

ANNUAL REPORT

2018

College of Sciences and Mathematics Outreach

The College of Sciences and Mathematics Outreach Office at Auburn University strives 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



131

contact days



5,930

students, parents, and teacher participants

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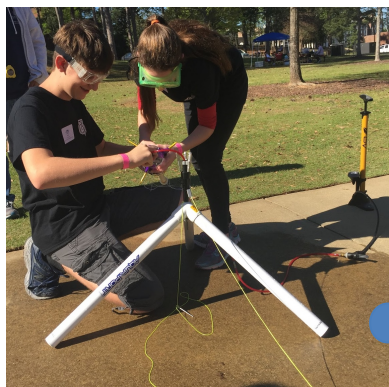
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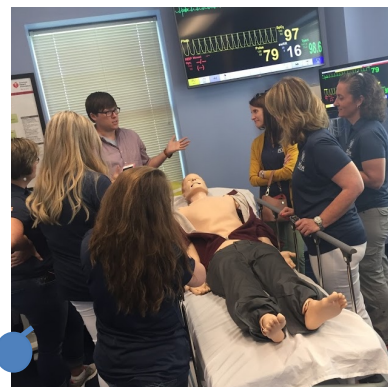
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COSAM Outreach Highlights 2018



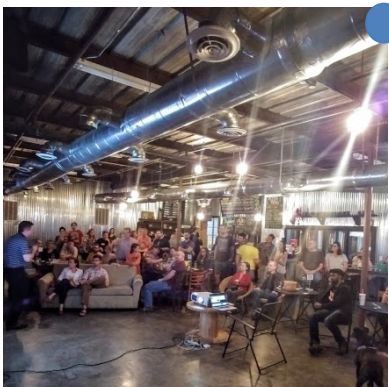
COSAM Outreach took on both the middle school and high school **State Science Olympiad** competitions! More than 400 students competed at Auburn this Spring in these competitions.



This year SCORE played a major role in BEST by designing the game that culminated with over 4000 people watching and competing at the **South's BEST Regional Championship!**

Summer Science Institute garnered even more interest from faculty, and participating students got to experience over five new modules across different COSAM departments.

Check out some of our new programs and achievements!



COSAM Outreach welcomed two new full-time positions, including a new **Assistant Director of Outreach**, and several new student workers!



Outreach Staff



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 the outreach programs, the Director of AU Science in Motion, SCORE, Co-PI of AU-AMSTI, and the campus-wide outreach representative for COSAM (WISE Institute, Outreach Faculty Engagement Council). In addition, she is responsible for oversight of all grant-related activities for the unit and serves as the State Affiliate Director of the Project Lead The Way program.



Kristen Bond

Assistant Director of Outreach

Kristen's responsibilities during the 2018 year included: coordination of elementary, middle school, and high school Science Olympiads including the middle school and high school State Competition; Science Matters Summer Academy; Middle School AMP'd; and SWSM.



Teddy Dubose

Accountant II

Teddy's primary responsibility included managing program budgets, office management, and oversight of all financial matters of the unit.



Josh King

Outreach Program Administrator

Josh's responsibilities during the 2018 year included: coordination of GUTS, the PLTW State Conference, High School AMP'd Challenge, GEARSEF, Science Café, and serving as the Affiliate Assistant Director for the Alabama Project Lead The Way Biomedical Sciences program.

Outreach Staff (cont.)



Tj Nguyen

Assistant Director of SCORE Robotics

Tj Nguyen is the Assistant Director of SCORE. He coordinates and runs robotics outreach programs through SCORE such as Drone Camp, BEST Robotics, and VEX Robotics.



Frank Ware

Robotics Education Specialist

Frank Ware is the Office Manager of SCORE and robotics instructor. He keeps the robots at SCORE in working order in addition to teaching and instructing student camps and teacher workshops. He specializes in Ozobots instruction with our elementary students.



Dr. Charles Eick

Affiliate Asst. Director of PLTW Launch and Gateway

Dr. Eick's responsibilities during the 2018 year included: coordination of the PLTW state conference, coordination of Summer and Winter Launch and Gateway PLTW core trainings, teacher visitations and school support, and coordination of other PLTW supplemental professional development offerings.



Janie Marino

STEM-IQ Project Assistant

Janie's responsibilities during the 2018 year included: coordination of STEM-IQ professional development, logistics, mentoring, and program evaluation, and assisting with the GEARSEF program.

Outreach Staff (cont.)



Dr. Veronica Morin
Assistant Director of Outreach

Dr. Morin joined the College of Sciences and Mathematics Outreach office in the fall of 2018.



Jennifer Spencer
Outreach Program Administrator

Jennifer joined the College of Sciences and Mathematics Outreach office in the fall of 2018. Jennifer will be assisting both the main Outreach office and the Southeastern Center of Robotics Education.



Dr. Jessica Gilpin
Outreach Postdoctoral Fellow

Upon graduating with her PhD in Marine Biology in December 2017 and stayed in the College of Sciences and Mathematics Outreach office as a postdoctoral fellow to assist with programs such as GWIS, Summer Science Institute, GEARSEF, and SWSM.

Student Employees



Emily Hardy

STEM-IQ Graduate Student Assistant

Emily's responsibilities during the 2018 year included: coordination of STEM-IQ professional development, logistics, mentoring, and program evaluation, and assisting with the GEARSEF program.



Jacob Varner

Graduate Program Assistant

Jacob is a graduate student working on his MBA and Master of Industrial and Systems Engineering. Jacob has worked in the College of Sciences and Mathematics Outreach office since 2013 and his primary responsibilities include overseeing the office's technology, Summer Science Institute, PLTW, and BEST Robotics.



Erika Dunavant

Outreach Student Program Assistant

Building Science

Senior

Third year in COSAM Outreach



Hunter Terry

SCORE Student Program Assistant

Aerospace Engineering

Junior

Third year in SCORE

Student Employees (Cont.)



Nia Perkins

SCORE Student Program Assistant

Electrical Engineering
Second Degree Student
Third year in SCORE



Grace Denniston

Outreach Student Program Assistant

Industrial Design
Junior
Second year in COSAM Outreach



Marcus Woodard

Outreach Student Program Assistant

Software Engineering
Senior
Second year in COSAM Outreach



Meagan Fuller

Outreach Student Program Assistant

Psychology
Junior
Second year in COSAM Outreach

Student Employees (Cont.)



Grace Holland

Outreach Student Program Assistant

Wildlife Science (Pre-Vet)

Sophomore

First year in COSAM Outreach



Jonathan Snell

Outreach Student Program Assistant

Civil Engineering

Freshman

First year in COSAM Outreach

2018 Outreach Calendar

PLTW State Conference	January 22
High School AMP'd	January 27
Middle School AMP'd	January 27
Science Café & Pub	January – June
Elementary Science Olympiad	February 24
GEARSEF	March 6
State MS Science Olympiad	March 31
State HS Science Olympiad	March 31
Spring GUTS	April 26
SWSM	May 3
STEM IQ	May 30 – 31
Science Matters	June 4 – 8, 11 – 15, 18 – 22, 25 – 29; July 16 – 20, 23 – 27
Science in Motion Training	June 4 – 29, June 4 – 15, June 18 – July 13, July 2 – 3
PLTW Core Training	June 11 – July 20
Summer Science Institute	June 10 – 16
AP Summer Institute	July 9 – 13, July 16 – 20
GEARSEF Teacher Training	September 25
War Eagle BEST	October 20
South's BEST	December 1 – 2

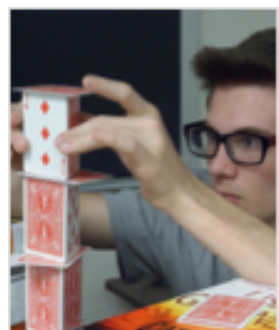
Program Descriptions



AP Summer Institute (COSAM Facilitated)

Funding Source: Participant fees

The AP Summer Institute (APSI) Workshop is endorsed by College Board and designed to aid the professional development of teachers, counselors, and administrators who are involved with Advanced Placement (AP) courses. Workshops are designed for teachers who are teaching an Advanced Placement course for the first time and for experienced teachers desiring refresher training. APSI is hosted each summer in partnership with the Office of Professional and Continuing Education at Auburn University. COSAM facilitates course offerings in Biology, Chemistry, Physics, History, and Computer Science.



Auburn Mathematical Puzzle Challenge

Funding Source: COSAM, participant fees

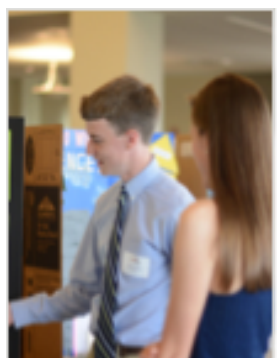
The Auburn Mathematical Puzzle Challenge, or AMP'd Challenge for short, is a problem-solving challenge offered once each year. AU hosts a middle school event in which teams of 6 –8 students work together to solve thematic mathematical puzzles. The high school event is hosted in which students are challenged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



Getting Under the Surface (GUTS)

Funding Source: Participant fees

GUTS is a program for kids in grades 1-6 and their parents or grandparents as lab partners. 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.



GEARSEF

Funding Source: COSAM, Samuel Ginn College of Engineering, & 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 hosts 6th – 12th grade projects from 19 Southeast Alabama counties. Two exceptional high school students from GEARSEF advance to the Intel ISEF each May to compete against the top 1,500 students in the world for nearly \$4 million dollars in prizes and scholarships.

Program Descriptions



Project Lead The Way

Funding Source: Participant fees

Auburn University serves as PLTW's engineering and biomedical sciences affiliate university for the state of Alabama. In this role, Auburn University facilitates the delivery of the PLTW Pathway to Engineering, Biomedical Sciences, Launch, and Gateway programs by providing professional development through its core training and counselor conferences, as well as college-level recognition, program initiatives, and statewide/regional support and communication. PLTW at Auburn University is a collaboration between the WISE Institute and the College of Sciences and Mathematics.



Science Café & Pub

Funding Source: COSAM

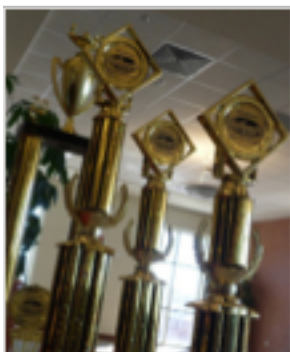
Science Café is a monthly recurring community outreach night of science, good drinks, tasty sweets, and great conversations. At the AU Science Cafe, participants have the opportunity to sit down and talk about new and exciting science and technology with STEM experts in our community, all the while relaxing in a great local food and drink venue. The event is free and open to the public of all ages.



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. Each summer, up to eighteen different one-week courses are designed and taught by master educators in the region.



Science Olympiad

Funding Source: COSAM, AU Bookstore

Science Olympiad is a national science competition that is organized as a one-day academic track meet, consisting of up to 24 different competitive events. Each spring, Auburn University hosts a regional competition for elementary students as well as the overall State competition for middle and high school students.

Program Descriptions



Science in Motion

Funding Source: State Department of Education

Alabama Science in Motion (ASIM) is the high school science component of the Alabama Math, Science and Technology Initiative. ASIM is a partnership between universities and high schools in Alabama. The goals of Science in Motion are to provide high-tech laboratory experiences for students and effective professional development for teachers. In many instances the cost of the equipment involved would be prohibitive for individual schools or even systems to acquire. Sharing this equipment through Science in Motion offers equally enriching opportunities to students from different backgrounds and schools.



SWSM

Funding Source: Sponsorships and Participant Fees

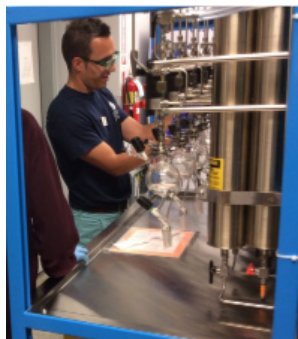
The annual Society of Women in Sciences and Mathematics (SWSM) Symposium and Luncheon offers women at all stages of their careers in science and mathematics the opportunity to network with one another through panel discussions, break-out sessions, career corner, and a luncheon with Keynote address from the Marie W. Wooten Distinguished Speaker.



STEM-IQ

Funding Source: National Science Foundation Grant

STEM-IQ is a program for middle and high school teachers that focuses on aiding students through the science and engineering fair project design process. The program is funded through a National Science Foundation, EPSCoR Track III grant. Participation in this program is by invitation and is limited to school systems interested in participating in AU's regional Science and Engineering Fair.



Summer Science Institute

Funding Source: NSF, SWSM, & COSAM Outreach

The Summer Science Institute at Auburn University is a summer science program for rising 11th and 12th 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. Students are chosen based upon their academic merit through a rigorous application process.

Program Descriptions



War Eagle BEST

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

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



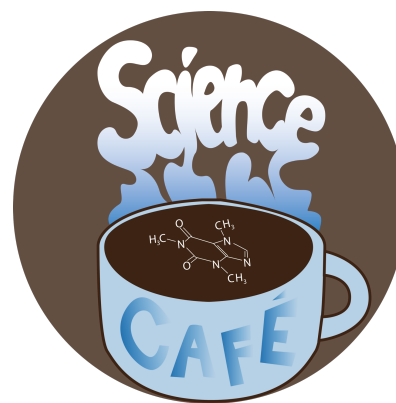
South's BEST

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

Each December, a crowd of over 3,500 students, teachers, parents, and industry mentors assemble at Auburn University for the Annual South's BEST Regional Robotics Championship. Winners from 17 Southeastern BEST hubs advance to South's BEST, where the "Best of the BEST" compete in two intense days of competition.

Program: Science Café & Pub**Date:** Monthly Recurring Program**Description:** Monthly community science presentation and discussion night featuring local scientists**Facilities:** Mama Mocha's Coffee Emporium & Red Clay Brewery**Personnel:**AU: Josh King, Erika Dunavant, Khorizon Dunn, Mary Lou Ewald, Grace Denniston, Marcus Woodard, and various presenters**Impact:**Total Audience Attendance (11 nights): 870Grade Range: All ages**Presenters:**

- January: Dr. Anne Gorden and Lab – “It’s Not Easy Being Green”
- February: Dr. Stuart Loch – “Shining a Light on Aliens: The Physics Behind Search for ET Life”
- March: Emily Merritt – “The Trouble with Ticks”
- April: Dr. Sarah Zohdy – “Biology? There’s an App for That”
- May: Dr. James Radich – “Exponential Growing Pains for the 21st Century”
- June: Dr. Karen McNeal – “Augmented Reality Sandboxes in Geoscience”



Program: Greater East Alabama Regional Science and Engineering Fair (GEARSEF)**Date:** Thursday, March 6, 2018**Description:** Students presented projects from a variety of Science and Engineering fields.**Personnel:**

AU: Mary Lou Ewald, Josh King, Janie Marino, Emily Hardy, Kristen Bond, Teddy Dubose, Nia Perkins, Jessica Gilpin, Hunter Terry, Meagan Fuller, Marcus Woodard, Grace Holland

Judges:

Dr. Sushil Adhikari, Ms. Sulihat Aloba, Mrs. Shaliah Armstrong, Dr. Adriana Avila Flores, Dr. Nick Backsheider, Ms. Morgan Beadles, Dr. Majid Beidaghi, Mr. Roger Birkhead, Ms. Jenna Bloemer, Ms. Sara Bolds, Mrs. Cara Brittain, Dr. Christopher Burton, Dr. Asha-Dee Celestine, Ms. Alexandria Combs, Dr. Selen Cremaschi, Ms. Qi Cui, Mr. Suman Das, Dr. Virginia Davis, Ms. Ana Dmytrejchuk, Dr. Byron Farnum, Ms. Kaelyn Fogelman, Ms. Dianna Forbes, Mr. Robel Ghebream, Ms. Claire Graham, Ms. Swati Gupta, Ms. Nicole Habbit, Mr. Taylor Hall, Mrs. Elise Hall, Ms. Haley Hallowell, Dr. Greg Hartwe, Mr. Dana Hickey, Mrs. Beth Hickman, Mrs. Keah Higgins, Mr. Shawn Jacobsen, Ms. Lauren Kirby, Mrs. Jessica Krewall, Dr. Guillaume Laurent, Mr. Gaoxiang Li, Mr. Zening Liu, Ms. Yalin Liu, Mrs. Tyaunnaka Lucy, Mrs. Kristy Mann, Ms. Sarah Martin, Dr. Yohannes Mehari, Mr. Nirmal Kumar Mitra, Dr. Chandana Mitra, Mr. Animesh Mondal, Mr. Matthew Noor, Dr. Vera Opatova, Dr. Sang Wook Park, Mr. Nicholas Parr, Dr. Haixin Peng, Dr. Priyanka Pinky, Ms. Jenna Pruett, Dr. Vrishank Raghav, Ms. Tharikaa Ramesh Kumar, Ms. Susan Rashid, Mr. Cody Rasmussen-Ivey, Ms. Caitlin Redak, Mr. Dewayne Riddle, Mr. Peter Rogers, Mr. Alex Rubin, Mr. Partha Saha, Dr. Elizabeth Schwartz, Ms. Shehenaz Shaik, Dr. Catherine Situma, Mr. Warren Smith, Mr. Nick Soltis, Dr. Christine Sundermann, Ilknur Uludag, Mr. Armin Vahid Mohammadi, Dr. Alexander Vinel, Dr. Marilyn Vogel, Dr. Haruka Wada, Ms. Maya West, Dr. Matthew Wolak, Mr. David Young, Mr. Xavier Zahnle, Ms. Beijia Zhang

Sponsoring Auburn University Organizations:

100 Women Strong; AU Department of Chemistry and Biochemistry; AU Department of Geosciences; AU Department of Physics; Samuel Ginn College of Engineering; COSAM Outreach; AU Department of Biological Science; AU College of Sciences and Mathematics Office of the Dean; Educational Foundations, Leadership, & Technology at AU; AU Project Lead The Way; the National Oceanic and Atmospheric Administration (NOAA); Society of Hispanic Professional Engineers (Auburn Student Chapter); AU Department of Mathematics and Statistics; United States Air Force; AU Society of Women in Sciences and Mathematics, the Office of Naval Research; Intel; The Biophysical Society; Northrop Grumman in Auburn; ASU Walton; Mu Alpha Theta; Ricoh; Stockholm Water Foundation; NASA Earth System; Yale Science and Engineering Association

Total Number of Students: 275 students presented 211 projects (top 48 projects advanced to state)

Age Range: 6th-12th grade

Schools Impacted: Auburn High School, Auburn Jr. High School, Drake Middle School, East Samford, Marbury High School, Georgiana School, Greenville High School, Greenville Middle School, McKenzie High School, Beverlye Magnet School, Carver Magnet School, Honeysuckle Magnet School, Holtville Middle School, Eclectic Middle School, Elmore County High School, Redland Elementary School, Wetumpka High School, Wetumpka Middle School, Harrand Creek Elementary, Admiral Moorer Middle School, Eufaula High School, Geneva Middle School, Slocomb Middle School, Smiths Station High School, Smiths Station Jr. High, Wacoochee Elementary School, Calhoun High School, Lowndes County Middle School, Central High School (Lowndes), Hayneville Middle School, Opelika Middle School, Carroll High School, D. A. Smith Middle School, Central Freshman Academy, Central High School (Phenix City), Phenix City Intermediate School, South Girard School, LAMP

Facilities: Auburn Hotel and Conference Center

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

Date: Monday, September 25, 2017

Description: A one-day training for 36 new teachers to GEARSEF was provided at the Auburn Chamber of Commerce.

Personnel:

AU: Mary Lou Ewald, Josh King, Janie Marino, Emily Hardy, Dr. Charles Eick, Jessica Gilpin, Zahra Karimi



Program: Science Olympiad - Elementary School (Division A2)

Date: Saturday, February 24, 2018

Description: Regional Elementary School Olympiad

Personnel:

AU: Kristen Bond, Teddy Dubose, Josh King, Frank Ware, Hunter Terry, Charles Eick, Shane Williams, Grace Holland, Grace Denniston, Jessica Gilpin, Emily Hardy, Erika Dunavant

Non-AU: High School students from Auburn High School

Schools Impacted: Auburn Classical Academy, Beulah Elementary, Bryan Elementary, Concord Elementary, Excalibur Christian School, Fairhope Intermediate School, Gardendale Elementary, LaFayette Eastside Elementary, Montana Street Magnet School, Montgomery Catholic Preparatory School, Mt. Gap Elementary, Oak Grove Elementary, Ogletree Elementary, Pick Elementary, Prattville Christian Academy, Springwood School, St. Luke's Episcopal School, West Forest Intermediate, Wrights Mill Road Elementary, and Yarbrough Elementary

Total Number of Students: ~675

Age Range: 3rd – 6th grade

Facilities: AU Student Center, Parker Hall, Sciences Center Labs, Sciences Center Classroom Building, Sciences Center Auditorium, Beard-Eaves Memorial Coliseum

Program: AL State Science Olympiad – Middle School (Division B)**Date:** Saturday, March 31, 2018**Description:** State Middle School Olympiad**Personnel:**

- AU: Mary Lou Ewald, Kristen Bond, Teddy Dubose, Erika Dunavant, Josh King, Nia Perkins, Hunter Terry, Frank Ware, Tj Nguyen, Shane Williams, Charles Eick, Meagan Fuller, Grace Denniston, Grace Holland, Marcus Woodard, Jacob Varner, Jessica Gilpin
- Non-AU: Science teachers from participating schools

Schools Impacted: Alabama School of Fine Arts, Auburn Junior High School, Baldwin Arts and Academics Magnet, Bragg Middle School, Brewton Middle School, Christ the King Catholic School, Corner Middle School, Cottage Hill Christian School, Excalibur Christian School, JF Drake Middle School, Monrovia Middle School, Our Lady of the Valley School, Prattville Christian Academy, Trinity Presbyterian School

Total Number of Students: ~210

- Age Range: 6th – 9th grade

Facilities: AU Student Center, Haley Center, Parker Hall, Sciences Center Auditorium, Sciences Center Classrooms, Sciences Center Laboratory



Program: AL State Science Olympiad - High School (Division C)

Date: Saturday, March 31, 2018

Description: State High School Olympiad

Personnel:

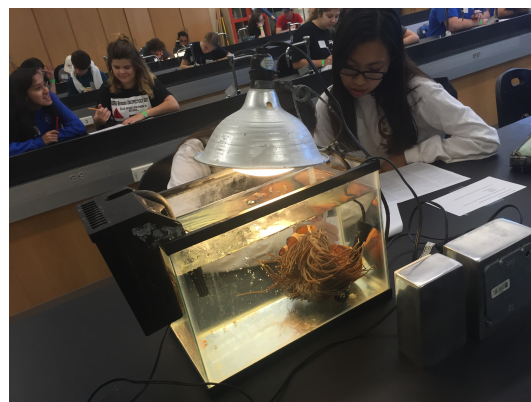
- AU: Mary Lou Ewald, Kristen Bond, Teddy Dubose, Erika Dunavant, Josh King, Nia Perkins, Hunter Terry, Frank Ware, Shane Williams, Tj Nguyen, Jacob Varner, Jessica Gilpin, Charles Eick, Meagan Fuller, Grace Denniston, Grace Holland, Marcus Woodard
- Non-AU: Science teachers from participating schools

Schools Impacted: Alabama School of Fine Arts, Alabama School of Math & Science, Auburn High School, Bayside Academy, Grissom High School, Hewitt-Trussville High School, Jefferson County International Baccalaureate, LAMP High School, Montgomery Catholic Preparatory School, Randolph School, Sparkman High School, Trinity Presbyterian School, Vestavia Hills High School, Wetumpka High School

Total Number of Students: ~210

- Age Range: 9th – 12th grade

Facilities: AU Student Center, Parker Hall, Sciences Center Auditorium, Sciences Center Classrooms, Sciences Center Laboratory,



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

Date: Saturday, January 27, 2018

Description: Math Puzzle Challenge event for high school students

Facilities: Haley Center

Personnel:

AU: Josh King, Jacob Varner, Marcus Woodard, Grace Denniston

Non-AU: Eric Harshbarger

Student Impact:

Number of Students: 122

Grade Range: 9th-12th

Schools Impacted:

Auburn High School
Beauregard High School
Beulah High School
Central Educational Center
First Baptist Opelika Christian
LAMP High School
Lee-Scott Academy
Montgomery Catholic School
Newnan High School
Saint James School
Smith Station High School



Program: Middle School Auburn Mathematical Puzzle Challenge (AMP'd)

Date: January 27, 2018

Description: Math Puzzle Challenge event for high school students

Personnel:

AU: Kristen Bond, Jacob Varner, Andrew Owens, Dr. Jessica McDonald, Amber Holmes, Math Graduate Students

Non-AU: Math/Science/Technology Teachers from participating schools

Facilities: Parker Hall, Science Center Auditorium

Impact:

Schools: Central Educational Center, East Coweta Middle School, Evans Middle School, First Baptist Opelika Christian School, Lee Middle School, Lee-Scott Academy, Madras Middle School, Montgomery Catholic Preparatory School, Opelika Middle School, Oxford Middle School, Pike Road Historic School, Sanford Middle School

Total Number of Students: 150

Age Range: 7th – 8th grade



Program: SWSM Women's Leadership Symposium**Date:** Thursday, May 3, 2018, 8:00 AM – 1:30 PM**Description:** High School girls, SWSM supporters, AU faculty, and students attend an annual symposium consisting of a panel discussion, break-out sessions, Career Corner, and luncheon with keynote speaker**Personnel:**

AU: Mary Lou Ewald, Kristen Bond, Teddy Dubose, Josh King, Erika Dunavant, Jacob Varner, Hunter Terry, Frank Ware, Tj Nguyen, Sherri Rowton, Brook Moates, Tammy Hartwell, Leisa Coleman, Helen Stewart, Brooke Wheat

Facilities: The Hotel at Auburn University & Dixon Conference Center**Total Number of Students:** 80**Age Range:** 9th-12th Grade**Schools Impacted:** Auburn High School, Lanett High School, Loachapoka High School, Loveless Academic Magnet Program, Montgomery Catholic Preparatory School, Opelika High School, Stanhope Elmore High School, Tallassee High School, Wetumpka High School**Panelists:** Dr. Jessica Gilpin - Biological Sciences, Jamonica Moore - Chemistry and Biochemistry, Amanda Savrda – Geosciences, Alexis Stokes - Biomedical Sciences**Breakout Sessions:** SWSM Tackles the “Imposter Syndrome”, Uranium Sensing: A Goldilocks Tale, Admission Advice, Pederson Cleaner Shrimp: Cleaning up Coral Reefs**Career Corner:** Dr. Melissa Buie – Physics '88, Kim Flurry – Physics '86, Amy Grilliot – Biology '99, Kate Wehr Johnson – Mathematics '05, Mary Beth Lloyd – Chemistry '90, Dr. Lori McStoots – Microbiology '01, Dr. Emily Roarty – Microbiology '01, Amanda Savrda – Geosciences '08**Distinguished Speaker:** Dr. Jenny Oakes Sobera '94 – Owner of Village Dermatology in Mountain Brook, Alabama

Program: STEM-IQ Teacher Fellow Workshop

Description: The objective of STEM-IQ, a 5-year National Science Foundation funded initiative, is to advance teachers' motivation and ability to lead science fair projects and to test the hypothesis that improving science fair participation will enhance teachers' ability to lead scientific inquiry and enhance the quality and diversity of the STEM pipeline in Alabama. Specifically, we aim to develop a professional learning community that links Auburn University STEM faculty with 6th – 12th grade students, teachers and administrators, facilitated through the Auburn University College of Sciences and Mathematics Outreach Center. We will use existing science fair infrastructure as a framework to provide teacher professional development and enhance the STEM pipeline for students from Southeastern Alabama.

Project Goals:

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

This year, COSAM Outreach provided a 2-day workshop for continuing training of our Cohort 3 fellows. The Cohort 3 workshop went deeper into the process of organizing and running a science fair at one's own school, how to get students involved in science fairs, and continuing support on inquiry and science literacy skills. The workshop also focused on pacing and starting the science fair process for Cohort 3.

Date: May 30-31, 2018 (Cohort 3)

Facilities: AU Sciences Center Laboratory building

Personnel: Mary Lou Ewald (COSAM Outreach), Janie Marino (COSAM Outreach), Emily Hardy (COSAM Outreach), Josh King (COSAM Outreach), Roger Birkhead (ASIM), Allen Landers (Physics), Virginia Davis (Chemical Engineering), Paul Cobine (Biology), Tim Mitchell (Biology), Joni Lakin (College of Education)

Impact:

Number of Participants:

- Cohort 3:
 - 15 teachers from the following schools: Smiths Station Jr. High, Central Freshman Academy, Lanett High School, Smiths Station High School, Admiral Moorer Middle School, Pike Road School System, West Smith Station, South Girard Middle School, Wacoochee Elementary School.

Program: Science Matters**Dates:** June 4-8, June 11-15, June 18-22, June 25-29, July 16-20, July 23-27**Facilities:** Parker 254, 352, 354, 356, Natural History Museum, Auburn University Regional Airport, Donald E. Davis Arboretum, School of Fisheries, Samuel Ginn College of Engineering**Description:** Science Matters is a summer enrichment academy in which elementary and middle school children attend themed weeks filled with experiments, field trips, and make-and-take projects.**Personnel:**

- AU: Kristen Bond, Jacob Varner, Teddy Dubose, Marcus Woodard, Meagan Fuller.
- Non-AU: Will Tidmore, Andrea Beall, Shelly Patterson, Aleesa Zutter, Gina Watkiss, Kenzie Strickert, Seth House, Wayne Strickland, Ty Lucy, Linzee Mooty, Julie Price, Heather Cowell, Catina Day, Dr. Bruce Zutter, Danielle Hawkins, Stan Arington, Nicole Engleman

Statistics:

- Total Number of Student Places Filled: 416/440
- Capacity: 95%
- Total Number of Students: 221 students
- Age Range: rising 1st-8th grade

Courses:**June 4-8***Engineered For Fun*

Instructor: Andrea Beall

- Grades: 1 – 2
- Total Number of Students: 22

Assembly Required

- Instructors: Shelly Patterson & Aleesa Zutter
- Grades: 3 – 4
- Total Number of Students: 44

Slip and Slime

- Instructor: Gina Watkiss
- Grades: 5 – 6
- Total Number of Students: 21

June 11-15*Oh What a Web*

- Instructor: AU Natural History Museum
- Grades: 5 – 6
- Total Number of Students: 15

June 18-22

Assignment: CODE

- Instructor: Kenzie Strickert
- Grades: 1 – 2
- Total Number of Students: 22

Sound Off!

- Instructor: Seth House
- Grades: 1 – 2
- Total Number of Students: 19

Blinded by the Light

- Instructor: Wayne Strickland
- Grades: 3 – 4
- Total Number of Students: 22

Can't Touch This

- Instructor: Ty Lucy
- Grades 5 – 6
- Total Number of Students: 18

Ready, Set, Research!

- Instructor: AU Museum of Natural History
- Grades: 7 – 8
- Total Number of Students: 8

June 25-29

Give Me Five

- Instructors: Linzee Mooty & Julie Price
- Grades: 1 – 2
- Total Number of Students: 44

Beauty in the Beast

- Instructors: Heather Cowell & Catina Day
- Grades: 3 – 4
- Total Number of Students: 44

July 16-20

The Body Shop

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

Branching Out

- Instructor: Dr. Bruce Zutter
- Grades: 3 – 4
- Total Number of Students: 22

Person of Interest

- Instructor: Danielle Hawkins
- Grades: 5 – 6
- Total Number of Students: 22

Growing Greens and Gills

- Instructor: Stan Arington
- Grades: 7 – 8
- Total Number of Students: 12

July 23-27



Out of this World

- Instructor: Heather Cowell
- Grades: 1 – 2
- Total Number of Students: 22

911 – What's Your Emergency?

- Instructor: Danielle Hawkins
- Grades: 3 – 4
- Total Number of Students: 24

Curves Ahead

- Instructor: Nicole Engleman
- Grades: 5 – 6
- Total Number of Students: 22



Program: Summer Science Institute

Support: All expenses are covered for SSI students thanks to support from the COSAM Outreach office, the National Science Foundation, and the Society for Women in Sciences and Mathematics.

Dates: Sunday, June 10 - Saturday, June 16, 2018 (residential)

Description: This summer science program is open to outstanding 11th-12th grade students interested in science and mathematics and reside in Alabama or Georgia. Spots in the program were limited to 16 (8 females and 8 males) and were granted on an academically competitive basis. During the institute, students engaged with real-world applications and practitioners of science, performed experiments using cutting edge research equipment, and partnered with COSAM researchers to gain lab skills not taught in high school.

Personnel:

Counselors: Jacob Varner (Software Engineering, Business), Dr. Jessica Gilpin (Biological Sciences), Dr. Emily Hardy (Chemistry and Biochemistry)

COSAM Faculty and Staff:

Department of Biological Sciences: Dr. Paul Cobine, Shawn Jacobsen, Dr. Mary Mendonca, Dr. Aaron Rashotte, Dr. Rita Graze

Department of Chemistry and Biochemistry: Dr. Anne Gorden, Dr. Steve Mansoorabadi, Dr. Konrad Patkowski, Dr. Brad Merner, Dr. Byron Farnum, Dr. Chris Easley, Dr. Evangelos Milliordos, Dr. Monika Raj

Department of Geosciences: Dr. Lorraine Wolf

Department of Physics: Dean Nicholas Giordano, Dr. Allen Landers, Dr. Ryan Comes, Dr. Marcleo Kuroda

Additional AU faculty/staff: Mary Lou Ewald (Director of COSAM Outreach), William Blakely (COSAM Student Services)

Impact:

Total Number of Students: 16

Age Range: rising 11th-12th grades

Counties Impacted:

Alabama: Elmore, Jefferson, Lee, Limestone, Madison, Marengo, Mobile

Georgia: Coweta, Forsyth, Fulton, Hall

Facilities: SCC, SCL, Rouse Life Sciences Building, Leach Science Center, Student Center, Hill Dormitories

The 2018 Summer Science Institute hosted 16 highly motivated, high achieving students who were chosen to participate by a competitive application process. The students were also selected based on interest in science, mathematics, and Auburn University. The average ACT score of the participants was **32.2**, with a range of 28 to 35. During the first evening of the program, the students completed a short, informational pre-program survey. On the last day of the program, all of the 16 participants responded to a 29 question survey. The following section highlights some of the key results from the surveys.

Survey Results:

Quantitative Results

100% of the students indicated they would recommend SSI to a friend.

100% of the students reported that SSI positively impacted their summer.

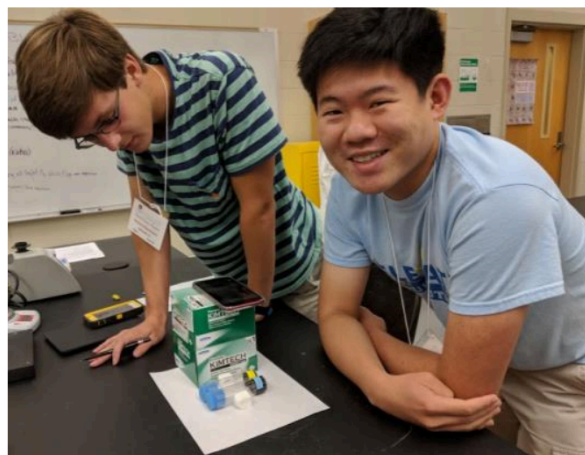
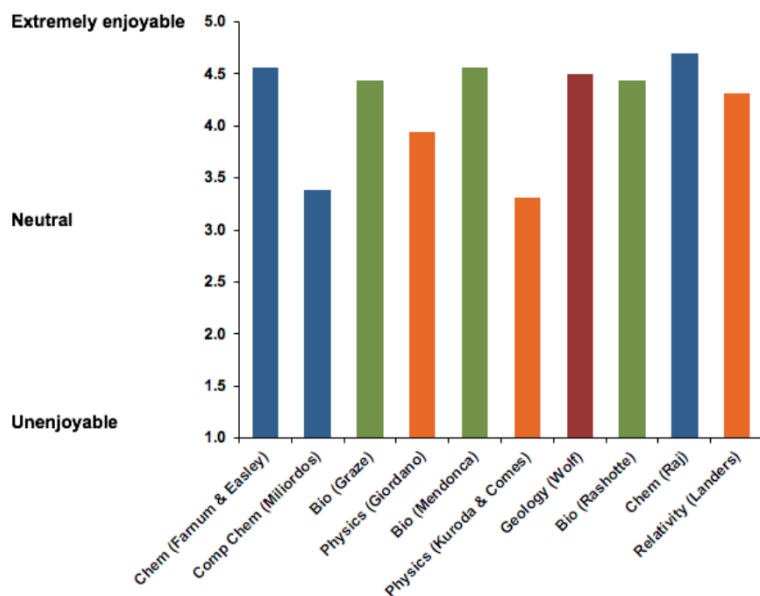
100% of students reported they were very satisfied (43.75%) or extremely satisfied (56.25%) with their overall experience at SSI.

68.8% of students stated that SSI helped to better determine their career choice.

81.3% reported an increase in their understanding of how to engage in scientific research and **75%** feel confident in their ability to seek out and engage in undergraduate scientific research after participating in SSI.

62.5% of students reported an increased interest in attending Auburn University due to SSI, with **37.5%** of students indicating they were very or extremely interested.

68.8% reported a greater interest of becoming a scientist after participating in SSI!



Summer Science Institute Class of 2018

Testimonials from 2018

“The Summer Science Institute clearly shows Auburn University’s dedication to its students and its dedication to the sciences.”

“It has been unquestionably the best part of my summer so far and an unforgettable experience.”

“It was amazing to meet so many dedicated professors who were willing to share their interests and to be surrounded by students who were so passionate about science.”

“I loved being able to perform collegiate-level lab work and I was amazed by the diverse graduate and undergraduate research that was taking place at Auburn.”

“I am so grateful for the work and money that was put into preparing so many labs, providing food and housing, and planning incredible experiences like the Arboretum demonstrations and the hike at Chewacla state park.”

“I am truly impressed with all of the professors I met because it is evident they love what they do, and they want their students to feel the same way.”

“After such an amazing week, Auburn University is definitely among my top college choices!”



Program: Project Lead The Way Core Training**Dates:** June 11 – July 20, 2018**Facilities:** SCA, SCL 102, 105, 231, 310**Description:**

Project Lead The Way (PLTW) is a non-profit organization that focuses on STEM programs throughout the nation by providing activity-, project-, and problem-based curricula and professional development for STEM educators. By partnering with PLTW, Auburn University was able to facilitate the training of 120 teachers from 13 states across 9 different PLTW courses in 2018. Acting as PLTW's Affiliate University for Engineering, Biomedical Sciences, Gateway, and Launch courses for the state of Alabama, COSAM Outreach and the AU Women in Science and Engineering (WISE) Institute personnel aided in hospitality, lab and classroom resources, staff support, and general facility resources to support instruction.

Courses:

- Gateway Courses
 - Automation and Robotics
 - Medical Detectives
 - Design and Modeling
- Engineering Courses
 - Principles of Engineering
 - Digital Electronics
- Biomedical Sciences Courses
 - Principles of Biomedical Sciences
 - Human Body Systems
- Launch Classroom Teacher Training
- Launch Lead Teacher Training

**Personnel:**

AU: Mary Lou Ewald, Bonnie Wilson, Josh King, Dr. Charles Eick, Jacob Varner, Jessica Gilpin

PLTW, Master Teachers, and Others: Jonathan Ferrell, Jayna Frost, Joseph Giunta, Bruce Hermes, Devon LaMonica, Brian McDowell, Matthew Michalke, Tj Nguyen, Karen Parisi, Michelle Robinson, Jonathan Scrivner, Dennis Sterrett, Barbara Sutherland

Impact:

18 Winter Core training teachers and 119 Summer Core training teachers.

Program: Project Lead The Way State Conference**Dates:** January 22**Facilities:** Student Center**Description:**

Project Lead The Way (PLTW) is a non-profit organization that focuses on STEM programs throughout the nation by providing activity-, project-, and problem-based curricula and professional development for STEM educators. Auburn University, with the help of Mississippi State University, hosted over 160 teachers for the 2018 AL/MS PLTW State conference. The conference included 38 sessions throughout the day led by AU staff, and educators from around Alabama and Mississippi. Dr. Neil Lamb, the Vice President for Education Outreach at HudsonAlpha was the keynote speaker for the conference lunch.

Personnel:

AU: Mary Lou Ewald, Bonnie Wilson, Josh King, Dr. Charles Eick, Jacob Varner, Dr. Jessica Gilpin, Emily Hardy, Kristen Bond, Janie Marino, Teddy Dubose, Grace Denniston

Mississippi State: Vemitra White

HudsonAlpha: Dr. Neil Lamb



Program: Science in Motion (Teacher Training)

Date: Physics (June 4-29), Chemistry (June 18 – July 13), Biology (June 4-15), Physical Science (July 2-3)

Description: A state funded initiative that provides high-tech laboratory experiences for high school students and effective professional development for teachers. The information here is for the summer teacher workshops which trains teachers on pedagogical techniques and how to use the equipment ASIM provides the schools.

Facilities: SCL 306, Parker Hall Lab

Personnel:

AU: Roger Birkhead, Dewayne Riddle, Christina Steele, Pam Pearson

Impact:

Number of Teachers: 60

**Program: AP Summer Institute**

Date: July 9-13, July 16-20

Description: Teacher training that prepares high school teachers to teach an Advanced Placement (AP) course

Facilities: SCA, SCL 102, 105, 231, Parker Hall lab

Impact: 142 high school teachers from Alabama

Program: Getting Under the Surface (G.U.T.S) - Spring**Date:** Thursday, April 26, 2018; 6:00 pm - 8:30 pm**Description:** Parent/Child teams act as lab partners in a 75 - 90 minute science activity.**Logistics:**AU Personnel: Josh King, Marcus Woodard, Erika Dunavant, Cailin Kelly, Dr. Brittney Duncan, Rebecca Riggs, Will TidmoreTotal Number of Students: 41Total Number of Parents: 41Age Range: 1st-6th GradeFacilities: SCA, SCL 231 & 310, SCC 115**Course: Jungle Jinx**

You've been stranded in a deep, dark jungle with nothing but your knowledge of science to save you! Lucky for you, you're the world's top expert on states of matter, but is that enough to brave past the traps, quick-sands, and spooky marshes you'll encounter? Surviving this expedition will require you learning all you can about this wild new world!

Age Range: 1st-3rd gradesDeveloped by: Cailin KelleyNumber of Students: 12Average Parent Satisfaction Ranking: 5 (out of 5)Average Student Satisfaction Ranking: 4.67 (out of 5)**Course: The Great Escape**

Mad scientists, Dr. Feida D. Dark and Dr. Mix N. Up, have accidentally locked themselves inside of their laboratory. Do you have what it takes to help open up the door? Can you use your science knowledge to help crack the code? You only have 90 minutes! Good Luck!

Age Range: 1st-3rd gradesDeveloped by: Dr. Brittney DuncanNumber of Students: 15Average Parent Satisfaction Ranking: 5 (out of 5)Average Student Satisfaction Ranking: 5 (out of 5)

Course: Microbe Mix-up!

The Center for Disease Control (CDC) just had a terrible mix-up—their latest shipment of microbes just reached them unlabeled! How do you identify each? Everyone agrees the shipment *should* be safe, but how would you know if one of them was dangerous? What if a deadly disease was on the truck? If you're up to the task, the CDC needs your help!

Age Range: 4th-6th grades

Developed by: Rebecca Riggs

Number of Students: 6

Average Parent Satisfaction Ranking: 4.67 (out of 5)

Average Student Satisfaction Ranking: 4.67 (out of 5)

Course: Mythbreakers

Can you really pull out a tablecloth without making a mess? Does sugar really make you hyper? Is the sky really blue? Can we really even say we know anything at all?! Become a mythbreaker at this GUTS to learn science's role in determining truth. What is the difference between theories and laws, and how does the empirical nature of science help us settle confusing conundrums? Be prepared to forget what you think you know at Mythbreakers!

Age Range: 4th-6th grades

Developed by: Will Tidmore

Number of Students: 8

Average Parent Satisfaction Ranking: 4.4 (out of 5)

Average Student Satisfaction Ranking: 4.5 (out of 5)



Program: War Eagle BEST

Dates:

Wednesday, September 5th; 2:30 PM – 7:30 PM (Kick Off Day)

Sunday, October 7th; 1:30 – 4:30 PM (Mall Day)

Friday, October 19th; 12:00 – 5:00 PM (Competition Day)

Saturday, October 20th; 7:00 AM – 5:00 PM (Competition Day)



Description: Middle and high school local robotics competition.

Personnel:

AU: Mary Lou Ewald, Dr. Veronica Morin, Teddy Dubose, Jennifer Spencer, Garon Griffiths, Grace Denniston, Jessica Taylor, Jacob Varner, TJ Nguyen, Frank Ware, Jessica Gilpin, Dan Schnittka, Meagan Fuller, Grace Holland, Jonathan Snell and various student volunteers and judges

Non-AU: Barbara Bryan, Pete O'Day, Sid Stubbs, and various judges

Schools Impacted:

Auburn High School
Beulah High School
Central High School
Early College Academy
Edward Bell Career Technical Center
Eastwood/Cornerstone Schools
Glenwood School
Holtville Middle School
Holtville High School
LAMP High School
Lanett High School
Lee-Scott Academy
Marbury High School
Opelika Middle School
Opelika High School
Southside Middle School
Springwood School
Tallassee High School
Trinity Christian School



Total Number of Students: 269

Age Range: 5th – 12th grade

Facilities: Opelika High School

Program: South's BEST Robotics Championship

Dates: Friday, November 30th; 3:00 – 7:00 PM (Team Registration and Hub Council Meeting)
 Saturday, December 1st; 8:00 AM – 6:00 PM (Competition Day)
 Sunday, December 2nd; 8:00 AM – 6:00 PM (Competition Day)

Description: Middle and high school regional robotics championship program for winning teams from 17 BEST hubs across 5 states in the Southeast.

Personnel:

AU: Mary Lou Ewald, Dr. Veronica Morin, Jessica Taylor, Garon Griffiths, Teddy Dubose, Jennifer Spencer, Jessica Gilpin, Grace Denniston, Nia Perkins, Jacob Varner, TJ Nguyen, Hunter Terry, Frank Ware, Janie Marino, Jonathan Snell, Meagan Fuller, Grace Holland, Dr. Allen Landers, Dan Schnittka, and various student volunteers and judges

Non-AU: Pete O'Day (Field Construction), Matt Schuster (Production Manager)

Total Number of Students: approx. 2,000

Age Range: 5th – 12th grade

Facilities: AU Student Center, SCC, SCL, SCA, and Beard-Eaves-Memorial Coliseum

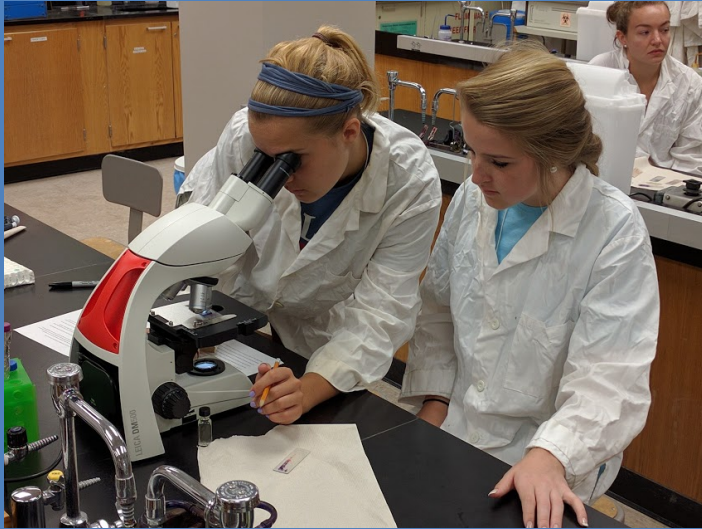
Schools Impacted (Hub Affiliation):

W.P. Davidson High School (Jubilee BEST)
 Faith Academy (Jubilee BEST)
 Mobile Area Coalition of Homeschoolers (Jubilee BEST)
 Semmes Middle School (Jubilee BEST)
 St. Luke's Episcopal School (Jubilee BEST)
 St. Vincent de Paul Catholic School (Jubilee BEST)
 Brooks High School (Northwest Alabama BEST)
 Covenant Christian School (Northwest Alabama BEST)
 Creekside Technology Academy (Northwest Alabama BEST)
 Phillips High School (Northwest Alabama BEST)
 Decatur-Austin Robotics Coalition (Tennessee Valley BEST)
 Lindsay Lane Christian Academy (Tennessee Valley BEST)
 Eastwood/Cornerstone Schools (War Eagle BEST)
 Glenwood School (War Eagle BEST)
 Holtville Middle and High School (War Eagle BEST)
 Tallassee High School (War Eagle BEST)
 J.U. Blacksher School (River BEST)
 Thomasville High School (River BEST)
 Corinth School District (Mississippi BEST)
 Starkville Christian Home Educators (Mississippi BEST)
 McNairy Central High School (Mississippi BEST)
 Eagle Home School (Mississippi BEST)
 Starkville High School (Mississippi BEST)
 Dickson Area Robotics Team (Music City BEST)
 Thurman Francis Arts Academy (Music City BEST)
 Stewarts Creek Middle School (Music City BEST)
 North Forsyth High School (Georgia BEST)



South Forsyth High School (Georgia BEST)
 Kennesaw Mountain High School (Georgia BEST)
 Good Hope Middle School (North Alabama BEST)
 Marshall County Robotics (North Alabama BEST)
 Spain Park High School (North Alabama BEST)
 Episcopal Day School (Central Alabama BEST)
 Oak Mountain High School (Central Alabama BEST)
 Fort Payne High School (Northeast Alabama BEST)
 LIGHT Robotics (Northeast Alabama BEST)
 Billingsley High School (Shelton State BEST)
 Evangel Christian School (Shelton State BEST)
 Sweet Water High School (Shelton State BEST)
 Tuscaloosa Christian School (Shelton State BEST)
 Bankhead Middle School (Bevill BEST)
 Fayette Middle School (Bevill BEST)
 Goshen High School (Troy BEST)
 Wetumpka High School (Troy BEST)
 Martin Middle School (Selma BEST)
 Meadowview Christian School (Selma BEST)
 Pensacola High School (Emerald Coast BEST)
 Woodlawn Beach Middle School (Emerald Coast BEST)
 Seaside Neighborhood School (Emerald Coast BEST)
 Pensacola Catholic High School (Emerald Coast BEST)
 West Florida High School (Emerald Coast BEST)
 Northwest Florida Robot Spot (Emerald Coast BEST)
 Ridgecrest Christian School (Wiregrass BEST)
 Cottonwood High School (Wiregrass BEST)
 Dallas County High School (Selma BEST)
 Trinity Christian Academy (War Eagle BEST)
 Johns Creek High School (Georgia BEST)
 Lincoln County Middle Schools (Tennessee BEST)
 Saraland Middle School (Jubilee BEST)
 Carrol Academy (Mississippi BEST)
 Merrol Hyde Magnet School (Music City BEST)
 Gulf Breeze High School (Emerald Coast BEST)
 Early County High School (Wiregrass BEST)
 Pleasant Valley High School (Central Alabama BEST)
 Moulton Middle School (Northwest Alabama BEST)
 Lawrence County High School (Northwest Alabama BEST)
 North Sand Mountain High School (Northeast Alabama BEST)
 Holy Spirit Catholic School (Shelton State BEST)
 Winfield City High School (Bevill BEST)
 Jackson Middle School (River BEST)
 Abbeville High School (Troy BEST)







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