



College of Sciences and
Mathematics
Educational Outreach Programs
2011 Annual Report

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Mission Statement

The College of Sciences and Mathematics at Auburn University aims to promote scientific* literacy and interest among K-12 students, teachers, and communities in our region, our state, and our nation.

Goals of the College of Sciences and Mathematics Outreach Program include:

- Encourage interest in the sciences* in K-12 students
- Actively engage K-12 students and teachers in relevant and inspiring experiences in math and science
- To motivate K-12 students to reach their full potential in science by providing them with access to exciting, hands-on laboratory activities, enthusiastic science mentors, and a supportive environment that encourages their intellectual development
- Provide opportunities for Auburn University faculty and undergraduate and graduate students to share their passion for science with a broad audience
- To provide professional development opportunities for K-12 teachers to improve the quality of math and science education.

*The use of “science” in the mission and goals statements represents both science and mathematics.

Summary

To promote careers in science and mathematics among the K-12 students of today, the College of Sciences and Mathematics at Auburn University has designed an innovative outreach division offering special activities, workshops, and programs throughout the year for the general public and K-12 students and teachers. These activities are designed to provide a continuum of programs for students in various stages of their educational development.

2011 Activities

Current outreach program efforts of the College of Sciences and Mathematics are designed to achieve the above stated goals. In 2011 - January to December - over 11,630 students, parents, and teachers were reached through these efforts. A total of 14 on-site programs, with 73 contact days, were hosted / sponsored by COSAM's Outreach Office. In the following pages, you will find the 2011 Outreach staff, a calendar of 2011 programs, a brief summary of each program offered (including funding sources), program reports for each program's session, and bi-monthly newsletters distributed to outreach participants, parents, teachers, and other science outreach supporters.

2011 COSAM Outreach Staff

Mary Lou Ewald

Director of Outreach

- Oversees and manages all aspects of Outreach Programs
- Director, AU Science in Motion
- Co-PI, AU-AMSTI
- Outreach representative for COSAM (WISE Institute, Outreach Outcomes SACS committee, grant proposal development)



Erin Percival

Assistant Director of Outreach

- Assists with management of Outreach Programs and student employees
- Directs summer programming
- Curriculum development and instruction (GUTS, Science

Investigations)

Kathy Feminella

Administrative Assistant

Primary Responsibilities:

- Responsible for all financial records and information for Outreach Office
- Coordinates AU Explore Science EXPO
- Coordinates Middle School and Elementary Science Olympiad competitions
- Hospitality Coordinator for War Eagle BEST & South's BEST Robotics competitions



Student and Temporary Employees

Molly Folkerts

*Student Program Assistant
Student, Biological Sciences*

Primary Responsibilities:

- Science Matters, summer assistant
- War Eagle & South's BEST registration assistant
- Assist coordinators with the following programs: BEST National Conference, Science Investigations, and GUTS



Regina Halpin

Special Projects

Primary Responsibilities:

- Program Chair, BEST National Conference
- Program assessment and evaluation



Chelsea Harrison

*Student Program Coordinator
Student, Industrial and Systems Engineering*

Primary Responsibilities:

- Outreach website updates and maintenance
- Science Matters Room Director
- War Eagle & South's BEST Judge's Assistant
- Coordinates Spring YES

Allison Holt

*Student Program Coordinator
Student, Software Engineering and Applied Discrete
Mathematics*

Primary Responsibilities:

- War Eagle & South's BEST Registration coordinator





- Coordinates GUTS

Sallie Martin

*Special Programs Assistant
Graduate Student, Entomology*

Primary Responsibilities:

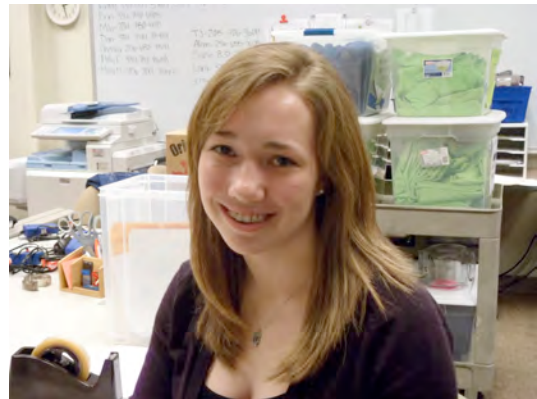
- GUTS Instructor
- AU Explore registration

Molly McCartney

*Student Program Assistant
Student, Industrial and Systems Engineering*

Primary Responsibilities:

- Science Matters, extended care assistant
- War Eagle & South's BEST judging assistant



- Assist coordinators with the following programs: BEST National Conference, Science Investigations, and GUTS

Casey Mitchell

*Graduate Program Assistant
Graduate Student, Secondary Science Education*

Primary Responsibilities:

- Science Matters registration
- BEST National Conference housing coordinator

TJ Nguyen

*Student Program Coordinator
Student, Mechanical Engineering*

Primary Responsibilities:

- Information Technology for Outreach



- Coordinates Parents Night Out events
- War Eagle & South's BEST Assistant

Brent Percival

Development

Primary Responsibilities:



- Director of Marketing and Development, BEST at Auburn University
- Development, COSAM Outreach

Katy Prince

Special Programs Assistant

Graduate Student, Biological Sciences

Primary Responsibilities:

- Summer Y.E.S. Camp Counselor



Lara Stubbs

Outreach Program Specialist

Primary Responsibilities:

- Science Matters Room Director
- South's BEST Hospitality Assistant

2011 Outreach Calendar

February 12, 2011	Parents Night Out
February 19, 2011	Middle School Science Olympiad
February 22, 2011	Getting Under the Surface (GUTS)
February 25, 2011	Tests of Engineering Aptitude, Mathematics, and Science (TEAMS)
March 5, 2011 (Y.E.S.)	Spring Youth Experiences in Science
March 25, 2011	Parents Night Out
March 29, 2011	Getting Under the Surface (GUTS)
April 2, 2011	Elementary Science Olympiad
April 8, 2011	Parents Night Out
April 14-16, 2011	Boosting Engineering Science and Technology (BEST) World Championship
April 29, 2011	AU Explore
May 31-June 3, 2011	Science Matters (My Big Backyard; Invent It, Build It; Fur and Feathers)
June 6-10, 2011	Science Matters (Up, Up and Away; Fancy Fuel; Hogwarts I)
June 20-24, 2011	Science Matters (Creature Features; From Farm to Food; Ocean Explorers)
June 27- July 1, 2011	Science Matters (Science Stew, LEGO Mania)
June 27-30, 2011	Summer Youth Experiences in Science (Y.E.S.)

July 10-15, 2011	Science Matters (To Catch a Thief; Animation Creation)
July 21-23, 2011	BEST National Conference
July 24-29, 2011	Science Matters (Slimy Science; Race to the Sun)
August 1-5, 2011	Science Matters (The Biology of ME!; An Egg-cellent Adventure)
August 27, 2011	War Eagle BEST Kick-off
September 9, 2011	Science Investigations
September 16, 2011	Science Investigations
September 17, 2011	Advanced Placement Study Day
September 20, 2011	Getting Under the Surface (GUTS)
September 25, 2011	War Eagle BEST Mall Day
September 30, 2011	Parents Night Out
October 8, 2011	War Eagle BEST Competition
October 21, 2011	Science Investigations
October 21, 2011	Parents Night Out
October 27, 2011	Getting Under the Surface (GUTS)
October 28, 2011	Science Investigations
November 11, 2011	Science Investigations
November 17, 2011	Getting Under the Surface (GUTS)
November 18, 2011	Science Investigations
December 2-3, 2011	South's BEST Robotics Championship
December 9, 2011	Science Investigations

Programs Offered by COSAM Outreach

AU Explore



event

AU Explore is COSAM's annual Open House Day for 5th - 8th graders. On Friday, April 29, approximately 1350 students, teachers and parents from 35 schools in Alabama and Georgia attended this free event on Auburn's campus. Students had the opportunity to experience live animals up close, as well as interact with University faculty and students at the Science and Math EXPOs. Make-n-Take Science Fun Shops and Demo Shows presented by Auburn's finest also occurred throughout the day.

Funding Source: COSAM, Food & T-shirt sales during the

Science Investigations

Science Investigations provides a meaningful science laboratory experience for home-schooled students in grades 6-8. The program includes monthly sessions for 8 months and is designed to be a learning continuum throughout the year. The main objective of the program is to provide students with an overview of various types of laboratory techniques, policies, procedures, and equipment, as well as examine the scientific method.

Participants are required to design their own "science investigation" in conjunction with the Intel Science and Engineering Fair and present their results at the Greater East Alabama Regional Science and Engineering Fair (GEARSEF) in the spring. During Fall 2011, four sessions were held with 37 students returning for each session. Science Investigations helps to prepare home schooled students for collegiate science labs.

Funding Source: Self-supported through participant fees

SCIENCE INVESTIGATIONS

at Auburn University

Getting Under The Surface (GUTS)

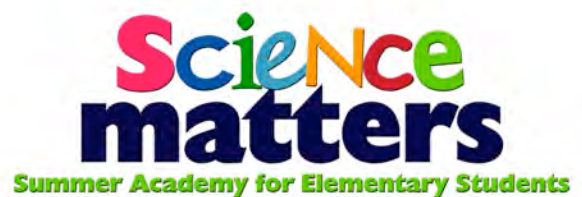
GUTS is a monthly program for kids in grades 1-6 and their parents or grandparents. Each evening session includes dessert followed by a 90-minute science activity featuring a "Getting Under The Surface" theme that focuses on a scientific topic or technique. In 2011, two sessions were held in the spring, and three sessions in the fall. Throughout the year, a total of 246 students and parents attended a GUTS session.

Funding source: Self-supported through participant fees



Science Matters Summer Academy

Science Matters is a summer enrichment program for elementary students offering youngsters a supercharged science experience. The program allows participants to explore the world of science through real experiments, fantastic field trips, constructive play, technology and art projects, and hands-on, make-n-take activities. Seven different science-themed weeks were offered during the summer of 2011. Eighteen different courses were designed by master educators in the region. Over the entire seven weeks, 168 students in grades 1-6 filled a total of 330 open seats.



Funding: Self-supported through participant fees

Science Olympiad



Exploring the World of Science

Science Olympiad is a one-day academic track meet, consisting of up to 23 different competitive events. **Division B (middle)** was held on February 19, 2011, with 20 teams of 15 students each (300 students total) in grades 6-9 converged on Auburn's campus to compete. Winners from the middle school division qualify to compete at the state Science Olympiad.

Division A (elementary) was held on April 2, 2011, with 29 teams of students (580 students) in grades

3-6 in attendance.

Funding Source: COSAM, T-shirt sponsorship from AU Bookstore

T.E.A.M.S. (Tests of Engineering Aptitude, Mathematics, and

Science)

COSAM Outreach and the Samuel Ginn College of Engineering co-sponsored the T.E.A.M.S. competition for students in grades 9-12 held on February 25, 2011. Seventy-six students from 6 schools used the principles of engineering, math, and science to solve real world challenges. T.E.A.M.S. is a program of the Junior Engineering Technical Society (JETS).



Funding Source: School-based fees



The Y.E.S. Program (Youth Experiences in Science)

Spring Y.E.S. was held on Saturday, March 5, 2011. Spring Y.E.S. is a free program offered every spring for students in grades 3-6. Hands-on courses for the 2011 Spring Y.E.S. included Slimy Toys at Hogwarts, Art in Science, Tigers for Tigers, Don't Catch that Germ, and LEGO-Mania. A total of 129 students attended the 2011 event.

Summer Y.E.S. 2011 was a four day camp for rising 6-9 graders. It was held on Monday, June 27 - Thursday, June 30, 2011. A total of 46 students attended and took part in hands-on courses. The courses offered for this camp included River Creatures; Soakin' Skyrockets; Electronics; NanoScience; Genes, Diseases, and Biotechnology; and, Off the Wall Science.

Funding Source: Participant fees



Boosting Engineering, Science, and Technology (BEST) Robotics

What do you get when you cross robots, a playing field, referees, cheerleaders, and pep bands? The BEST competition ever! BEST, nationally headquartered at Auburn University, is an all-volunteer organization whose mission is to inspire middle and high school students to pursue careers in engineering, science, technology, and mathematics through a sports-like, science- and engineering-based competition. Started in 1993 with 14 schools and 221 students, today BEST has 47 hubs with over 900 middle and high schools and over 16,000 students participating each year. BEST Robotics at Auburn University is a partnership between COSAM, the Samuel Ginn College of Engineering, and the College of Architecture, Design, and Construction.

War Eagle BEST

War Eagle BEST had 17 schools from south central Alabama and west Georgia compete in 2011. Kickoff was held on August 27 in the Student Center Ballroom, where teams were given the game theme – BUGS! – and the task for this year’s challenge. Four weeks later, on September 25, a practice “Mall Day” was held at Auburn / Opelika Colonial University Mall. On Saturday, October 8th approximately 1,000 students, parents, teachers, and judges came together to compete in “BUGS!” at Wetumpka High School. Four teams advanced to the regional championship, South’s BEST.



Tennessee Valley BEST



Tennessee Valley BEST, hosted at Calhoun Community College, had 22 schools compete in 2011. Kickoff was held on Saturday, September 3, when teams were given the game theme – BUGS! - and the task for this year’s challenge. Four weeks later, on October 1st a practice “Mall Day” was held in Decatur, AL. On Saturday, October 15th approximately 800 students, parents, teachers, and judges came together for the BUGS competition. TV BEST is a partnership between Auburn University and Calhoun Community College in Decatur, AL.

The South’s BEST

In December, a crowd of over 3500 students, teachers, parents, and industry mentors assembled at Auburn University for the 2011 South's BEST Regional Robotics Championship. South's BEST hosted 50 teams from 13 hubs



and 7 states over the weekend of December 2-3. The 5th annual Women in Science and Engineering Luncheon, sponsored by the WISE Institute, Toyota Motor Manufacturing, and TV BEST, was held on Friday, December 2 and had over 186 attendees. A Science and Engineering Exhibit Fair was hosted on Saturday during the event. Over \$5000 in door prizes were given out to students and teachers throughout the event.

2011 BEST Sponsors

Platinum Level (\$5,000-\$14,999)

Alabama Department of Postsecondary Education
Office of Vice President for University Outreach
Briggs & Stratton Engine Power Products Group
Hyundai Motor Manufacturing of Alabama
Neptune Technologies Group
Toyota Motor Manufacturing of Alabama

Gold Level (\$2,500-\$4,999)

Jacobs Technology
Wells Fargo
VWR Foundation
Brasfield & Gorrie Construction
Rheem Manufacturing (Montgomery)

Silver Level (\$1,250 - \$2,499)

SpaceX

Bronze Level (\$500-\$1,249)

Sam's Club
AO Tourism
Dr. George Blanks
Instrumentation Society of America – Birmingham Chapter

Friend Level (up to \$499)

Sam's Club
AO Tourism
Dr. George Blanks
Wal-Mart

Program: Parents' Night Out

Date: February 12; March 25; April 8; September 30; October 21

Description: *Parents' Night Out* is an opportunity for parents to have an evening to themselves and peace of mind knowing their children are in a safe, secure, and FUN environment. The children have the opportunity to construct and program LEGO robots, design a K-Nex amusement park ride, watch educational videos, and engage in puzzles, word games, and educational board games.

Personnel:

- **AU:** Mary Lou Ewald, Kathy Feminella, Chelsea Harrison, Casey Mitchell, Tj Nguyen, Approximately 15 volunteers from the Society of Women Engineers (SWE) and the Association for Women in Science (AWIS)

Total Number of Students: 61

Age Range: 6-12

Facilities: SCC, Parker Hall

February 12, 2011

Number of students: 13

March 25, 2011

Number of students: 8

April 8, 2011

Number of students: 23

September 30, 2011

Number of students: 9

October 21, 2011

Number of Students: 8



Program: Science Olympiad- Middle School (Division B)

Date: Saturday, February 19, 2011; 7:30 am- 4 pm

Description: Regional Middle School Olympiad

Personnel:

- **AU:** Mary Lou Ewald, Kathy Feminella, Dr. Steve Stuckwisch, Lara Stubbs, Chris Sunderman, Stuart Loch, Mark Liles, Paul Noorgard, Xiaoying Han, Molli Newmam, Ashraf Uddin, Brian Helms, Dimitri Glotov, Ron Lewis, TY Tam, Huajan Huang, Mike Fogle, Geof Hill, Minseo Park, Josh Inwood, Virginia Davis, Claude Ahyi, Teck Lee, William Maddox, Erkan Nane, Yanzaho Cao, Bob Lishak, Sam Chang, Peter Nysten, Conner Balance, Casey Mitchell, TJ Nguyen, Chelsea Harrison, Allison Holt, David King
- **Non-AU:** N/A

Schools Impacted: Auburn Junior High School, Baldwin Arts and Academics Magnet, Beverlye Magnet School, Carver Magnet School, Clanton Middle School, Drake Middle School, Geneva Middle School, Marion Academy, Millbrook Middle Junior High School, Montgomery Catholic, Pleasant Grove Middle School, Prattville Christian, Wacoochee Junior High, Zora Ellis

Total Number of Students: approx. 350

- **Age Range:** 5th-8th grade
- **Facilities:** AU Student Center, Parker Hall, SCL, SCC, Rouse Life Sciences, Petrie Hall, Haley Center



Exploring the World of Science

Program: Getting Under the Surface (G.U.T.S.)

Date: Tuesday, February 22, 2011; 6:00 pm - 8:00 pm

Description: Parent/ Child teams act as lab partners in a 75-90 minute science activity.

Personnel:

- **AU:** Mary Lou Ewald, Kathy Feminella, TJ Nguyen, Casey Mitchell
- **Non-AU:** Katie Davis-Drake Middle School

Schools Impacted: N/A

- **Total Number of Students:** 21
- **Total Number of Parents:** 21
- **Age Range:** 1st-6th Grade

Facilities: Parker Hall 307, SCL 323 & 327

Flash, Boom, Pour

- Instructed by: Katie Davis
- Number of Students: 11 (8 reporting on survey)
- Student Satisfaction Ranking: 4 (out of 5)
- Parent Satisfaction Ranking: 4 (out of 5)
- Age Range: 1st-3rd Grade



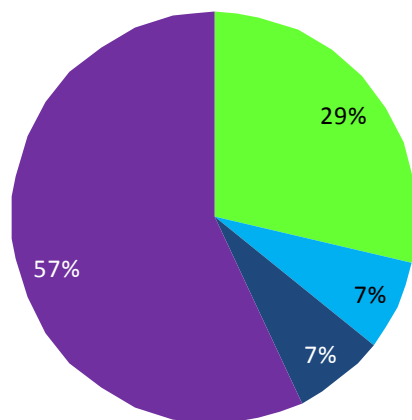
Don't Catch That Germ

- Instructed by: Casey Mitchell
- Number of Students: 8 (6 reporting on survey)
- Student Satisfaction Ranking: 5 (out of 5)
- Parent Satisfaction Ranking: 5 (out of 5)
- Age Range: 4th-6th Grade



How did you hear about G.U.T.S.?

■ AU Daily ■ Other E-mail ■ Past Participant ■ Other



Program: Tests of Engineering Aptitude, Mathematics, and Science (TEAMS) Competition

Date: Friday, February 25, 2011; 1:00 pm- 5:00 pm

Description: Tests provided by the Junior Engineering Technical Society (JETS)

Personnel:

- **AU:** Mary Lou Ewald, George Blanks, Kathy Feminella, Casey Mitchell, Allison Holt, Chelsea Harrison, TJ Nguyen
- **Non-AU:** N/A

Schools Impacted: Central Education Center, Columbus High School, Grissom High School, Hanceville High School, Montgomery Catholic Preparatory School, Northside High School, Randolph School

Total Number of Students: 76

- **Age Range:** 9th – 12th grade

Facilities: AU Student Center Ballroom

Sponsorship: supported by participant fees

Winners:

- **9/10 Division**
 - Montgomery Catholic Preparatory School B
- **11/12 Division**
 - 1st- Randolph School
 - 2nd-Columbus High School
 - 3rd- Grissom High School



Smarter Energy. Cleaner Planet.

Program: Spring Youth Experiences in Science (Y.E.S.)

Date: Saturday, March 5th; 7:45 am- 12:00 pm

Description: Each child participated in hands-on, make-and-take activities related to specific fields of science and math in a half-day academy.

Personnel:

- **AU:** Mary Lou Ewald, Kathy Feminella, Chelsea Harrison, Casey Mitchell, Linda Pastorello, Andrew Henley
- **Non-AU:** Frank Ware (Sanford Middle School), Gina Watkiss (The Heritage School)
- **Schools Impacted:** N/A
- **Total Number of Students:** 129
- **Age Range:** 3rd-6th Grade

Facilities: SCL 102, 231, 310, 323, 327

Slimy Toys at Hogwarts

- Instructor: Gina Watkiss, The Heritage School
- Number of Students: 50
 - Course 1- 25 students
 - Course 2- 25 students

Art in Science

- Instructor: Andrew Henley, Jule Collins Smith Museum of Fine Art
- Number of Students: 50
 - Course 1- 25 students
 - Course 2- 25 students

LEGO-Mania!

- Instructor: Frank Ware, Sanford Middle School
 - Number of Students: 40
 - Course 1- 20 students
 - Course 2- 20 students

Tigers for Tigers

- Instructor: Linda Pastorello, AU Biological Sciences Dept
- Number of Students: 49
 - Course 1- 24 students
 - Course 2- 25 students



Don't Catch That Germ!

- Instructor: Casey Mitchell, COSAM Outreach Program Specialist
- Number of Students: 41
 - Course 1- 21 students
 - Course 2- 20 student

Program: Getting Under the Surface (G.U.T.S.)

Date: Tuesday, March 29, 2011; 6:00 pm - 8:00 pm

Description: Parent/ Child teams act as lab partners in a 75-90 minute science activity.

Personnel:

- **AU:** Mary Lou Ewald, Kathy Feminella, Casey Mitchell, Allison Holt
- **Non-AU:** Frank Ware – Retired School Teacher (Sanford Middle School), Gina Watkiss – The Heritage School, Erin Percival – Drake Middle School

Schools Impacted: N/A

- **Total Number of Students:** 17
- **Total Number of Parents:** 17
- **Age Range:** 1st-6th Grade

Facilities: Parker Hall 307, SCL 231, 310, & 323

Bubble Magic

- Instructed by: Gina Watkiss
- Number of Students: 5 (3 reporting on survey)
- Student Satisfaction Ranking: 4.3 (out of 5)
- Parent Satisfaction Ranking: 5 (out of 5)
- Age Range: 1st -3rd Grade

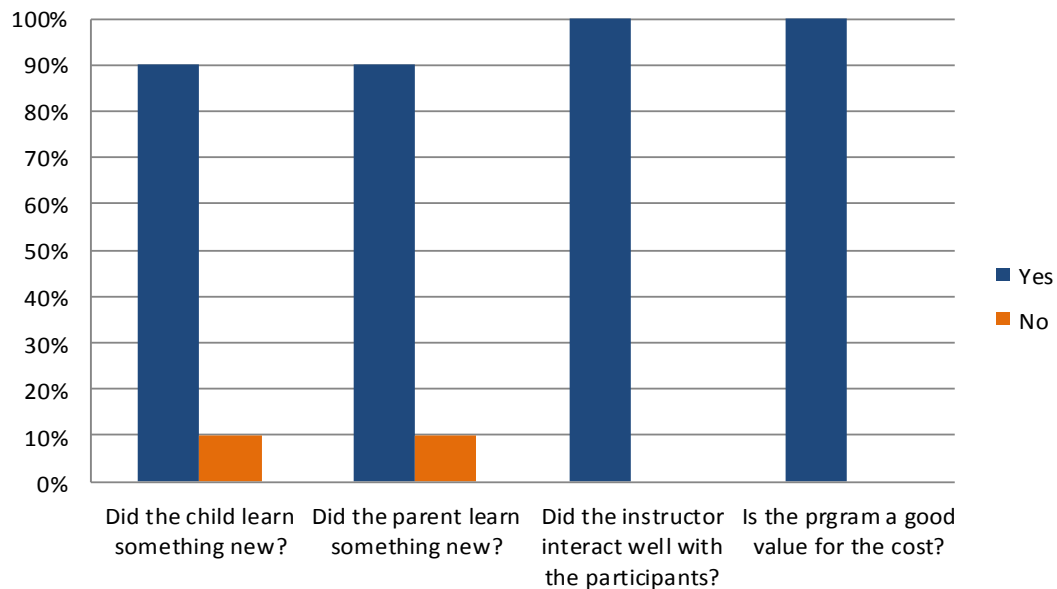
LEGO-Mania!

- Instructed by: Frank Ware
- Number of Students: 7 (3 reporting on survey)
- Student Satisfaction Ranking: 5 (out of 5)
- Parent Satisfaction Ranking: 4.7 (out of 5)
- Age Range: 4th-6th Grade

Race to the Sun

- Instructed by: Erin Percival
- Number of Students: 4
- Student Satisfaction Ranking: 5 (out of 5)
- Parent Satisfaction Ranking: 5 (out of 5)
- Age Range: 4th-6th Grade

Participant Feedback (All courses combined)



Program: Science Olympiad- Elementary School (Division A)

Date: Saturday, April 2, 2011 7:30 am- 4 pm

Description: Regional Elementary School Olympiad

Personnel:

- **AU:** Mary Lou Ewald, Kathy Feminella, Dr. Greg Harris, Allison Holt, Chelsea Harrison, Casey Mitchell, TJ Nguyen,
- **Non-AU:** N/A

Schools Impacted: Ashville School, Cary Woods Elementary School, Clanton Intermediate, Dean Road Elementary, Excalibur Christian, Geneva Middle School, Highlands Elementary School, Highlands Elementary School, Math and Science Academy, Mountain Gap Elementary School, Ogletree Elementary School, Richland Elementary School, St Luke's Episcopal School, Trinity Presbyterian, W. O. Lance Elementary School, W.S. Neal Middle School, Wrights Mill Road School, Yarbrough Elementary School

Total Number of Students: approx. 580

- **Age Range:** 3rd – 6th grade
- Facilities:** AU Student Activities Center, Parker Hall, SCL, and Rouse Life Sciences



Exploring the World of Science

Program: BEST World Championship

Date: April 14-16, 2011

Location: ESPN Wide World of Sports Complex at Walt Disney World, Kissimmee, Florida

Description: A middle and high school robotics competition open to winning teams from other regional championships in the United States.

Executive Planning Committee:

- **Mary Lou Ewald** - War Eagle/South's BEST (Auburn, AL)
- **George Blanks** – War Eagle/South's BEST (Auburn, AL)
- **Greg Young** – Capitol BEST (Austin, TX)
- **Garry and Janne Ackerman** - CoCo BEST (Dallas, TX)

Schools Impacted:

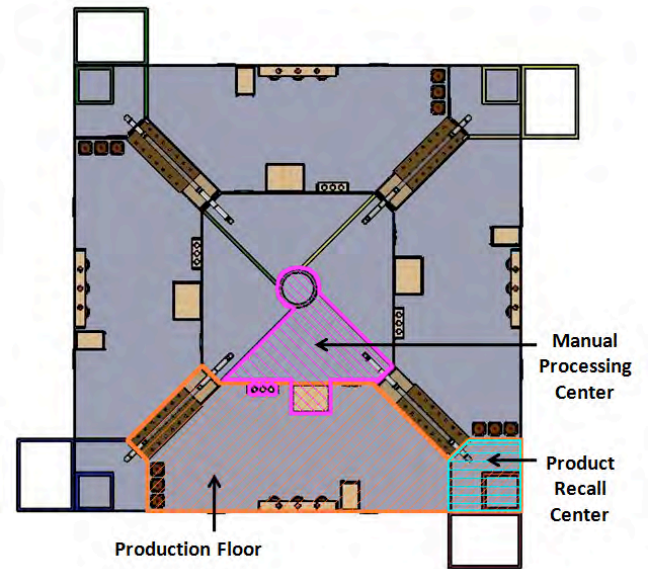
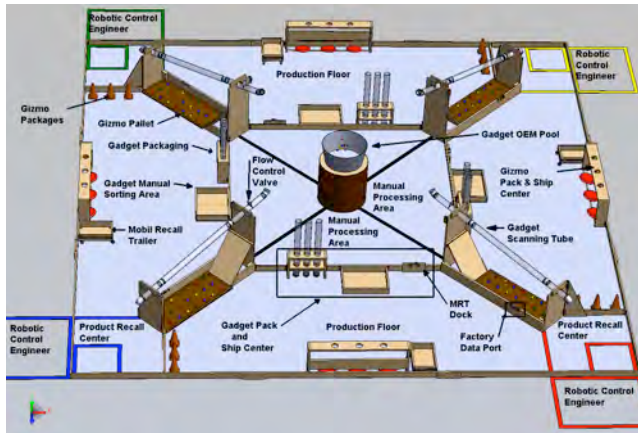
Ambassadors for Christ Academy – Bentonville, AR
Anna High School – Anna, TX
Birdville CTAL – North Richland Hills, TX
Caddo Mills High School – Caddo Mills, TX
Central High School – Philadelphia, PA
Central Magnet School – Murfreesboro, TN
Conway High School – Conway, MO
Decatur-Austin Robotics Coalition (DARC) – Decatur, IL
Dickson Area Robotics Team (DART) – Dickson County, TN
Ereckson Middle School – Allen, TX
Kansas City Christian School – Prairie Village, KS
Kittson Central High School – Hallock, MN
Lausanne Collegiate School – Memphis, TN
Liberal Arts & Science Academy – Austin, TX
Merrol Hyde Magnet School – Hendersonville, TN
Metro Homeschool – Blue Springs, MO
Oak Mountain High School – Birmingham, AL
OCK Homeschool – Oklahoma City, OK
REACH Homeschool – Moorhead, MN
United Engineering Technology Magnet – Laredo, TX
Westlake High School – Austin, TX
Wetumpka High School – Wetumpka, AL

2010 Game Description: TOTAL RECALL

Goal: Create a robot that is able to successfully process and package as much “good” product as possible while striving for Six Sigma quality levels on each of two independent production lines. Product identified as “defective” are “recalled”. Products to be packaged:

- **Gadgets** – represented by black, yellow, and white golf balls
- **Gizmos** – represented by magnetic and non-magnetic Easter eggs

Game Field Layout



Process Sigma (σ) is calculated for each production line based upon the number of **defects** per million opportunities (DPMO). A $\sigma = 6$ is the highest achievable. The process Sigma is used as a point multiplier for all product that has been processed during a production run.

$$\text{Team Score} = (\text{Gadget Pts} \times \sigma_{\text{gadget}}) + (\text{Gizmo pts} \times \sigma_{\text{gizmo}}) + \text{Bonus Pts.}$$

Placing defective Gadgets in the Product Recall Trailer and moving it to the Product Recall Center removes these defects from the Sigma calculation, boosting the Sigma multiplier.



2011 Game Winners

BEST Award

- 1st: Metro Homeschool – River Valley BEST
- 2nd: DARC– Tennessee Valley BEST
- 3rd: OKC Homeschool – Oklahoma BEST

Robotics

- 1st: REACH Homeschool – Bison BEST
- 2nd: Central Magnet School – Music City BEST
- 3rd: Metro Homeschool – River Valley BEST
- 4th: Ambassadors for Christ Academy – Kansas BEST

BEST World Championship

Category Awards

Best Marketing Presentation Award

- 1st: DARC – Tennessee Valley BEST
- 2nd: Wetumpka High School – War Eagle BEST
- 3rd: Oak Mountain High School – Blazer BEST

Best Team Exhibit and Interview Award

- 1st: OKC Homeschool – Oklahoma BEST
- 2nd: Ereckson Middle School– CoCo BEST
- 3rd: United Engineering Technology Magnet – San Antonio BEST

Best Project Engineering Notebook Award

- 1st: Metro Homeschool – River Valley BEST
- 2nd: OKC Homeschool– Oklahoma BEST
- 3rd: Central High School – Philadelphia BEST

Best Spirit and Sportsmanship Award

- 1st: Metro Homeschool – River Valley BEST
- 2nd: Oak Mountain High School – Blazer BEST
- 3rd: Wetumpka High School – War Eagle BEST

Best T-shirt design

- 1st: Metro Homeschool – River Valley BEST
- 2nd: Ereckson Middle School – CoCo BEST
- 3rd: Oak Mountain High School – Blazer BEST

Robot Awards

Founders Award for Creative Design: (give in honor of the two founders of BEST, Steve Marum and Ted Mahler)

- 1st: DARC – Tennessee Valley BEST
- 2nd: Ambassadors for Christ Academy – Kansas BEST
- 3rd: REACH Homeschool – Bison BEST

Most Robust Robot: (needed the least amount of repairs)

- 1st: REACH Homeschool – Bison BEST
- 2nd: DARC – Tennessee Valley BEST
- 3rd: Westlake High School – Capitol BEST

Most Elegant Robot: (the machine that performs its function the most effectively)

- 1st: Central Magnet School – Music City BEST
- 2nd: DART – Music City BEST
- 3rd: Ambassadors for Christ Academy – Kansas BEST

Most Photogenic Robot: (the beauty contest)

- 1st: Central Magnet School – Music City BEST
- 2nd: Kittson Central High School – Bison BEST
- 3rd: Birdville CTAL – Cowtown BEST

Special Competition Awards

Team Exhibit Design and Construction Award (awarded to the team with the most creative an innovative exhibit design)

- Ereckson Middle School – CoCo BEST



MathWorks Best Programming Skills Award

- DARC – Tennessee Valley BEST

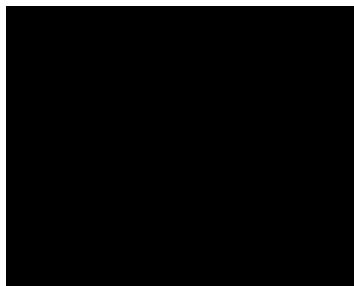
SolidWorks CAD Design Award

- 1st: REACH Homeschool – Bison BEST
- 2nd: DARC – Tennessee Valley BEST
- 3rd: Wetumpka High Scholl – War Eagle BEST

Best Team Video Award

- 1st: United Engineering Technology Magnet – San Antonio BEST
- 2nd: Central High School – Philadelphia BEST
- 3rd: Kittson Central High School – Bison BEST

The 2011 BEST World Championship sponsors:



Mississippi State University



Program: AU Explore

Date: Friday, April 29, 2011, 8:00 am - 3:00 pm

Description: Science and Mathematics Open House

Personnel:

- **AU:** Mary Lou Ewald, Kathy Feminella, George Blanks, TJ Nguyen, Chelsea Harrison, Allison Holt, and, Casey Mitchell
- **Non-AU:** Kristy Mann, Terri Rubio,

Schools Impacted: Barron School, Cary Woods Elementary, Dean Road Elementary, Dixie Elementary, J.F. Drake Middle School, Eagle Ranch School, Everest Academy, Lakeview Christian, Morris Avenue, Northside Intermediate, Oak School, Ogletree Elementary, Pintlala, South Girard Junior High School, Valleydale Homeschool, Veritas Christian Academy, Williams Intermediate, Wrights Mill Elementary, Yarbrough Elementary

Total Number of Participants: approx. 1350

- **Age Range:** 5th- 8th grade

Facilities: Parker Hall, SCL, Chemistry Building, Rouse Life Sciences, Parker Lawn

The EXPO- 9:00 - 12:00 - The EXPO is a series of dozens of interactive displays sponsored by each of the departments that comprise the College of Sciences and Mathematics (COSAM) at Auburn – Math/Statistics, Physics, Biology, Chemistry/Biochemistry, and Geology/Geography. Students browsed the displays at their own pace and were able to see, touch, hear, and smell the many wonders of science and math! Included in the Science EXPO are live animal displays, featuring snakes, lizards, turtles, spiders, insects, and many more fascinating creatures!

- Aaron Rashotte Lab
- Jon Armbruster Lab
- Nanette Chadwick Lab
- Debbie Folkerts Lab
- Chris Goldsmith
- Ken Halanych Lab
- Wendy Hood Lab
- Shawn Jacobsen
- Allen Landers Lab
- Mark Liles
- Bryan McMeen (student) and the Math Club, Math Graduate Students
- Scott R. Santos Lab
- James Saunders
- John Simms
- Kaye Storey and Faculty
- Ed Thomas Lab



Science Fun Shops- 9:00 - 2:00- The “Science Fun Shops” are short, hands-on mini-courses focused on a particular topic. The courses typically lasted about 45 minutes and had 25-800 participants.

- All About Eyeballs
 - Instructed by: Bob Lishak
 - 2, 45 minute courses; capacity: 30
- Art in Science
 - Instructed by: Andrew Henley
 - 3, 45 minute courses; capacity: 24
- Bubble Mania
 - Instructed by: Kristy Mann & Terri Rubio
 - 3, 45 minute courses; capacity: 27
- Build a Kaleidoscope
 - Instructed by: Erica Snipes
 - 3, 45 minute courses; capacity: 24
- Build a Motor
 - Instructed by: Matt Jones
 - 3, 45 minute courses; capacity: 24
- Cartesian Diver
 - Instructed by: Aaron Modic
 - 3, 45 minute courses; capacity: 30
- Fur, Feathers, and Fins
 - Instructed by: Matt Kearly
 - 2, 45 minute courses; capacity: 25
- Genes in a Bottle
 - Instructed by: Mark Liles, Cathy McVay, Les Goertzen
 - 4, 45 minute courses; capacity: 30
- Match the Graph
 - Instructed by: Matt Obley
 - 3, 45 minute courses; capacity: 25
- Medical Technology
 - Instructed by: Kat Milly West
 - 3, 45 minute courses; capacity: 50
- Microscopic Wonders
 - Instructed by: Roger Birkhead
 - 2, 45 minute courses; capacity: 24
- Owl Pellets
 - Instructed by: Christine Sundermann
 - 2, 45 minute courses; capacity: 24
- Physics of Music
 - Instructed by: Stuart Loch
 - 3, 45 minute courses; capacity: 50
- Silly Cilia
 - Instructed by: Tony Moss
 - 3, 45 minute courses; capacity: 24
- Slimistry
 - Instructed by: Paul Norgaard
 - 3, 45 minute courses; capacity: 30
- Snap Electronics
 - Instructed by: Corey Small
 - 2, 45 minute courses; capacity: 24
- SunScreen or SunBurn?
 - Instructed by: Beth Hickman
 - 3, 45 minute courses; capacity: 27
- Survivor
 - Instructed by: Brian Helms and Mollie Newman
 - 3, 45 minute courses; capacity: 30
- We-Do LEGOS
 - Instructed by: Marllin Simon
 - 2, 60 minute courses; capacity: 24

Demo Shows- 9:00 – 2:00

- Dr. Webb’s Magic Show- 9:00, 11:00
 - 60 minute sessions– seating capacity: 180
 - Dr. Thomas Webb, Professor Emeritus, Dept. of Chemistry / Biochemistry
- Raptor Show – 9:00, 10:00, 11:00
 - 60 minute sessions– seating capacity: 300
 - Southeastern Raptor Center
- Glass Blowing Show – 9:00, 10:00, 1:00
 - 60 minute sessions– seating capacity: 125
 - Matt Montgomery, Department of Chemistry/Biochemistry
- Herpetology Show – 10:00, 11:00
 - 60 minute sessions– seating capacity: 250
 - Michael Wines, Department of Biological Sciences



Participants by Department

Biology

- Aaron Rashotte Lab
- Jon Armbruster Lab
- Debbie Folkerts Lab
- Ken Halanych Lab
- Shawn Jacobsen
- Mark Liles
- Nanette Chadwick Lab
- Scott R. Santos Lab
- Wendy Hood Lab
- Mark Liles
- Cathy McVay
- Les Goertzen
- Bob Lishak
- Tony Moss
- Brian Helms
- Molli Newman
- Chris Sundermann
- Roland Dute
- Mike Miller
- Matt Kearly
- Mike Wines

Chemistry/Biochemistry

- Chris Goldsmith
- Wendall Sandlin
- Tom Webb
- Kat Milly West

Geology and Geography

- James Saunders
- John Simms

Math/Statistics

- Bryan McMeen (student) and the Math Club, Math Graduate Students

Physics

- Ed Thomas Lab
- Allen Landers Lab
- Dave Patrick
- Erica Snipes
- Aaron Modic
- Stuart Loch
- Matt Jones
- Corey Small
- Marllin Simon

Science in Motion

- Roger Birkhead
- Paul Norgaard
- Matt Obley

AMSTI

- Kristi Mann
- Terri Rubio
- Beth Hickman

Vet-Med

- Kaye Storey and Faculty
- Southeastern Raptor Center

Program: Science Matters

Dates:

- Tuesday, May 31- Friday, June 3
- Monday, June 5-Friday, June 10
- Monday, June 19-Friday, June 24
- Monday, June 27-Friday, July 1
- Monday, July 10-Friday, July 15
- Monday, July 24-Friday, July 29
- Monday, August 1-Friday, August 5



Times: Regular Day 8:00 am – 3:30 pm; Extended Day 8:00 am – 5:00 pm

Description: Science Matters is a summer enrichment program in which children attend themed weeks filled with experiments, field trips, and make-and-take projects. In addition, the program provided a platform for 24 education students from the AU College of Education to gain valuable classroom experience teaching science content.

Personnel:

- **AU:** Mary Lou Ewald, Erin Percival, Kathy Feminella, Chelsea Harrison, Lara Stubbs, Casey Mitchell, Molly Folkerts, Molly McCartney, Sarah Starr, Stanton Belford, Amy Rutherford
- **Non-AU:** Rebecca Balkcom-Auburn Jr. High School, Mark Jones-J.F. Drake Middle School, Frank Ware-Retired Samford Middle School, Gina Watkiss-The Heritage School, Hilary Boyd-Auburn Junior High School, Lisa Jones-J.F. Drake Middle School, Amanda Prince-Auburn Early Education Center, Jennifer Spencer-Cary Woods Elementary

Schools Impacted:

Beauregard Elementary, Berry Middle School, Bob Harding Shawmut School, Cary Woods Elementary, Dean Road Elementary, First Baptist Opelika Christian School, J.F. Drake Middle School, Jackson Intermediate School, Jones Valley Elementary, Jupiter Christian, Korea’s Elementary School (Seoul), Lanier Middle School, Lee-Scott Academy, Mom’s Avenue Intermediate, Northern Elementary School, Northside Intermediate, Ogletree Elementary, Richland Elementary, Smiths Station Elementary, Smiths Station Intermediate, Southview Primary, Teasley Elementary, The Donoho School, Trinity Christian School, Uance Elementary, Vestavia Hills Elementary West, Wrights Mill Road, Yarbrough Elementary

- **Total Number of Student Places Filled:** 330
- **Total Number of Students:** 168 students
- **Age Range:** rising 1st-6th grade

Facilities: Parker Hall

Tuesday, May 31st-Friday, June 3rd

My Big Backyard

- Instructor: Amanda Prince
- Grades: 1 – 2
- Total Number of Students: 22

Invent It, Build It

- Instructor: Jennifer Spencer
- Grades: 3 – 4
- Total Number of Students: 24



Fur and Feathers

- Instructor: Amy Rutherford
- Grades: 5 – 6
- Total Number of Students: 9

Monday, June 5-Friday, June 10

Up, Up and Away

- Instructor: Amanda Prince
- Grades: 1 – 2
- Total Number of Students: 22

Fancy Fuel

- Instructor: Mark Jones
- Grades: 3 – 4
- Total Number of Students: 16

Hogwarts I

- Instructor: Gina Watkiss
- Grades: 5 – 6
- Total Number of Students: 17

Monday, June 19-Friday, June 24

Creature Features

- Instructor: Amanda Prince
- Grades: 1 – 2
- Total Number of Students: 20

From Farm to Food

- Instructor: Rebecca Balkcom
- Grades: 3 – 4
- Total Number of Students: 24

Ocean Explorers

- Instructor: Stanton Belford
- Grades: 5 – 6
- Total Number of Students: 12

Monday, June 27-Friday, July 1

Science Stew

- Instructor: Amanda Prince
- Grades: 1 – 2
- Total Number of Students: 20

LEGO Mania

- Instructor: Frank Ware
- Grades: 3 – 4
- Total Number of Students: 24

Monday, July 10-Friday, July 15

To Catch a Thief

- Instructor: Mark Jones
- Grades: 3 – 4
- Total Number of Students: 29

Animation Creation

- Instructor: Rebecca Balkcom
- Grades: 5 – 6
- Total Number of Students: 11

Monday, July 24-Friday, July 29

Slimy Science

- Instructor: Gina Watkiss
- Grades: 3 – 4
- Total Number of Students: 24

Race to the Sun

- Instructor: Rebecca Balkcom
- Grades: 5 – 6
- Total Number of Students: 9

Monday, August 1-Friday, August 5

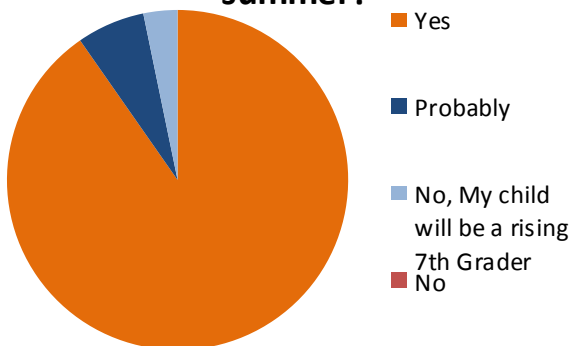
The Biology of ME!

- Instructor: Casey Mitchell
- Grades: 3 – 4
- Total Number of Students: 18

An Egg-cellent Adventure

- Instructor: Frank Ware
- Grades: 5 – 6
- Total Number of Students: 19

Will you consider sending your child to the Science Matters Academy next summer?



Program: Summer Youth Experiences in Science (Y.E.S.) Camp

Date: Monday, June 27th- Thursday, June 30th 2011

Description: Each child participates in hands-on, make-and-take activities related to specific fields of science and math in this four day academy.

Personnel:

- **AU:** Mary Lou Ewald, Kathy Feminella, Erin Percival, Chelsea Harrison, Casey Mitchell, Brian Helms, Virginia Davis, Trent Lishak, Molly Folkerts, Molly McCartney, Lara Stubbs, Katy Prince, Sarah Starr
- **Non-AU:** Gina Watkiss-The Heritage School, Rebecca Balkcom-Auburn Jr. High School, Mark Jones-J.F. Drake Middle School, Mike Smith-Auburn Jr. High School

Schools Impacted:

Auburn Junior High School, Baldwin Arts and Academic Magnet School, Barbara Bush Middle School, Berry Middle School, Chamblee Middle School, Crews Middle School, Demopolis Junior High School, Everest Academy, Five Forks middle School, Isidore Newman Middle School, J.F. Drake Middle School, Jackson Middle School, Lee-Scott Academy, Mauldin Middle School, Northview High School, Opelika Middle School, Saint James School, Sam Junior High School, Trinity Christian School, W.F. Burns Middle School, Wicksburg High School, Wilson Hall Middle School

- **Total Number of Students:** 46
- **Age Range:** rising 7th-9th grade

Facilities: SCL, Parker Hall

Off The Wall Science

- Instructed by: Gina Watkiss
- Number of Students: 18

Genes and Biotechnology

- Instructed by: Rebecca Balkcom
- Number of Students: 14

Nano Science

- Instructed by: Dr. Virginia Davis
- Number of Students: 11

River Creatures

- Instructed by: Dr. Brian Helms
- Number of Students: 13

Electronic Kits

- Instructed by: Mike Smith
- Number of Students: 14

Soarin' Skyrockets

- Instructed by: Dr. Mark Jones
- Number of Students: 17



Program: BEST National Conference

Date: Thursday, July 21, 2011- Saturday, July 23, 2011 8:00 am - 5:00 pm

Description: The national BEST conference for hub personnel and teachers.

Personnel:

- **AU:** Mary Lou Ewald, George Blanks, Kathy Feminella, Erin Percival, Chelsea Harrison, Casey Mitchell, Lara Stubbs, Molly Folkerts, Molly McCartney, Sarah Starr
- **Non-AU:** Regina Halpin

Total Number of Participants: approx. 175

- **Age Range:** Adults

Facilities: Auburn University Student Center, Sciences Center Classrooms Building, Sciences Center Auditorium, Auburn University Hotel and Conference Center



Thursday and Friday Sessions:

42 Days of BEST: Planning Your Work and Working Your Plan

Session Chair: George Blanks

Developing Effective Training Programs

Session Chair: Eric Heiselt

Presenter: Fred Stillwell

Elements of a Successful Team

Session Chair: Susan Haddock

Presenters: Virginia Vilardi, Lee Brownell

Fundraising Strategies and Resources for Hubs

Session Chair: Robin Fenton

Presenter: Janice Stewart

Keys to Winning: Strategies for the BEST Award

Session Co-Chairs: Jennifer Cox, Virginia Vilardi

Off-Season Robotics Program for K-12 Schools

Session Chair: Velda Morris

Presenters: Jane White, Deborah Wallace

Getting the Most from MathWorks

Session Chair: Greg Young

Awards & Judging: Developing a Systematic Approach

Session Chair: Mary Lou Ewald

The Engineering Design Process

Session Chair: Bob Boyle

Robot Construction and the Engineering Design Process

Session Chair: E.T. Hammerand

Presenter: Jim Walter

Effective Hub Management

Session Chair: Terry Grimley

Kit Management and Field Construction Solutions

Session Chair: Larry Gewax

Presenter: Bill Rock, Richard Gale, Ravi

Techandani, David Vignes, and Alejandro Garcia

Curriculum Integration

Session Chair: Kathleen Geise

Presenter: Ken Berry

Understanding the Robot Design & Construction Process

Session Chair: Paul Lutes

Presenter: Michael Carroll

Best Practices: Hub Effectiveness and Efficiency

Session Chair: Mike Bright

Presenters: Jody Snow, John Robertson

Speakers:

Networking Luncheon

Featured Speakers: Wes Woods, Robin Fenton

Conference Banquet

Featured Speaker: J. Paul Wahnish

Saturday Software Training Workshops

EasyC

Instructor: Cliff Ratcliff, Learning Labs

Sessions Taught: 2, 3 hour sessions

Total Number of Participants: 25

SolidWorks

Instructor: Al Whitmaugh, InspirTech

Sessions Taught: 2, 3 hour sessions

Total Number of Participants: 42

ROBOTC

Instructor: Robin Shoop, Carnegie Mellon Robotics Academy

Sessions Taught: 1, 3 hour session

Total Number of Participants: 27

MathWorks

Instructor: Sandeep Hiremath, MathWorks

Sessions Taught: 2, 3 hour sessions

Total Number of Participants: 28



CONFERENCE BANQUET

Friday, July 22, 6:00 8:00pm
Student Center Ballroom

Keynote Speaker

J. Paul Wahnish

President and Founder, Career Technical Education Foundation, Inc.

www.careertechedfoundation.org



J. Paul Wahnish founded the Career Technical Education Foundation, Inc. (CTEF) in 2003. It originally began as a booster organization for the robotics club where he currently chairs the Academy of Engineering and teaches Project Lead The Way® courses, a nationally renowned curriculum for pre-engineering. Started in 2001, the booster organization transitioned into an integral support system for the Academy. The five-year business plan Paul set into action guided East Lake High School to the status of a model school for implementing career academies related to the STEM career clusters. The "Footprint for Sustainability" developed through East Lake's success has become a driving factor in assisting surrounding districts desire to implement career academies structured for success. Paul's expertise in implementing his program has led to various speaking engagements, entertaining such audiences as the Southern Region Education Board regional and national conferences, the state of South Carolina, Wisconsin, and Indiana State Educator meetings, to name but a few.

Paul's extensive background in the engineering technology field contributes to his ability to design and develop programs that continue to have lasting impacts on the participants and communities involved. An entrepreneur at heart, Paul started his journey in 1985 as the President and Owner of Under Car Parts, Inc., a company involved in the purchase, engineering design, consolidation, remanufacture, sales and marketing of front wheel drive constant velocity assemblies. Also during this same timeframe, he started Metro Automotive Marine and contracted out his services to major Automotive and Marine manufacturers. Paul became involved as an entrepreneurial independent contractor agency, in engineering, sales and marketing of automotive and marine products offered by Champion Parts, and various other manufacturers until 1995. In 1995, Paul started Wahnish Consulting as an independent contractor in engineering design, sales and marketing of all product categories nationally to automotive OEM, traditional, retail, and to marine OEM and the traditional aftermarket. Paul continued consulting until 2003 when he sold one of his companies.

A committed father to two young men, Paul actively became involved in their lives by coaching junior and senior high school sports teams and substitute teaching at their schools. When offered a full-time position at the high school, Paul took it on his own terms, and began the five-year plan that has now become recognized as one of the Top Ten high school engineering academies for Project Lead The Way®.

Paul received his B.S. in Political Science from the University of South Florida, then attended Stetson University Law School and is a member of the American Society of Mechanical Engineers and the Society of Automotive Engineers.

"...Unlocking Imaginations,
Reaching Our Potential"

The BEST National Conference



Who should attend:

- New and veteran BEST teachers
- Team mentors (new and veteran)
- Middle and high School STEM educators
- 2- and 4-year college/university faculty
- BEST hub personnel and volunteers
- Those interested in starting a BEST hub
- Champions of informal STEM education
- **Anyone with a vested interest in workforce development through programs like BEST**

July 21-23, 2011

Auburn University
Auburn, AL

**Hands-On Half-Day
Software Training Workshops
(July 23)**

Conference Highlights

- ◆ Session tracks: Teachers, Hubs, Technical, and General Audience

Just a few of the many sessions offered:

- ◆ BEST's role in STEM Education
- ◆ Understanding the robot design & construction phase of BEST
- ◆ Strategies for BEST team success
- ◆ Curriculum integration
- ◆ BEST game development
- ◆ Building a "BEST Community"

Plus...

- ◆ "Best Practices" Poster Session
- ◆ Exhibitors Showcase/Wine & Cheese Reception
- ◆ Networking luncheons
- ◆ Conference Banquet with national STEM education Keynote Speaker

...and much more

**Earn CEU
credits!**

\$165 "Early Bird" Conference Registration - Extended to Wednesday, May 25!

- Conference fee includes continental breakfast and lunch each day, Friday night banquet, Exhibitor's reception, conference bag and CD.
- Post-conference hands-on workshops – no additional charge, but seating is limited! Registration is required as part of Conference registration.
- For session descriptions, conference registration, housing forms, and more, visit www.bestinc.org

Updated May 16, 2011

Program: Science Investigations

Date: Friday, September 9th and 16th, 2011; 9:00 AM- 11:30 AM

Description: This program provides a meaningful science lab experience for home schooled students from Alabama and Georgia.

Personnel:

- **AU:** Erin Percival, Mary Lou Ewald, Molly Folkerts, Molly McCartney, Emily Dunavant

Schools Impacted: N/A

- **Total Number of Students:** 40
- **Age Range:** 6th-8th

Facilities: SCL 323

Middle School Class

- Instructed by: Erin Percival, Emily Dunavant
- Activities:
 - Safety Rules
 - Safety Symbols
 - Lab Equipment
 - Science Fair Introduction
 - Polymer Absorbance



Program: Getting Under the Surface (G.U.T.S)

Date: Tuesday, September 20th, 2011; 6:00 pm - 8:00 pm

Description: Parent/ Child teams act as lab partners in a 75-90 minute science activity.

Personnel:

- **AU:** Mary Lou Ewald, Kathy Feminella, Casey Mitchell, Allison Holt
- **Non-AU:** Frank Ware – Retired School Teacher (Sanford Middle School), Andrew Click – Retired School Teacher (Sanford Middle School)

Schools Impacted: N/A

- **Total Number of Students:** 25
- **Total Number of Parents:** 25
- **Age Range:** 1st-6th Grade

Facilities: Parker Hall 307, SCL 231, 310, & 323

Multiplying Microbes

- Instructed by: Casey Mitchell
- Number of Students: 9
- Student Satisfaction Ranking: 4.5 (out of 5)
- Parent Satisfaction Ranking: 4.5 (out of 5)
- Age Range: 1st -3rd Grade

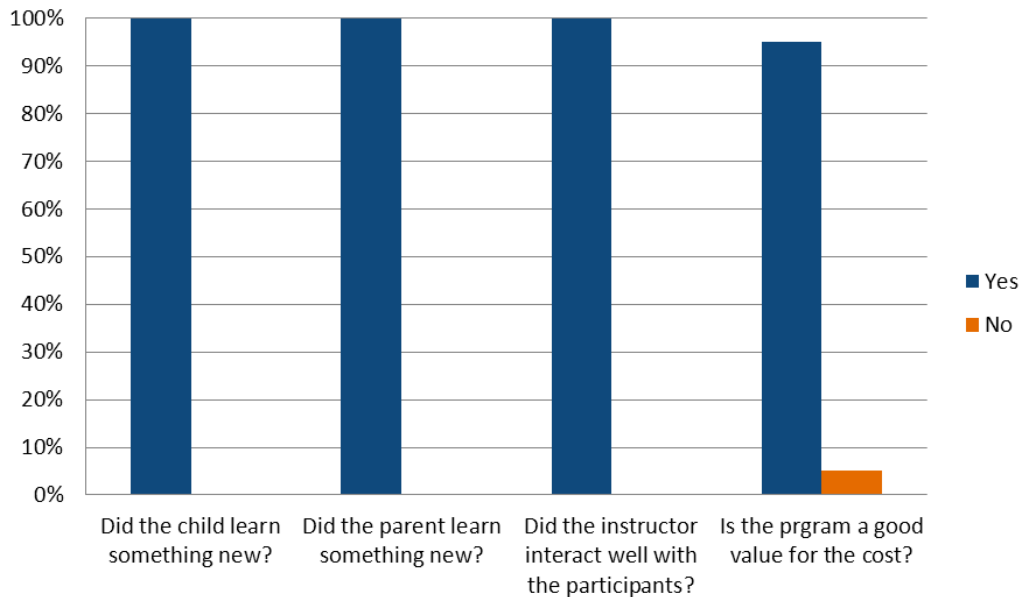
LEGO-Mania!

- Instructed by: Frank Ware
- Number of Students: 11 (4 reporting on survey)
- Student Satisfaction Ranking: 5 (out of 5)
- Parent Satisfaction Ranking: 5 (out of 5)
- Age Range: 4th-6th Grade

Rollercoaster Rally

- Instructed by: Andrew Click
- Number of Students: 5
- Student Satisfaction Ranking: 4.8 (out of 5)
- Parent Satisfaction Ranking: 4.6 (out of 5)
- Age Range: 4th-6th Grade

Participant Feedback (All courses combined)



Program: War Eagle BEST

Date: Saturday, August 27, 2011- Kick Off
Sunday, September 25, 2011- Mall Day
Friday, October 7- Saturday, October 8, 2011- Judging and Game day

Description: A middle and high school robotics competition open to teams in the East Alabama region.

Personnel:

- **Co-Directors-** George Blanks, Mary Lou Ewald, and Darin Baldwin (Southern Union Comm. College)
- **Emcee-** Chris McDuffie (AL State Dept. of Education)
- **Event Coordination/Logistics-** Mary Lou Ewald, Erin Percival (COSAM Outreach)
- **Floor Boss-** Michael Carroll (College of Engineering, graduate student)
- **Head Judges-** Peter Jones (College of Engineering) and Karl Ward (SABIC Innovative Plastics)
- **Head Referee-** Andrew Faggard (College of Engineering, student)
- **Head Scorekeeper-** Bryan McMeen (COSAM, student)
- **Hospitality-** Kathy Feminella (COSAM Outreach), Lara Stubbs (Huntingdon College, student)
- **Judging Assistants-** Jackie Hundley (College of Engineering), Chelsea Harrison (COSAM Outreach), Molly McCartney (COSAM Outreach)
- **Media/Communications-** Cheryl Cobb (Engineering), Candis Hacker Birchfield (COSAM)
- **On-Site Coordination** – Virginia and Carmine Vilardi (Wetumpka High School)
- **Pit Boss-** Justin Moses (College of Engineering, student)
- **Registration/Information/Sales** – Allison Holt and Molly Folkerts (COSAM Outreach)
- **Graphic Design-** Aileen Broaddus, Wally Ridgway (College of Engineering)
- **Staging-** Jason Smith, Lisa Wethington (College of Engineering, students)
- **Student Assistants-** Allison Holt, TJ Nguyen, Katy Prince
- **Technical Coordinators-** Michael Carroll, Lucas Hunter (U.S. Army), William Woodall (College of Engineering, graduate student), Isaac Queen (Southern Union Community College)
- **Volunteer Coordinator** – TJ Nguyen (COSAM Outreach)
- **Webmaster-** Tyler Patterson (College of Engineering)
- **Alabama Power Support Team-** Mike McCraney (Coordinator), David Freeman, Leah James, Brian Mitchell, Beth Suttle, Jimmy White, Kevin Wiley

Schools Impacted:

A-2-Z Home School – Auburn, AL
Auburn Junior High School – Auburn, AL
Benjamin Russell High School – Alexander City, AL
Brewbaker Technology Magnet High School – Montgomery, AL
Bullock Co. High School – Union Springs, AL
Jordan High School – Columbus, GA
LAMP High School – Montgomery, AL
Loachapoka High School – Loachapoka, AL
Montgomery Catholic Preparatory School – Montgomery, AL
Northside High School – Columbus, GA
Prattville High School – Prattville, AL
Smiths Station High School – Smiths Station, AL
Southside Middle School – Tallassee, AL
Springwood School – Lanett, AL

Schools Impacted (continued)

St. James School – Montgomery, AL
Stanhope Elmore High School – Millbrook, AL
Wetumpka High School – Wetumpka, AL

- **Total Number of Students:** approx. 600-1,000
- **Age Range:** 5th-12th grade

Facilities: AU Student Center Ballroom (Kick Off), Auburn/ Opelika Colonial University Mall, Wetumpka High School (Game Day)

2011 Game Description: BUGS!

Game Pieces

Game Piece	Total #	Point Value
Flies (<i>with Black Ribbon</i>)	4	9
Flies (<i>with Red Ribbon</i>)	8	7
Cockroaches	12	5
Termites	16	3
Bug Food	28	1

Point Value Multiplier

The point value of insects and bug food in scoring position is multiplied by a CAM:

Containment Area Multiplier (CAM)		
SCA	PCA	WPCA
1	3	5

Bonus Points

Food Bonus – 25 points for **each** CA occupied by **both** insects and bug food

Separation Bonus – 50 points if **any** CA contains only one type of bug. For the bonus, both types of flies are considered the same. **Examples:**

If a team has 2 flies with black ribbons and 2 flies with red ribbons in the SCA, 2 flies with black ribbons in the PCA, and 3 cockroaches in the WPCA, they will receive the 50 points.

If there is one fly in the SCA and both the WPCA and PCA are empty at the end of the match, the team will receive the 50 points.

Full Recovery Bonus – 100 points if **at least one of each** type of insect is collected in **any** CA combination. For the bonus, both types of flies are considered the same.

2011 Game Winners

BEST Award

- 1st: Wetumpka High School – #25
- 2nd: Springwood School – #10
- 3rd: Stanhope Elmore High School – #24

Robotics

- 1st: Stanhope Elmore High School – #24
- 2nd: Auburn Junior High School – #2
- 3rd: Southside Middle School – #21
- 4th: Springwood School – #22

Category Awards

Best Marketing Presentation Award

- 1st: Wetumpka High School – #25
- 2nd: Brewbaker Technology Magnet High School – #4
- 3rd: Loveless Academic Magnet Program (LAMP) High School – #19

Best Team Exhibit and Interview Award

- 1st: Wetumpka High School – #25
- 2nd: Springwood School – #22
- 3rd: Montgomery Catholic Preparatory School – #14

Best Project Engineering Notebook Award

- 1st: Wetumpka High School – #25
- 2nd: Springwood School – #22
- 3rd: Stanhope Elmore High School – #24

Best Spirit and Sportsmanship Award

- 1st: Wetumpka High School – #25
- 2nd: Stanhope Elmore High School – #24
- 3rd: Brewbaker Technology Magnet High School – #4

Best T-shirt design

- 1st: Brewbaker Technology Magnet High School – #4
- 2nd: Wetumpka High School – #25
- 3rd: Montgomery Catholic Preparatory School – #14

Best Web Page Design

- 1st: Montgomery Catholic Preparatory School – #14
- 2nd: Wetumpka High School – #25
- 3rd: Southside Middle School – #21

Special Awards

Most Robust Robot: (needed the least amount of repairs)

- 1st: Stanhope Elmore High School – #24
- 2nd: Southside Middle School – #21
- 3rd: St. James School – #23

Most Elegant Robot: (the machine that performs its function the most effectively)

- 1st: Auburn Junior High School – #2
- 2nd: Wetumpka High School – #25
- 3rd: Southside Middle School – #21

Most Photogenic Robot: (the beauty contest)

- 1st: Southside Middle School – #21
- 2nd: Stanhope Elmore High School – #24
- 3rd: Prattville High School – #17



Team Exhibit Design and Construction Award (awarded to the team with the most creative and innovative exhibit design)

- Wetumpka High School – #25

Founder’s Award for Creative Design: (given in honor of the two founders of BEST, Steve Marum and Ted Mahler)

- 1st: Prattville High School – #17
- 2nd: Stanhope Elmore High School – #24
- 3rd: A-2-Z Homeschool – #1

Sponsor’s Choice Awards

The War Eagle BEST Teacher Leadership Award

A line from the Auburn Creed reads: “I believe in education, which gives me the knowledge to work wisely and trains my mind and my hands to work skillfully.” For inspiring the spirit of the Auburn Creed in her BEST students, this year’s Teacher Leadership Award goes to:

- Mr. Scott Moody – Lee Scott Academy

igus Top Gun Award (the team that scored the most points in a single round)

- Stanhope Elmore High School – #24

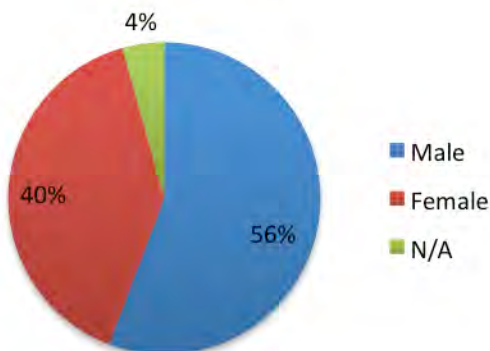
Solid Works CAD Design Award

- Southside Middle School – #21

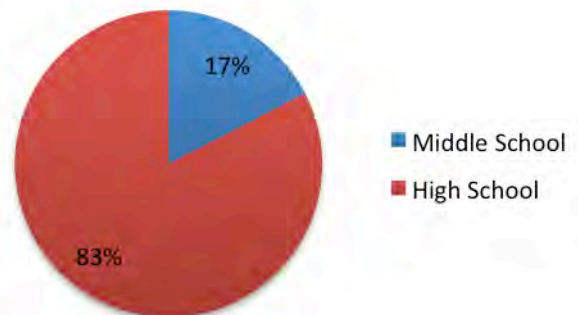
Teams Advancing to South’s BEST

1. Wetumpka High School – #25
2. Stanhope Elmore High School – #24
3. Springwood School – #22
4. Auburn Junior High School – #2

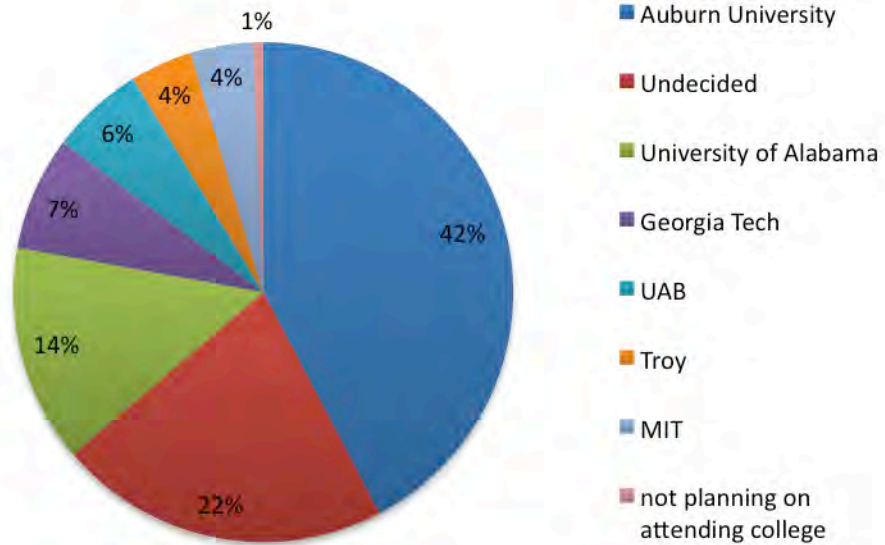
Participant Breakdown
Gender



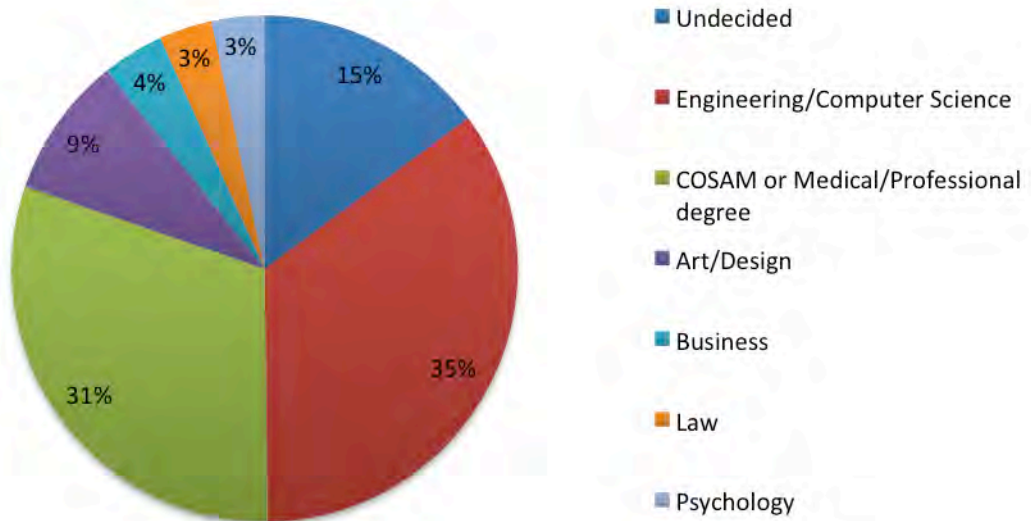
Participant Breakdown
Grade



Participant Breakdown University of Choice



Participant Breakdown Desired Field of Study



Program: Science Investigations

Date: Friday, October 21st and 28th, 2011; 9:00 AM- 11:30 AM

Description: This program provides a meaningful science lab experience for home schooled students from Alabama and Georgia.

Personnel:

- **AU:** Erin Percival, Mary Lou Ewald, Molly Folkerts, Molly McCartney, Emily Dunavant

Schools Impacted: N/A

- **Total Number of Students:** 40
- **Age Range:** 6th-8th

Facilities: SCL 323

Middle School Class

- Instructed by: Erin Percival, Emily Dunavant
- Activities:
 - Safety
 - Using glassware
 - Big Pieces or Small Lab



Program: Getting Under the Surface (G.U.T.S.)

Date: Thursday, October 27th, 2011; 6:00 pm - 8:00 pm

Description: Parent/ Child teams act as lab partners in a 75-90 minute science activity.

Personnel:

- **AU:** Mary Lou Ewald, Kathy Feminella, Casey Mitchell, Allison Holt, Kat West, Sam Hirt, Paul Norgaard
- **Non-AU:** Frank Ware – Retired School Teacher (Sanford Middle School), Gina Watkiss – The Heritage School

Schools Impacted: N/A

- **Total Number of Students:** 30
- **Total Number of Parents:** 30
- **Age Range:** 1st-6th Grade

Facilities: Parker Hall 307, SCL 231, 310, & 323

The GUTS of Blood and Diseases

- Instructed by: Kat West
- Number of Students: 7 (3 reporting on survey)
- Student Satisfaction Ranking: 5 (out of 5)
- Parent Satisfaction Ranking: 4.7 (out of 5)
- Age Range: 1st -3rd Grade

Batty for Bats

- Instructed by: Sam Hirt
- Number of Students: 9 (5 reporting on survey)
- Student Satisfaction Ranking: 4.8 (out of 5)
- Parent Satisfaction Ranking: 4.8 (out of 5)
- Age Range: 4th-6th Grade

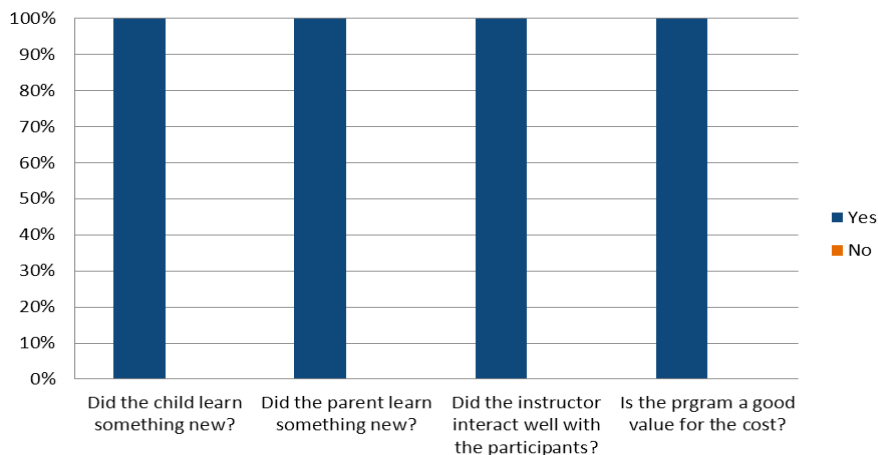
The GUTS of Halloween

- Instructed by: Gina Watkiss
- Number of Students: 9 (4 reporting on survey)
- Student Satisfaction Ranking: 4.75 (out of 5)
- Parent Satisfaction Ranking: 4.75 (out of 5)
- Age Range: 1st -3rd Grade

Edible Science

- Instructed by: Paul Norgaard
- Number of Students: 5 (0 reporting on survey)
- Student Satisfaction Ranking: N/A
- Parent Satisfaction Ranking: N/A
- Age Range: 4th-6th Grade

Participant Feedback (All courses combined)



Program: Science Investigations

Date: Friday, November 11th and 18th, 2011; 9:00 AM- 11:30 AM

Description: This program provides a meaningful science lab experience for home schooled students from Alabama and Georgia.

Personnel:

- **AU:** Erin Percival, Mary Lou Ewald, Molly Folkerts, Molly McCartney, Emily Dunavant

Schools Impacted: N/A

- **Total Number of Students:** 40
- **Age Range:** 6th-8th

Facilities: SCL 323

Middle School Class

- Instructed by: Erin Percival, Emily Dunavant
- Activities:
 - The parts of a microscope
 - Microscope technique
 - Living protist lab



Program: Getting Under the Surface (G.U.T.S.)

Date: Thursday, November 17th, 2011; 6:00 pm - 8:00 pm

Description: Parent/ Child teams act as lab partners in a 75-90 minute science activity.

Personnel:

- **AU:** Mary Lou Ewald, Kathy Feminella, Allison Holt, Wayne Strickland
- **Non-AU:** Hilary Boyd – Auburn Junior High School, Karin Fuller – Auburn Junior High School,

Schools Impacted: N/A

- **Total Number of Students:** 30
- **Total Number of Parents:** 30
- **Age Range:** 1st-6th Grade

Facilities: Parker Hall 307, SCL 231, 310, & 323

Squishy Circuits

- Instructed by: Hilary Boyd
- Number of Students: 8
- Age Range: 1st -3rd Grade

Toys in Space

- Instructed by: Wayne Strickland
- Number of Students: 15
- Age Range: 4th-6th Grade

You are What You Eat

- Instructed by: Karin Fuller
- Number of Students: 6
- Age Range: 1st -3rd Grade



Program: South's BEST Robotics Championship

Date: Thursday, December 1st – Saturday, December 3rd 2011

Description: A middle and high school robotics competition open to winning teams from other hubs in the eastern United States.

Personnel:

- **Co-Directors-** Dr. George Blanks, Mary Lou Ewald
- **Awards & Judging Coordination/Judging Assistants-** Mary Lou Ewald, Erin Percival, Jackie Hundley, Chelsea Harrison, Molly McCartney
- **Event Coordination/Logistics-** George Blanks
- **Emcee-** Greg Womble
- **Floor Boss-** Michael Carroll
- **Floor Production Manager:** Matt Schuster
- **Floor Production Coordinator-** TJ Nguyen
- **Head Judge-** Peter Jones
- **Assistant Head Judges-** Karl Ward, Jim Westmoreland
- **Head Referee-** Mark Rose
- **Head Field Referees-** Andrew Faggard, Tim Iler
- **Hospitality (Food and Facilities)-** Kathy Feminella
- **Media Coordination-** Candis Birchfield, Cheryl Cobb
- **Photography-** Kim Brumbeloe, Don Morgan, Barbara Bryan
- **Pit Boss-** Joey Giuliano, Justin Moses
- **Production-** Bradley Green
- **Registration and Sales-** Allison Holt, Molly Folkerts
- **School of Architecture Coordinators-** Rusty Smith, Margaret Fletcher
- **Head Scorekeeper-** Bryan McMeen
- **Signage-** Aileen Broaddus, Wally Ridgway
- **Staging-** Jason Smith, Lisa Wethington, Christina Giuliano, Sue Mitchell
- **Streaming Video Coordinator-** Jeff Walker
- **Technical and Compliance Coordinators-** Michael Carroll, William Woodall, Lucas Hunter, Isaac Queen
- **Video Production-** Greg Ruff
- **Webmaster-** Tyler Patterson
- **Graphic Design-** Wally Ridgway

Schools Impacted:

Blazer BEST University of Alabama Birmingham Birmingham, AL

- Homewood Middle School- Homewood, AL
- Oak Mountain High School- Birmingham, AL
- Shades Valley Technical Academy- Birmingham, AL
- Spain Park High School- Birmingham, AL



University of Alabama at Birmingham

Central Alabama BEST Central Alabama Comm. College Talladega, AL

- Crossroads Christian School-Moody, AL
- Episcopal Day School-Gadsden, AL
- Hope Academy- Talladega, AL



Schools Impacted (continued):

Emerald Coast BEST University of West Florida Pensacola, FL

- Milton High School-Milton, FL
- Pensacola High School-Pensacola, FL
- Seaside Neighborhood School- Santa Rosa Beach, FL
- Woodham Middle School-Pensacola, FL



Georgia BEST Southern Polytechnic State University Marietta, GA

- Fernbank Science Center LINKS-Atlanta, GA
- North Cobb Christian School- Kennesaw, GA
- North Forsyth High School-Cummings, GA
- Henry W. Grady High School-Atlanta, GA



Jubilee BEST Mobile Community Mobile, AL

- W.P. Davidson High School-Mobile, AL
- Mobile Area Coalition of Homeschools- Mobile, AL
- North Mobile County Middle School-Axis, AL
- St. Paul's Episcopal School-Mobile, AL
- St. Vincent de Paul Catholic School-Mobile, AL
- Sweet Water High School-Mobile, AL
- Monroeville Junior High School- Monroeville, AL



Mississippi BEST Mississippi State University Starkville, MS

- Starkville Christian Home Educators-Starkville, MS
- Holy Cross School-New Orleans, LA
- Lausanne Collegiate School- Memphis, TN
- Alcorn Central High School- Glen, MS



Music City BEST Lipscomb University Nashville, TN

- Dickson Area Robotics Team-Burns, TN
- Central Magnet School-Murfreesboro, TN
- Merrol Hyde Magnet School- Hendersonville, TN



North Alabama BEST Wallace State Community College Hanceville, AL

- Marshall Technical School-Guntersville, AL
- Holly Pond High School-Holly Pond, AL
- Hartselle Junior High School-Hartselle, AL
- Fairview High School-Cullman, AL



Northwest Alabama BEST Northwest Shoals Comm. College Muscle Shoals, AL

- Russellville City Schools-Russellville, AL
- Muscle Shoals High School-Muscle Shoals, AL



Tennessee Valley BEST AU & Calhoun Community College Decatur, AL

- The Academy for Science and Foreign Language- Huntsville, AL
- Athens Bible School-Athens, AL
- Decatur Austin Robotics Coalition (Decatur City Schools)-Decatur, AL
- Lindsay Lane Christian Academy-Athens, AL



War Eagle BEST Auburn University Auburn, AL

- Auburn Junior High School-Auburn, AL
- Springwood School-Lanett, AL
- Stanhope Elmore High School-Millbrook, AL
- Wetumpka High School-Wetumpka, AL



Wiregrass BEST Dothan Community Dothan, AL

- Beverlye Magnet School-Dothan, AL
- Carver Magnet School-Dothan, AL
- Charles Henderson High School-Troy, AL



South's BEST Robotics Championship

Dothan, AL

Schools Impacted (continued):

Wolverine BEST Grove City College Grove City, PA

- Cornerstone Christian Preparatory Academy-Venetia, PA
- Mercer Area Middle/High School-Mercer, PA
- DuBois Area High School-DuBois,PA



Total Number of Students: approx. 2,500

- **Age Range:** 6th-12th grade

Total Number at Event: approx, 3,500

Facilities: AU Student Center, Auburn Arena



2011 Game Description: Bugs!

Game Pieces

Game Piece	Total #	Point Value
Flies <i>(with Black Ribbon)</i>	4	9
Flies <i>(with Red Ribbon)</i>	8	7
Cockroaches	12	5
Termites	16	3
Bug Food	28	1

Point Value Multiplier

The point value of insects and bug food in scoring position is multiplied by a CAM:

Containment Area Multiplier (CAM)		
SCA	PCA	WPCA
1	3	5

Bonus Points

Food Bonus – 25 points for each CA occupied by both insects and bug food

Separation Bonus – 50 points if any CA contains only one type of bug. For the bonus, both types of flies are considered the same. **Examples:**

If a team has 2 flies with black ribbons and 2 flies with red ribbons in the SCA, 2 flies with black ribbons in the PCA, and 3 cockroaches in the WPCA, they will receive the 50 points.

If there is one fly in the SCA and both the WPCA and PCA are empty at the end of the match, the team will receive the 50 points.

Full Recovery Bonus – 100 points if at least one of each type of insect is collected in any CA combination. For the bonus, both types of flies are considered the same.

2011 Championship Winners

BEST Award

- 1st: W.P. Davidson High School (Jubilee BEST)
- 2nd: Central Magnet School (Music City BEST)
- 3rd: Decatur Austin Robotics Coalition (Tennessee Valley BEST)

Game Winners

- 1st: Central Magnet School (Music City BEST)
- 2nd: Decatur Austin Robotics Coalition (Tennessee Valley BEST)
- 3rd: W.P. Davidson High School (Jubilee BEST)
- 4th: Seaside Neighborhood School (Emerald Coast BEST)

Middle School BEST Award

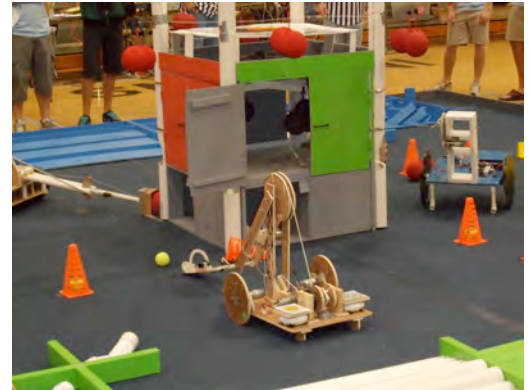
- 1st: Seaside Neighborhood School (Emerald Coast BEST)
- 2nd: Beverlye Magnet School (Wiregrass BEST)

Middle School Robotics Award

- Seaside Neighborhood School (Emerald Coast BEST)

Best Oral Presentation Award

- 1st: Mobile Area Coalition of Homeschools (Jubilee BEST)
- 2nd: Central Magnet School (Music City BEST)
- 3rd: Episcopal Day School (Central Alabama BEST)



Best Team Exhibit and Interview Award

- 1st: Decatur Austin Robotics Coalition (Tennessee Valley BEST)
- 2nd: Spain Park High School (Blazer BEST)
- 3rd: Springwood High School (War Eagle BEST)

Best Project Engineering Notebook Award

- 1st: Central Magnet School (Music City BEST)
- 2nd: W.P. Davidson High School (Jubilee BEST)
- 3rd: Monroeville Junior High School (Jubilee BEST)

Best Spirit and Sportsmanship Award

- 1st: Wetumpka High School (War Eagle BEST)
- 2nd: Merroll Hyde Magnet School (Music City BEST)
- 3rd: St. Vincent de Paul (Jubilee BEST)

BEST Team Video

- 1st: Woodham Middle School (Emerald Coast BEST)
- 2nd: The Academy for Science and Foreign Language (Tenn. Valley BEST)
- 3rd: Spain Park High School (Blazer BEST)

Team Exhibit Design and Construction Award (the most creative and innovative table display design)

- 1st: Central Magnet School (Music City BEST)
- 2nd: Decatur Austin Robotics Coalition (Tennessee Valley BEST)
- 3rd: Spain Park High School (Blazer BEST)

2011 Championship Winners (continued)

Founders Award for Creative Design: (given in honor of the two founders of BEST, Steve Marum and Ted Mahler)

- 1st: Mobile Area Coalition of Homeschools (Jubilee BEST)
- 2nd: Athens Bible School (Tennessee Valley BEST)
- 3rd: Homewood Middle School (Blazer)

Most Elegant Robot: (the machine that makes efficiently performs the task it was designed for)

- 1st: Seaside Neighborhood School (Emerald Coast BEST)
- 2nd: Decatur Austin Robotics Coalition (Tennessee Valley BEST)
- 3rd: Fernbank LINKS (Georgia BEST)

Most Robust Robot: (needed the least amount of repairs)

- 1st: W.P. Davidson High School (Jubilee BEST)
- 2nd: Athens Bible School (Tennessee Valley BEST)
- 3rd: Oak Mountain High School (Blazer BEST)

Most Photogenic Robot: (the beauty contest)

- 1st: DuBois Area High School (Wolverine BEST)
- 2nd: Episcopal Day School (Central Alabama BEST)
- 3rd: Henry W. Grady High School (Georgia BEST)

Best Web Page Design

- 1st: Russellville City School (Northwest Alabama BEST)
- 2nd: Oak Mountain High School (Blazer BEST)
- 3rd: Beverly Magnet School (Wiregrass BEST)

Best T-shirt design

- 1st: Central Magnet School (Music City BEST)
- 2nd: Wetumpka High School (War Eagle BEST)
- 3rd: Homewood Middle School (Blazer BEST)

igus Top Gun Award (the team that scored the most points in a single round)

- Central Magnet School (Music City BEST)

Solid Works CAD Design Award

- 1st: W.P. Davidson High School (Jubilee BEST)
- 2nd: Central Magnet School (Music City BEST)
- 3rd: Fernbank LINKS (Georgia BEST)

Southern Company “Southern Style” Award – This award was determined by ballot and through consultation with the Southern Co. employees who were present. It is being awarded to the team that other teams believed exhibited the qualities important to the Southern Company – honesty, respect, fairness, integrity, safety, teamwork, and diversity.

- Holly Pond High School (North Alabama BEST)

Women in Science and Engineering (W.I.S.E.) Luncheon

- Guest Speaker: Dr. Deborah Barnhart, CEO and Executive Director of the U.S. Space and Rocket Center
- Female Student Attendance: 186



2011 SOUTH'S BEST

PROUDLY PRESENTS

Dr. Deborah Barnhart

CEO and Executive Director of
the U.S. Space and Rocket Center
Huntsville, Alabama



Deborah Edwards Barnhart, ED.D.

Guest Speaker at the WOMEN IN SCIENCE AND ENGINEERING LUNCHEON

Dr. Deborah Edwards Barnhart became the Chief Executive Officer and Executive Director of the U.S. Space & Rocket Center in December 2010. The Center is the official Visitor Information Center for NASA's Marshall Space Flight Center, an affiliate of the Smithsonian, and the showcase for Redstone Arsenal and Army programs. Home to U.S. Space Camp, U.S. Space Academy, and Aviation Challenge, the Center is Alabama's leading tourist attraction. Today's leading technology initiatives in aerospace and defense are showcased along with international space artifacts including a complete Space Shuttle stack and an Apollo Saturn V moon rocket.

Dr. Barnhart's career spans three decades of service in commercial industry, government, aerospace and defense. A retired Navy Captain (O-6), she was one of the first ten women assigned to duty aboard ships and commanded five units in her 26 year career. She was Vice President of three Dow 30 aerospace and defense companies, serving in manufacturing, business development, and congressional lobbying for Honeywell International, McDonnell Douglas (now Boeing), and United Technologies Hamilton Sundstrand.

Dr. Barnhart earned her doctorate at Vanderbilt University, holds degrees from the University of Maryland, the University of Alabama Huntsville, and is a Sloan Fellow (MBA) from Massachusetts Institute of Technology. She resides in Huntsville, Alabama and Clearwater Beach, Florida.

Friday,
December 2nd

11:15 a.m. - 12:45 p.m.
Student Center Ballroom



Science and Engineering Exhibit Fair



SOUTH'S BEST

2011 Robotics Championship

Science and Engineering Exhibit Fair

This year's competition day will feature a Science and Engineering Exhibit Fair. The fair will include interactive and informational displays hosted by the following groups:

Auburn University

- College of Sciences and Mathematics Student Services
- Samuel Ginn College of Engineering Student Services
Samuel Ginn College of Engineering Department Displays
- Special Opportunities in STEM
Honors College, Admissions Office, WISE, SWE, AWIS, Co-Op,
Living Learning Communities
- AU-Air Force ROTC
- AU-War Eagle Motor Sports

Mississippi State University-Bagley College of Engineering

Wallace State Community College

**Science and
Engineering
Exhibit Fair**
Saturday, December 3rd
10am-2pm
Auburn Arena Lawn

Beginning at 10:00am on Saturday, students will receive a Science and Engineering Fair Stamp Card as they enter the exhibit fair on the Auburn Arena Lawn (outside the main entrance). As the students circulate among the displays they should present their stamp card at each exhibit table to be stamped. After receiving eight unique stamps, they should drop their stamp card in the big, blue box at the registration desk for a chance to receive door prizes later in the day. The fair will end at 2:00pm sharp!

Door prizes to include: BEST merchandise, HEXBUG Gift Packs, Auburn Merchandise Gift Bags, Portable DVD Player, Robotics Kit, and more!

Door prize winners will be announced over the floor microphone between 3:00 and 3:30pm

2011 Student Survey Summary

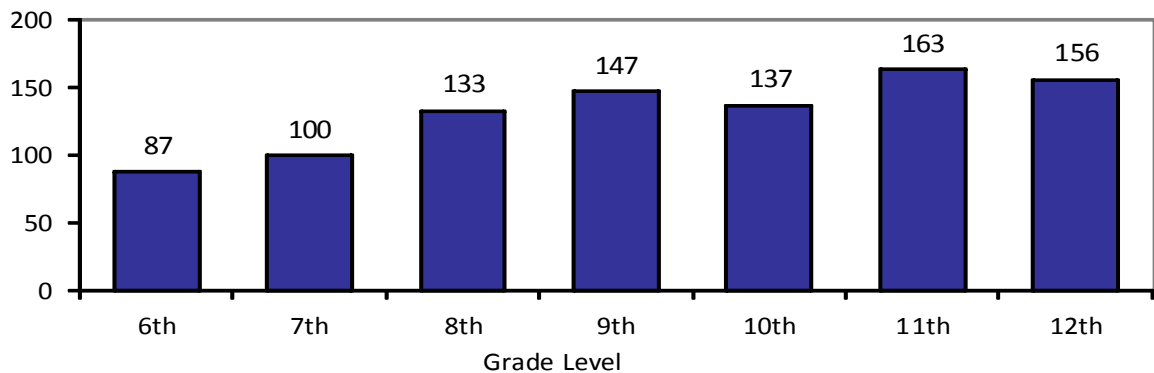
Introduction

The 2011 South's BEST Robotics Competition was held December 2-3. Fifty (50) teams were in attendance, with 31 (or 62%) being from Alabama.

Two surveys were administered to students; one before their visit and one during. A copy of the pre-event survey is attached in Appendix A. The survey during the event asked one question: based on your experience at South's BEST, are you interested in attending Auburn University? Eighty-four (84) percent, 148 students, answered "yes". 29 total students answered "no"; nearly one quarter (24 percent) of the students who answered "no" were from out of state.

Summary of Student Survey

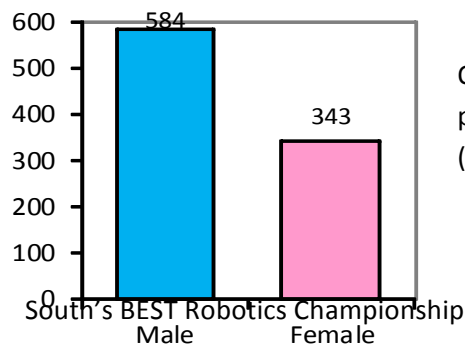
The survey was completed by **1,045 students**. It was apparent that Seaside Neighborhood School had an obvious number of non-BEST students complete the survey, and that Woodham Middle School's surveys were completed by a teacher. These surveys (142 of them) were removed from the pool and steps will be taken to eradicate these effects in the future. For the purpose of defining grade level and gender, Woodham's results were left in the pool.



Grade Level

Of the 932 available surveys in the revised pool, 923 students provided their grade level. Middle School students (6th-8th grade) accounted for 34.7% of student attendees, with 65.3% being in high school (9th – 12th grade).

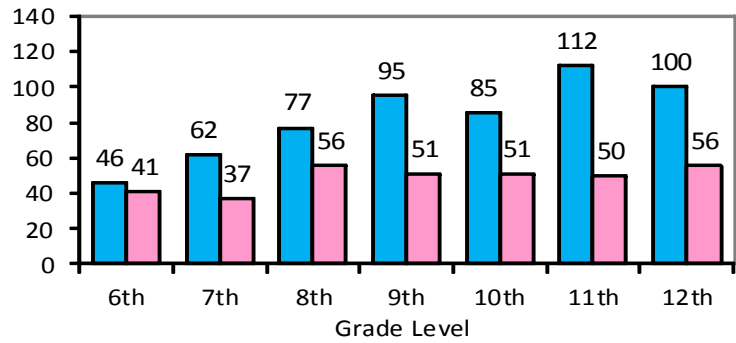
Gender



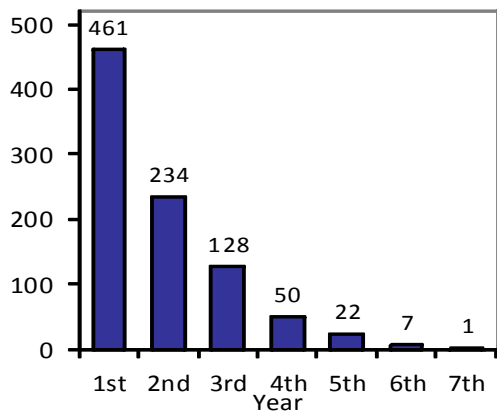
Of the 932 available surveys in the revised pool, 927 students provided their gender; 343 were female (37%) and 584 were male (63%).

Gender by Grade Level

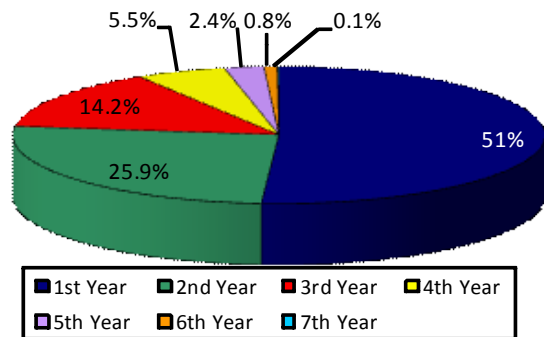
Of the 932 available surveys in the revised pool, 919 students provided both their grade level and gender; 577 male and 342 female.



Years in the Program

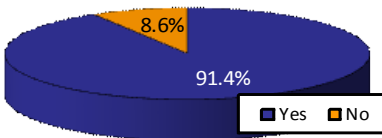


Of the 903 available surveys in the revised pool (sans both Woodham and Seaside), every student provided the number of years they've participated in BEST. First year students accounted for 51%; second year students, 25.9%; third year, 14.2%; fourth year, 5.5%; fifth year, 2.4%; sixth year, 0.8%; and one (1) seventh year student accounted for 0.1%.



As a regional competition, the number of years a student has participated in BEST is not an accurate indication of student attrition. As the program continues to grow, new teams and competition sites are added each year, which brings a new group of students. What this data represents is the innovation and competitive spirit of first year teams and participants.

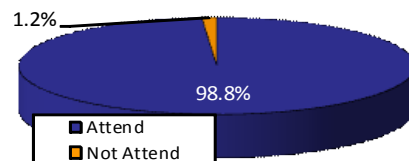
Increased Interest in STEM



Of the 903 available surveys in the revised pool (sans both Woodham and Seaside), 825 had an increased interest in math, science, and/or engineering because of their participation in BEST. Only 78 answered "no"; over 60% of which had only participated in BEST for one year.

Plans to Attend College

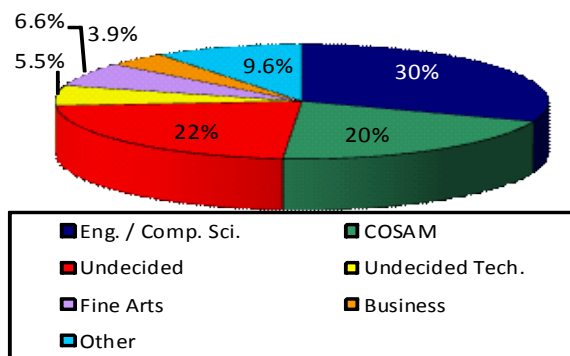
Of the 903 available surveys in the revised pool (sans both Woodham and Seaside), 11 students did not plan to attend



college, while 892 did. Of those who did not plan to attend college, 27.3 % were female and 72.7 % were male.

Of students who wanted to attend a college or university, school of first choices were roughly: Auburn, 18 percent; Alabama, 9 percent; Georgia Tech, 4 percent; South Alabama, 2.5 percent; UAH, 2 percent; Harvard, 2 percent; UAB, 1.9 percent; LSU, 1.6 percent; Mississippi State, 1.6 percent; and Vanderbilt, 1.3 percent. A majority of students chose more than three schools or were completely undecided, roughly 29 percent total.

Fields of Study



There were 13 available fields of study for students to choose from and an “other” write-in option. Students who chose multiple unrelated fields or wrote “undecided” were marked “undecided”; students who chose multiple technical fields, namely “Math, Science, Engineering, or Medicine” were marked “undecided technical”. Engineering/Computer Science accounted for 30 percent while COSAM (or medical degrees starting there) accounted for 20 percent. Undecided students accounted for 22 percent and undecided technical was 5.5 percent. The remaining notable percentages were:

Agriculture .4%	Communications /	History, Literature, or English
Architecture 2.5%	Journalism .5%	1.8%
Business 3.9%	Criminology or Law 2.1%	Psychology 2.4%
Education 1%	Fine Arts 6.6%	

College Interest Among High School Students

Eleven students said they had no plans of attending college; ten of which were in high school. There were 603 high school students that gave their collegiate plans. The colleges of choice and the percentages of which they are preferred are similar to those of the entire group. The largest variance is in undecided students; which actually rose by one percentage point.

A major was given by 592 high school students. Engineering/Computer Science was selected by 211 students, or 35.6%. COSAM degrees captured 120 students or 20 % (over half selecting medicine). Undecided students fell to 18.8 percent and undecided students in technical disciplines fell to 4.7%. The remaining highest concentrations were:

Fine Arts: 5.6%	Psychology: 2.5%
Business: 4.4%	Architecture: 1.5%



Student Survey 2011

Name: _____ City/State: _____

School: _____ Grade: _____ Gender: Female Male

1.) Do you intend/want to go to college?

- Yes
- No

If so, where would you like to attend? _____

What field of study do you plan to major in?

- | | |
|--|--|
| <input type="checkbox"/> Agriculture | <input type="checkbox"/> History/ Literature/ English |
| <input type="checkbox"/> Architecture/ Design/ Construction | <input type="checkbox"/> Law |
| <input type="checkbox"/> Business (marketing, accounting, aviation, etc) | <input type="checkbox"/> Mathematics |
| <input type="checkbox"/> Communications/ Journalism | <input type="checkbox"/> Medicine/ Health/ Vet./ Nursing |
| <input type="checkbox"/> Criminology | <input type="checkbox"/> Psychology/ Social Work |
| <input type="checkbox"/> Engineering/ Computer Science | <input type="checkbox"/> Science (chemistry, biology, physics) |
| <input type="checkbox"/> Fine Arts (art, music, film, theatre) | <input type="checkbox"/> Other _____ |

2.) If you are not planning to attend college, why not?

- | | |
|--|---|
| <input type="checkbox"/> I have no interest in attending college | <input type="checkbox"/> I can't afford to attend college |
| <input type="checkbox"/> I have a job | <input type="checkbox"/> Other: _____ |

3.) Has participating in the BEST Program increased your interest in the fields of math, science, and/or engineering?

- Yes
- No

4.) How many years (including this year) have you participated in BEST?

- | | |
|----------------------------------|---|
| <input type="checkbox"/> 1 year | <input type="checkbox"/> 3 years |
| <input type="checkbox"/> 2 years | <input type="checkbox"/> More than 3 years: _____ |

Program: Science Investigations

Date: Friday, December 9th, 2011; 9:00 AM- 11:30 AM

Description: This program provides a meaningful science lab experience for home schooled students from Alabama and Georgia.

Personnel:

- **AU:** Erin Percival, Mary Lou Ewald, Molly Folkerts, Molly McCartney, Emily Dunavant

Schools Impacted: N/A

- **Total Number of Students:** 40
- **Age Range:** 6th-8th

Facilities: SCL 323

Middle School Class

- Instructed by: Erin Percival
- Parents and Student Science Fair Meeting:
 - GEARSEF Regulations
 - Review Parent Resource Packet
 - Science Fair Project Question and Answer



AUBURN UNIVERSITY

COLLEGE OF SCIENCES
AND MATHEMATICS

January/February 2011

Volume 3, Issue 1

E=mc²

Engaging More Community Connections

A Science and Math Outreach Newsletter

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Upcoming Events and Programs 1-2

Experiment of the Issue 3

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Upcoming Events & Programs:

Science Matters Summer Academy for Elementary Students

Schedule of Events

- Feb. 12—Parents Night Out
- Feb. 19—Science Olympiad
- Feb. 25—TEAMS competition
- Feb. 22—GLITS
- Feb. 23—Deadline for Spring YES registration
- March 5—Spring YES
- March 25—Parents Night Out
- March 29—GLITS
- April 2—Elementary Science Olympiad
- April 3—Parents Night Out
- April 21—GLITS
- April 29—Tentative date for AU Explore

Science Matters was such a huge success last summer that we will again be offering the program this summer with ALL NEW courses! This summer, the program will target elementary students in rising grades 3—6 (currently in grades 2—5). The program allows participants to explore the world of science through **real experiments, fantastic field trips**, technology and art projects, and hands-on, **make-n'-take activities**. A few of the courses planned for this summer include:

To Catch a Thief - The Great Escape - Fur and Feathers - Hogwarts I - Toy Science

Science Matters offers seven different science-themed weeks. Your child can delight in as many weeks as they like! Parents can choose between the Regular Day option from 8:30am-3:30pm daily or the Extended Day option from 8:30am-5pm daily. Multiple week discounts are available.



Program Fees range from \$170—\$215 per week and include: **All materials** for all courses, fantastic **field-trips** each week, first-class experienced instructors and staff, all snacks (morning and afternoon breaks), special *Science Matters* T-shirt and backpack, and a **Certificate of Achievement**.

Registration will open and available on-line by mid-February.

For more information, contact us at COSAM_Outreach@auburn.edu or by phone at (334) 844-7449 or visit our website. www.auburn.edu/cosam/outreach

Science Matters Dates this summer:

- May 31—June 1 (4-day week)
- June 6-10
- June 20-24
- June 27-July 1
- July 11-15
- July 25-29
- August 1-5

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

www.auburn.edu/cosam/outreach

Upcoming Events & Programs, cont'd:

Summer YES Camps—Save the Date!



The College of Sciences and Mathematics will host two Summer Youth Experiences in Science (YES) camps this year—**June 20-23** and **June 27-30**—for rising 7th—9th grade students (students currently in 6th—8th). Summer YES is a great opportunity for students to explore the many wonders of science by participating in hands-on experiments related to Chemistry, Electronics, River Creatures, and much more. Students can choose a half-day, full-day or residential option. Summer YES was the only middle school camp in the state of Alabama to be featured in the national publication, "The Ultimate Guide to Summer Opportunities for Teens," in 2008. Registration and course information will be available in mid-February.

Spring YES—March 5

The FREE Spring Youth Experiences in Science program at Auburn University will occur on



Saturday, March 5th, 9:00—noon.

Registration is now available on the outreach website, www.auburn.edu/cosam/outreach. The morning will include a variety of hands-on, minds-on science courses designed for students in grades 3-6. Spring Y.E.S. is a free program—space is limited and pre-registration is required and due by February 23.

Parents Night Out—February 12

Parents Night Out is an opportunity for parents to have an evening to themselves and peace of mind knowing their children are in a safe, secure, and FUN environment. Parents Night Out will take place on the AU campus for children ages 6-12 on select dates this semester (see below). Children will have the opportunity to participate in a variety of science-based activities, including: LEGO Robotics; K-Nex amusement park ride construction; educational videos, puzzles and board games; arts and crafts; and much more!

Dates for Parents Night Out events this semester:

- Saturday, February 12, 2011 (Special Valentine's Weekend Event)
- Friday, March 25, 2011
- Friday, April 8, 2011

Each event will take place from 6:00 PM-10:00 PM. The cost is \$25 for one child and \$15 for each additional child in the same family. Pizza dinner is included. Pre-registration required—registration form can be found on our website at 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

Experiment of the Issue

Goldenrod Valentines

Materials Needed:

- Goldenrod Paper*
- Cotton balls
- Squirt bottle
- Scissors
- Ammonia-water solution (household ammonia from the grocery store like glass cleaner)
- Candle or yellow crayon
- All purpose gloves
- Paper towels
- Safety glasses



Procedure...

- Fold one piece of goldenrod paper in half and cut out a heart shape from the center fold.
- Fold the heart shape 2-3 times more and cut out smaller heart shapes or other patterns of your choice, then unfold the paper.

Procedure (cont.)...

- Lay the heart flat on a tray with 4-5 cm (1.5-2 in) rims (ie: baking pan, plastic container, or dinner plates work well) to contain the ammonia solution.
- Dip a cotton ball in the ammonia solution and swab the doily from side to side to turn the paper from yellow to red. You may also use a squirt bottle for precision saturation or write a disappearing message like LOVE or BE MINE. You can also simply pour a small amount of the ammonia directly onto the doily.
- After your message fades away, use a candle or yellow crayon to write a "secret message" inside the heart doily and follow step four to make the message appear again. It's Valentine magic (I mean science)!
- Finally share the love with a family member, friend, or "person of interest" and they will be yours forever!



The Science Behind It...

The ammonia on the cotton ball is a base and causes the dye in the special goldenrod paper to change color. You probably noticed that the red color fades over time and the paper eventually changes back to its original yellow color. Why? The carbon dioxide gas in the air we breathe is slightly on the acidic side of the pH scale. The carbon dioxide reacts with the ammonia on the paper to produce ammonium carbonate, which changes the pH of the paper to neutral (roughly a pH of 7) and the dye changes back to yellow. If you use a stronger base like washing soda, the red message will not disappear with just the carbon dioxide in the air. You will need to use a stronger acid like lemon juice or vinegar to change it from red to yellow. You can also use goldenrod paper as inexpensive pH paper to classify safe household products as being either acidic or basic.

***Goldenrod Paper**—When this paper meets a basic substance it turns bright red... so, why wouldn't it make the perfect Valentine's Day experiment? Just add your favorite Valentine shapes to this acid/base experiment and you will end up with the most amazing scientific Valentines you've ever seen! Goldenrod paper can be purchased at on-line science supply stores, such as Steve Spangler Science, or make your own at home. Recipe for making the paper → http://www.ehow.com/how_5869678_make-goldenrod-paper.html



Since last issue ...

Halloween G.U.T.S.

The Halloween Special session of Getting Under The Surface (G.U.T.S) took place on Thursday, October 21, 2010. Thirty-seven parent-child teams attended this event, the final G.U.T.S. session of 2010. Two brand new courses were revealed: Bones: Connecting the Living to the DEAD, taught by Ms. Katie Davis, and Going Batty with Batman, taught by Mr. Sam Hirt. Other courses from the evening included Just Eyeball It, taught by Dr. Robert Lishak, and The G.U.T.S. of Harry Potter's Magic, taught by Ms. Gina Watkiss. Thank you to all who attended for making the 2010 G.U.T.S. program a great success!



War Eagle BEST

On Saturday, October 30, 2010, 18 teams from southern Alabama and eastern Georgia came to Auburn's campus for War Eagle BEST, a high school and middle school robotics competition. Teams prepared for the competition for 6 weeks. Teams that advanced to the South's BEST Robotics Championship included Episcopal Day School, Lee-Scott Academy, Stanhope Elmore High School, and Wetumpka High School. Congratulations to all the participating teams on their hard work and dedication!



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AUBURN UNIVERSITY

COLLEGE OF SCIENCES
AND MATHEMATICS

March/April 2011
Volume 3, Issue 2

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Engaging More Community Connections

A Science and Math Outreach Newsletter

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Upcoming Events & Programs:

Spring YES—March 5 *Youth Experiences in Science*

Schedule of Events

- March 5—Spring YES
- March 25—Parents Night Out
- March 29—GUTS
- April 2—Elementary Science Olympiad
- April 8—Parents Night Out
- April 21—GUTS
- April 29—AU Explore
- May 31—Science Matters Camps Begin
- June 20-23—Summer YES
- June 27-30—Summer YES

The Spring Youth Experiences in Science program at Auburn University will occur on Saturday, March 5, from 9:00 a.m.—12:00 p.m.

Spring YES is a free Saturday science camp for 100-200 students in grades 3-6. Students explore hands-on, minds-on activities in courses like Tigers for Tigers, Slimy Toys at Hogwarts, Art in Science, LEGO-Mania! and Don't Catch that Germ. Pre-registration is required.



Parents Night Out—March 25 & April 8

Parents Night Out is an opportunity for parents to have an evening to themselves and peace of mind knowing their children are in a safe, secure, and FUN environment. Parents Night Out will take place on the AU campus for children ages 6-12 on select dates this semester (see below). Children will have the opportunity to participate in a variety of science-based activities, including: LEGO Robotics; K-Nex amusement park ride construction; educational videos, puzzles and board games; arts and crafts; and much more!



Dates for Parents Night Out events this semester:

- Friday, March 25, 2011
- Friday, April 8, 2011

Each event will take place from 6:00 PM-10:00 PM. The cost is \$25 for one child and \$15 for each additional child in the same family. Pizza dinner is included. Pre-registration required—registration form can be found on our website at www.auburn.edu/cosam/outreach.

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

www.auburn.edu/cosam/outreach

Upcoming Events & Programs, cont'd:

G.U.T.S.—March 29

The spring 2011 *Getting Under The Surface* program will continue on Tuesday, March 29th. G.U.T.S. is a bimonthly evening program aimed at students in grades 1-8 and their parents or grandparents. Each evening session includes dessert followed by a 90-minute science activity featuring a "Getting Under The Surface" theme. Courses for the March 29th session will include "Bubble Magic", "Race to the Sun", and more.

The \$18 registration fee for each session includes dessert and all course materials for each student/adult pair—discounts available for additional family members to participate. The final session this semester will occur on Thursday, April 21st.

G.U.T.S
at
Auburn University



Getting Under the Surface

Elementary Science Olympiad—April 2



Auburn University will host the 15th annual Division A Science Olympiad on Saturday, April 2nd. Division A competition is geared toward students in grades 4-6 and will include events such as "A is For Anatomy", "Barge Building", and "Can Race". The event will take place on the Auburn University campus and will run from 8:30-3:30. Good luck to all the competitors!

Summer YES Camps—Save the Date!

The College of Sciences and Mathematics will host two Summer Youth Experiences in Science (YES) camps this year—June 20-23 and June 27-30—for rising 7th–9th grade students (students currently in 6th–8th).

Summer YES is a great opportunity for students to explore the many wonders of science by participating in hands-on experiments related to Chemistry, Electronics, River Creatures, Biotechnology, Nanotechnology, and much more. Students can choose a half-day, full-day or residential option. Summer YES was the only middle school camp in the state of Alabama to be featured in the national publication, "The Ultimate Guide to Summer Opportunities for Teens," in 2008. Registration and course information will be available in mid-March on our website.



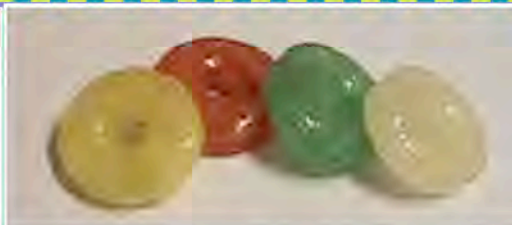
For up-to-date program information from the COSAM Outreach Office, sign up for our listserve, AU4kids. To become a member, send an e-mail to cosam_outreach@auburn.edu

Experiment of the Issue

Your Sense of Taste

Materials Needed:

- Life Savers or other flavored candies



Chemistry



Perception



Life Science

Procedure:

- Work in pairs
- One person closes their eyes and holds their nose, while another feeds them a lifesaver, without telling them the flavor.
- The person who ate the candy should try to guess what flavor the life saver is, without letting go of their nose.
- Observations should proceed for a minute or so as the candy dissolves in their mouth. Is there any change in the taste of the candy from the beginning to the end of the experiment? Describe the tastes.
- Take turns feeding each other candy and guessing flavors until you run out of candies!

The Science Behind It....

There are only four different types of true tastes - sour, sweet, salt and bitter. Each of these types of receptors bind to a specific structure of a "taste" molecule. Sweet receptors recognize hydroxyl groups (OH) in sugars, sour receptors respond to acids (H⁺), the metal ions in salts (such as the Na⁺ in table salt). Alkaloids trigger the bitter receptors - alkaloids are nitrogen containing bases with complex ring structures which have significant physiological activity. Some examples of alkaloids are nicotine, quinine, morphine, strychnine, and reserpine. Many poisons are alkaloids, and the presence of receptors for the bitter taste at the back of the tongue may help to trigger the vomiting response.

Approximately 80-90% of what we perceive as "taste" actually is due to the sense of smell. Just think about how dull food tastes when you have a head cold or a stuffed up nose. At first students may not be able to tell the specific flavor of the candy, just perhaps a sensation of sweetness or sourness. If students are patient, some may notice that as the candy dissolves they can identify the specific taste. This is because some scent molecules volatilize and travel up to the olfactory organ through a "back door" - that is up a passage at the back of the throat and to the nose. Since we can only taste four different true "tastes", it is actually smell that lets us experience the complex, mouth watering flavors we associate with our favorite foods.

Upcoming Events & Programs, cont'd:

Science Matters—Save the Dates!

Registration is now open for our Science Matters summer academy for elementary students. The program was such a huge success last summer that we have expanded the program this summer with ALL NEW courses! This summer, the program will target elementary students in rising grades 1—6 (currently in grades K-5). The program allows participants to explore the world of science through real experiments, fantastic field trips, technology and art projects, and hands-on, make-n'- take activities. A few of the courses planned for this summer include:

To Catch a Thief - LEGO-Mania! - Ocean Explorers - Science Stew -- Hogwarts I - Toy Science

Science Matters offers seven different science-themed weeks (four weeks for rising 1-2 graders). Your child can delight in as many weeks as they like! Parents can choose between the Regular Day option from 8:30am -3:30pm daily or the Extended Day option from 8:30am-5pm daily. Multiple week discounts are available.

Program Fees range from \$170—\$235 per week and include: All materials for all courses, field-trips, first-class experienced instructors and staff, all snacks (morning and afternoon breaks), special Science Matters T-shirt and backpack, and a Certificate of Achievement.

Science Matters Dates this summer:

May 31—June 1 (4-day week)

June 6-10

June 20-24

June 27-July 1

July 11-15

July 25-29

August 1-5



For more information, contact us at COSAM_Outreach@auburn.edu or by phone at (334) 844-7449 or visit our website: www.auburn.edu/cosam/outreach

Opportunities:

Scholarships available for Alaska science camp



The Mississippi-Alabama Sea Grant Consortium is sponsoring two scholarships to the Ocean Science and Leadership Expedition in Alaska on July 14-23, 2011, for students who will be in grades 10-12 in the 2011-2012 school year and reside in Alabama or Mississippi.

The camp, offered by the Prince William Sound Science Center and based in Cordova, Alaska, will include ocean-science learning on subjects, such as oil spills, oceanography and climate change. The course includes a sea-kayaking expedition, a hike on a glacier, camping on a remote beach and a trip to Valdez on the Alaska Marine Highway.

The scholarship will cover the \$1,100 tuition and \$400 toward travel expenses. The deadline for applications is April 1. For the Mississippi-Alabama Sea Grant Consortium scholarship application and more details about the program, go to <http://www.pwssc.org/blog/summer-programs/ocean-science-and-leadership-expedition>. Scholarship awards will be based on merit and financial need.

Engaging More Community Connections

**Since last issue ...****Valentine's Parents' Night Out**

The special Valentine's session of our new Parents' Night Out program took place on Saturday, February 12, 2011. 13 children spent their Saturday night with us enjoying Magic School Bus videos, a pizza dinner, making Valentine's Day cards, playing educational board games, and building/programming with LEGO Wedo Robotics. Thank you to all who attended for making the first Parents' Night Out program of 2011 a success.

TEAMS

On Friday, February 25th, schools from across the region competed in the TEAMS competition at Auburn University. TEAMS is a timed national engineering & science competition, sponsored by the Junior Engineering Technical Society (JETS), that asks high school students to solve real-world challenges. Winners from the AU competition included Randolph School (11th/12th Grade Division, 1st Place), Columbus High School (11th/12th Grade Division, 2nd Place), and Grissom High School (11th/12th Grade Division, 3rd Place). Montgomery Catholic School Team B won the 9th/10th Grade Division.

Science Olympiad

The 2011 Division B Science Olympiad took place on Saturday, February 19th on the Auburn campus. Middle School events throughout the day ranged in subject matter that spanned all areas of the science course of study. Winners of the competition were Auburn Junior High School – 1st place, Drake Middle School Team A- 2nd place, Drake Middle School Team B- 3rd place, Baldwin Arts and Sciences Team A- 4th place. These teams qualified for the 2011 Alabama State Science Olympiad at Huntingdon College on March 12th.

Colleges of Sciences and Mathematics K-12 Outreach

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COLLEGE OF SCIENCES
AND MATHEMATICS

May/June 2011

Volume 3, Issue 3

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Upcoming Events & Programs:

SUMMER SCIENCE CAMPS!

Register Today...

Schedule of Events

- May 31—June 3—Science Matters
- June 6—10—Science Matters
- June 20—23—Summer YES Camp
- June 20—24—Science Matters
- June 27—30—Summer YES Camp
- June 27—July 1—Science Matters
- July 1—15—Science Matters
- July 20—23—BEST National Conference
- July 25—29—Science Matters
- August 1-5—Science Matters

The College of Sciences and Mathematics will host two Summer Youth Experiences in Science (YES) camps this year—**June 20-23** and **June 27-30**—for rising 7th—9th grade students (students currently in 6th—8th).



Summer YES is a great opportunity for students to explore the many wonders of science by participating in hands-on experiments related to Chemistry, Electronics, River Creatures, Biotechnology, Nanotechnology, and much more. Students can choose a half-day, full-day or residential option. Summer YES was the only middle school camp in the state of Alabama to be featured in the national publication, "The Ultimate Guide to Summer Opportunities for Teens," in 2008. Registration and course information is available on our website.

Register now for Summer programs to receive the largest discounts!

Early bird dates:

May 6—Science Matters

May 20—Summer YES

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

www.auburn.edu/cosam/outreach

2011 Course Offerings


June 20-23

Microbe Mission
Create Your World
Krashers
Art in Science

June 27-30

River Creatures
Soakin' Skyrockets
Electronics
NanoScience
Genes, Diseases, and Biotechnology
Off the Wall Science

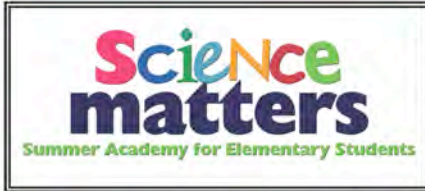
 = morning courses (8:30—11:30am)

 = afternoon courses (1:30—4:30pm)

Register by **May 20** to receive discounted pricing. For more information, contact us at COSAM_Outreach@auburn.edu or by phone at (334) 844-7449 or visit our website. www.auburn.edu/cosam/outreach

Upcoming Events & Programs, cont'd:

Science Matters



Science Matters is a summer science academy program at the Auburn University main campus for elementary students in grades 1-6 that offers youngsters a supercharged science experience. The program allows participants to explore the world of science through real experiments, fantastic field trips, technology and art projects, integrated language arts, and hands-on, make-n-take activities.

Science Matters offers seven different science-themed weeks (four weeks for 1-2 graders). Your child can delight in as many weeks as they

like! Parents can choose between the Regular Day option from 8 am - 3:30 pm daily or the Extended Day option from 8 am - 5 pm daily.

Program Fees Include (Prices range from \$170 –\$235 per week/child):

- All materials for courses—Fantastic field-trips each week—First-class experienced instructors and staff—All snacks (morning and afternoon breaks) - Special Science Matters academy T-shirt—Science Matters string backpack—Certificate of Achievement—Lots of Make-n-Take projects

Spaces are limited each week and are filled on a first come, first served basis. Multiple week discounts are available.

Science Matters – Summer 2011 Schedule and Course Topics

*****Courses in ORANGE are full.*****

Week	1st – 2nd grade	3rd-4th grade	5th-6th grade
May 31 – June 1*	My Big Backyard	Invent It, Build It!	Fur and Feathers
June 6-10	Up, Up & Away	Fancy Fuel	Hogwarts I
June 20-24	Creature Features	Farm to Food	Ocean Explorers
June 27-July 1	Science Stew	LEGO-Mania!	Toy Science
July 11-15	X	To Catch a Thief	Animation Creations
July 25-29	X	Slimy Science	Race to the Sun
Aug 1-5	X	The Biology of ME!	Egg-cellent Adventure

Waiting lists will be kept for full courses. Register by May 6 to receive a discounted price. To register, visit www.auburn.edu/cosam/outreach or call 334-844-7449.



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

Experiment of the Issue

Taco Sauce Penny Cleaner from Steve Spangler Science

Materials Needed:

- Dirty pennies (try to collect tarnished pennies that all look the same)
- Taco sauce (mild sauce from Taco Bell works well)
- Vinegar
- Tomato paste
- Salt
- Water
- Small plates



Procedure...

1. Let's start by proving that taco sauce does a good job of cleaning pennies. Place several tarnished pennies on a plate and cover them with taco sauce. Use your fingers to smear the taco sauce all over the surface of the pennies. Remember to wash your hands... and don't lick your fingers (pennies are really dirty and some taco sauces are really spicy!)
2. Allow the taco sauce to sit on the pennies for at least two minutes.
3. (cont. below)

Procedure (cont.)...

3. Rinse the pennies in the sink and look at the difference between the top side of the pennies that touched the taco sauce and the bottom side. It's no myth... taco sauce does the trick.

So, which ingredients are responsible for the cleaning power of taco sauce? Let's find out...

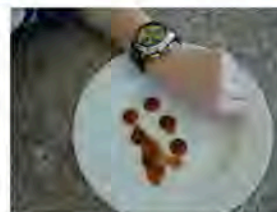
1. Place two or three equally tarnished pennies on each of four plates. Use masking tape or a sticky note to mark each plate with the ingredient you are testing (vinegar, tomato paste, salt, and water).
2. Cover the pennies with the various ingredients and allow them to sit for at least two minutes.
3. Rinse the pennies from each test plate with water. Which ingredient cleaned the pennies the best?

Much to our surprise, none of the ingredients did a good job of cleaning the dirty pennies. In fact, the results were terrible. Where did we go wrong? Maybe two or more of the ingredients work together to react against the copper oxide on the penny. This assumption helped set up our second test using various combinations of tomato paste, vinegar and salt.

1. Place two or three equally tarnished pennies on each of three plates. Make three signs that say "Tomato Paste + Vinegar," "Salt + Vinegar," and "Tomato Paste + Salt."
2. Cover the pennies with each of the mixtures and give the ingredients at least two minutes to react.
3. Rinse the pennies under water and write down your observations.

Observations...

Parents, the Taco Sauce Penny Cleaner is a great example of a Science Fair project. First, you ask a question - does taco sauce really clean pennies? You find that it does and then you ask another question - What is it in the taco sauce that causes it to clean pennies? You run multiple tests and isolate one variable at a time to see if the vinegar, the tomato paste, the salt, or the water is the real cleaning agent for the pennies. Guess what... nothing cleans the penny. Now what do you do? You ask another question - Could a combination of ingredients cause the cleaning action? Again, you isolate the variables to eventually reach the conclusion that the combination of the vinegar and salt cleans the pennies. The Taco Sauce Penny Cleaner experiment clearly shows scientific inquiry in motion.





Taco Sauce Penny Cleaner (cont.)

How does it work....The clear winner is the mixture of vinegar and salt. Neither vinegar nor salt by themselves cleaned the pennies, but when they were mixed together something happened. The chemistry behind the reaction is somewhat complicated but very interesting. Dr. Laurence D. Rosenhein from the Department of Chemistry at Indiana State University published an article in the Journal of Chemical Education in 2001 about this very reaction. According to Dr. Rosenhein, salt (sodium chloride) plays a very important role in making a copper chloride complex. Salt breaks down into sodium ions and chloride ions and it is the chloride ions that form a surprising complex with the copper ions (specifically the Cu+1). It is also well known that a mixture of lemon juice and salt does a good job in removing tarnish from metals and works very well on pennies. By themselves, the salt and weak acid do very little in the way of removing the coating of copper oxide on the penny, but together these ingredients make a great cleaning agent. Now you know the cleaning power of taco sauce!

Since Last Issue...AU Explore Open House

AU Explore is COSAM's annual Open House Day for middle school students. Approximately 1300 5th–8th grade students from Alabama and Georgia participated in this year's event, which occurred on Friday, April 29. Students experienced live birds of prey, reptiles, and insects up close, interacted with University faculty and students at the Science and Math EXPOs, built motors and dissected sheep eyes at the Science Fun Shops, and watched the science of glass blowing in the Glass Blowing Science demo show.



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Upcoming Events & Programs:

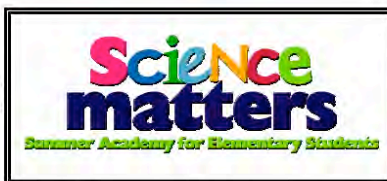
SUMMER SCIENCE CAMPS!

Register Today...

Schedule of Events

- July 11—15—Science Matters
- July 20—23—BEST National Conference
- July 25—29—Science Matters
- August 1-5—Science Matters

Science Matters is a summer science academy program at the Auburn University main campus for elementary students in grades 1-6 that offers youngsters a supercharged science experience. The program allows participants to explore the world of science through real experiments, fantastic field trips, technology and art projects, integrated language arts, and hands-on, make-n-take activities. We still have 3 weeks of Science Matters available this summer for 3rd—6th grade children (see dates below). Parents can choose between the Regular Day option from 8 am - 3:30 pm daily or the Extended Day option from 8 am - 5 pm daily.



Program Fees Include (Prices range from \$170 –\$235 per week/child):

- All materials for courses—Fantastic field-trips each week—First-class experienced instructors and staff—All snacks (morning and afternoon breaks) - Special Science Matters academy T-shirt—Science Matters string backpack—Lots of Make-n-Take projects

Spaces are limited each week and are filled on a first come, first served basis. Multiple week discounts are available.

Fall GUTS Dates

Announced!

See back cover for details.

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

www.auburn.edu/cosam/outreach

Science Matters – Summer 2011 Schedule and Course Topics

Courses in ORANGE are full.

Week	3rd-4th grade	5th-6th grade
July 11-15	To Catch a Thief	Animation Creations
July 25-29	Silly Science	Race to the Sun
Aug 1-5	The Biology of ME!	Egg-cellent Adventure

Limited seating still available.

To register, visit www.auburn.edu/cosam/outreach or call 334-844-7449.

Upcoming Events & Programs, cont'd:

The BEST National Conference

From its humble beginnings in 1993, BEST has now grown across the nation and is the second largest educational robotics program in the United States. BEST actively engages over 15,000 students, thousands of industry sponsors and mentors, various school districts and state departments of education, and 40 colleges and universities. Hub representatives from all 47 BEST competition sites around the country will be present at the 2011 conference at Auburn University, July 21-23.



Sessions for Teachers Include:

Team Organization and Planning * Understanding Robot Design & Construction * The Engineering Design Process
Strategies for BEST Team Success * BEST and Curriculum Integration
Software Orientation for easyC, MathWorks, ROBOTC, and SolidWorks

Special Events Include:

Post-Conference, Hands-On, BEST Software Workshops * Exhibitors Showcase/Wine & Cheese Reception
Networking luncheons * Conference Banquet with national STEM education Keynote Speaker



Who should attend:

New and veteran BEST teachers * Team mentors (new and veteran) * Middle and high school STEM educators
2- and 4-year college/university faculty * BEST hub personnel and volunteers
Those interested in starting a BEST hub * Champions of informal STEM education

Anyone with a vested interest in workforce development through programs like BEST!

For conference information or to register, go to www.bestinc.org.

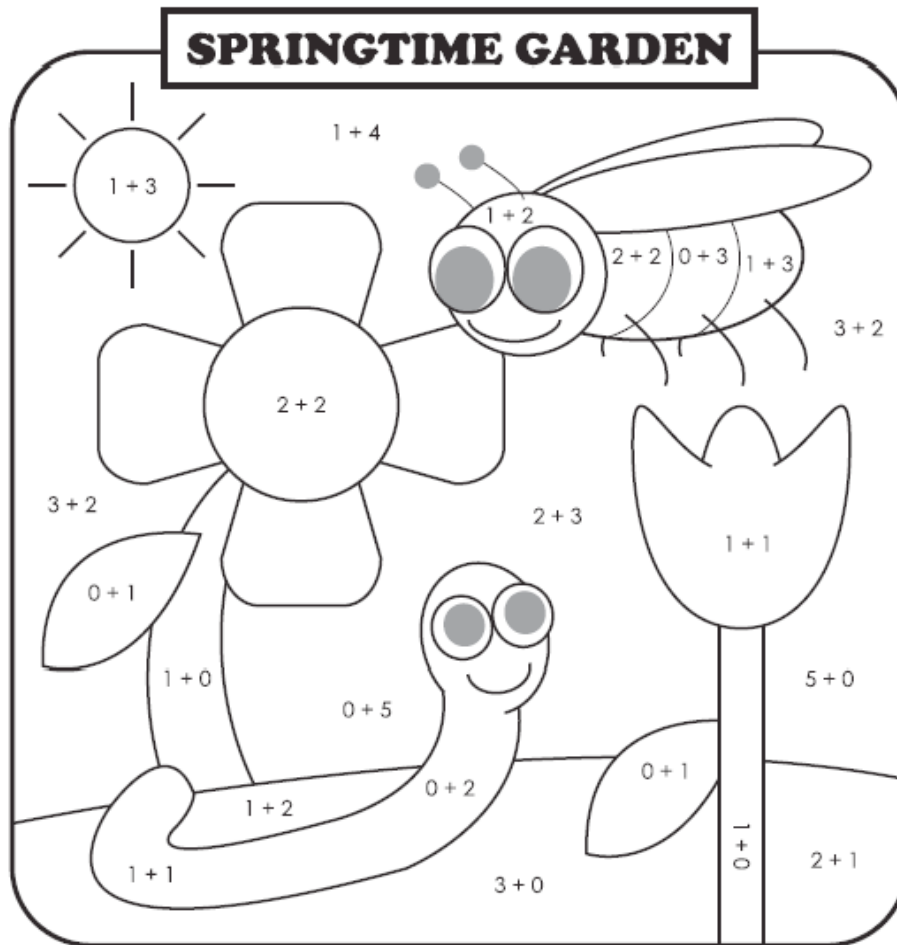
For up-to-date program information from the COSAM Outreach Office, sign up for our listserv, AU4kids. To become a member, send an e-mail to cosam_outreach@auburn.edu

Activity of this Issue

COLOR BY SUM

Add. Then color all the sums using the color key below.

1 = Green 2 = Red 3 = Brown 4 = Yellow 5 = Blue



Keep your child's brain active in the summer months! Find science and math activities and worksheets like this for all grade levels at www.education.com

Since Last Issue....Summer YES



The Summer Youth Experiences in Science (Summer YES) program kicked off on June 27th with 46 middle-school kids eager to participate in four days of engaging science courses. Participants participated in two of the following courses: Soarin' Skyrockets, Electronic Kit Building, NanoScience, Off the Wall Science, Genes, Diseases, & Biotechnology, and

River Creatures. Additionally, participants toured the Auburn University School of Veterinary Medicine and the Leach Science Center and were visited by the Southeastern Raptor Center and their friends. The event concluded on Thursday, June 30th with a certificate ceremony and an address from COSAM's Associate Dean of Academics, Dr. Lawrence Wit.



Mark Your Calendars for GUTS

Getting Under the Surface (GUTS) is a monthly event which takes place on select evenings during the school year for elementary school students and their parents. It's a unique opportunity in which parents and their kids engage in science together. If your child enjoyed Science Matters this summer, GUTS is sure to be a hit this fall!

Tuesday, September 20

Thursday, October 27

Tuesday, November 15

Pre-registration is required and will be available in September on our website.



www.auburn.edu/cosam/outreach

College of Sciences and Mathematics K-12 Outreach

315 Roosevelt Concourse

131 Science Center Classrooms

Auburn University, AL 36849

Phone: 334-844-7449

Fax: 334-844-5740

E-mail: cosam_outreach@auburn.edu



Visit our YouTube channel!! New videos will be updated following outreach programs.

www.youtube.com/AUCOSAMOutreach

Keep up to date with programs and information by visiting:
www.auburn.edu/cosam/outreach



AUBURN UNIVERSITY

COLLEGE OF SCIENCES
AND MATHEMATICS

September/October 2011

Volume 3, Issue 5

E=mc²

Engaging More Community Connections

A Science and Math Outreach Newsletter

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Schedule of Events

- Sept. 9 – Science Investigations
- Sept. 9 – Parents Night Out
- Sept. 20 - GUTS
- Sept. 30 – Parents Night Out
- Oct. 8 - War Eagle BEST
- Oct. 15– Tennessee Valley BEST
- Oct. 21– Parents Night Out
- Oct. 21– Science Investigations
- Oct. 27– GUTS

Upcoming Events & Programs:

GUTS (Getting Under the Surface)

GUTS is back and better than ever this fall with many **ALL NEW** Courses!

GUTS is a monthly evening program aimed at first-sixth grade students and their parent or grandparent. Each evening begins with dessert and is followed by a 1½ hour science course. Each GUTS course is themed around an engaging science concept or topic. Participants engage in activities and/or science experiments related to the topic in order to develop deeper meaning and understanding. Parents attend the sessions with their child and serve as a guide. A parental guide combined with a hands-on approach to learning means that many GUTS courses teach concepts beyond what is taught in a regular classroom environment.

Fall Course Line-up

(S= September 20, O= October 27, N= November 17)

1st-3rd Grade

- Multiplying Microbes– NEW! (S)
- The GUTS of Halloween-NEW! (O)
- The GUTS of Blood and Diseases– NEW! (O)
- Squishy Circuits– NEW! (N)
- You Are What You Eat– NEW! (N)

4th-6th Grade

- LEGO-Mania (S)
- Batty for Bats (O)
- Edible Science (O)
- Rollercoaster Rally-NEW! (S)
- Toys in Space-NEW! (N)

**New classes indicate that the course is either new to the age group indicated OR that it has not been offered in over three years.*

You can register NOW for ALL of these courses!

Also, new this year is the option to receive **reduced rates** through the purchase of a 2011-2012 GUTS Membership.

To register for GUTS or for information about any our programs visit our website at:

www.auburn.edu/cosam/outreach

Child Membership	Family Membership
\$60.00/year	\$108.00/year
Four GUTS courses throughout the year for the use of <u>one</u> child.	Eight GUTS courses throughout the year for use by multiple children in the same immediate family.
1 GUTS T-shirt and 1 name tag	2 GUTS T-shirts and 2 name tags
Free attendance to the May 2012 Backyard Bash for one child	Free attendance to the May 2012 Backyard Bash for two children
10% off any additional GUTS sessions	10% off any additional GUTS sessions

Upcoming Events & Programs, cont'd:

Science Investigations

Science Investigations provides a meaningful science lab experience for home schooled students in **grades 6-8**. The program, held at Auburn University's main campus, is designed to be a learning continuum throughout the year, with eight lab sessions that are designed to build students' science laboratory skills. Additionally, students will develop their own 'science investigation' experiment and present it at the Greater East Alabama Regional Science and Engineering Fair (GEARSEF) in March 2012 at Auburn University.

Due to an overwhelming response to this year's Science Investigations program, we will be offering a second Science Investigations class on different days. Both classes will participate in the same lab activities, have the same assignments, and be responsible for creating a science fair project.

The registration deadline for the second class (Group B) is September 9, 2011.

To register, visit www.auburn.edu/cosam/outreach and click on Science Investigations on the right hand side of the page.

Parents Night Out

Need a night off?

Parents Night Out is an opportunity for parents to have an evening to themselves and peace of mind knowing their children are in a safe, secure, and FUN environment. Parents Night Out will take place on the AU campus. Children ages 6-12 are eligible to participate in the program. Children will have the opportunity to participate in a variety of science-based activities.

Construct and program **LEGO robots**
Design **K-Nex** amusement park rides
Magic School Bus videos and other **educational videos**
Puzzles, word games, and educational board games
Arts and **crafts**....and much more!

Pre-registration required. Download registration form at www.auburn.edu/cosam/outreach. Fee: \$25 for first child, \$15 for each additional child in same family. Dinner is provided.

September 9th (6-9pm)

September 30th (6-9pm)

October 21st (6-9pm)

Meet Our Staff

Erin Percival

We are thrilled to announce the newest member of the outreach family in the College of Sciences and Mathematics...Erin Percival.



Erin worked as a graduate student in COSAM's Outreach Department from 2007-2009. For the past two years she served as a seventh grade life science teacher at Drake Middle School in Auburn. Over the past 5 years, she helped design and deliver curriculum for a number of programs, including LADIES, GUTS, DAMES, and Science Investigations.

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

BEST (Boosting Engineering, Science, & 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- 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. Auburn University is the National Headquarters of BEST Inc. and is home to a local hub competition, War Eagle BEST.

2011 War Eagle BEST Schedule

Saturday, August 27– Kick-Off Day

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

*Sunday, September 25– Mall Day**

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

*Saturday, October 8– War Eagle BEST Competition**

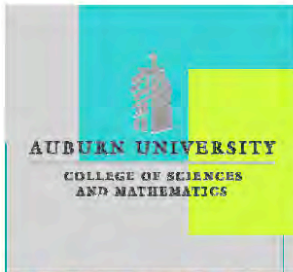
Teams meet at the Student Activities Center to compete for the title of War Eagle BEST Champion.

*The general public is welcome and encouraged to attend both Mall Day and the War Eagle BEST Competition

2011 War Eagle BEST Competition Teams

A-2-Z Homeschool	Loveless Academic Magnet Program	Southside Middle School
Auburn Junior High School	Loachapoka High School	Springwood School
Benjamin Russell High School	Montgomery Catholic Preparatory School	Stanhope Elmore High School
Brewbaker Technology Magnet High School	Northside High School	St. James School
Bullock County High School	Opelika High School	Wetumpka High School
Carver High School	Prattville High School	
Chambers County Career Tech. Center	Smiths Station High School	
Jordan High School	South Highlands Middle School	

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.



College of Sciences and Mathematics K-12 Outreach

315 Roosevelt Concourse
131 Science Center
Classrooms
Auburn University, AL
36849
Phone: 334-844-7449

Since Last Issue....Science Matters

Over 175 1st-6th grade kids filled 330 seats in this year's Science Matters Academy! The program allows participants to explore the world of science through real experiments, fantastic field trips, technology and art projects, integrated language arts, and hands-on, make-n-take activities. Participants engaged in a variety of topics including forensic science, the biology of the senses, LEGO programming, and slimy science. The program will kick-off again next summer with an all-new, line-up of courses, so that children can delight in new wonders every summer!

Visit <http://www.youtube.com/watch?v=NSqLnqR7gYA> to see highlights from this summer!

Activity of the Issue

Observe how light affects the color development of leaves in the fall.

What you need:

- A tree with leaves that turn red in autumn
- Aluminum foil or heavy paper and masking tape.

What you do:

1. Before the leaves turn colors in the fall, find a maple tree, flowering dogwood, sweet gum, or other tree or shrub that you know will turn bright red or purple.
2. Find several leaves that receive bright sunlight, and cover part of them with foil or heavy paper and tape. You can use foil cut into shapes for fun.
3. After the leaves have changed color, remove the covering and observe the different colors underneath. These are the colors that were in the leaf all summer. The bright reds and purples are only made in the fall, with exposure to light.

Get more great science projects each month with the Science Made Simple newsletter at www.sciencemadesimple.com



Visit our YouTube channel!! New videos will be updated following outreach programs.

www.youtube.com/AUCOSAMOutreach

Keep up to date with programs and information by visiting:
www.auburn.edu/cosam/outreach

AUBURN UNIVERSITY
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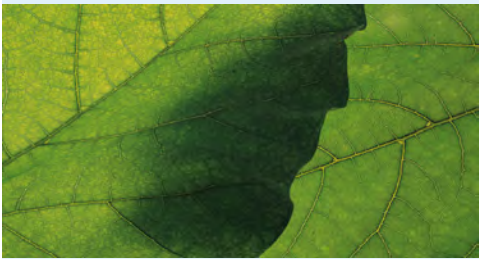
Engaging More Community
Connections



A Science and Math Outreach Newsletter

Volume 3: Issue 6

November/December 2011



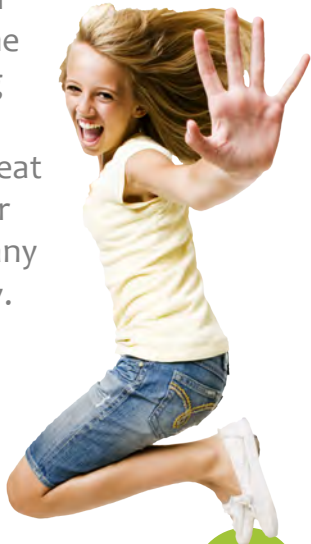
Upcoming Events & Programs:

DAMES

Daughters and Mothers Exploring Science

Saturday, January 21st

Sponsored by the Society of Women in Science and Mathematics, DAMES is a one day mini-conference aimed at increasing the number of women in the fields of science and mathematics. DAMES is a great opportunity for both mothers and their daughters (grades 6-8) to explore the many wonders of science at Auburn University. The event includes 2-3 hands-on courses taught by female students, faculty, and women from industry followed by a luncheon and keynote speaker.



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Upcoming Events and Programs

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- Arboretum Days
- Science Fair Teacher Workshop
- South's BEST Robotics Regional Championship
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4



Upcoming Events and Programs (cont'd)

Arboretum Days

Saturday, November 12th

The next Arboretum Days will take place on, Saturday, November 12th from 9-10am. This month's activity will be all about winter birds! Many birds will make Auburn their home all through the winter. Learn to recognize the birds you might see and what you can do to help them 'live the good life'. Everyone will learn how to make tasty treats to help our local birds survive and thrive during the winter. Arboretum Days is designed for students Pre-K through 5th grade. The program, which takes place at the Donald E. Davis Arboretum at Auburn University's main campus, allows kids to become actively engaged in science-based activities while allowing them to explore the outdoors in a unique and beautiful environment.

While the event is free, pre-registration is required as space and materials are limited. To register, e-mail Dee Smith at arbinfo@auburn.edu.

Each child must be accompanied by a parent or guardian. As a courtesy, please inform Dee, in advance, should you decide to cancel.

Science Fair Teacher Workshop

Tuesday, November 15th

The Intel International Science and Engineering Fair is the world's largest, international pre-college science competition. Auburn University is home to the regional affiliate fair, GEARSEF (Greater East Alabama Science and Engineering Fair). The fair, which will occur on March 7, 2012, serves as the fair site to middle and high school students from east central Alabama counties.

Teachers of 6th-12th grade students interested in participating in this year's fair are invited to join us on Tuesday, November 15 from 5-8pm for our teacher workshop. The cost to participate in the workshop is \$10.00 and dinner is included. Public schools, home schools, and private schools are invited to participate. A local expert will dish out the secrets to science fair success and all participants will be shown how to register for the event and complete the required paperwork.

Teachers interested in participating in the November workshop should complete the Teacher Workshop Registration Form found at: www.auburn.edu/cosam/outreach. Questions can be directed to Erin Percival at erin.percival@auburn.edu.

South's BEST

December 2nd-3rd

BEST (Boosting Engineering, Science, & 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- 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.

In September and October, 847 teams at 47 hubs across the country participate in this six-week event. Winning teams from these hubs advance to compete in one of three regional competitions. Auburn University hosts one of these regional competitions, South's BEST. South's BEST brings all winners from hubs east of the Mississippi River to Auburn to compete in late November or early December of each year.

The 2011 competition will occur on Friday, December 2nd and Saturday, December 3rd at the Auburn Arena. Robot matches will begin on Friday afternoon and will continue throughout the day on Saturday. The public is invited to attend the event at no cost.

Advancing BEST Teams from AU-supported hubs

From our own

War Eagle BEST hub

Auburn Junior High School
Springwood School (Lanett, AL)
Stanhope Elmore High School (Millbrook, AL)
Wetumpka High School

From our sister hub

Tennessee Valley BEST

Athen's Bible School
Decatur Austin Robotics Coalition
Lindsay Lane Christian Academy (Athens, AL)
The Academy for Science and Foreign Language (Huntsville, AL)



Outreach Calendar

November

- 11 Science Investigations
- 11 Science Afternoon at AU
- 12 Arboretum Days
- 15 Science Fair Teacher Workshop
- 17 GUTS
- 18 Science Investigations

December

- 2 December 2-3- South's BEST Regional Robotics
- 9 December 9- Science Investigations





Continued from page 1

DAMES

Daughters and Mothers Exploring Science Saturday, January 21

Registration is now open and spaces are available to girls (and their mothers) in grades 6-8 interested in participating in the January 21st DAMES event.

Mothers are encouraged, but not required to attend. The cost is \$8.00 for a mother/daughter pair or \$16.00 for a daughter/friend pair.

To register for DAMES visit
www.auburn.edu/cosam/outreach.

DAMES

Event Schedule
January 21st

9:15
Check-in

9:45
Welcome

10:00
Course 1

11:00
Course 2

12:00
Lunch (provided)

1:15
SWE Challenge Event

2:30
Wrap-up

Science Afternoon at Auburn University

Friday, November 11

Sponsored by the
National Organization of Black Chemists and Chemical
Engineers (NOBCChE)

Inviting Middle & High School Science Teachers:

Connect with Scientists and Engineers, learn about the Auburn Chemistry Department, learn about Nanotechnology, and take part in hands-on activities designed for the classroom.

2-4pm- Nanotechnology Teacher Workshop
3:30-5:30pm- Chemistry Department Open House

To register:

Contact Dr. Ashley Beasley Green at

Ashley.beasley@nist.gov

Please include name, e-mail, school, and grade level in e-mail.

AMP'd

Auburn Math Puzzle Challenge

A 7th-8th grade problem-solving event for schools

Are YOUR students up to the CHALLENGE?

The Commissioner of the Auburn Math Police, or A.M.P. Squad, needs your students' help apprehending the most heinous of thieves! Put your students' math and problem-solving skills to the test while engaging them in a classic who-dun-it game they will love!

- Engage in real-world problem solving
- Use practical applications of mathematics
- Acquire competence and confidence through self-directed learning
- Engage in applied technology
- Develop leadership, teamwork and organizational skills and, of course...

...Have a blast while learning!

Schools may enter a maximum of two, 6-8 member teams in the 2012 middle school challenge.

To register:

Complete the AMP'd registration form available at: www.auburn.edu/cosam/outreach

The deadline to register is
November 30, 2011.

Activity of the Issue

Hot 'n' Cold

Materials:

- Various materials: wood, metal, Styrofoam, glass, plastic, cardboard, etc. (preferably with a flat surface larger than your hand)
- Thermometer

What to do:

1. Allow the materials to come to room temperature.
2. Place your palms flat on the various surfaces and compare how cold they feel.
3. Arrange the materials in order from cold to warm.
4. Then place the thermometer on each surface.
5. Notice they are all the same temperature.

What's happening?

The temperature-sensing nerve endings in your skin detect the difference between your inside body temperature and your outside skin temperature. When your skin cools down, your temperature sensitive nerves tell you that the object you are touching is cold. An object that feels cold must be colder than your hand, and it must carry body heat away so that your skin cools down.

Styrofoam and metal are two materials that work well as heat conductors because they both start at room temperature and carry heat away from your body, but at different rates.

How cold something feels matters less about the actual temperature and more about the rate of heat exchange.

For more great science activities like this one, you can do at home visit:
www.exploratorium.edu/snacks



Since the last issue

Science Investigations-September 9 and September 16

Forty, 6th-8th grade homeschooled students are participating in this year's Science Investigations program. Students are conducting science labs as a means of learning the lab process. The year will culminate with a science fair project they will display at GEARSEF in March.

AP Study Day- September 17

300 students taking AP-level courses visited us to spend a day studying and reviewing for their classes on our university campus.

GUTS- September 20 and October 27

The September GUTS event attracted 28 parent/child pairs who participated in three hands-on courses: Rollercoaster Rally, Lego Mania, and Multiplying Microbes. In October, 29 parent/child pairs participated in Halloween themed courses about bats, blood, food, and all things creepy and slimy.



E=mc² Engaging More Community Connections

Volume 3:Issue 6

Engaging More Community
Connections

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