

# ANNUAL REPORT

2013

College of Sciences and Mathematics Outreach



The College of Sciences and Mathematics Office of Outreach 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.



19

on-site programs



112

contact days



9,361

students, parents, and teacher participants

# About COSAM Outreach

To promote careers in sciences and mathematics among K-12 students, the College of Sciences and Mathematics (COSAM) at Auburn University has designed an innovative outreach division offering special events, competitions, 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.

In 2013, COSAM Outreach hosted over 9,361 students, parents, and teachers at events on the AU campus. A total of 19 on-site programs, with 112 contact days, were hosted/sponsored by COSAM's Outreach Office. Additionally, over 70,000 students and teachers were impacted through Alabama Science in Motion and the Alabama Math, Science, and Technology Initiative (AMSTI).

In Outreach, we continuously evaluate and assess our existing programs while also creating new programs for specific target audiences. In 2013, we piloted five new science and math outreach initiatives, including:

**TASSAL** (The Alabama STEM Studio for Afterschool Learning)

Through a multi-year partnership with the Truman Pierce Institute based in the AU College of Education, COSAM Outreach is providing science and engineering training and resources for afterschool educators across the state.

## **Kidz-Sized Science**

A community program meeting once a month during the academic year that aims to provide discovery-based learning opportunities for pre-school students in the Auburn-Opelika area.

## **AMP'd High School Challenge**

The Auburn Mathematical Puzzle Challenge,

or "AMP'd", draws on the creative talents of a group of Auburn based mathematicians and math graduate students who are masterful at developing complex logic-based puzzles that engage students in a much different way than a traditional paper-and-pencil math competition! The one-day team-based challenge had high school students running around campus as they used their collective brainpower to solve a series of math puzzles centered on science themes.

## **Robotics and Engineering Education – Fostering the Conceptual Understanding of Science (RE2 - FoCUS) Initiative**

Researchers from the College of Sciences and Mathematics, the College of Education, the Samuel Ginn College of Engineering, and AU-AMSTI received a \$633,000 grant from the Alabama State Department of Education through the U.S. Department of Education to embark on a 3-year initiative to provide professional development for teachers and engage students in project-based science, technology, engineering and mathematics education. The grant supports professional development opportunities for 176 Alabama middle school science and math teachers and provides resources and equipment for engaging their students in hands-on

STEM projects throughout the year.

## **Robotics Academy**

The ongoing success and spread of the BEST Robotics program across the state inspired the creation of a new summer academy for rising 7th – 10th graders focused on robotics. Students engaged in real-world science and math as they worked in small teams to design, construct, program and test a functional robot using VEX Robotics systems. Progress of conceptual learning was gauged each afternoon through mini-challenges. The week culminated in a Robot Competition that tested the creativity, functionality, and robustness of each team's robot.

As our program offerings continue to grow, I am pleased to report that an increasing number of COSAM faculty are enthusiastically connecting with the public through our programs and sharing their passion for science and mathematics. Their involvement adds breadth and depth to our program offerings and provides more opportunity for the public to be true shareholders in the resource that IS Auburn University. We invite you to take a moment to review our 2013 annual report for more information on this past year's successes.

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# Outreach Highlights

In 2012, COSAM's Department of Outreach initiated an academically competitive, science and mathematics enrichment program for rising 11th and 12th grade students called the Summer Science Institute. The one-week program is designed for students who demonstrate a heightened interest in a career in the sciences or mathematics and provides them an opportunity to explore cutting-edge research topics in biology, chemistry, geology, physics and mathematics. Prof. Allen Landers (Physics), who is the Howard Carr Professor of Outreach and director of the institute, conceived the program with a vision toward exciting young minds about science.

"My initial idea was to do something solely in the Physics Department, but I recognized right away that COSAM's Office of Outreach provides an outstanding infrastructure that could be utilized to create a more diverse program," said Landers. "These students are the future of science in terms of research and science education, so we want to get them excited about any and all aspects of science and math."

As director, Landers is responsible for working with Mary Lou Ewald, COSAM's director of outreach, to coordinate all activities during the week, determine the schedule, recruit faculty participants, and provide guidance for creating modules that will be effective in inspiring young scientific minds.

The 2013 Summer Science Institute took place in June, and 26 students from Alabama and Georgia spent the week on campus working with COSAM faculty and staff in a series of hands-on and interactive workshops including activities from each of the five COSAM departments. Participating faculty included Anne Gorden, John Gorden, and Konrad Patkowski from the Department of Chemistry and Biochemistry; Dean Hoffman and Chris Rodger from the Department of Mathematics and Statistics; Jason Bond,

Wendy Hood, Debbie Folkerts and Haruka Wada from the Department of Biological Sciences; Willis Hames from the Department of Geology and Geography; and Mike Fogle, Uwe Konopka, David Maurer and Allen Landers from the Department of Physics.

"Because we had so many participating faculty, we really got to showcase how enthusiastic we are about engaging young people in science and mathematics. We try to create an exploratory atmosphere where we excite the students about science as a career. Students get to experience the broad diversity of the college, which ranges widely from field and lab work in biology, to synthesis and computer modeling of molecules in chemistry, to discrete and recreational mathematics. We also engage the students in a number of supplemental activities including a herpetology hunt and an astronomy night," said Landers.

Because the Summer Science Institute hosts a limited number of participants, Landers said there is an additional advantage for both the students and faculty during the program.

"The students have an opportunity to ask open-ended questions, so they are able to get a lot out of each session since we are experts in our respective fields. Spontaneous discussions tend to be more effective because they are in response to student questions and the students are engaged from the start. There is something very special about the intimacy and one-on-one time the students get with the faculty," said Landers. "As scientists we get to sometimes recognize natural phenomenon for the very first time, and getting to share that with high school kids is a very cool, deep experience. The whole thing is extremely gratifying."

Mary Lou Ewald,




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## *Staff and Temporary Employees*

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**Mary Lou Ewald**  
Director of Outreach

As the Director of Outreach for the College of Sciences and Mathematics, Mary Lou's primary responsibilities include: oversight and management of all aspects of Outreach Programs, the Director of AU Science in Motion, Co-PI, AU-AMSTI, and the campus-wide outreach representative for COSAM (WISE Institute, Campus Outreach Committee, grant proposal development).



**Erin Percival**  
Assistant Director of Outreach

Erin's primary office responsibilities include assisting in management of Outreach programs, management of student employees, and curriculum development oversight. This year she directly coordinated SI, GUTS, AMP'd Challenge, GEARSEF, AU Explore Science EXPO, Science Matters, War Eagle BEST teacher and judges communications, Kidz-sized Science, and South's BEST teacher facilitation.



**Kristen Bond**  
Program Administrator

Kristen's responsibilities during the 2013 year included: financial record keeping, coordination of elementary and middle school Science Olympiad, Spring YES, Middle School AMP'd, and South's BEST hospitality and logistics.



**Amy Mathis**  
Office Manager- TES Employee

Amy joined the office as a Temporary Service Employee in February 2012. This year she aided in GEARSEF, Science Matters, SWSM Symposium, and BEST Robotics.

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## *Temporary and Student Employees*

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### **Judith Bailey**

Student Program Coordinator - Graduate Student

Industrial and Systems Engineering  
Graduate Student  
First year in COSAM Outreach



### **Tj Nguyen**

Student Program Coordinator - Graduate Student

Mechanical Engineering  
Graduate Student  
Fiifth year in COSAM Outreach



### **Donna Raiford**

Program Coordinator

Donna worked in the office part-time in the spring of 2014. She aided in Elementary Science Olympiad, Middle School Science Olympiad, and AU Explore.



### **Allison Tjelmeland**

Student Program Assistant - Graduate Student

Biological Sciences  
Graduate Student  
Second year in COSAM Outreach

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## *Temporary and Student Employees*

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**Amber Derouen**  
Student Program Assistant  
Cell and Molecular Biology  
Junior  
First year in COSAM Outreach



**Khori Dunn**  
Student Program Assistant  
Biomedical Sciences  
Freshman  
First year in COSAM Outreach



**Allison Holt**  
Student Program Coordinator

Software Engineering  
Senior  
Fourth year in COSAM Outreach



**Molly McCartney**  
Student Program Assistant

Industrial and Systems Engineering  
Sophomore  
Second year in COSAM Outreach

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## *Temporary and Student Employees*

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**Katie Teixeira**  
Student Program Assistant

Biomedical Sciences  
Senior  
First year in COSAM Outreach



**Jacob Varner**  
Student Program Assistant

Software Engineering  
Freshman  
First year in COSAM Outreach



**Hunter Whitten**  
Student Program Assistant

Biomedical Sciences  
Freshman  
First year in COSAM Outreach

# 2013 Outreach Calendar

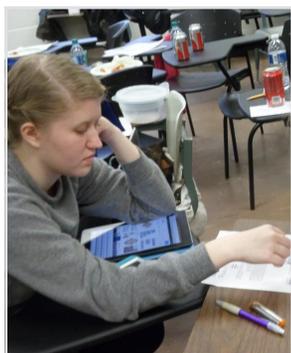
January 19	AP Study Day (Math)
January 26	The Alabama STEM Studio for Afterschool Learning (TASSAL)
February 8	Kidz-sized Science
February 9	Elementary Science Olympiad
February 9	Gorgas Scholarship Competition
February 19	Getting Under the Surface (GUTS)
February 22	Tests of Engineering Aptitude, Mathematics and Science (TEAMS)
February 23	Middle School Science Olympiad
February 23	AP Study Day (Math)
March 2	AP Study Day (Science)
March 2	High School Auburn Mathematical Puzzle Challenge (AMP'd)
March 5	Greater East Alabama Regional Science and Engineering Fair (GEARSEF)
March 8	Kidz-sized Science
March 16	AP Study Day (English)
March 20	Getting Under the Surface (GUTS)
March 28	Hyundai Fun Day
April 6	AP Study Day (Science)
April 12	Kidz-sized Science
April 13	Spring Youth Experiences in Science (YES)
April 26	AU Explore
May 4	AP Study Day (Science)
May 9	Society of Women in Sciences and Mathematics Annual Symposium
May 10	Kidz-sized Science
May 28 – 30	Math Science Partnership AMSTI Specialist Training
June 3 – 7	Science Matters
June 9 – 15	Summer Science Institute (SSI)
June 17 – 21	Science Matters

# 2013 Outreach Calendar

July 8 – 12	Science Matters
July 15 – 19	Science Matters
July 22 – 26	Robotics Academy
July 25	GEARSEF Teacher Workshop
July 29 – August 2	Science Matters
July 29 – 31	BEST Teacher Training
September 5	War Eagle BEST Kick Off
September 19	GEARSEF Teacher Workshop
September 28	Middle School Auburn Mathematical Puzzle Challenge (AMP'd)
October 18 – 19	War Eagle BEST
December 7 – 8	South's BEST Robotics Championship



## Program Descriptions



### Auburn Mathematical Puzzle Challenge

Funding Source: COSAM, Army ROTC, participant fees

The Auburn Mathematical Puzzle Challenge, or AMP'd Challenge for short, is a problem solving challenge offered two times each year. In the fall, AU hosts a middle school event in which teams of 6 – 8 students to work together to 'solve a crime' by solving real mathematical puzzles. In the spring, a high school event is hosted in which students are challenged to solve 10 - 12 puzzles in a five hour period.



### AU Explore

Funding Source: COSAM

AU Explore is COSAM's annual Open House Day for 5<sup>th</sup> - 8<sup>th</sup> graders. On Friday, April 26<sup>th</sup>, 1132 students as well as parents and teachers from 18 schools in Alabama and Georgia and 127 home school groups 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.



### Greater East Alabama Regional Science & Eng. Fair

Funding Source: COSAM, Samuel Ginn College of Engineering, and fees

GEARSEF is a regional affiliate fair of the Intel International Science and Engineering Fair (Intel ISEF), the world's largest international pre-college science competition. ISEF, the premiere science competition in the world, annually provides a forum for millions of students from over 50 countries, regions, and territories to showcase their independent research. GEARSEF hosted 75, 6<sup>th</sup> – 12<sup>th</sup> grade projects. Two exceptional high school students from GEARSEF advanced to the Intel ISEF in Phoenix, AZ this past May to compete against the top 1,500 students in the world for nearly \$4 million dollars in prizes and scholarships.



### Getting Under The Surface (GUTS)

Funding Source: Participant fees

GUTS is a 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.

## Program Descriptions



### Kidz-sized Science

Funding Source: Participant fees

Kidz-sized science is a monthly program for pre-kindergarten and kindergarten students. This Auburn University hosted event takes place each month at the Village Mall in Auburn. During each session, kids engaged in a good book, explored the science behind the theme, and created a take-home project.



### Robotics Academy

Funding Source: Participant fees

Robotics Academy is a summer camp for middle school students interested in robotics. Working in teams, students engage in real-world design scenarios that will culminate in a friendly competition on the last day of the academy. Students are introduced to the design process, the importance of notebooks and technical writing, as well as gain hands-on experience programming and building robots using VEX robotics kits. All aspects of the camp are applicable outside of the Robot Academy. The programming portion teaches logic that is applicable to any other programming language, and the VEX robotics control system is used in other robotics competitions such as BEST Robotics.



### Science Matters

Funding Source: Participant fees

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 authentic experiments, local field trips, constructive play, technology, art projects, and hands-on, make-n-take activities. 18 different courses were designed by master educators in the region and offered during six weeks in the summer.

Funding: Self-supported through participant fees



### Science Olympiad

Funding Source: COSAM, AU Bookstore

Science Olympiad is a one-day academic track meet, consisting of up to 23 different competitive events.

- Division B (middle) included 12 teams of 15 students each in grades 6-9. They converge on Auburn's campus to compete each February. Winners from the middle school division qualify to compete at the state Science Olympiad.
- Division A (elementary) included over 500 students.

## Program Descriptions



### Summer Science Institute

Funding Source: NSF, Army ROTC, SWSM, and COSAM Outreach

The Summer Science Institute at Auburn University is a summer science program for rising 11<sup>th</sup>-12<sup>th</sup> grade students with a high aptitude and interest in the fields of science and math. The program partners students with experienced AU Science and Math research faculty to explore topics more advanced than what is typically taught in a public or private high school environment. This year, 26 outstanding students were chosen to participate from Alabama and Georgia.



### Society of Women in Sciences and Math Symposium

Funding Source: Sponsorships and Participant Fees

The annual Women's Leadership Symposium and Luncheon offers women at all stages of their careers in science and mathematics the opportunity to network with one another through panel discussions, career awareness break-out sessions, and a luncheon with Keynote address from the Marie W. Wooten Distinguished Speaker. In order to meet the Society's mission, 75 high school girls were invited to participate. The young women engaged in a panel discussion led by women graduate students in the College of Sciences and Mathematics. Additionally, they participated in career awareness break-out sessions led by COSAM staff and graduate students followed by a Keynote address from Dr. Emily Pauli.



### Tests of Engineering Aptitude, Math, and Science

Funding Source: Participant Fees

COSAM Outreach and the Samuel Ginn College of Engineering co-sponsored the T.E.A.M.S. competition for students in grades 6-12 held in February. Students used the principles of engineering, math, and science to solve real world challenges.



### Youth Experiences in Science-Spring program

Funding Source: COSAM

Spring Y.E.S. is a free program offered every spring for students in grades 3-6. Hands-on courses for the 2013 Spring Y.E.S. included Robo Rules, Turtle Mania, Go Go with Goddard, and Now You See It, Now You Don't. Over 75 students attended the 2013 event.

## Program Descriptions



### BEST Robotics

What do you get when you cross robots, a playing field, referees, cheerleaders, and pep bands? The BEST competition ever! BEST - Boosting Engineering, Science, and Technology - 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 45 hubs in 16 states with over 733 middle and high schools and over 14,325 students participating each year.



### War Eagle BEST

Funding Source: Sponsorships, COSAM and Samuel Ginn College of Engineering

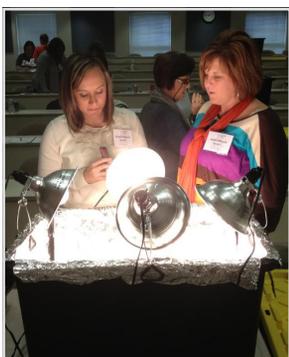
War Eagle BEST hosted 27 schools from East Central Alabama and West Georgia. Kickoff was held on September 5 in the Student Center Ballroom, where teams were given the game theme – Gatekeeper – and the task for this year’s challenge. Four weeks later, on October 6<sup>th</sup>, a practice “Mall Day” was held at Auburn Village Mall. On October 18- 19, approximately 1,000 students, parents, teachers, and judges came together for “Gatekeeper!” at the Auburn University. Five local teams advanced to the regional championship, South’s BEST.



### South’s BEST

Funding Source: Sponsorships, COSAM and Samuel Ginn College of Engineering

In December, a crowd of over 3,500 students, teachers, parents, and industry mentors assembled at Auburn University for the 2013 South’s BEST Regional Robotics Championship. South’s BEST hosted 56 teams from 18 hubs and 6 states over the weekend of December 7-8. The 6<sup>th</sup> annual Women in Science and Engineering Luncheon, sponsored by the WISE Institute, Toyota Motor Manufacturing, and TV BEST, was held on Saturday, December 7 and hosted 175 attendees.



### The Alabama STEM Studio for Afterschool Learning

Funding Source: Truman Pierce Institute

COSAM Outreach, in partnership with the College of Education’s Department of Curriculum and Teaching and the Truman Pierce Institute, received funding to design a new statewide afterschool STEM training program. The initiative – TASSAL (The Alabama STEM Studio for Afterschool Learning) – kicked off on January 26, 2013 with a one-day workshop attended by 18 educators from across the state. TASSAL utilizes a series of hands-on, inquiry based activities that integrate science, technology, engineering and mathematics principles in a fun, non-threatening learning environment. The target audience is afterschool educators located at 21st Century Community Learning Centers (CCLC) in Alabama.

## *Programs Supported by the Outreach Office*



### AP Study Days

COSAM Outreach hosted approximately 750 high school students from 3 area high schools at 6 Saturday AP Study Day offerings. These schools (Benjamin Russell High School in Alexander City, Tallassee High School in Tallassee and Smiths Station High School in Smiths) are participants in Alabama's A+ College Ready Program that supports teachers and students in Advanced Placement (AP) courses.



### AP Institute for Teachers

In partnership with the Office of Professional and Continuing Education, COSAM hosted 88 teachers at a one-week, discipline specific workshop. Courses included Biology, Chemistry, Calculus, and Statistics.



### Hyundai Fun Day

On March 23, 2013, the Girl Scouts of Southern Alabama hosted a STEM Day for over 200 elementary and middle school girls to participate in a variety of hands-on science and engineering activities. The workshops were developed and hosted by Auburn University students in COSAM, Engineering, and other units on campus. The event was sponsored by Hyundai Motor Manufacturing of Alabama.



### SWSM Holiday Reception

On December 12, over 30 women participated in the annual SWSM Holiday reception to network and learn about initiatives supported by SWSM during the 2013 year.

**Program: The Alabama STEM Studio for Afterschool Learning (TASSAL)**

**Description:** STEM workshops for afterschool educators

**Date:** Saturday, January 26 and Thursday, July 18

**Facilities:** Sciences Center Classrooms Building

**Personnel:**

AU: Mary Lou Ewald, Erin Percival, Kristen Bond, Allison Holt, Christine Schnittka, Chris Groccia, George Turner, Yewande Fasina, Jessica Cooper

Non-AU: Mark Jones, Rebecca Balkcom

**CCLC Sites Impacted:**

Number of Teachers: 30

- Bay Minette County Schools
- Bessemer City High School
- Brewton City Schools
- Cedar Bluff
- Discovery Daze – Prattville Elementary
- Eclectic Middle School
- Episcopal Day School
- Grove Hill Afterschool Adventure
- Lawrence County Schools
- Leroy High School
- Pine Level Elementary
- Project Rise – Foley High
- Selma Community Learning Center
- Smart Links for Escambia Middle
- Tuscaloosa’s One Place



## Program: Kidz-sized Science

**Description:** Kidz-sized SCIENCE is a monthly enrichment program designed specifically for 4-6 years olds from the Auburn and Opelika communities. The goal of Kidz-sized SCIENCE is to provide a stimulating environment for guiding children in the development of science, math, and literacy skills by providing discovery-based science labs, activities, and materials appropriate for young children.

**Date:** Friday, February 8, 12:00 – 2:30pm and 3:00 – 4:30pm

**Facilities:** Village Mall in Auburn

### Personnel:

AU: Erin Percival, Allison Holt, Donna Raiford, and Tj Nguyen

Non-AU: Amanda Prince

### Student Impact:

Number of Students: 10

Grade Range: 4 – 5 years old (Pre-K and K students)

### Course Theme: Temperature Exploration

### Major Activities:

- Studied different animals and their habitats
- Explored properties of ice



### Program: Elementary School Science Olympiad (Division A2)

**Description:** An annual one-day sports-like science competition for students in grades 3 - 6.

**Date:** Saturday, February 9<sup>th</sup>; 7:30 AM - 4:00 PM

**Facilities:** AU Student Center, Parker Hall, Science Center Labs, Science Center Auditorium, Science Center Classrooms, Haley Center

### Personnel:

AU: Mary Lou Ewald, Erin Percival, Kristen Bond, Donna Raiford, Allison Holt, Tj Nguyen, Allison Tjelmeland

Non-AU: Science teachers from participating schools

### Student Impact:

Number of Students: 515

Grade Range: 3<sup>rd</sup> - 6<sup>th</sup>

### Schools Served:

- Bagley Elementary
- Cary Woods Elementary
- Dean Road Elementary
- Geneva Middle
- Highlands Elementary
- W.O. Lance Elementary
- Mt. Gap Elementary
- Oak Grove Elementary
- Ogletree Elementary
- Prattville Christian
- Richland Elementary
- St. Luke's Episcopal
- Thompson Elementary,
- Trinity Presbyterian
- Wrights Mill Rd. Elementary
- Yarbrough Elementary



**Program: Getting Under the Surface (GUTS)**

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

**Date:** Tuesday, February 19<sup>th</sup>; 6:00 PM - 8:00 PM

**Facilities:** SCC 115, SCL 102, SCL 231, SCL 310

**Personnel:**

AU: Erin Percival, Kristen Bond, Dr. Geoff Hill

Non-AU: Gina Watkiss (The Heritage School)

**Student Impact:**

Number of Students: 24

Grade Range: 1<sup>st</sup> -6<sup>th</sup>

Schools Served: NA

Course: Science Buffet

This course gives a whole new meaning to “playing with your food”! Dancing raisins, Alka-Seltzer rockets, breath mint magic, coke fountains, and eggs too pretty to eat are a few things you’ll explore as you play with your food!

Grades: 1 - 3

Developed by: Gina Watkiss

Number of Students: 12



Course: Cardinal Color

Why are cardinals red? This basic question has puzzled feeder watchers and scientists alike. The first step toward a scientific investigation of feather coloration is measuring the coloration of individual birds. We will use an instrument called a spectrometer to turn plumage brightness into numbers and explore how much the flashy feathers of male cardinals differ.

Grade Range: 4 - 6

Developed by: Dr. Geoff Hill

Number of Students: 12

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

**Description:** Students work collaboratively in teams of 4-8 students to solve real-world engineering challenges, applying their math and science skills in practical, creative ways in this annual competition.

**Date:** Friday, February 22nd; 1:00pm- 4:00 pm

**Facilities:** Auburn University Hotel and Conference Center

**Personnel:**

AU: Mary Lou Ewald, George Blanks, Allison Holt, Tj Nguyen

**Student Impact:**

Number of Students: 94

Grade Range: 6<sup>th</sup> -12<sup>th</sup>

Schools Served:

- Virgil I. Grissom High School (2 teams)
- Montgomery Catholic High School (5 teams)
- Northside High School (2 teams)
- Columbus High School (2 teams)
- Central Educational Center
- Piedmont High School
- Saint James School (2 teams)



## Program: Middle School Science Olympiad (Division B)

**Description:** An annual one-day sports-like science competition for students in grades 6 - 9.

**Date:** Saturday, February 23<sup>rd</sup>; 7:30 AM - 4:00 PM

**Facilities:** AU Student Activities Center, Parker Hall, Sciences Center Classrooms Building, Sciences Center Classrooms Building, Rouse Life Sciences, Haley Center, Petrie Hall

### Personnel:

AU: Mary Lou Ewald, Erin Percival, Kristen Bond, Molly McCartney, TJ Nguyen, Allison Tjelmeland, Allison Holt, additional AU Personnel listed below

### Student Impact:

Number of Students: 215

Grade Range: 6<sup>th</sup> - 9<sup>th</sup>

#### Schools Served:

- Auburn Junior High School
- Baldwin Arts and Sciences Academy
- Beverly Magnet School
- Carver Magnet School
- J.F. Drake Middle School
- Montgomery Catholic Preparatory School
- Pleasant Grove Middle School
- Saint James Middle School

### Event Supervisors:

Sam Hirt	Anatomy
Dr. Dmitry Glotov	Booilever
Dr. Virginia Davis	Crime Buster
Malachi Williams	Disease Detectives
Jennifer Parker	Disease Detectives
Dr. Ashraf Uddin	Dynamic Planet
Ave Gaton	Experimental Design
Caley Allen	Food Science
Daniel Smith	Food Science
Billy McCann	Food Science
Kyle Paris	Forestry
Dr. Jessica McDonald	Helicopter
Dr. Chris Sunderman	Heredity
Dr. David Maurer	Keep the Heat
Dr. Stuart Loch	Meteorology
Dr. Bryce Duncan	Metric Mastery
Dr. Mike Fogle	Mission Possible
Dr. Erkane Dane	Mousetrap Vehicles
Dr. Kiajun Liu	Reach for the Stars
Dr. Luke Marzen	Road Scholar
Dr. Bill Hames	Rocks and Minerals
Dr. Huajun Huang	Rotor Egg Drop
Dr. Sarit Dhar	Shock Value



**Program: Auburn Mathematical Puzzle Challenge (AMP'd)- High School**

**Description:** A math puzzle-based challenge in which kids deepen their critical thinking skills through a series of applied math problems in a thematic setting.

**Date:** Saturday, March 2<sup>nd</sup>; 9:00 AM - 4:00 PM

**Facilities:** Parker Hall, SCA

**Personnel:**

AU: Erin Percival, Mary Lou Ewald, Kristen Bond, Allison Tjelmeland, Allison Holt, Tj Nguyen, Eric Harshbarger

Math Dept.: Alice Zakutney, Bethany Bittinger, Ashley Kinsey, Kate Duke, Taylor Anderson, Olcay Ciftci, Sydney Bell

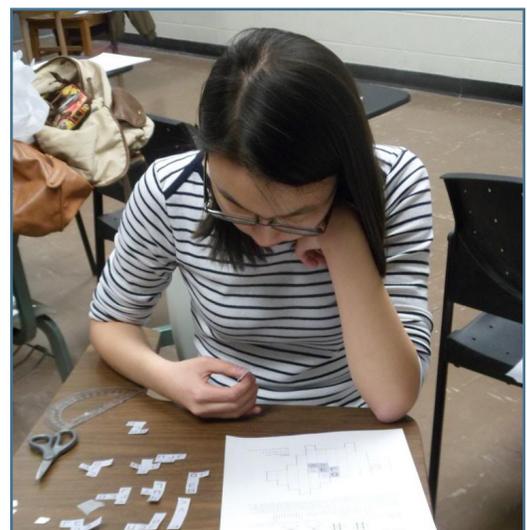
**Student Impact:**

Number of Students: 37

Grade Range: 9<sup>th</sup> - 12<sup>th</sup>

Schools Served:

- Central Educational Center (2 teams)
- Glenwood School
- Heritage School
- Montgomery Catholic Prep. School
- Saint James School



## Program: Greater East Alabama Regional Science and Engineering Fair (GEARSEF)

**Description:** An Intel ISEF regional science and engineering fair in which students present science fair projects to a panel of university faculty.

**Date:** Tuesday, March 5, 2013; 8:00 am - 4:00 pm

**Facilities:** Student Center Ballroom, SC 2216, SC 2218, SC2222, SC 2223, SC2225

### Personnel:

AU: Erin Percival, Mary Lou Ewald, Kristen Bond, George Blanks, Amy Mathis, Allison Tjelmeland, Molly McCartney, TJ Nguyen, Allison Holt  
Non-AU: NA

### Student Impact:

Number of Students: 66

Grade Range: 6<sup>th</sup> - 12<sup>th</sup>

#### Schools Served:

- Auburn Junior High School
- Auburn High School
- Central High School
- Dothan High School
- Eclectic Elementary School
- Everest Academy
- Glenwood School
- J.F. Drake Middle School
- Lakeview Christian School
- LAMP High School
- Lowndes County Middle School
- Milbrook Middle School
- Redland Elementary School
- Stanhope Elmore High School
- The Calhoun School
- Wetumpka Middle School

### AU Faculty and Grad. Students:

#### COSAM

Archana Reddy Addla  
Caley Allen  
Alexandra Bentz  
Nancy Capps  
Nanette Chadwick  
Roland Dute  
Brian Folt  
Sharon Hamilton  
Brian Helms  
Wendy Hood  
Shawn Jacobsen  
Rebecca Koch  
Ely Kosnicki  
Allen Landers  
Yingru Li  
Elizabeth Schwartz  
Aubrey Sirman  
Catherine Situma  
Chris Sundermann  
Allison Tjelmeland

#### Engineering

Hamza Ahmed  
Devin Cook  
Virginia Davis  
Brittani Edwards  
Elizabeth Lipke  
Michael Porter  
Martina Svyantek

#### Other

Roger Birkhead  
Yewande Fasina  
Chris Schnittka  
George Turner  
Jami Gauthier  
Ashton Lofgreen  
Derek Pope  
Kelly Zuromski  
Molli Newman  
Stephanie Renuart



## Program: Kidz-sized Science

**Description:** Kidz-sized SCIENCE is a monthly enrichment program designed specifically for 4-6 years olds from the Auburn and Opelika communities. The goal of Kidz-sized SCIENCE is to provide a stimulating environment for guiding children in the development of science, math, and literacy skills by providing discovery-based science labs, activities, and materials appropriate for young children.

**Date:** Friday, March 8, 2:00 – 2:30pm and 3:00 – 4:30pm

**Facilities:** Village Mall in Auburn

### Personnel:

AU: Tj Nguyen, Erin Percival, Allison Holt, Mary Lou Ewald, and Amy Mathis

Non-AU: Amanda Prince

### Student Impact:

Number of Students: 10

Grade Range: 4 – 5 years old (Pre-K and K students)

### Course Theme: Movement

### Major Activities:

- Language Arts lesson featuring Energy
- Explored movement of marbles traveling through a tube
- Compared the kinetic energy of different objects



**Program: Getting Under the Surface (GUTS)**

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

**Date:** Wednesday, March 20<sup>th</sup>; 6:00 PM - 8:00 PM

**Facilities:** Parker Hall, SCC 115, SCL 231, Parker 112

**Personnel:**

AU: Erin Percival, Kristen Bond, Nicole Garrison

Non-AU: Amy Rutherford (J.F. Drake Middle School)

**Student Impact:**

Number of Students: 24

Grade Range: 1<sup>st</sup> -6<sup>th</sup>

**Course: Along Came a Spider**

Do you know that you are rarely ever more than six feet away from a spider and that spider silk is one of the strongest natural fibers known? And, will over 40,000 species, spiders are among the most abundant predators on the planet! Come discover spiders and learn how they benefit humans, how they make and use silk, how spider venom aids them, and how to recognize spiders common to your backyard. Put your fears aside as we explore this important, remarkable, and diverse group of animals

Grades: 1 - 3

Developed by: Nicole Garrison

Number of Students: 12

**Course: Virus Factory**

“Oh no! GUTS has been hijacked by the Super Scientist virus, and we need your help to find a cure!” Come along with us as a normal GUTS course is invaded and transformed into a Super Scientist Virus Factor. You’ll discover how viruses can make you sick, examine how medicine fights to make you well, and even build your very own Super Scientist Virus!

Grade Range: 4 - 6

Developed by: Amy Rutherford

Number of Students: 12

## Program: Kidz-sized Science

**Description:** Kidz-sized SCIENCE is a monthly enrichment program designed specifically for 4-6 years olds from the Auburn and Opelika communities. The goal of Kidz-sized SCIENCE is to provide a stimulating environment for guiding children in the development of science, math, and literacy skills by providing discovery-based science labs, activities, and materials appropriate for young children.

**Date:** Friday, April 12, 12:00 – 2:30pm and 3:00 – 4:30pm

**Facilities:** Village Mall in Auburn

### Personnel:

AU: Erin Percival, Kristen Bond, Molly McCartney, Amy Mathis, and Tj Nguyen

Non-AU: Amanda Prince

### Student Impact:

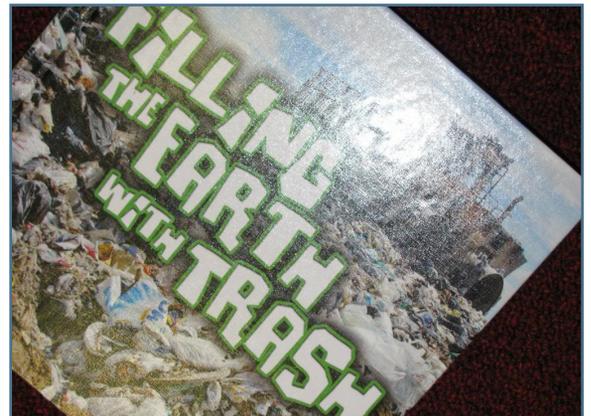
Number of Students: 10

Grade Range: 4 – 5 years old (Pre-K and K students)

### Course Theme: Recycling

#### Major Activities:

- Classification of Recyclable Materials
- Bowling with Recyclable Materials
- Coffee Filter Earth
- Language Arts lesson about Recycling



## Program: Spring Youth Experiences in Science (YES)

**Description:** Children engage in hands-on, make-and-take activities related to specific fields of science and math in a half-day academy.

**Date:** Saturday, April 13, 2013; 8:00 AM - 12:00 PM

**Facilities:** SCL 231, SCL 310, SCC 118, SCC 122

### Personnel:

AU: Kristen Bond, Erin Percival, Amy Mathis, TJ Nguyen, Allison Tjelmeland, Molly McCartney

Non-AU: Bruce Zutter (Ogletree Elementary School), Aleesa Zutter (Yarbrough Elementary School), Emily Dunavant (Prattville Junior High School), and Casey Johnson (Loachapoka High School)

### Student Impact:

Number of Students: 60

Grade Range: 3<sup>rd</sup> - 5<sup>th</sup>

### Courses:

GO, GO with Goddard  
Developed by: Dr. Bruce Zutter

Now you See it, Now you Don't  
Developed by: Casey Johnson

Robo Rules  
Developed by: Aleesa Zutter

Turtle-Mania  
Developed by: Emily Dunavant



**Program: AU Explore****Description:** COSAM's annual science and mathematics open house**Date:** Thursday, April 26<sup>th</sup>; 8:00 AM - 3:00 PM**Facilities:** Parker Hall, SCL, SCC, SCA, Chemistry Building, Rouse Life Sciences, Parker Lawn, and Amphitheater**Personnel:**

AU: Mary Lou Ewald, Erin Percival, Kristen Bond, Allison Holt, Amy Mathis, Molly McCartney, Kristy Mann, Tj Nguyen, Donna Raiford, Allison Tjelmeland, additional AU personnel listed below.

**Student Impact:**

Number of Students: 1,234

Grade Range: 5<sup>th</sup> - 8<sup>th</sup>

Schools Served:

- Bay Minette Middle School
- Calvary Christian School
- Cary Woods Elementary School
- Clay County Middle School
- Dean Road Elementary School
- Eagle Ranch
- Gadsden Middle School
- Knollwood Christian School
- Lee Scott Academy-Krauss
- Meadowlane Elementary School
- Morris Avenue Intermediate School
- Northside Intermediate School
- Olgetree Elementary School
- Phenix City Intermediate School
- Ridgecrest Elementary School
- Smiths Station Junior High School
- Wacoochee Elementary School
- Yarbrough Elementary School
- Homeschool students (~150 students)

**Science EXPO:** The Science EXPO is a series of dozens of interactive displays sponsored by each of the 4 science departments that comprise the College of Sciences and Mathematics (COSAM) at Auburn - Physics, Biological Sciences, Chemistry & Biochemistry, and Geography & Geology. Students browse the displays at their own pace and were able to see, touch, hear, and smell the many wonders of science! Included in the Science EXPO are live animal displays, featuring snakes, lizards, turtles, spiders, insects, and many more fascinating creatures!

- Nanette Chadwick and graduate students
- Debbie Folkerts and graduate students
- Molette Lab (Ken Halanych, Scott Santos and graduate students)
- Shawn Jacobsen
- Aaron Rashotte and graduate students
- Wendy Hood and graduate students
- Chris Goldsmith
- John Simms and graduate students
- Allen Landers and graduate students
- Ed Thomas and graduate students
- Steven Clontz
- John Asplund
- Daniel Smith
- Roger Birkhead



**Science Fun Shop:** The Science Fun Shops are short, hands-on mini-courses focused on a particular topic. The courses typically last 45 minutes.

- **All About Eyeballs**  
Instructed by: Bob Lishak  
Number of students impacted: 27
- **Build a Motor**  
Instructed by: Erica Snipes, Ivan Arnold-  
Number of students impacted: 138
- **Carnivorous Plants**  
Instructed by: Dee Smith  
Number of students impacted: 60
- **Cartesian Diver**  
Instructed by: Jeff Herfindal, Mihir Pandya  
Number of Students impacted: 44
- **Fly Over Alabama**  
Instructed by: - Chandana Mitra,  
Number of students impacted: 56
- **Fur, Feathers, and Fins**  
Instructed by: Matt Kearly  
Number of students impacted: 47
- **Genes in a Bottle**  
Instructed by: Mark Liles  
Number of students impacted: 48
- **Hoo Eats Who?**  
Instructed by: - Chris Sundermann, Roland Dute  
Number of students impacted: 40
- **Kritter Kids**  
Instructed by: Ron & Angie VanHerwyn  
Number of students impacted: 160
- **Medical Technology**  
Instructed by: Kat Milly West  
Number of students impacted: 151
- **Physics of Music**  
Instructed by: Stuart Loch  
Number of students impacted: 80
- **See, Feel, Think**  
Instructed by: Linda Pastorello  
Number of students impacted: 46
- **Silly Cilia**  
Instructed by: Tony Moss  
Number of students impacted: 50
- **Snap Electronics**  
Instructed by: Rebecca Rogers, Josh Vanderhyden  
Number of students impacted: 64
- **Survivor!**  
Instructed by: Brian Helms and Mollie Newman  
Number of students impacted: 20
- **Walking to Win**  
Instructed by: Kristy Mann  
Number of students impacted: 125
- **We-Do LEGOS**  
Instructed by: Marllin Simon  
Number of students impacted: 68



**Demo Shows:** Demo shows are large-scale science shows.

- **Herpetology Show - 12:00, 1:00**  
45 minute shows  
Number of students impacted: 417  
Michael Wines
- **Pyro Show - 10:00, 1:00**  
45 minute shows  
Number of students impacted: 342  
John Gorden and Anne Gorden
- **Raptor Show - 9:00, 10:00, 11:00**  
45 minute shows  
Number of students impacted: 774  
Southeastern Raptor Center
- **Wet 'n' Wild Show - 11:30, 12:15**  
30 minute shows  
Number of students impacted: 340  
Paul Norgaard, Christina Steele, Pam Pearson



**Math EXPO:** The Math EXPO is a tent chock full of interactive math learning activities targeted at the 5<sup>th</sup> - 8<sup>th</sup> grade ability level.

Developed by: Steven Clontz  
3, 45 minute sessions  
Number of students: 150

## Participation by Department

### Biology:

- Nanette Chadwick (Science EXPO)
- Roland Dute (Science Fun Shop)
- Debbie Folkerts (Science EXPO)
- Ken Halanych (Science EXPO)
- Brian Helms (Science Fun Shop)
- Shawn Jacobsen (Science EXPO)
- Wendy Hood (Science EXPO)
- Matt Kearly (Science Fun Shop)
- Mark Liles (Science Fun Shop)
- Bob Lishak (Science Fun Shop)
- Tony Moss (Science Fun Shop)
- Molli Newman (Science Fun Shop)
- Linda Pasterello (Science Fun Shop)
- Aaron Rashotte (Science EXPO)
- Scott Santos (Science EXPO)
- Dee Smith (Science Fun Shop)
- Chris Sundermann (Science Fun Shop)
- Mike Wines (Demo Show)

### Chemistry/Biochemistry:

- Chris Goldsmith (Science EXPO)
- Anne Gorden (Demo Show)
- John Gorden (Demo Show)
- Kat Milly West (Science Fun Shop)

### Geology and Geography:

- Chandana Mitra (Science Fun Shop)
- John Simms (Science EXPO)

### Mathematics and Statistics:

- John Asplund (Math EXPO)
- Steven Clontz (Math EXPO)

### Physics:

- Ivan Arnold (Science Fun Shop)
- Jeff Herfindal (Science Fun Shop)
- Allen Landers (Science EXPO)
- Stuart Loch (Science Fun Shop)
- Mihir Pandya (Science Fun Shop)
- Rebecca Rogers (Science Fun Shop)
- Marlen Simon (Science Fun Shop)
- Erica Snipes (Science Fun Shop)
- Ed Thomas (Science EXPO)
- Josh Vanderhyden (Science Fun Shop)

### AMSTI/Science in Motion:

- Kristi Mann (Science Fun Shop)
- Paul Norgaard (Demo Show)
- Pam Pearson (Demo Show)
- Christina Steele (Demo Show)

## Program: Society of Women in Sciences and Mathematics Women's Leadership Symposium

**Description:** High School girls, SWSM members, AU faculty, and students attend an annual symposium consisting of a panel discussion, break-out session, career corner and luncheon with keynote speaker.

**Date:** Thursday, May 9<sup>th</sup>; 8:00 AM - 1:30 PM

**Facilities:** Student Center

### Personnel:

AU: Mary Lou Ewald, Erin Percival, Kristen Bond, Amy Mathis, Allison Tjelmeland, TJ Nguyen, Tammy Hartwell, Sherri Rowton, Brook Moates, Brent Percival, Kim McCurdy

Non-AU: Dr. Emily Pauli

### Student Impact:

Number of Students: 90

Grade Range: 9<sup>th</sup> - 12<sup>th</sup>

Schools Served:

- Auburn Junior High School
- Auburn High School
- Glenwood School
- Holy Family Cristo Rey
- Loachapoka High School
- Montgomery Catholic Prep.School



### Keynote speaker:

- **Emily K. Pauli, PhD.**  
Director of Research  
*Clearview Cancer Institute*

### Panelists and their Break-Out Sessions:

- **Kirsten Guerra - Dept. of Geology and Geography**  
*What on Earth can you do with Geology?*
- **Nicole Garrison - Dept. of Biological Sciences**  
*Friends in Low Places*
- **Dana Lashley - Dept. of Chemistry and Biochemistry**  
*Fighting Deadly Viruses*
- **Kristen Courtney - Dept. of Mathematics and Statistics**  
*A Math Degree: What does it give you, and where can it take you*

### Break-Out Sessions:

- **Dr. Beth Yarbrough**  
Director of COSAM Student Services  
*Majoring in Science and Mathematics at Auburn University*
- **Beverley Childress**  
COSAM Pre-health Director  
*Preparing to become a doctor, veterinarian, or other health professional*

**Career Corner:** Amy Aquadro, Amy Grilliot, Ashley Hill, Anda Ray, Angela Jenkins, Sarah Sheffield

**Program: Kidz-sized Science**

**Description:** Kidz-sized SCIENCE is a monthly enrichment program designed specifically for 4-6 years olds from the Auburn and Opelika communities. The goal of Kidz-sized SCIENCE is to provide a stimulating environment for guiding children in the development of science, math, and literacy skills by providing discovery-based science labs, activities, and materials appropriate for young children.

**Date:** Friday, May 10, 12:00 – 2:30pm and 3:00 – 4:30pm

**Facilities:** Village Mall in Auburn

**Personnel:**

AU: Erin Percival, Allison Tjelmeland, Laura Stubbs, Kristen Bond, Amy Mathis, Tj Nguyen, Patrick Thompson

Non-AU: Amanda Prince

**Student Impact:**

Number of Students: 10

Grade Range: 4 – 5 years old (Pre-K and K students)

**Course Theme: Nature Hunt**

**Major Activities:**

- Presentation on Carnivorous Plants by Patrick Thompson, Arboretum Specialist
- Leaf Scavenger Hunt



## Program: Science Matters

**Description:** A summer enrichment academy for elementary school children in which they attend science-themed weeks filled with experiments, field trips, and make-and-take projects.

### Date:

- Monday, June 3 - Friday, June 7; 8:00 AM - 5:00 PM
- Monday, June 17 - Friday, June 21; 8:00 AM - 5:00 PM
- Monday, June 24 - Friday, June 28; 8:00 AM - 5:00 PM
- Monday, July 8 - Friday, July 12; 8:00 AM - 5:00 PM
- Monday, July 15 - Friday, July 19; 8:00 AM - 5:00 PM
- Monday, July 29 - Friday, August 2; 8:00 AM - 5:00 PM

**Facilities:** Parker 352, Parker 354, Parker 356, and Parker 358

### Personnel:

AU: Erin Percival, Kristen Bond, Amy Mathis, Emily Dunavant, Lara Stubbs, Tj Nguyen, Allison Tjelmeland, Molly McCartney, Allison H.

Non-AU: Rebecca Balkcom (Auburn Junior High School), Mark Jones (J.F. Drake Middle School), Frank Ware (Retired, Sanford Middle School), Gina Watkiss (The Heritage School), Hilary Boyd (Auburn Junior High School), Courtney Davis (Pleasant Valley Elementary School), Lana Grooms (Auburn Early Education Center), Karin Fuller (Auburn Junior High School), Andrew Click (Sanford Middle School), Amanda Prince (Auburn Early Education Center), Leah Shope (Auburn Early Education Center), Amy Rutherford (J.F. Drake Middle School)

### Student Impact:

Number of Students: 204

Student Seats Filled: 400/420 (95% capacity)

Grade Range: rising 1<sup>st</sup> - 6<sup>th</sup>



**Course Information:****Week #1: June 3 - 7, 2013***Science Stew*

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

*Biology of Me*

- Instructor: Casey Johnson
- Grades: 3 - 4
- Number of Students: 12

*DNA Detectives*

- Instructor: Amy Rutherford
- Grades: 5 - 6
- Number of Students: 20

**Week #2: June 17 - 21, 2013***Creature Features*

- Instructor: Aleesa Zutter
- Grades: 1 - 2
- Number of Students: 22

*Head, Shoulders, Knees, and Toes*

- Instructor: Karin Fuller
- Grades: 3 - 4
- Number of Students: 24

*Secret Formulas*

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

**Week #3: June 24 - 28, 2013***Space is the Place*

- Instructor: Aleesa Zutter
- Grades: 1 - 2
- Number of Students: 22

*Slimy Science*

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

*20 Questions*

- Instructor: Bruce Zutter
- Grades: 5 - 6
- Number of Students: 20
- 

**Week #4: July 8 - 12, 2013***Kitchen Chemistry*

- Instructor: Aleesa Zutter
- Grades: 1 - 2
- Number of Students: 22

*Angry Birds*

- Instructor: Hilary Boyd
- Grades: 3 - 4
- Number of Students: 24

*Balloon Poppers*

- Instructor: Andrew Click
- Grades: 5 - 6
- Number of Students: 24

**Week #5: July 15 - 19, 2013***My Big Backyard*

- Instructor: Amanda Prince
- Grades: 1 - 2
- Number of Students: 23

*Ready, Set, Grow*

- Instructor: Karin Fuller
- Grades: 3 - 4
- Number of Students: 24

*Spa Science*

- Instructor: Emily Antoniak
- Grades: 3 - 4
- Number of Students: 24

**Week #6: July 29 - August 2, 2013***Design This*

- Instructor: Amanda Prince
- Grades: 1 - 2
- Number of Students: 23

*It's Up in the Air*

- Instructor: Bruce Zutter
- Grades: 3 - 4
- Number of Students: 22

*LEGO-Mania*

- Instructor: Frank Ware
- Grades: 5 - 6
- Number of Students: 24



## Program: Summer Science Institute

**Description:** A summer science program for outstanding 11<sup>th</sup> - 12<sup>th</sup> grade students interested in science and mathematics. Students engage in real-world applications of science, perform experiments using cutting edge research equipment, and partner with COSAM researchers to gain lab skills not taught in high school.

**Date:** Sunday, June 9 - Saturday, June 15; 8:00 AM - 5:00 PM

**Facilities:** Auburn Museum of Natural History, Donald E. Davis Arboretum, SCC, SCL, Chemistry Building, Petrie Hall, Parker Hall, Rouse Life Sciences Building, Leach Science Center

### Personnel:

AU:

Counselors: Daniel James (Math), Emily Dunavant (Science Teacher), TJ Nguyen (Mechanical Engineering), Allison Tjelmeland (Biology)

Lead Faculty:

- Department of Biological Sciences: Jason Bond, Debbie Folkerts
- Department of Chemistry and Biochemistry: Anne Gorden, John Gorden, Lynn Mandeltort, Konrad Patkowski
- Department of Geology and Geography: Bill Hames
- Department of Mathematics and Statistics: Dean Hoffman, Chris Rodger
- Department of Physics: Mike Fogle, Allen Landers

Additional AU Faculty/staff: Roger Birkhead (Science in Motion), Kristen Bond (COSAM Outreach), Mary Lou Ewald (Director of COSAM Outreach), Wendy Hood (Biological Sciences), Shawn Jacobsen (Biological Sciences), Erin Percival (Assistant Director of COSAM Outreach), Uwe Konopka (Physics), Dave Maurer (Physics), Haruka Wada (Biological Sciences), Paul West (Army ROTC), Lorraine Wolf (Geology and Geography), Beth Yarbrough (COSAM Student Services)

### Counties Impacted:

- Alabama: Choctaw, Dekalb, Jefferson, Lee, Lime, Madison, Marengo, Mobile, Montgomery, Morgan, Pike
- Georgia: Cobb, Forsyth, Gwinnett, Muscogee, Paulding

### Student Impact:

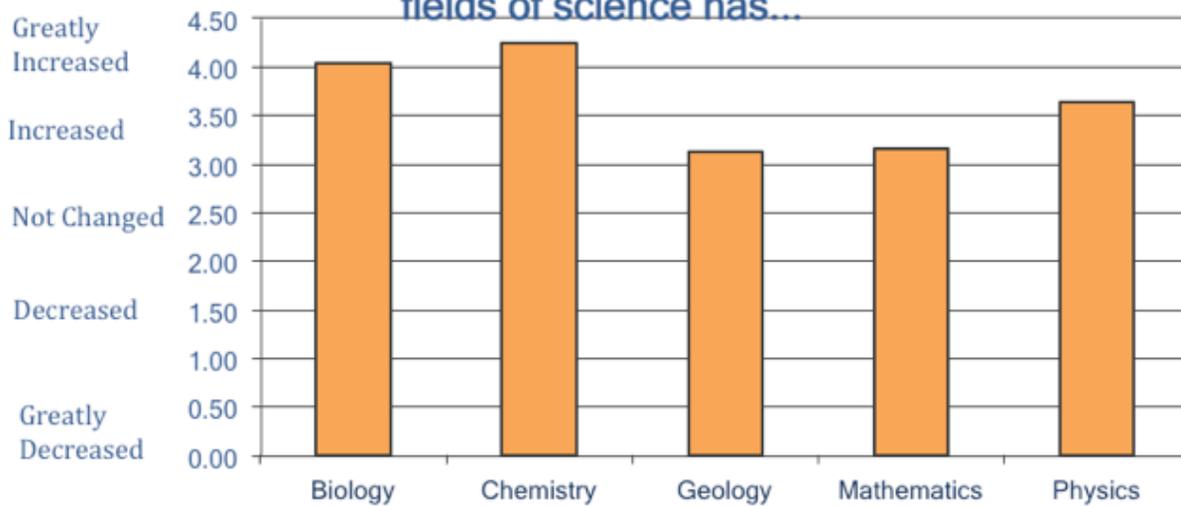
Number of Students: 28  
Grade Range: rising 11<sup>th</sup> - 12<sup>th</sup>



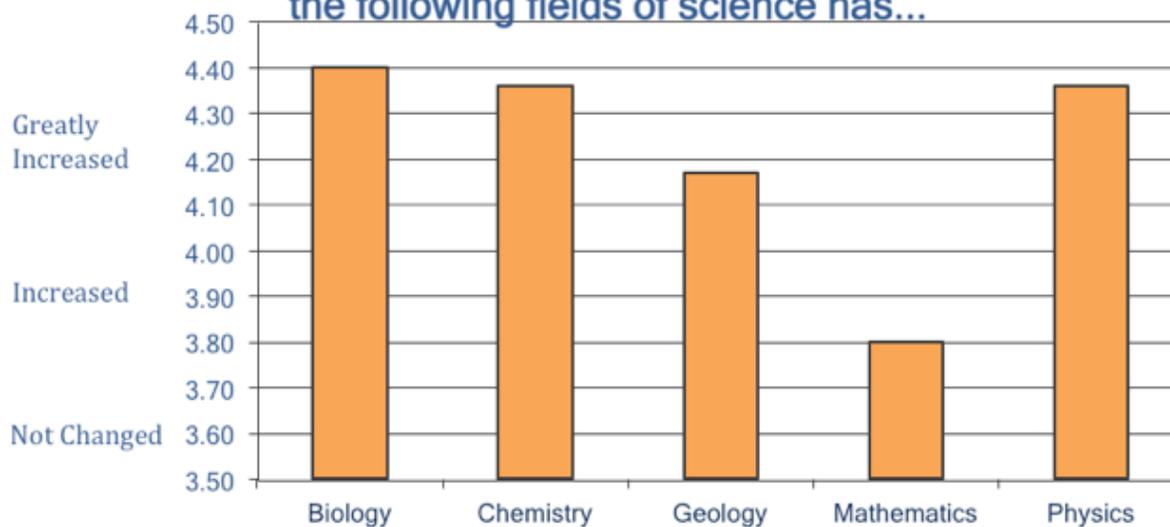
Survey Results:



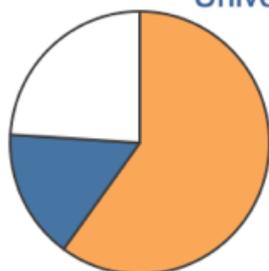
After participating in AU-SSI my interest in the following fields of science has...



After participating in AU-SSI my awareness of careers in the following fields of science has...



## Has your participation in AU-SSI increased your interest in attending Auburn University?



- Yes, my interest in attending AU has increased
- No, I was already interested in attending AU
- No, my interest in attending AU has not increased



## How much content knowledge do you feel you acquired during the academic sessions?

Academic Session	Rating
Chemistry Analysis Lab	3.64
Chemistry Synthesis Lab	3.48
Tour of Natural History Museum	3.40
Physics Session with Dr. Landers	3.40
Biology Field Trip	3.32
Computational Chemistry	3.24
Physics Session with Dr. Fogle	3.20
Biology session	3.16
Math session (Tuesday afternoon)	2.76
Geology Session	2.76
Math Session (Wednesday afternoon)	2.64

Note: A ranking of 2.5 or higher means over half of the students found they acquired some or a lot of content knowledge from the academic session.

## How enjoyable were the different academic sessions you participated in during the week?

Academic Session	Rating
Chemistry Analysis Lab	4.72
Biology Field Trip	4.40
Chemistry Synthesis Lab	4.36
Physics Session with Dr. Landers	4.24
Biology Session	4.21
Tour of Natural History Museum	3.80
Computational Chemistry	3.60
Physics Session with Dr. Fogle	3.60
Math session (Tuesday afternoon)	3.24
Math Session (Wednesday afternoon)	3.08
Geology Session	2.76

Note: A ranking of 3.15 or higher means over half of the students found the academic session enjoyable or extremely enjoyable.

## How beneficial were the different lunchtime activities to you?

Academic Session	Rating
Undergraduate Research Panel with Dr. Lorraine Wolf	4.32
Fun with Uranium talk with Dr. Anne Gorden	4.00
College majors discussion with Dr. Beth Yarbrough	3.68
Leach Laboratory Tour with Dr. Maurer	3.68
ROTC Discussion with Major Paul West	3.08

Note: A ranking of 3.5 or higher means over half of the students found the lunchtime activities beneficial or very beneficial.

## How beneficial were the different nighttime activities?

Academic Session	Rating
Science Demo Show	4.84
Astronomy	4.24
Mammal Hunt	4.13
Herp Hunt	3.96

Note: A ranking of 3.25 or higher means over half of the students found the nighttime activities very enjoyable or extremely enjoyable.

## Program: Robotics Academy

**Description:** Week-long academy where students engage in real-world engineering scenarios that culminate in a friendly competition on the last day of the academy.

**Date:** Monday, July 22 - Friday, July 26; 9:00 AM - 4:00 PM

**Facilities:** SCC 122, SCA

### Personnel:

AU: Erin Percival, Mary Lou Ewald, Kristen Bond, Amy Mathis, Allison Holt, TJ Nguyen, Dan Pierce, Udarius Blair, and Quentin Smith

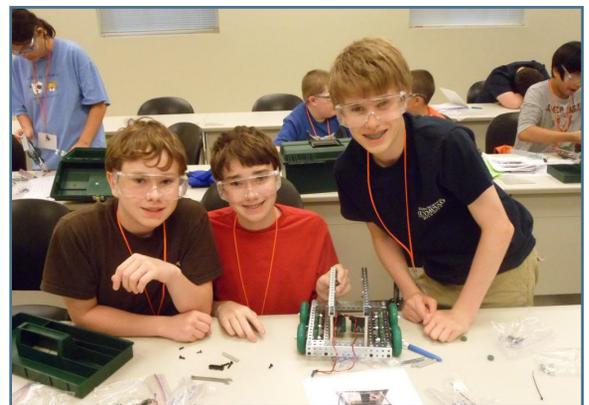
### Student Impact:

Number of Students: 26

Grade Range: rising 7<sup>th</sup> - 10<sup>th</sup>

Schools Served:

- Auburn Junior High School
- Classical Center
- J.F. Drake Middle School
- Lee-Scott Academy
- Loftis Middle School
- Trinity Christian School
- Viator Middle School
- W.F. Burns Middle School



## Program: War Eagle BEST Teacher Training Workshop

**Description:** Professional development for BEST Robotics teachers that included both technical and non-technical/BEST Award training.

**Date:** Monday, July 29<sup>th</sup> - Wednesday, July 31<sup>st</sup>; 8:30 AM - 4:00 PM

**Facilities:** SCC 115, SCC 118

### Personnel:

AU: Mary Lou Ewald, Erin Percival, Kristen Bond, Amy Mathis, Tj Nguyen, George Blanks

### Impact:

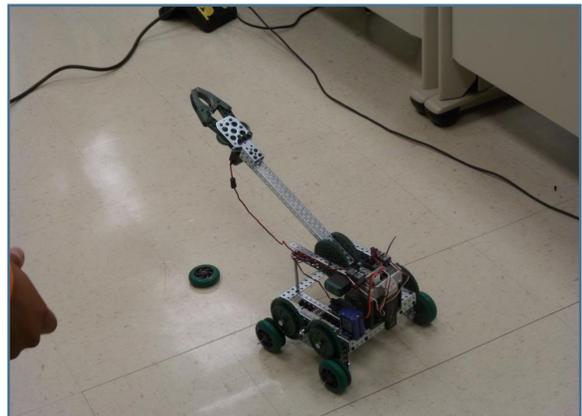
#### Schools Served:

- Auburn Junior High School
- Autauga County Career Tech Center
- Brewbaker Technology Magnet H.S.
- Drake Middle School
- Glenwood School
- Gwinett County Schools
- Jordan High School
- Lanett High School
- Lee-Scott Academy
- Loachapoka High School
- Montgomery Catholic Prep. School
- Northside High School
- Opelika High School
- Opelika Middle School
- The Paideia School
- Prattville High School
- Saint James School
- Sidney Lanier Senior High School
- South Girard School
- Spencer High School
- Springwood School
- Tallapoosa County Career Tech.

Course: The Technical Side of BEST

Learn the ins and outs of the technical side of BEST. Teachers will explore the purpose and correct usage of each Returnables Kit item and get experience with the building process as they construct their own VEX Robot using a rapid prototyping kit. Finally, teachers will learn how to effectively program their newly constructed robots using the Intelitek EasyC programming environment.

Developed by: Tj Nguyen  
Number of Participants: 24  
Teachers without prior training: 15



Course: BEST Success

Teachers will get insider information on what it takes to be successful in the non-robotics portions of BEST. They will learn how to construct a professional quality engineering notebook, learn what judges are looking for at their team exhibits and what sets apart a memorable marketing presentation from one that gets lost in the shuffle.

Developed by: Mary Lou Ewald, Erin Percival  
Number of Participants: 11  
Teachers without prior training: 14



## Program: Auburn Mathematical Puzzle Challenge (AMP'd)

**Description:** A math puzzle-based challenge in which kids deepen their critical thinking skills through a series of applied math problems in a thematic setting.

**Date:** Saturday, September 28, 2013, 8:00 AM – 4:00 PM

**Facilities:** Parker Hall, Science Center Auditorium

### Personnel:

AU: Kristen Bond, Erin Percival, Allison Tjelmeland, Amber Douren, Khorizon Dunn, TJ Nguyen, Amy Mathis, Katie Teixeira. Steven Clontz, John Asplund, Kat Perry, Andrew Owens

Math Dept.: James Hammer, Randy Gay, Kelly Bragan, Calvin Montgomery, Susan Chesnut, Chris Krizan, Graham Gordon, Megan Reynolds, Jessica Clontz, Jennifer Aust, Daniel James, Ashley Lewis, Frank Sturm, Aras Erzurumluoglu, Will McGuffey, Daniel Brice, Shane Mulqueen, Ashley VanVleck, Daniel Miradakis, Daniel Hollis, Elizabeth Bailey, Lusia Hairuo Xu, Joshua Harrelson, Mark Guest, Brad McQuaig, Alisha Chauhan, Amy Peterson, Erica Muenzel, Aimon Wilks, Grace Lenox

### Student Impact:

Number of Students: 114

Grade Range: 7<sup>th</sup> -8<sup>th</sup>

#### Schools Served:

- Alabama Christian School
- Central Educational Center
- East Coweta Middle School
- Lee-Scott Academy
- Montgomery Catholic Prep. School
- Opelika Middle School
- Saint James School
- Sanford Middle School
- Smokey Road Middle School
- Southside Middle School



## Program: War Eagle BEST

**Description:** Middle and high school robotics program

**Date:** Thursday, September 5<sup>th</sup>; 6:00 PM - 8:00 PM (Kick Off Day)

Sunday, October 6<sup>th</sup>; 12:00 PM - 5:00 PM (Mall Day)

Friday, October 18<sup>th</sup>; 12:00 PM - 5:00 PM (Competition Day)

Saturday, October 19<sup>th</sup>; 7:00 AM - 5:00 PM (Competition Day)

**Facilities:** AU Student Center, Village Mall Auburn, and AU Student Activity Center

### Personnel:

AU: Mary Lou Ewald, Erin Percival, Kristen Bond, Tj Nguyen, Judith Bailey, Allison Tjelmeland, Katie Teixeira, Amber Derouen, Jacob Varner, Hunter Whitten, Khori Dunn and student volunteers.

### Student Impact:

Number of Students: ~700

Grade Range: 6<sup>th</sup> - 12<sup>th</sup>

#### Schools Served:

- Auburn Junior High School
- Brewbaker Technology Magnet High School
- Central Educational Center
- Columbus High School
- Edward Bell Career Technical Center
- Glenwood School
- Hardaway High School
- J.F. Drake Middle School
- Jordan High School
- LAMP High School
- Lanett High School
- Lee-Scott Academy
- Loachapoka High School
- Montgomery Catholic Preparatory School
- Northside High School
- Opelika High School
- Opelika Middle School
- Prattville High School
- Saint James School
- Smiths Station High School
- South Girard School
- Southside Middle School
- Spencer High School
- Springwood School
- Wetumpka High School
- Wetumpka Middle School



## Gatekeeper Story Line

As the world of electronics grows larger and larger, the internal components continue to grow smaller and smaller. Transistors, gates, registers, memory, decoders - all working together making electronics simple yet complex. We all agree, future economies will depend on us building the BEST robots and cutting-edge technology.

The BEST Robotics motto has always been “no robot left behind”. One challenge remains: Squeaky, the original BEST robot needs serious upgrades to become Squeaky 2.0.

Almost all of the components for Squeaky’s upgrade have been secured through generous BEST sponsors, but one component is still missing: the BEST CPU (Central Processing Unit). Squeaky 2.0 will require the newest and fastest CPU on the market.

BEST Robotics will be interviewing corporations in 42 days to award the contract to upgrade Squeaky. BEST Robotics will base the award on efficiency of each company’s production line (robot performance), engineering notebook, marketing strategy, exhibit booth, and sportsmanship.



## BEST Award Winners

1st Place: Brewbaker Tech. Magnet High School\*

2nd Place: Wetumpka High School\*

3rd Place: Springwood School\*

4th Place (finalist): Columbus High School

## Game Winners

1st Place Robotics: Wetumpka High School

2nd Place Robotics: Lee-Scott Academy\*

3rd Place Robotics: Saint James School\*

4th Place Robotics (finalist): Springwood School

\* Advanced to South’s BEST Regional Competition

## Sponsors of the Program

Alabama Power

Hyundai Motor Manufacturing Alabama

Donaldson Company

Briggs & Stratton

Neptune Technology Group

VWR Foundation

Wells Fargo

Army ROTC

Brasfield and Gorrie

VisualEdge

Auburn Opelika Tourism Bureau

Carmichael Engineering



**Program: South's BEST****Description:** Middle and high school robotics championship**Date:** Saturday, December 7<sup>th</sup>; 10:00 AM - 9:00 PMSunday, December 8<sup>th</sup>; 9:30 AM - 5:00 PM**Facilities:** Auburn Arena, SCA, SCL, SCC, Parker Hall**Personnel:**

AU: Mary Lou Ewald, George Blanks, Erin Percival, Kristen Bond, Amy Mathis, Tj Nguyen, Allison Tjelmeland, Judith Bailey, Katie Teixeira, Amber Derouen, Jacob Varner, Hunter Whitten, Khori Dunn, and AU student volunteers

**Student Impact:**

Number of Students: ~3,500

Grade Range: 6<sup>th</sup> - 12<sup>th</sup>**Schools Served:**

- Brewbaker Technology Magnet High School (Montgomery, AL)
- Lee-Scott Academy (Auburn, AL)
- Saint James School (Montgomery, AL)
- Springwood School (Lanett, AL)
- Wetumpka High School (Wetumpka, AL)
- Evangel Christian School (Alabaster, AL)
- Homewood Middle School (Homewood, AL)
- Oak Mountain High School (Birmingham, AL)
- Spain Park High School (Birmingham, AL)
- East Rankin Academy (Pelahatchie, MS)
- Starkville High School (Starkville, MS)
- Starkville Christian Home Educators (Starkville, MS)
- McNairy Central High School (Selmer, TN)
- Wheeler High School (Marietta, GA)
- Fernbank LINKS (Atlanta, GA)
- Northview High School (Johns Creek, GA)
- South Forsyth High School (Cumming, GA)
- Central Magnet School (Murfreesboro, TN)
- Merrol Hyde Magnet School (Hendersonville, TN)
- M.A.R.I.O. (Clarksville, TN)
- Central High School of Clay County (Lineville, AL)
- Episcopal Day School (Gadsden, AL)
- Hope Academy (Talladega, AL)
- Talladega Career Tech Center (Talladega, AL)
- RCS Engineering (Russellville, AL)
- Brooks High School (Killen, AL)
- Muscle Shoals High School and Center for Technology (Muscle Shoals, AL)
- Academy for Science and Foreign Language (Huntsville, AL)
- DARC (Decatur, AL)
- Lindsay Lane Christian Academy (Athens, AL)
- Baker High School (Mobile, AL)
- Faith Academy (Mobile, AL)
- W.P. Davidson High School (Mobile, AL)

### Schools Served:

- Talladega Career Tech Center (Talladega, AL)
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- DARC (Decatur, AL)
- Lindsay Lane Christian Academy (Athens, AL)
- Baker High School (Mobile, AL)
- Faith Academy (Mobile, AL)
- W.P. Davidson High School (Mobile, AL)
- Mobile Area Coalition of Homeschools (Mobile, AL)
- Monroeville Middle School (Monroeville, AL)
- Sweet Water High School (Sweet Water, AL)
- Woodham Middle School (Pensacola, FL)
- Woodlawn Beach Middle School (Gulf Breeze, FL)
- Seaside Neighborhood School (Santa Rosa Beach, FL)
- Hartselle Junior High School (Hartselle, AL)
- Holly Pond High School (Holly Pond, AL)
- Rehobeth Middle School (Rehobeth, AL)
- Wicksburg High School (Newton, AL)
- Holy Cross School (New Orleans, LA)
- St. Scholastica Academy (Covington, LA)
- Marshall Technical School (Guntersville, AL)
- Fyffe High School (Fyffe, AL)
- Dallas County High School (Plantersville, AL)
- John T. Morgan Academy (Selma, AL)
- Demopolis Middle School (Demopolis, AL)
- Northridge High School (Tuscaloosa, AL)
- Northside High School (Northport, AL)
- Tuscaloosa Christian School (Cottondale, AL)
- Strawberry Crest High School (Dover, AL)
- McLane Robotics Engineering Acad. (Brandon, FL)
- Delhi Charter School (Delhi, LA)

### BEST Award Winners

1<sup>st</sup> Place - Wetumpka High School

2<sup>nd</sup> Place - Fernbank LINKS

3<sup>rd</sup> Place - Wicksburg High School

### Robotics Award Winners

1<sup>st</sup> Place - DARC

2<sup>nd</sup> Place - Merrol Hyde Magnet School

3<sup>rd</sup> Place - Evangel Christian School

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Army ROTC

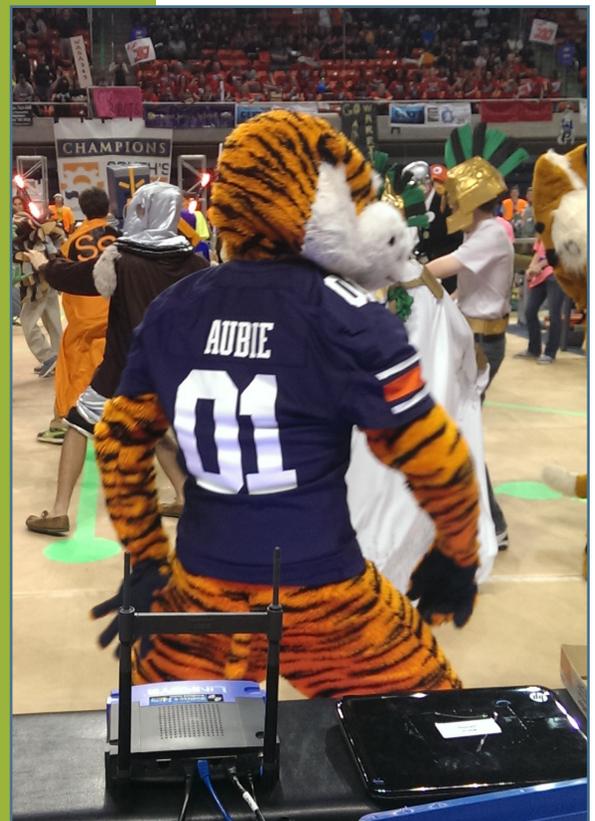
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Carmichael Engineering

ISA



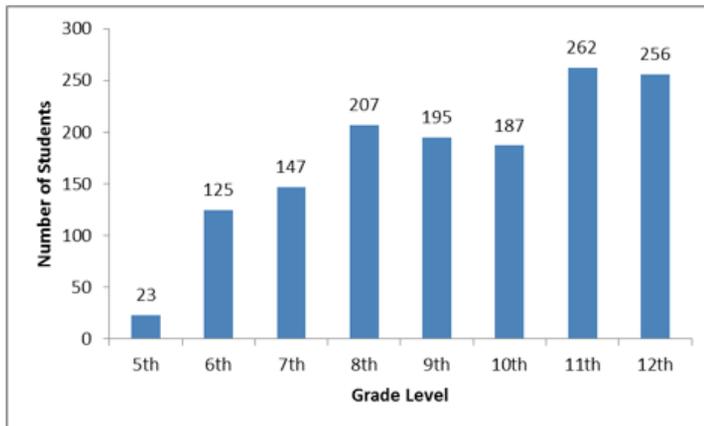
## 2013 Student Survey Summary

### Introduction

The 2013 South's BEST Robotics Championship Competition was held December 7-8 at the Auburn Arena on the campus of Auburn University. Fifty-six (56) teams from 6 states were in attendance, with 37 (or 66%) from Alabama. Other represented states included: Georgia, Florida, Mississippi, Louisiana, and Tennessee. A one page survey was completed by 1,416 students in attendance at the event. Student surveys were a requirement of participation in the event but do not necessarily represent all team members.

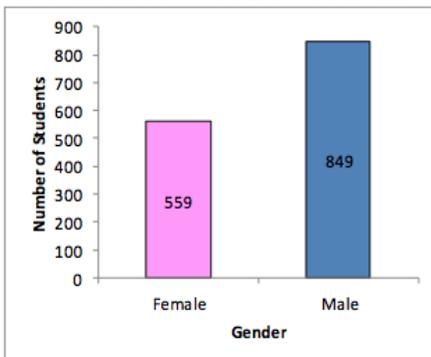
### Grade Level

Of the 1,416 completed surveys, 1,402 students provided their grade level. Middle School students (5th-8th grade) accounted for 36% of student attendees, with 64% being in high school (9th – 12th grade).



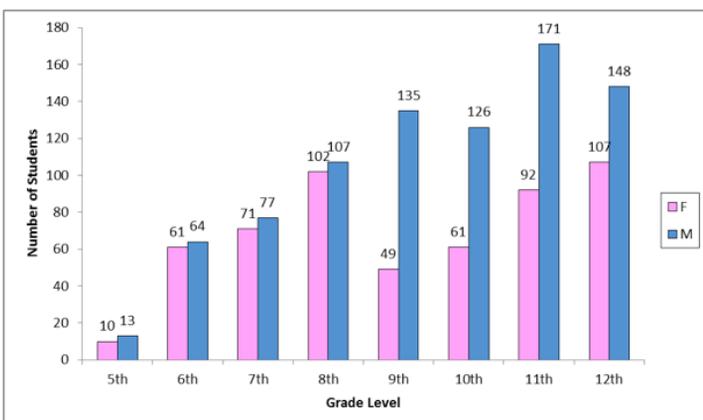
### Gender

Of the 1,416 completed surveys, 1,408 students provided their gender; 559 were female (40%) and 849 were male (60%).



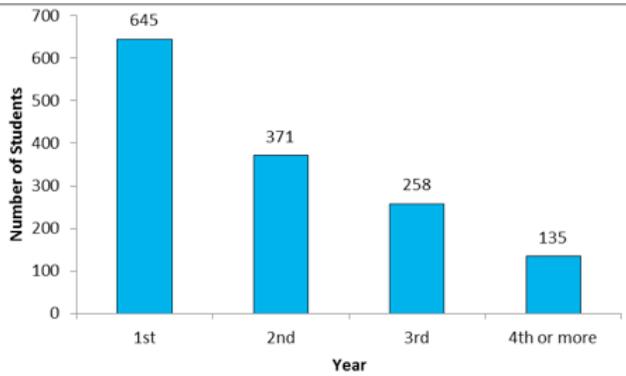
### Gender by Grade Level

Of the 1,416 completed surveys, 1,393 students provided both their grade level and gender; 841 male and 553 female.

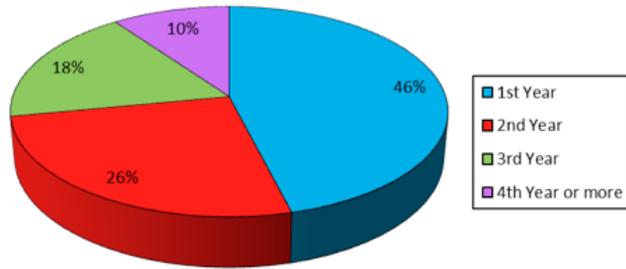


### Years in the Program

Of the 1,416 completed surveys, 1,409 students provided the number of years they've participated in BEST. First year students accounted for 46%; second year students, 26%; third year, 18%; and students who have participated for four or more years accounted for 10%.

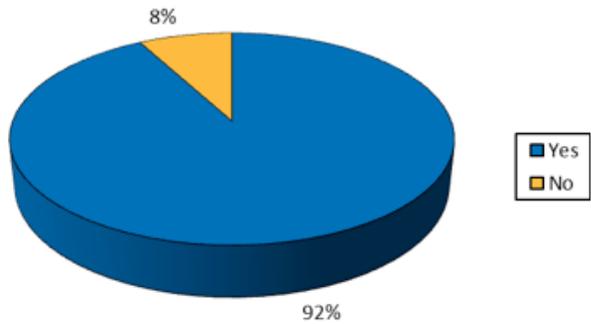


As the program continues to grow, new teams and competition sites are added each year, which attracts a new group of students. This data represents the innovation and competitive spirit of first year teams and participants.



### Increased Interest in STEM

Of the 1,416 complete surveys, 1,406 responded to the question. 1,287 (92%) expressed an increased interest in math, science, and/or engineering because of their participation in BEST.



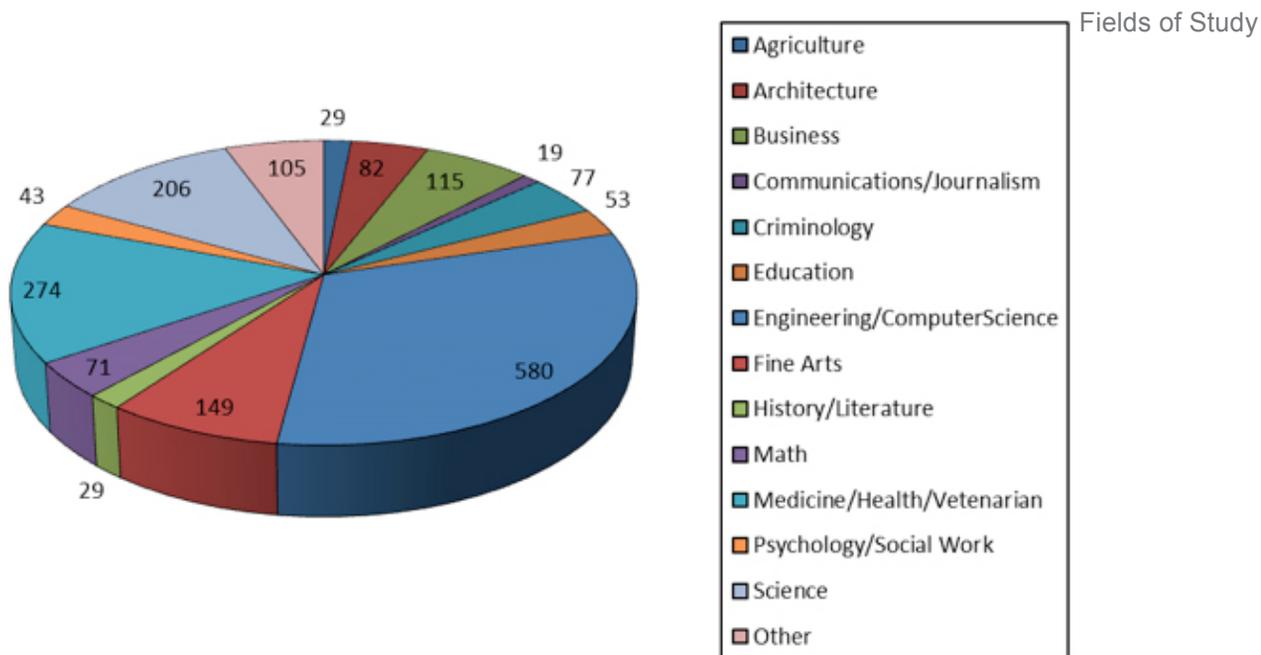
**Plans to Attend College**

Of the 1,416 completed surveys, 3 students did not respond and 10 students did not plan to attend college, while 1,403 did (99.3%). Of those who did not plan to attend college, 1 was female and 9 were male.

Of the 1,416 completed surveys, 899 were high school students who indicated that they intend to attend a college or university. Of the 899 surveys, the students who chose more than three schools or were completely undecided accounted for 22.1 percent.

Of 899 high school students who plan to attend a college or university, only 719 indicated which school(s) they were inter-

Auburn – 26%	Univ. South Alabama – 4.2%	Jacksonville State – 1.5%
Alabama – 13.9%	Vanderbilt – 2.9%	LSU – 1.5%
Georgia Tech – 8.3%	UAH – 2.6%	Univ. Georgia – 1.5%
Mississippi State – 5.6%	Stanford – 2.5%	Montevallo – 1.1%
MIT – 5.3%	Southern Miss – 1.7%	AUM – 1.1%
UAB – 5%	Troy – 1.5%	CACC – 1.1%



There were 13 available fields of study for students to choose from and an “other” write-in option. The data above represents the frequency of occurrence for the fields of study on the survey (students were allowed to select more than one field). Engineering/Computer Science accounted for 32.5 percent, while COSAM (or medical degrees starting there) accounted for 31 percent. The frequency of “other” was 5.7 percent with 56.2 percent of the “other” being undecided. The remaining notable percentages were:

- Agriculture 1.6%
- Architecture 4.5%
- Business 6.3%
- Communications or Journalism 1%
- Criminology or Law 4.2%
- Education 2.89%
- Fine Arts 8.1%
- History, Literature, or English 1.6%
- Psychology 2.3%

### College Interest Among High School Students

Ten students said they had no plans of attending college, 8 of which were in high school. There were 899 high school students that gave their collegiate plans. A major was given by 872 high school participants (students were able to select more than one major). Engineering/Computer Science was selected by 441 students, or 50.6%. COSAM degrees captured 317 students or 36.4% (about half selecting medicine). The remaining highest concentrations were:

Business: 8.6%

Fine Arts: 7.1%

Architecture: 4.9%

Criminology Law: 4.1%



## Student Survey 2013

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?

- Agriculture  Fine Arts (art, music, film, theatre)  
 Architecture/ Design/ Construction  History/ Literature/ English  
 Business (marketing, accounting, aviation, etc)  Mathematics  
 Communications/ Journalism  Medicine/ Health/ Veterinary/ Nursing  
 Criminology / Law  Psychology/ Social Work  
 Education  Science (chemistry, biology, physics)  
 Engineering/ Computer Science  Other: \_\_\_\_\_

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

- I have no interest in attending college  I can't afford to attend college  
 I plan to get a job  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?

- 1 year  3 years  
 2 years  More than 3 years: \_\_\_\_\_

5.) Are you a member of your school's BEST team or are you attending as a visitor supporting your schools' BEST team?

- Team Member  Visitor





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