CROSSFIRE 2017

What is BEST?

BEST at Auburn University is a Science Technology Engineering and Mathematics (STEM) education and workforce development program for middle and high school students that promotes 21st century skills. BEST stands for *Boosting Engineering Science and Technology*, and is a national program with fifty local competition sites in eighteen states. It is administered by BEST Inc, a 501c3 non-profit organization, that sets curriculum and competition standards. The mission of BEST is to inspire students to pursue careers in science, technology, engineering, and mathematics through participation in a competitive robotics program that fosters knowledge, teamwork, and communication. A major tenet of the program is that it is free to schools; there is no cost for robotics materials nor to enter a team.

Each year, middle and high school student teams are tasked with building a robot to compete against other schools in that year's challenge. Each challenge is based on an educational model. Previous models include *Blade Runner*, in which students researched wind turbines and transportation to *Pay Dirt*, focusing on commerce within a shifting market.

The robotics competition is a high-energy sports-like environment but good sportsmanship is essential. Student-driven robots compete against the challenges of the game, not other robots.

Each year's game theme and playing field is revealed in mid-September. Teams are given six weeks to design and build their robot before entering their local competition. The Auburn-hosted local competition, War Eagle BEST, is held in October. The top teams advance to one of four regional championships. The eastern region's championship, South's BEST, is also hosted by Auburn University.

In addition to robotics, the most coveted award of the program is the BEST Award. To compete, students must provide an engineering notebook, give an oral marketing presentation, construct an educational exhibit, and show excellent team spirit and sportsmanship. BEST uses the excitement of robotics to teach engineering and business processes.

What is the 2017 competition theme?

The 2017 game is entitled *Crossfire*. *Crossfire 2017* will embrace the world of Fire and Rescue and the importance of first responders.

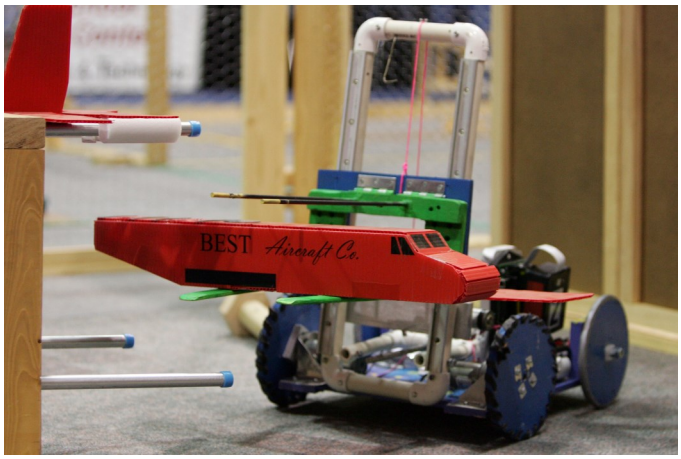
From the Ice Age to the Roman Empire onward to the Middle Ages and now into the 21st Century, fire has been used to heat caves, smelt iron, cook food, heat water and much more. The element of fire has been, and remains, a beneficial tool for humans in a number of ways.

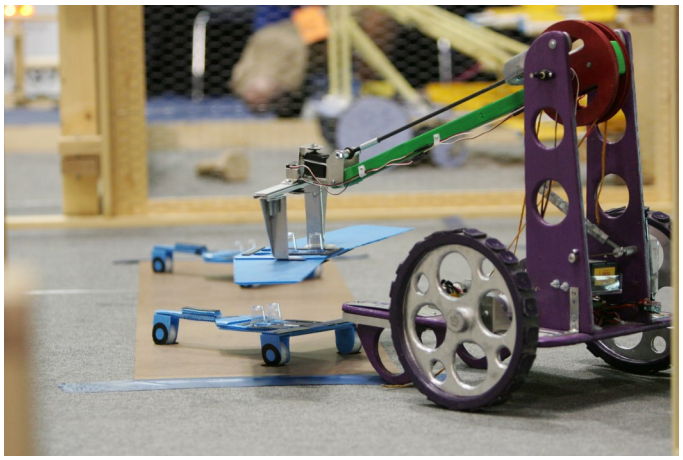
Unfortunately, when fire is out of control it has unintentional effects. Not until the Roman Empire was a fire brigade established. Using buckets, pumps and poles, the Romans extinguished fires. Today, fire equipment is empowered by innovative technology. Fires are not all the same. Different fuels create different situations, requiring different types of responses. Keeping in mind the sides of the "fire triangle" – oxygen, heat and fuel – coupled with a chemical reaction, first responders are always on the lookout of how to remove or extinguish one or more of the sides of the triangle to suppress extreme danger – with or without water.

How did BEST start?

The idea for a student robotics program originated in 1993, when two Texas Instruments (TI) engineers served as guides for TI's Engineering Day. Together with a group of high school students, they watched a video of freshmen building a robot at the Massachusetts Institute of Technology. The students' enthusiasm for the video inspired the TI engineers to develop a robotics competition for middle and high school students. With enthusiastic approval from TI management, North Texas BEST was born.

The first competition was held in 1993 with 14 schools and 221 students. In 2001, the first competition in the South was held on Auburn's campus. Today, there are over 900 teams nationally with over 22,000 students, 1,800 teachers, and over 4,000 volunteers.





Why is BEST needed?

In the Twentieth Century, the first airplane took to the skies, the first mass-produced automobile rolled off the assembly line, and man walked on the moon. None of that would have been possible without engineering, science, and math – or even more fundamentally, an inquisitive drive, critical thinking, and problem solving. Despite exponential growth in the past, engineering and technical disciplines are losing the youth that will be responsible for carrying the field further.

According to the National Center for Education Statistics (a division of the Department of Education), 68.6 percent of high school students plan to obtain a bachelors degree or higher, and according to Harris Interactive, only 34 percent of high school students wish to pursue STEM careers. The U.S. Department of Labor estimates there will be 1.2 million STEM-related job openings by 2018 but a shortage of trained people to fill them. To make the Twenty-first Century better than its predecessor, a greater investment must be made in STEM education programs for middle and high school students.

BEST Inc. solves the aforementioned problem by addressing the issue at a fundamental level – make STEM education fun. We accomplish this through student self-direction and competition. Competition creates passion; which is why the Wright Brothers flew, Henry Ford built the Model T, and Neil Armstrong walked on the moon.

Beyond robotics, the competition in the engineering design process, marketing, educational exhibits, and spirit and sportsmanship is where students achieve their educational advancement. We use the excitement of robotics as a catalyst for overall educational and workforce development, and we have been successful. Over 91 percent of BEST students say the program has increased their interest in math, science, and/or engineering. Secondly, nearly 99 percent of BEST students plan to pursue a degree at the college or university level. BEST is also a diverse program with nearly 4 out of 10 BEST students being female.

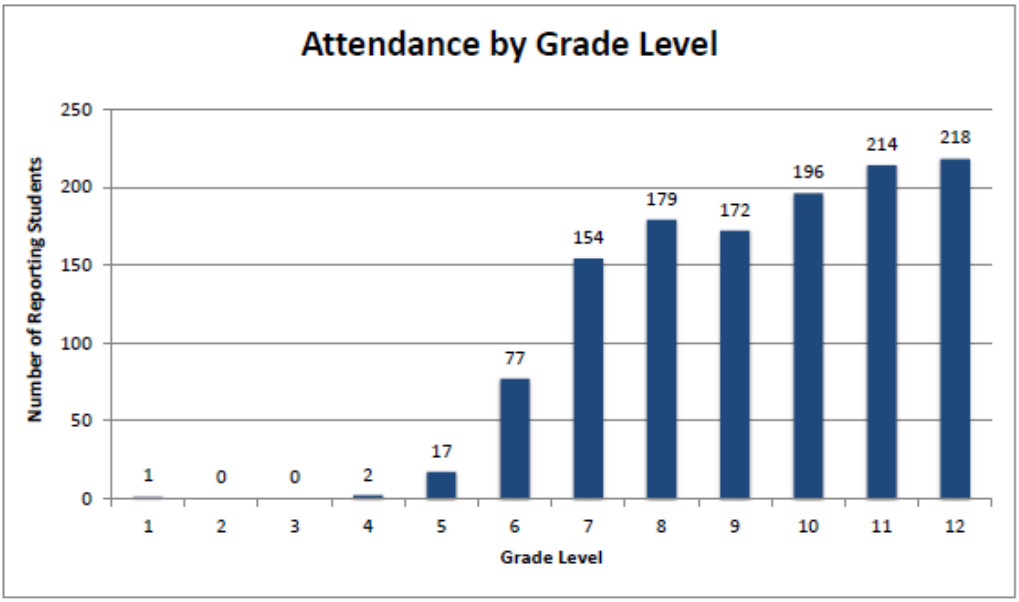
As a middle and high school program, BEST is targeted to students at the right stage of their educational development. According to a Microsoft-sponsored study by Harris Interactive, 78 percent of STEM college students said they decided to study STEM in high school or earlier and 21 percent decided in middle school or earlier.

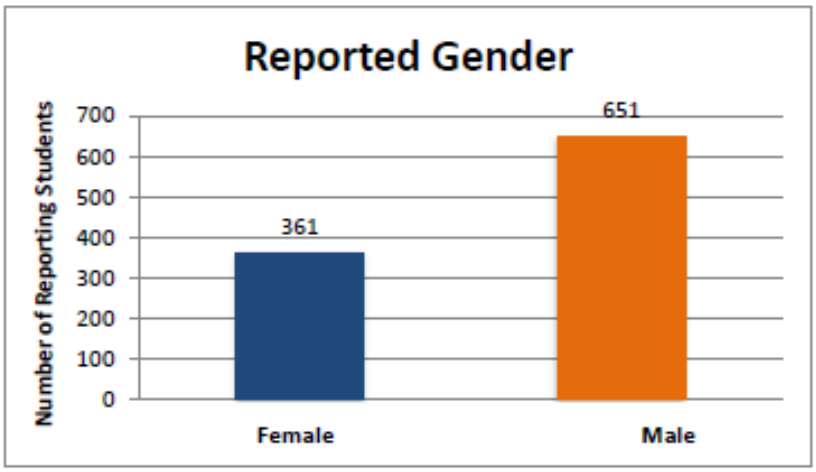
BEST provides students with relevant industry knowledge, critical thinking, exposure to higher education, and the aptitude to succeed.

Who participates in BEST?

The numbers and geographic scope of students who attend BEST at Auburn University competitions, War Eagle BEST and South's BEST, varies. War Eagle BEST is a local competition and features roughly twenty teams from schools surrounding the Auburn area (from Montgomery, AL to Columbus, GA). South's BEST is a regional competition and features nearly sixty teams from Tennessee, Mississippi, Georgia, Florida, and Alabama. In 2016, 69% of teams were from Alabama due to the program's large presence in the state. In total over 3,300 students attend BEST at Auburn University competitions. The following charts and graphs detail a sampling of those students.

Middle school students account for roughly 35% of South's BEST teams; with roughly 65% being in high school.





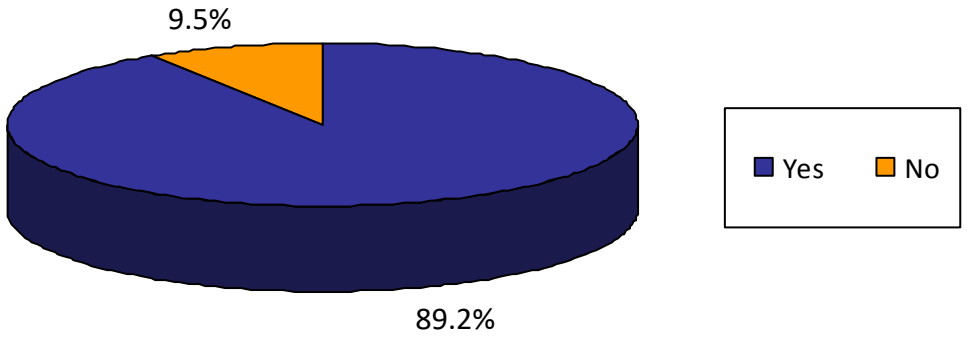
Gender participation remains fairly consistent from year-to-year with roughly 36% female, and 64% male.

How are these students impacted?

Our surveys show that the longer a student is involved in BEST, the greater their appreciation for math, science, and/or engineering. In the process, these students gain critical thinking and problem-solving skills they will carry with them regardless of their chosen profession.

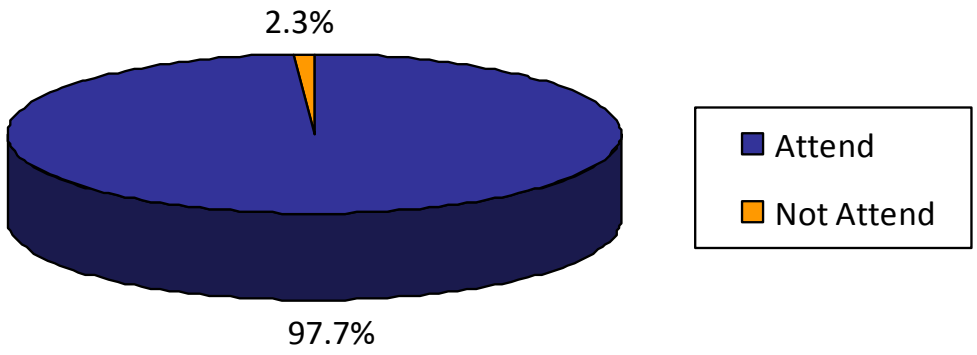
Over 89% of BEST students say they have an increased interest in math, science, and/or engineering because of the program.

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



The most telling example of program success is in college attendance. On average, between 95% and nearly 99% of BEST students plan to attend a college or university. The national average for high school students is generally around 68%. The chart below illustrates survey response at the 2016 South's BEST Championship.

Do you intend/ want to go to college?



Of those planning to attend college, 43.8% of students indicated they are interested in pursing a degree in Engineering/Computer Science. Sciences and Mathematics (including health and medical related fields) accounted for 32.7% of fields indicated by students.

What is the program budget?

Description	Expenses
BEST Robotics, Inc. Affiliation Fee	$1,800
Field builder expenses (travel, construction, etc)	$3,500
Staff Travel (prototype game, transporting playing field, etc)	$1,000
Kits	$6,000
Playing Fields (2)	$3,500
Misc (trailer maintenance, carpet cleaning)	$600
Office Supplies (judges notebooks, nametags, pens, etc)	$1,200
WE BEST Facility Rentals	$2,000
Other rentals (stanchions, tables, chairs, recycling, table cloths, etc)	$2,500
Facilities staffing at events (custodial, operations)	$7,000
WE BEST Production	$1,000
SO BEST Production - Sound Source Productions, Inc.	$46,000
WE BEST DJ	$500
SO BEST emcees	$1,000
WE BEST Trophies	$400
SO BEST Trophies	$600
WE and SO BEST Award Plaques	$2,000
SO BEST Signage	$1,000
Tiger Rags, Inc. - WE BEST T-Shirts	$800
Tiger Rags, Inc. - SO BEST T-Shirts	$2,200
Judges Gifts (WE and SO)	$2,200
MEALS - Volunteers, Judges, and Staff Food, Drink, Snacks, Refreshments	$10,000
Program Guides	$1,000
EMT Services	$600
Storage Unit	$1,600
Technical Coordinator	$20,000
Total	**$120,000**

*does not include program administrators' salary allocation or outreach program infrastructure

How is BEST funded?

BEST is free to schools. Providing the venue, materials to build the robots, and the competition and educational models, requires corporate and foundation support. A donation to BEST isn't just a gift, it's an investment in the education and future of tomorrow's technology leaders. BEST at Auburn University is fortunate to be supported by such great organizations as:

Donaldson. Filtration Solutions

AUBURN UNIVERSITY

ALABAMA POWER A SOUTHERN COMPANY

HYUNDAI HYUNDAI MOTOR MANUFACTURING ALABAMA

SOUTHERN COMPANY

BRIGGS & STRATTON

NEPTUNE TECHNOLOGY GROUP

VWR FOUNDATION Assisting Science, Supporting Health & Education

WELLS FARGO

NORTHROP GRUMMAN

ARMY ROTC

ALABAMA NATIONAL GUARD

VisualEdge Robotics www.visualedgeinc.biz Alabama's VEX Reseller

BOEING

Auburn and Opelika Tourism Bureau

Walmart

JACOBS

BRASFIELD & GORRIE GENERAL CONTRACTORS

What are some ways to support the program?

BEST at Auburn University is supported by educational partners, ambassadors, volunteers, and financial partners. Educational partners can aid in anything from curriculum development to technical advice. Ambassadors work within their network to promote the values and objectives of BEST, and obtain new partners and volunteers. Volunteers mentor school teams, or judge at War Eagle BEST or South's BEST. Financial partners, or sponsors, provide monetary or in-kind (product or service) donations.

Each sponsorship program is tailored to a specific organization's interests and objectives. In general, sponsorship levels are as follows:

Presenting Sponsor, $25,000+
Allotted to only one donor, the presenting sponsor will receive all benefits in the Atom sponsor level, as well as naming recognition and competition logo adjustments to reflect the distinction. All printed and promotional pieces will include the new logo and distinction. Ads may be run on the jumbotron at South's BEST. The company logo will be displayed on large banners at competitions.

Atom Sponsor, $10,000 – $24,999
Exhibit space at the competitions will be available. Atom sponsors will also be able to design a new award or name an existing one. Logo featured on competition t-shirts, all printed event materials, the game field, displayed on the Auburn Arena jumbotron (South's BEST), printed in the event program, and displayed on competition websites. Company information may be provided for inclusion in the teacher's information packet. Branded items may be donated for "Crowd Tosses" to attendees. All-access passes to War Eagle and South's BEST, including hospitality.

Gear Sponsor, $5,000 – $9,999
Logo featured on the game field, displayed on the Auburn Arena jumbotron (South's BEST), printed in the event program, and displayed on competition websites. Gear sponsors will also be able to design a new award or name an existing award with a multi-year commitment. Company information may be provided for inclusion in the teacher's information packet. Branded items may be donated for "Crowd Tosses" to attendees. All-access passes to War Eagle and South's BEST, including hospitality.

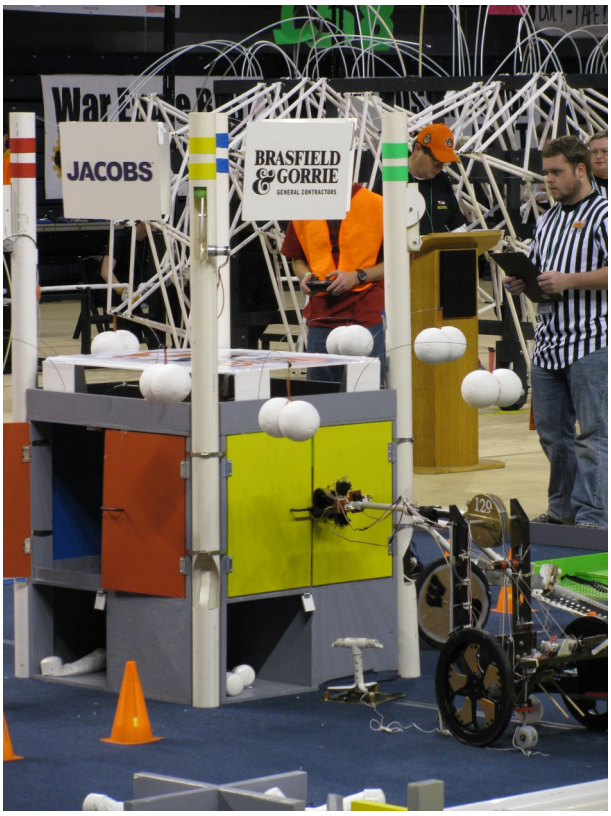
Tiger Sponsor, $1,000 – $4,999
Logo featured in event program and on competition websites. Company information may be provided for inclusion in the teacher's information packet. Branded items may be donated for "Crowd Tosses" to attendees. All-access passes to War Eagle and South's BEST, including hospitality.

BEST Friend, $1 – $999
Name listed in event program and on competition websites. All-access passes to War Eagle and South's BEST, including hospitality.

Donations to BEST at Auburn University are tax-deductible gifts made through the Auburn University Foundation.

What do sponsorship branding opportunities look like?

While the focus of BEST at Auburn University is on program support for students' educational advancement, we strive to provide as much benefit to those who support the program as possible. We encourage our constituents to support the companies who support us. With over 4,000 South's BEST attendees and around 1,000 War Eagle BEST attendees, BEST competitions host a strong segment of the industry's current and future leaders in students, parents, teachers, and volunteers.



Field signage varies per year based on the game theme but opportunities for logo placement are available at each competition.

Jumbotron logo images, videos, or commercials can scroll throughout the competition at South's BEST.

A total of nine hundred t- shirts are produced for War Eagle and South's BEST each year.

Thank you for your consideration and support.

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