEM learning in afterschool and summer programs. Read more about this effort [here](http://www.understandingscience.org) or access a .pdf of their position paper "Afterschool and Summer Programs: Committed Partners in STEM Education".
The Internet offers a wide variety of **free online tools that 4-H Clubs can utilize**. Here is a sample of the technology tools you may want to think about using in your club!

- **Club websites** - To fulfill the need for increased channels of communication with the public and at the same time adhere to UC guidelines and policies, the State 4-H Office is recommending that clubs work with their respective county offices to post club information on the UCCE county website. This will allow only authorized staff to administer the site, provides for consistent and accurate information, and protects the privacy of leaders and members. Contact your 4-H Staff about hosting club information. Note: The county website must be using ANR SiteBuilder 3.

- **Doodle poll** – Allows you to create an online poll to schedule an event or make a majority decision. No registration required. Doodle polls provide a simpler way of communicating with a group regarding their availability (by day and time) for events, meetings, etc. [http://www.doodle.com/](http://www.doodle.com/)

- **Google calendar** – Provides users with an online calendar which can be updated and shared with others (members, volunteers, parents, etc.). This calendar tool provides options for customized notifications, invitations and RSVPs, offline access, and a mobile version on your phone. [http://calendar.google.com](http://calendar.google.com)

- **Adobe Connect** - A web conferencing tool for online meetings, eLearning, and webinars which provides an alternative to face-to-face meetings. Based on Adobe Flash technology, Adobe Connect allows participants to easily collaborate and share ideas online. Contact your 4-H staff to setup a meeting room for your 4-H club! [https://uc-d.na4.acrobat.com](https://uc-d.na4.acrobat.com)

- **Blog** – A website that is regularly updated with entries providing news and/or commentary, descriptions of events, and pictures or videos. Blogs allow readers to stay informed about various topics and provide an option for individuals to leave comments or contribute to blog discussions. Think about using a blog instead of a traditional once-a-month newsletter!

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**Events & Activities**

**Computer Science Education Week**  
December 5-11, 2010  
[www.csedweek.org](http://www.csedweek.org)  
This week aims to eliminate misconceptions about computer science, communicate the endless opportunities for which computer science education prepares students, and provide information and activities for students, educators, parents, and corporations to advocate for computer science education at all levels. You can pledge your support and share your plans at [www.computinginthecore.org](http://www.computinginthecore.org); follow CSEdWeek on Facebook and Twitter to share information through your networks; or celebrate CSEdWeek in your school, club, or workplace.

**Festival of Science**  
At the State 4-H Field Day on May 28, 2011 at UC Davis  
[http://www.ca4h.org/Projects/SET/Initiative/Questions/](http://www.ca4h.org/Projects/SET/Initiative/Questions/)  
Curious about how things work? Want to know more about something? At the 2011 California State 4-H Field Day, University scientists will answer your questions! Provide your question ahead of the event and we will find the right scientists to provide an answer.
4-H Science Video Challenge
Entries due by January 31, 2011.
www.4-h.org/videochallenge
National 4-H Council, National 4-H Headquarters, and University of Arizona 4-H Youth Development, invite all 4-H professionals, staff and volunteers to produce their own digital video for front-line educators and volunteers. We are looking for bold, creative, and exciting videos to help educate facilitators about how to implement 4-H science and illustrate inquiry-based learning approaches to helping youth learn and master science content. The purpose of this contest is to build a vault of films to show great 4-H facilitation and learning in practice. If you have any questions, please contact Kirk Astroth at kastroth@cals.arizona.edu.

Caring for our Watersheds
Due February 11, 2011
www.CaringForOurWatersheds.com
Open to high school students in Sacramento, Yolo, Solano, Colusa, Yuba, Sutter, Glenn, El Dorado, and Placer
The Caring for our Watersheds program (CFW) is an environmental writing competition that asks high school students to answer the question, "What can you do to improve your watershed?" Students must research their local watershed, identify an environmental concern, and come up with a realistic solution in a 1,000 word proposal. Ten finalists will present their ideas to win up to $1,000 cash rewards for themselves and their schools. Schools also receive cash for every ten complete proposals submitted.

Young Naturalist Award
Deadline due by March 1, 2011
http://www.amnh.org/nationalcenter/younghanaturalistawards/index.html
The Young Naturalist Awards from the American Museum of Natural History is an inquiry-based science competition for students in grades 7-12 to promote participation and communication in science. The theme of the Young Naturalist Awards is the same each year: "Scientific Discovery Begins with Curiosity!" Students choose a topic in biology, ecology, Earth science, or astronomy and go to an area where they can explore their topic.

California 4-H Photography Contest and Film Festival at the 2011 State 4-H Field Day
http://www.ca4h.org/Programs/Events/SFD/
Start thinking now about the photography contest and film festival being planned for the 2011 State 4-H Field Day on May 28, 2011 at UC Davis. The California 4-H Technology Leadership Team will release the themes for both events in January 2011. Both are open to all 4-H members (age 9 through 19). For more information, please contact: Photography Contest, John Trammell at techdude4h@gmail.com and Film Festival, Ashlyn Aiu at singthislouder@gmail.com.

Special Recognition at the 2011 State 4-H Presentation Day
May 28, 2011
http://www.ca4h.org/Programs/Events/SFD/PD/Recognition_Opportunities/
A special recognition pin will be awarded for youth who participate in State Presentation Day and focus their presentations on science, engineering and technology! This year’s focus is on the natural properties and the human interactions with water. Potential topics include water quality, conservation, water cycle, effects on plants and organisms, water in cultural contexts, human impacts on water, phases and/or properties of water, storage and transportation.
Funding Opportunities

Please note: University policy requires a 4-H Youth Development Advisor or County Director to submit all grant applications and fulfill the requirements of UC ANR Contracts & Grants. For more information, please contact Steven Worker, CA 4-H SET Coordinator at smworker@ucdavis.edu.

GEAR-Tech-21

Due in December
http://4hset.unl.edu/4hdrupal/node/165
GEAR-Tech-21 is announcing mini-grants to host robotics and GPS/GIS youth camps in 2011. This is your chance to get GEAR-Tech-21 started in your area or to continue an existing club program. Your site must host a GEAR-Tech-21 summer camp that includes robotics, GPS, and GIS activities for at least 10 youth participants. GEAR-Tech-21 will provide training for camp staff and assist in finding equipment, software and other resources. Camp funding is limited to participant costs and will cover up to $75 per participant for Year 1 camps and up to $100 for Year 2 camps.

Around the State

In Siskiyou County: Siskiyou County achieved top participation in this year’s 4-H National Youth Science Day with the highest participation levels of youth reporting back their results at www.4-H.org/NYSD. To recognize their participation, Siskiyou County will be receiving a $500 award to use towards their county’s science, engineering and technology programming.

California was one of thirty-nine states to receive a $1,500 4-H Science Implementation Grant to support 4-H Science programming. Each grant is designed to prepare staff and volunteers to achieve their 4-H Science Plan of Action goals through trainings, webinars and orientations. The University of California will be using this grant to implement the February 5th SET workshops in Humboldt, Butte, Tehama, Yolo, Merced, Santa Cruz, Los Angeles, and Kern County.

In Sacramento: Over 200 youth at multiple afterschool locations participated in the 4-H Water Wizards project. The project helps youth learn about water and the environment, water properties, and conduct a service learning project in their watershed. More information is available at http://cesacramento.ucdavis.edu/4H/4-H_Water_Wizards.htm

Did you participate in the 2010 4-H National Youth Science Day in October? The 4-H National Youth Science Day is an opportunity to promote 4-H while sparking the interest of youth in learning more about 4-H science, engineering, and technology activities. The 2010 National Science Experiment, 4-H2O, focuses on water quality and climate change. Read about events that took place around California at http://www.ca4h.org/News/Impacts/?story=12&showall=yes.
At the State 4-H Leaders’ Forum at Asilomar in November, over 150 4-H volunteer leaders participated in SET workshops and the Saturday Science fair! At the fair, 10 4-H SET curricula were on display with an activity that participants could enjoy. At the TechXcite table, participants built cars from K’Nex; and the Power of the Wind table, adults built sailboats; at the YES table participants tried various bubble solutions; at the Water Wizards table adults conducted basic water quality tests; the remainder of tables had other exciting activities!