

Science News You Can Use

UMASS Collaboration

ARHS Physics teachers are teaming up with researchers from the Scientific Reasoning Research Institute (SRRI) at UMASS to investigate different ways that computer-based physics simulations can be used in the classroom. This research project, called “Teaching for Understanding,” is part of a multi-year investigation funded by the National Science Foundation. One of the long term goals is to develop a set of “best practices” for using these simulations in the classroom.

The study involves observations and videotaping of classes by researchers from UMASS, and interviews with teachers and students. Benefits for teachers and students include the development of new methods for using technology, and assessment instruments to measure student understanding.



Main Idea

Astronomy Donation

Our astronomy program received a donation of a Celestron telescope from Ms. Sara Steingiser, a former ARHS Parent. The donation gives us two telescopes to use for our night sky observation sessions. Ms. Terry Leatart, Math/Science Study Center teacher, also shares her telescope with us regularly. This Fall, students were able to view Jupiter and its moons, the rings of Saturn, craters on the Moon, binary stars, the Andromeda Galaxy, and the Ring Nebula. We thank our donors!



Main Idea

National Award for 9th Grade Science

ARHS has received a \$5000 competitive grant from the National Environmental Education Foundation, in conjunction with The Weather Channel, for the 9th grade Ecology / Environmental Science course. The particular series of lessons recognized engage students in investigating “*How many trees equal one car?*” To answer this question, students participate in hands-on investigations to determine how much carbon the school forest stores in one year, and how much carbon is emitted by the school’s transportation use during a school year. The units integrate mathematics with physical and biological concepts.

Funding from the grant supports the purchase of carbon dioxide sensors for field use, as well as curriculum planning time. ARHS is one of 16 schools across the country that will be showcased as a national model for how to infuse environmental content into high school curricula.

Opportunities in Science

Each year, ARHS students participate in special science programs, internships, or summer institutes. We keep a file of these opportunities in Rm. 218, or list them on the Daily Announcements.

If you work in the science field and are willing to have a student intern, please contact Ms. Mary McCarthy, Science Department Head mccarshm@arps.org with the details. Thanks!

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Science MCAS Now Required

All students, beginning with the Class of 2010, must pass a Science MCAS in order to graduate from high school. This test will be administered to sophomores and other students who need to pass the test in early June. Most ARHS students will take the MCAS in Biology. [Note: Sophomores currently enrolled in Chemistry / Honors will take the test in Chemistry.]



The following links will bring you to the released questions from the 2008 MCAS, as well as an answer key. Students can use these questions to review concepts and practice for the test:

For Biology:

<http://www.doe.mass.edu/mcas/2008/release/ghsbio.pdf>

For Chemistry:

<http://www.doe.mass.edu/mcas/2008/release/ghschem.pdf>



Main Idea

Future Medical Leaders of America

This club, advised by Ms. Kathy McCarthy, is open to students interested in a career in any medical field, from veterinarian to physical therapist to DNA researcher. A recent speaker was Dr. Harry Bermudez, a research scientist working at UMASS through a grant from the Armstrong Fund for Science, whose area of research is the identification of specific protein molecules on the outside of a human red blood cell. Students learned that these proteins identify what is "self" to our immune systems; and that if we can identify and replicate the proteins, it might be possible to develop ways to prevent the human body from rejecting transplants. Club members are exploring special topics in medicine and planning an awareness week (for a specific medical topic, such as A.I.D.S.) in the Spring.



Interested in Solving Real-World Engineering Problems? Join JETS!

In the annual TEAMS competition, run by the Junior Engineering Technical Society, students grades 9-12, working in teams, apply math and science concepts while solving some of today's greatest engineering challenges. More than 14,000 students compete each year in this fun, fast-paced competition which inspires creativity, teamwork, critical thinking and valuable insight into the world of engineering.

Our students have been competing for over 20 years; in that time, we have ranked in the Top Ten of our division in the national competition 18 times. Last year, ARHS was selected to be the first high school coach and team ever highlighted in *The Pre-Engineering Times*. This year's competition will be held on Saturday morning, March 7, 2009. Contact Dr. Blauner for more information (Room 223 after school, or e-mail her at blaunerp@arps.org). More information is available on our website: <http://www.arps.org/users/hs/blaunerp/JETS.html>

This Month, My Child Might:

- In *Chemistry*: Isolate pure silver from a chemical reaction
- In *Biology*: Use a light microscope to examine creatures living in a pond
- In *Physics*: Design a roller coaster
- In *ChemCom*: Model water treatment by filtering 'dirty' water
- In *Ecology*: Study the nitrogen cycle using soils collected from the ARHS Experimental Forest
- In *AP Biology*: Match DNA samples to 'suspects' through gel electrophoresis
- In *Environmental Science*: Study how invasive plants affect biodiversity
- *Anatomy & Physiology*: dissect rats!