

AUBURN UNIVERSITY
COLLEGE OF SCIENCES AND MATHEMATICS

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Engaging More
Community Connections



Volume 6: Issue 3

Summer 2014



Upcoming Events & Programs: Robotics University

July 2014

In 2013, researchers from the College of Sciences and Mathematics, the College of Education, and Alabama Math, Science and Technology Initiative (AMSTI) received a 3 year \$630,000 grant from the Alabama State Department of Education to provide professional development for teachers and engage students in project-based science, technology, engineering and mathematics education. The grant will support the RE²-FoCUS Initiative (Robotics and Engineering Education Fostering the Conceptual Understanding of Science) to offer professional development for Alabama middle school science and math teachers.

Last summer, 150 middle school teachers engaged in a five-day workshop entitled, "Save the Animals", that trained them on the use of two different Engineering Teaching Kits. This summer, 48 selected teachers will engage in a week of Robotics Education Training. Training will be on VEX rapid-prototyping kits and include special sections taught by AU faculty in the College of Sciences and Mathematics.

Two sessions of Robotics University will be hosted this summer. The first session will occur during the week of July 7th and the second session will occur during the week of July 21st.

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STEM-IQ

July 28th – August 1st, 2014

In the spring of 2014, the College of Sciences and Mathematics Outreach received a 5-year National Science Foundation, EPSCoR grant to provide training and resources for area school systems interested in participating in our regional Science and Engineering Fair. This summer, sixteen science and math teachers from three school systems: Auburn City Schools, Opelika City Schools, and Lowndes County Schools will become the first teacher fellows in the program. They will participate in a one-week training and spend the school year aiding students on their science and engineering fair projects.

During the 5 year project, teachers and students will bridge with faculty experts in STEM fields to meet the following goals:

1. To establish a network of STEM teachers and area administrators that advocate for students to engage in research experiences and give them the tools they need for implementation. Develop a continuum of training and a culture of participation in science and engineering fairs in Southeastern Alabama
2. To increase the number of students from underrepresented groups in rural Alabama participating in high quality, meaningful science and engineering research projects.
3. To increase positive student attitudes towards STEM through interactions with university research mentors who serve as role models for students.
4. To build a sustainable relationship between Auburn University and local public schools.

The training will occur from July 28 – August 1st at the main Auburn University Campus. For more information regarding the STEM-IQ program please contact Mary Lou Ewald at ewaldml@auburn.edu or 334-844-5745.

Upcoming Events and Programs (Cont'd.)

AP Summer Institute

July 15 – 18, 2014

AP Institute is the official training program developed by The College Board. COSAM Outreach, in collaboration with the Office of Professional and Continuing Education, will host eight science and math courses for area high school teachers this July. Course offerings include 3 biology courses, 2 chemistry courses, 2 physics courses, and 1 statistics course. Cumulatively, the training will provide over 220 high school science and math teachers with the skills and resources needed to teach AP courses at their respective schools throughout the school year. More information can be found at www.auburn.edu/outreach/opce/apsi.



War Eagle BEST

Co-hosted by the College of Sciences and Mathematics and the Samuel Ginn College of Engineering, War Eagle BEST challenges 25 robotics' teams each fall from middle and high schools in East Alabama and West Georgia to 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 hosted by Auburn University.

We are collecting information from middle and/or high schools interested in participating in the 2014 season. Currently, we have received interest forms from the following schools:

Autauga Academy	Loachapoka High School
Baldwin Arts & Academics Magnet	Montgomery Catholic Preparatory School
Brewbaker Technology Magnet High School	Opelika High School
Callaway High School	Opelika Middle School
Central Educational Center	Prattville High School
Columbus High School	Saint James School
Eastwood/Cornerstone	Smiths Station High School
Edward Bell Career Technical Center	Southside Middle School
Glenwood School	Springwood School
Lanett High School	Westlake High School
Lee-Scott Academy	Wetumpka High School

If you would like to see your child's middle or high school on this list contact:

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Learn more about BEST Robotics at www.wareaglebest.org.

Outreach Calendar

May

- 8 SWSM Annual Symposium
- 27 Science Matters – Week 1

June

- 2 Science Matters – Week 2
- 9 Summer Science Institute
- 16 Science Matters – Week 3
- 23 Science Matters – Week 4
- 24 Robotics Academy

July

- 8 Robotics University
- 14 Science Matters – Week 5
- 15 AP Institute
- 22 Robotics University
- 28 Science Matters – Week 6
- 28 STEM IQ Workshop

August

- 27 War Eagle BEST Kick-Off



Activity of the Issue

Passive Hydroponics

Materials:

- Empty, plastic 2L. bottle w/ bottle cap
- Wicking material
(Cotton or polyester macramé cord or thick string)
- Planting medium
(A soilless seed starter mixture)
- Fertilizer: Solid pellets
- Seeds (corn, radish, flowers, your choice)
- Water

What to do:

- 1.) Remove label from the bottle. Cut bottle 1 cm below shoulder.
- 2.) Poke or drill a 1 cm hole in bottle cap. Alternatively, rubber band several layers of aluminum foil across the opening and poke a hole in the foil.
- 3.) Thread a thoroughly wet wick strip through bottle top, invert top, and set into base. Wick should reach bottom of reservoir and thread loosely through cap (or aluminum foil). To be effective, the wick should run up into soil, not be plastered along a side of the bottle and not extend above the soil.
- 4.) Fill reservoir with water.
- 5.) Moisten the potting mix if needed (it ought to be moist enough to hold a loose ball if compressed). Add growing mix until $\frac{1}{4}$ full.
- 6.) Scatter 12 Osmocote pellets on the surface of the potting mix then fill with additional potting mix until the bottle is filled with mix.
- 7.) Lightly sprinkle water over the surface of the potting mix until water drips from the wick. The potting mix may drop $\frac{1}{4}$ to $\frac{1}{2}$ inch after watering.
- 8.) Place 8 seeds, evenly spaced, on top of the potting mix in a circle that is near the edge of the bottle.
- 9.) Cover the seeds and soil with a layer of vermiculite approximately 1 cm deep. Lightly sprinkle water to moisten the vermiculite. If you do not have vermiculite, cover the seeds in potting mix.
- 10.) Place the bottle on its water reservoir, and tape the shoulder to the reservoir to keep them together.
- 11.) Put bottle in a sunny window or in a light box.

Extension:

1. Compare different plants to see which germinate first, which grow the fastest, etc.

The Wisconsin Fast Plant Program at the University of Wisconsin-Madison developed this activity.

For more fun experiments involving plants visit:
<http://www.fastplants.org>

Since the last issue:

SWSM Annual Symposium

The 8th Annual Women's Leadership Symposium was held on Thursday, May 8, 2014 at the Auburn University Student Center. Approximately 100 high school students from the region along with SWSM members, COSAM faculty, and students, joined us for the event.

Each year, the goal of the symposium is to offer women of all ages and all stages in their careers the opportunity to network with one another through panel discussions, breakout seminars, career corner representation, as well as a keynote address from the Marie W. Wooten Distinguished Speaker. This year's speaker was Dr. Sandra Rattray, *Vice President and Head of Global Regulatory Affairs, Oncology, for Johnson & Johnson*. With a presentation titled "Whatever the Question, Women are part of the Answer" (a popular quote by Gloria Steinem), everyone in attendance left feeling energized about their role in the continued success of women in science and mathematics fields.



Since the last issue

Science Matters: The first three weeks of Science Matters Academy for Elementary Students were a huge success! Classes thus far have included courses such as: Buggin' Out, Ticket to Travel, Amusement Park Adventure, and Slimy Science 2. The program is full for the remainder of the summer! Summer 2015 Registration opens on Monday, February 9th.

Summer Science Institute: During June, 16 rising 11th and 12th grade students participated in the 3rd Annual Summer Science Institute Program. The SSI partners 12 COSAM faculty with gifted high school students to engage in hands-on, lab opportunities not typically experienced by students in high school. The National Science Foundation, the AU Physics Department, and the Society of Women in Sciences and Mathematics sponsor student participation in SSI.



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