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Newsletter Editor: David A. Young, PhysTEC Teacher In Residence. Please contact me with comments and suggestions, Dept. of Physics, University of Arkansas at Fayetteville, Fayetteville, AR 72701; dyoung7@uark.edu or visit http://comp.uark.edu/~dyoung7/.

Featured Physics Department:

The Physics Department at the University of Arkansas at Fayetteville would like to start featuring physics departments at different high schools across the state in their newsletter. In this first try we will examine the Physics department at Fayetteville High School, East Campus, in Fayetteville. Please send us a suggestion for another physics department to be featured in our spring newsletter.

The FHS Physics Department has three teachers, Mark Thompson, Mary Wise, and David A. Young. Mark was the replacement teacher for Marc Reif last year as he served as the PhysTEC TIR and he was hired to replace Marc after he took a teaching job in Rhode Island. Mary is David A. Young s replacement teacher, as he does the TIR at the University of Arkansas at Fayetteville for the 2003-2004 school year. Both Mark and Mary are graduates of the University of Arkansas at Fayetteville PhysTEC program, holding degrees in Physics, and both are doing the Nontraditional Licensure with the state. David A. Young has a Masters of Science in Physics and has taught physics periodically since teaching at Springdale High School in Springdale (84-87). He has taught at the Arkansas School for Mathematics and Sciences and was the K-12 District Mathematics Coordinator in Fayetteville.

FHS has 5 sections of physics this year. They offer three courses in physics: Physics A, AP Physics B, and AP Physics C. Traditionally students are allowed to take any of these as their first course in physics, but they are encouraged to take a two-year sequence in physics. In addition FHS will be trying to teach both the Mechanics and E/M parts of APPC in this school year. They have been using the Modeling philosophy from ASU (Arizona) and about half of the students enrolled in each AP course take the AP test in May. Activities the department is engaged in include: Lunch and Learn, a series of talks from guest speakers that occur during the lunch/activity period. They cablecast these live on the Educational Access channel of the local cable system. Plans are in the works to send these talks across the Distance Learning network in the state. If you have access to VNET (http://www.ardla.org/nwdemap.htm) or other distance learning facilities, please contact FHS for times and connection. They are also videotaping each speaker; so if you would like a copy of a particular presentation, please let them know. More info may be had at http://fayar.net/east/teacher.web/science/mthompson/LUNCH&LEARN.htm. Additionally the FHS Physics department takes part in the West Point Bridge Building Contest (http://bridgecontest.usma.edu/), has a rocket building aspect to their curriculum that culminates with Rocket DAY in November where teams of students will launch their Estes rockets, and measurements are collected. In the spring the department takes the students to the ice rink at the Jones Center in Springdale where the kids will conduct experiments of their own design. Physics On ICE focuses on students synthesizing their learning of physics to date and utilizes the frictionless nature of ice.

Through a grant the Physics and Mathematics departments received a few years ago (Verizon/GIFT) they have two ibook laptops equipped with Firewire and two digital video cameras. They use this equipment with Video Point to analyze different experiments that are videotaped. The department will occasionally use the Resource Room Officer and her Police Car to gather data on motion and since the mathematics department requires the students to have TI graphing calculators, they use the CBL2, and LabPro data collection devices as well as the Vernier Graphical Analysis, probes, and Logger Pro using the USB and/or ULI interface. They also have and use TI Interactive! and Interactive Physics for investigations. In the future the department is hoping to add an additional physics course, Physics X, which will focus on particular aspects of physics like Biophysics or Acoustics as the canvas to learn the concepts of physics in a first year course. In addition they are looking at forming an Astronomy Club and then developing a course in Astrophysics. For additional information contact mthompson@fayar.net.

PhysTEC TIR:

As the University of Arkansas at Fayetteville moves into their 3rd year of the PhysTEC program, last year s TIR (Teacher in Residence), Marc Reif has been replaced by David A. Young. Reif has moved on to teach physics in Rhode Island (Cranston West HS) near Providence in Rhode Island. His new email is mreif@cpsed.net. David A. Young is being supplied to the program by Fayetteville High School, marking the school district s second year of collaboration with the UofA@F.

The PhysTEC program is designed to improve the science preparation of future K-12 teachers. It aims to help physics and education faculty in colleges and universities work together to provide an education for future teachers that emphasize a student-centered, hands-on, inquiry-based approach to learning science.

The TIR program is one of the Six PhysTEC Program Components:

- A long-term, active collaboration among the physics department, department of education, and local schools.
- A Teacher-in-Residence (TIR) program that provides for a local K-12 master teacher to become a full-time participant in assisting faculty in course revisions and team-teaching, and to act as a reality check for both preservice teachers and university faculty. In addition the TIR mentors her replacement teacher as well as other new physics teachers, works with the Methods classes in the MAT program exploring Inquiry and technology as we assist new teachers in integration the science standard in K-12 science instruction.
- The redesign of content and pedagogy for targeted physics courses based on results from physics education research and utilizing appropriate interactive technologies.
- The redesign of content and pedagogy for elementary and secondary science methods courses with an emphasis on inquiry-based, hands-on approaches to teaching and learning.
- The participation of physics faculty in the improvement and expansion of school experiences for their students.
- The establishment of an Induction and Mentoring program conducted by TIRs and other master teachers to provide a valuable induction experience for novice science teachers.

If you are interested in being a TIR for the 2004-2005 school year, or in the future, please contact David or Dr. Gay Stewart at the UofA@F. More information about the project may be found at http://www.uark.edu/depts/physinfo/phystec/home.html.

High School Physics Day Registration Form:

Teacher's Name_____ **School**_____

School Address _____ **Teacher e-mail(s):**

City/State/Zip/Phone_____

We are PreRegistering _____ students @ $2.00 each for a total amount of $_____

Make checks payable to the UofA@F Physics Department by March 22, 2004. Check each Contest your school will compete in and indicate the number of teams you will have for each event. Please print student names on the back of this form if known:

☐ Water Rockets, # of Teams:___; ☐ Photography, # of Teams:___; ☐ Egg Drop, # of Teams:___

☐ Physics Quiz Bowl; ☐ Archimedes Boat, # of Teams:___; ☐ Physics Demonstrations, # of Teams:___

Arkansas High School Physics Teachers Alliance: After working last year to build an alliance of physics teachers in NorthWest Arkansas, we are now ready to try to form a statewide collection of teachers who have an interest in the teaching of High School Physics. Our first event will be a meeting at the Arkansas Conference on Teaching 2003 (ACT 2003) in Little Rock. We will meet from 5:10 pm to 6:00 pm in the Peabody Peak room at the Peabody Hotel in Little Rock on Thursday November 6, 2003. After the meeting we will move to the reception (don t forget to sign up for this) in the Exhibit Hall to continue our discussions and networking. At this meeting we will informally share what we are doing, complete a survey and collect email and snail mail addresses. If you can t attend, send someone in your place, or visit our web page at http://comp.uark.edu/~dyoung7/Alliance.htm. On the web page you will find our database of names and emails, the survey as well as other information of interest. Some of the goals of the alliance could be to meet periodically across the state, give support in teaching physics, identify and use the PTRAs in the State and surrounding area, and collaboration on grants. If you have ideas or needs, please plan to attend or visit the web page and fill out the survey.

Resources and Other Information:

CMASE/NASA: The UofA@F is host to this support entity. They have information on what the university can provide the classroom teacher, support the Regional Science Fair, have a NASA dissemination Center and coordinate the University Day (February 20, 2004). For more information contact Lynn Hehr at lhehr@uark.edu or visit http://www.uark.edu/~k12info/.

AAPT AOK Sectional Meeting: November 7-8 in Manhattan Kansas. Visit http://web.phys.ksu.edu/AOK_2003/ for registration information. 2001 Nobel Prize winner, Carl Wieman will speak on Friday afternoon.

The Periodic Table: Steve Long of Rogers let us know of the Chemical & Engineering News 80th anniversary issue featuring the periodic table and stories of the elements. Access it at http://www.cen-online.org. Teachers may request one free print copy by sending an email to Victoria Gilman (v_gilman@acs.org).

AP web support: We are helping with evaluation of web pages in the support section of the AP Physics part of AP Central (http://apcentral.collegeboard.com). Sign up for free access and find all types of help with teaching physics at the high school level.

Professional Membership: Don t forget to join AAPT (http://aapt.org/), NSTA (http://www.nsta.org/), SSMA (http://www.ssma.org/) and ASTA (http://www.aristotle.net/~asta/). See the AAPT web for grants and contests.

Lacy s Telescope: Don t forget to sign up and use the telescope on top of Kimpel Hall over the web. Dr. Lacy has lesson plans you can use, or you can just request a view of the universe. Check in at http://ursa.uark.edu/ursa.tele.html and email clacy@uark.edu.

UofA@F Physics Department s Database of Physics Demos: Link to these at http://physics.uark.edu/demos/. This is a searchable collection of demonstrations for teaching various types of physics with support documents.

APS Physical Review FOCUS: Learn about the latest in science in a form that your kids can embrace at http://focus.aps.org/.

BEST: If you didn t get to have a team this year, check out the program at http://www.meeg.uark.edu/best/. It is great fun and kids can learn a bunch of physics and about how to work on a team.

Dates:

Science Fairs: State - UCA April 2-3, 2004; International - Portland, OR, May 9-15, 2004

APPC and APPB Exams: May 10, 2004 PM

Important Deadline: March 1, 2004 is the deadline for Physics scholarship applications. Call, write or see http://www.uark.edu/depts/physics/undrgrad/scholar2.html.

HIGH SCHOOL PHYSICS DAY

The University of Arkansas Department of Physics will host its annual High School Physics Day on **FRIDAY March 26, 2004.** The faculty and members of SPS (Society of Physics Students) invite students and teachers from your high school to participate. Note that a small registration fee is required, which includes a pizza lunch, making the fee well worthwhile. Checks may be made payable to Department of Physics . There will be prizes in every category, and a classroom prize for the best school overall. We hope that this day will encourage the pursuit of physics as a career itself or as a valuable asset to a large number of possible careers by providing an opportunity for detailed projects to be carried out in a light-hearted (and hopefully light-landing) manner. We also hope to give students and teachers from across the state an opportunity to get acquainted, better inform them about our undergraduate physics programs, and show that fysics is phun.

SCHEDULE OF EVENTS AND RULES

8:30 - 8:45	Registration	12:30 - 1:30	Boat Contest
8:45 - 9:00	Introduction and welcome	1:30 - 2:30	Physics Quiz Bowl
9:00 - 10:00	Rocket Launch	2:30 - 3:30	Egg Drop
10:00 - 11:30	Demonstration Contest, tours of research labs	3:30 - 4:00	Physics at U of A, Fayetteville
11:30 - 12:30	Lunch provided by SPS	4:00 - 4:30	Awards ceremony

EGG DROP: No restraining devices or aerodynamic devices may be attached to the container. The container itself may not be an aerodynamic device. The maximum height of drop will be 60 to 80 feet. The winner is the container with the most eggs surviving the drop. In the event of a tie, the container with the least volume wins. Each container must hold **two** raw, unfrozen, untreated/unsprayed chicken eggs. Please bring your own eggs. Containers may be of any material but must fit into a cube 50 cm on each side. Containers which may chip the asphalt target will be disqualified. The containers must be opened to check the eggs after the drop. Unbroken eggs will be broken to determine if qualified. **Limit 3 entries per school.**

PHYSICS DEMONSTRATIONS: Design a demonstration that illustrates physical concepts or phenomena and enter it into the contest. The design must not have been presented or judged previously. It will be judged for originality and fidelity to the physical principles that are being illustrated.

PHYSICS PHOTOGRAPHY CONTEST: Entries are limited to one photograph per person, and must be the work of the entering student. Black and white or color, traditional or digital photographs are allowed. Photos should be submitted as 8" x 10" or 8.5" x 11" prints. An essay of 250 words or less describing the physics in the photo should accompany the submission. The essay should have a title and must be written by the student.

PHYSICS QUIZ BOWL: Each school may enter one team with up to four students. The game will consists of 7 Toss Up Questions and will follow the AGQBA rules for the 2nd Quarter game with Bonus with the exceptions of having a set 7 toss up questions and up to 7 Bonus round with 4- parts. The scoring will be 10 points for each toss up and 5 points for each part of the Bonus. Teams will play based on random draw and the point total will determine the final standing. If time permits we will have the top two teams play for 1st place. All other teams will pay only one game. **Limit 1 team.**

ROCKET LAUNCH: Students will modify a 2-liter soda bottle to be launched with a specified amount of water at a specified air pressure. Rockets will be judged for greatest time aloft and originality of design. **Limit 3 entries per school.**

ARCHIMEDES BOAT CONTEST. Each team will construct, on site, a boat using only a 300 mm by 300 mm piece of Aluminum Foil. We will provide the foil and the pennies. Your goal is to make a boat that will carry the most pennies. The boat must float for at least 77 seconds to count as carrying the pennies. Your team will have a limited amount of time to build, float and load your boat. **Limit 3 entries per school.**

HOW TO PARTICIPATE: Please fill out the registration form and return before Monday, March 22, 2004. Awards will be given for first, second, and third place in the five competitions. Entries by **individual** high school students and by **teams of two** members are welcome for all contests except the Quiz Bowl. Provisions will be made so that each team member receives an award. Everyone is encouraged to participate but anyone can come to observe. Judges' decisions are final. In the event of a tie, the points will be split between the teams.

NEWSLETTER
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