



AUBURN UNIVERSITY

COLLEGE OF SCIENCES
AND MATHEMATICS

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E=mc²

Engaging More Community Connections

A Science and Math Outreach Newsletter

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Upcoming Events & Programs:

G.U.T.S.

Getting Under The Surface

Schedule of Events

- September 10—Science Investigations
- September 11—Arboretum Days: Aliens!
- September 28—G.U.T.S.
- October 8—Science Investigations
- October 9—Arboretum Days: Pollination (with JCSMFA)
- October 17—War Eagle BEST Mall Day
- October 21—G.U.T.S.
- October 29—War Eagle BEST Game Day

Fall 2010 G.U.T.S. Dates

Tuesday, September 28

Thursday, October 21

Thursday, December 2

This year's Getting Under The Surface (G.U.T.S.) program will begin on September 28th. We are excited to announce that we are offering many brand new courses for the fall! As always, the \$18 G.U.T.S. registration fee will include a snack and all course materials for each student/adult pair per session. For descriptions of our September 28th courses and information about registration visit the COSAM Outreach website at www.auburn.edu/cosam/outreach. See the legend at the left for all Fall 2010 G.U.T.S. dates.

We look forward to seeing you at our Fall G.U.T.S.!



Arboretum Days

The College of Sciences and Mathematics would like to invite all science enthusiasts to participate in the Arboretum Days program this fall at the Donald E. Davis Arboretum! Arboretum days will begin at 9:00 AM on the first Saturday of September, October, and November. Each program will consist of a one hour nature-based activity lead by AU faculty and other qualified instructors. Programs are designed for children ranging from Pre-Kindergarten through 5th grade. Pre-registration is encouraged, and registration forms can be found on the Arboretum website: www.auburn.edu/arboretum/

September 11: Aliens!

October 9: Pollination (2-hour program in conjunction with the Jule Collins Smith Museum of Fine Art)

Parents' Night Out

Are you tired of never having "alone time" to spend with your spouse? Consider Parents' Night Out, a new event being offered by our office. Parents' Night Out is an educational childcare event for children ages 6-12. Participating children will be able to experience science-based activities and entertainment, such as building structures with K'Nex kits, watching *The Magic School Bus*, and playing science games and puzzles. Our first Parents' Night Out will be **Friday, October 1**, from 6:30 PM until 10:00 PM. There will be a fee of \$20 for the first child in each family and \$15 for each additional child. Pizza will be served. If you are interested in registering your child or children for this event, please visit our website to access the registration form.

Please visit our website for a complete listing of all our programs!

www.auburn.edu/cosam/outreach

For up-to-date program information from the COSAM Outreach Office, sign up for our listserv, AU4kids. To become a member, send an e-mail to cosam_outreach@auburn.edu

Upcoming Events & Programs, cont'd:

War Eagle BEST

Each fall, students from central Alabama and west Georgia gather at Auburn University to compete in a robotics competition called BEST. BEST (Boosting Engineering and Science through Technology) is a non-profit, volunteer-based organization whose mission is to inspire students to pursue careers in engineering, science, technology, and math through participation in a sports-like, science-based and engineering-based robotics competition. BEST is designed to engage students through teamwork, self-directed learning, apprenticeship, and problem solving. Students participating in BEST are responsible for all the work involved in designing, building, and operating a robot. Team mentors—engineers, technical professionals, and scientists from industrial backgrounds—serve as guides to shepherd the students through the engineering design process.



WAR EAGLE
BEST

To participate in BEST, each team of students must design and build a radio-controlled machine that can accomplish several pre-defined tasks in a game-type format. Six weeks before the competition, the teams gather for Kick-Off Day in September at local competition sites called hubs. At Kick-Off, each team receives identical kits of equipment (motors, r/c units, batteries, etc.) and raw materials from which to build their machines. The robots they create cannot weigh more than 24 pounds, must fit within a 24-inch cube, and must be built only from the raw materials supplied by the hub.

The BEST competition is held each fall at 40 different locations across the country. BEST is currently the second largest educational robotics competition program in the United States with over 12,000 students at 700+ schools—public, private, and home schools—participating each year. Auburn University is currently the National Headquarters for this rapidly-growing program. The BEST program is FREE to participating schools, thanks to generous sponsorship from higher education institutions and industry in Alabama.

Teams participating in the 2010 War Eagle BEST Competition:

A-2-Z Homeschool	Lee-Scott Academy	Randolph County Schools
Benjamin Russell High School	Loachapoka High School	Selma High School
Brewbaker Technology Magnet High School	Mellow Valley Christian Academy	Smiths Station High School
Chambers County Career Tech Center	Millbrook Middle/Jr. High School	Southside Middle School
Episcopal Day School	Montgomery Catholic Prep School	Springwood School
First Assembly Christian School	Northside High School	Stanhope Elmore High School
Holtville High School	Opelika High School	Wetumpka High School
Jordan High School	Opelika Middle School	Woodland High School
LAMP		

Dates for the 2010 War Eagle BEST Competition:

September 19 - Kick-Off Day

Teams receive kits and game rules and begin working on the design of their machines.

October 17 - Mall Day

Teams meet at Colonial Mall in Auburn to test their robot designs on a fully-functional, full-sized playing field.

October 29-30 –War Eagle BEST Game Day

Teams meet at the Student Activities Center to compete for the title of War Eagle BEST Champion.

**The general public is welcome and encouraged to attend both Mall Day and Game Day. Come support the teams as they put their robots to the test! All events are free to attend.

For more information about BEST, please visit the BEST Inc. website at www.bestinc.org or the War Eagle BEST website at www.wareaglebest.org.

Experiment of the Month

Think of it as a science burrito...

Anyone can stack blocks, boxes, or books, but only those with a steady hand and a little understanding of chemistry can stack liquids. What if you could stack different liquids in different layers? Think of it as a science burrito.

Materials:

Light corn syrup
Water
Vegetable oil
Colored dish soap (such as blue Dawn)
Rubbing alcohol
Honey
A clear glass
Food coloring
Several small cups



Procedure

1. Measure out small amounts of each liquid (about 8 ounces) into the small cups.
2. Add food coloring to the liquids. Each liquid should be a different color. *Note: Vegetable oil and honey will not be very easy to color. You can leave these two liquids in their natural state to avoid a big mess.
3. Pour the liquids from the small cups into the clear glass in the following order: honey, corn syrup, dish soap, water, vegetable oil, and rubbing alcohol. *Note: It is important to pour all liquids slowly and directly into the center of the glass. The liquids should not come into contact with the sides of the glass while pouring. It is okay if the liquids mix a little as you pour. They will separate again.
4. As you pour, the liquids will layer on top of one another. After all the liquids have been poured, you will have scientifically stacked six different liquids. It's a science burrito!

The Science Behind It...

To understand this experiment, you will need to know a little about density. Scientifically, density is defined as mass per unit volume (density = mass/volume). Consider this example: Think of two rooms that are exactly the same size. Now put 10 people into one room, maybe all your friends from school or all the teachers that you know. Think about how much space everyone would have to move around. Don't forget about the other room, though! Instead of 10 people, put 250 people in the other room. They're really packed in there! Think about how much room each of those 250 people would have to move around. Probably not very much room at all. Since density is mass per unit volume, and the volumes of the two rooms are the same, the room with 250 people in it has more mass per unit volume and is, therefore, more dense. Have you ever wondered why ice floats on water? Since they are both the same substance, you would think that they would have the same density values. However, the molecules in liquid water are more tightly pressed together than the molecules in ice. That's why the ice floats! It's less dense! Differences in density allow you to stack liquids in this experiment. Vegetable oil and rubbing alcohol are less dense than honey and corn syrup. That's why the liquids will float on one another in colorful layers!

Engaging More Community Connections



Since last issue ...

Science Matters

The new **Science Matters** summer enrichment program for elementary students was a great success! Approximately 125 students in grades 2-5 participated in seven weeks of science-themed activities and field trips. The program received overwhelming positive feedback from both parents and students alike. 94% of parents reported that they were interested in sending their child to Science Matters again next summer, and 97% reported that they would recommend the program to other parents. As a result, we will be offering **Science Matters** again in Summer 2011, so be on the watch for the registration form after Christmas break! Below are a few photos from this summer's program. Check out our YouTube site (<http://www.youtube.com/watch?v=DAX2PW19mlc>) to see video footage from each week of **Science Matters**!



Science Matters Themes

June 1-4
Earth and Worms

June 7-11
NASA Design Squad

June 21-25
Rocket Challenge

June 28-July 2
Art in Science

July 6-9
BizWorld

July 19-23
Soda Pop Science

July 26-30
Furry Friends



Since last issue... cont'd

Summer Y.E.S.

Fifty students in grades 6-9 participated in Summer Y.E.S. this past July. Each student attended two of the five courses that were offered: River Creatures, CHAOS (Chemistry And Other Sciences), Robots and Avatars, Art in Science, and Krashers.



SWSM Women's Leadership Symposium

The Society for Women in Science and Mathematics' (SWSM) 2010 Women's Leadership Symposium was, once again, a great success. Fifty female students and teachers from surrounding high schools including Lee-Scott Academy, Loachapoka, Wetumpka, Stanhope-Elmore, and Erickson Academy joined AU faculty and community members of SWSM for the symposium. Through this and many other activities, SWSM fulfills its mission of being leaders and role models committed to increasing awareness of opportunities available for women in the field of sciences and mathematics, as well as providing support to ensure success.

College of Sciences and Mathematics K-12 Outreach

315 Roosevelt Concourse
131 Science Center Classrooms
Auburn University, AL 36849
Ph: 334-844-5769
Fax: 334-844-5740
E-mail: cosam_outreach@auburn.edu



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