AUBURN UNIVERSITY

COLLEGE OF SCIENCES AND MATHEMATICS

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Engaging More Community Connections

Volume 8: Issue 3

COSAM Outreach Newsletter Summer Round-Up 2016

Inside

Current Events & Programs:

AU Science Café

4th Tuesday of each month (next is August 23rd)

Next Topic: "Drones, Fish, and Waterfalls!" – Dr. Armbruster (Biology)

The AU Science Café is a **new**, monthly program offering members of the nearby Auburn-Opelika community the opportunity to sit down and talk about new and exciting science and technology with scientists in our community, all the while relaxing in a great local food and drink venue. The event is **free** and open to the public. **No science background is required, and no question is too silly to ask!**

The café is generally held the 4th Tuesday of each month from 6:30-7:30pm at Mama Mocha's Coffee Emporium. For directions, the topic schedule, and further information, visit us online at http://auburn.edu/cosam/sciencecafe .

Student Programs

Volume 8: Issue 3

COSAM Outreach has been busy this summer getting students engaged in science! Here's a quick round-up of our student programs:

Science Matters

Science Matters is a summer enrichment program for elementary students in rising grades 1-8 offering youngsters a supercharged science experience. The program allows participants to explore the world of science through real experiments, technology and art projects, and hands-on, make-n-take activities. This summer we hosted a total of 171 young scientists over 20 courses! For more info, visit us online at http://auburn.edu/cosam/sciencematters .

Outreach Calendar

August

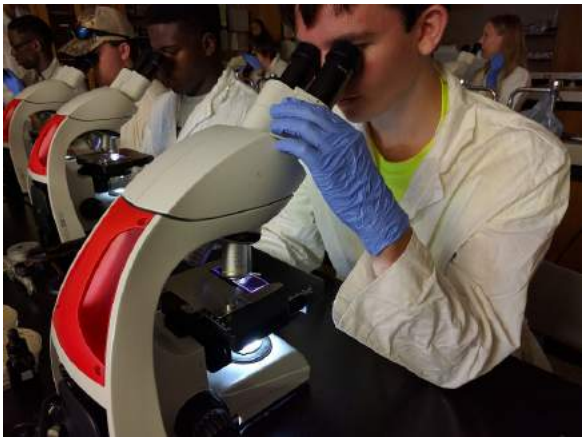
- 16 First day of classes - AU
- 23 August Science Café
- 24 War Eagle BEST Kickoff

September

- 25 War Eagle BEST Mall Day
- 27 September Science Cafe

Summer Science Institute (SSI)

SSI is a summer program for outstanding students who are currently in the 10th or 11th grades and are interested in science and mathematics. Students engage in real-world applications of science, perform experiments using cutting edge research equipment, and partner with COSAM researchers to gain lab skills not taught in high school. This summer we hosted 26 brilliant students over two week-long sessions! For more info, visit us online at http://auburn.edu/cosam/ssi .



Drone Camp

Drone Camp is a week-long camp for rising 7th-9th grade students interested in learning about the world of quadcopters, drones, and UAVs. Participants learned about the basics of flight, the anatomy of a drone, different uses of drones in research and industry, as well as how to program and pilot their drone to fly through an obstacle course designed by the participants. This summer we piloted 20 new drone aviators through the course! For more information, contact TJ Nguyen at tcn0002@auburn.edu .

Our summer also had plenty of opportunities to equip teachers with further skills in the classrooms! Here's a quick snapshot of the impact we've had:

AP Summer Institute

The AP® Summer Institute Workshop is designed to aid the professional development of teachers, counselors, and administrators who are involved with Advanced Placement (AP®) courses. For more info, visit the AP Summer Institute online at http://auburn.edu/apsi.

- *Teachers Trained:* 242
- *Courses:* AP Computer Science, Biology, Chemistry, Calculus, Physics, and History

PLTW teachers practicing a forensic autopsy (above)

FLIP

The FLIP (Flipped Learning and Instruction in Physics) project supports teachers in developing the necessary skills, knowledge and beliefs to effectively implement research based inquiry instruction using flipped/inverted approaches in high school physics courses. For more info, contact Mary Lou Ewald at ewaldml@auburn.edu .

- *Teachers Trained:* 9
- *Courses:* 4 day training workshop as part of a 2-year professional development program

Project Lead The Way (PLTW)

Each summer, Auburn University offers Core Training for Engineering, Biomedical Science, and Gateway programs to train participants to become Project Lead The Way teachers. For more info, visit us online at http://auburn.edu/pltw .

- *Teachers Trained:* 170
- *Courses:* 12 courses with topics such as "Engineering Design and Development," "Biomedical Innovations," and more.

Pave the Way teachers learning about robotics (above)

Pave The Way

The 2016 Pave The Way workshop offered ongoing support of teacher growth in Science, Technology, Engineering, and Mathematics content and pedagogy at the 3rd, 4th, and 5th grade levels by applying research-based practices and emphasizing project-based learning. For more info, contact Kristen Bond at Kristen.bond@auburn.edu.

- *Teachers Trained:* 80
- *Courses:* Various STEM project-based learning techniques utilizing the VEX-IQ and Dash & Dot robotics systems.

Science in Motion

The goals of Science in Motion are to provide high-tech laboratory experiences for students and effective professional development for teachers, each summer offering teacher workshops on the implementation of laboratory technology and procedures. For more info, visit us online http://cws.auburn.edu/asim.

- *Teachers Trained:* 27
- *Courses:* Physics, Biology, and Chemistry laboratory activities and technology

STEM-IQ

The objective of STEM-IQ is to advance teachers' motivation and ability to lead science fair projects. It also tests the hypothesis that improving science fair participation will enhance teachers' ability to lead scientific inquiry and enhance the quality and diversity of the STEM pipeline in Alabama. For more info, visit us online at http://auburn.edu/cosam/stemiq.

- *Teachers Trained:* 32
- *Courses:* A 2-day training focused on running a science fair, and a 5-day training on overviewing science fair and inquiry/project-based learning

Invisible Ink (The Lemon Juice Way)*

Materials:

- Q-tip or brush
- Lemon juice
- Paper
- Salt
- Wax crayon
- Hair dryer (or other safe heat source)

What to do:

1. Dab the Q-tip or brush into a bowl of lemon juice and use the Q-tip/brush to write on the paper. NOTE: Be careful to not use too much lemon juice!

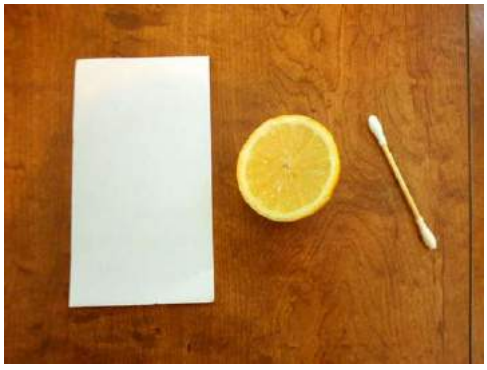
2. Let the lemon juice dry.

3. To see the message, heat the paper with the hair dryer.

4. Write another lemon juice message, but put salt on the drying "ink".

5. Give it a minute and then wipe the salt off.

6. Use a wax crayon to color over the message.



Questions to Consider

1. Why does this work with lemon juice?

Lemon juice is mildly acidic and acid weakens paper. The acid remains in the paper after the juice has dried. When the paper is held near heat the acidic parts of the paper burn or turn brown before the rest of the paper does.

2. What other ways can you make invisible ink?

Using the same heat method, you can also use vinegar, apple juice, and even orange juice, to name just a few. Try some other fruit juices to see what works.

For other types of invisible ink using items like milk and baking soda, visit http://www.kidzworld.com/article/3844-making-invisible-ink-appear

*This activity was developed by and adapted from *KidzWorld.com*

BEST is coming!

War Eagle BEST is the local BEST Robotics hub for schools located in East Alabama and West Georgia. The program is co-hosted by the College of Sciences and Mathematics and the Samuel Ginn College of Engineering at Auburn University. Each fall ~25 local schools design, build, and program a robot from a kit of raw materials through implementation of the Engineering Design Process. The six-week-long program culminates in a one-day, sports-like competition.

Kickoff for War Eagle BEST occurs August 24th. Teams should be getting ready for an awesome robotics challenge this Fall!

For further information, visit http://wareaglebest.org or contact Kristen Bond at Kristen.Bond@auburn.edu .

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