



**Boosting Engineering, Science & Technology™**

**Welcome to the 2011 BEST  
World Championship Competition**

**We hope you enjoy your day!**

**BEST** (Boosting Engineering Science and Technology) is a program designed to show youth how engineering can be fun through a sports-like technology contest where local high school students design and build a remote controlled machine (robot) to accomplish a given task. Education and industry professionals volunteer their time as coaches and mentors to offer guidance in the design and construction processes. Restrictions apply to help make the competition simulate a “real world” business and engineering environment. Constraints include:

- Constrained development time (6 weeks),
- Constrained design components (identical kits provided),
- Specific design requirements (size, weight, etc.)

The BEST program goals are intended to inspire and motivate students toward studies and careers in engineering, science and technology. It’s about changing the way students of America think about science and technology while gaining the rewards of excitement and fun.

BEST accomplishes these goals through local “hub” competitions, regional championships and now our first national championship. Hubs currently exist in 15 states across the US with regional championships hosted at the University of North Texas (TEXAS BEST), Auburn University (SOUTH’S BEST) and University of Arkansas – Fort Smith (FRONTIER TRAILS BEST).

Today, the best from those regional championships compete for the national title here in Dallas! Good luck!

## National Championship Sponsors

The BEST program receives vital support from local industry, school administrators, local businesses and individuals within the community. We thank you for supporting the cause. The 2011 BEST World Championship sponsors are:



**Garry and Janne Ackerman**



Auburn University

Mississippi State University



# Competition Schedule

7:30 am	PIT Opens	Jostens Center
8:00 am	Team Briefing	Jostens Center
8:30 am	Opening Ceremonies	Jostens Center
9:00am	Preliminary Competition (6 matches per team)	Jostens Center
	Team Exhibits Open	Champion Stadium
12:00 pm	Lunch Break	
1:00 pm	Preliminary Competition, Continues	Jostens Center
	Wildcard Match	Jostens Center
2:00 pm	Team Exhibits Conclude	Champion Stadium
3:00 pm	Teacher Recognition	Jostens Center
3:15 pm	Semi-Final Competition (Round Robin – 6 matches)	Jostens Center Top 8 Teams from Prelims
4:00 pm	Awards Presentations	Jostens Center
4:30 pm	Final Competition (Round Robin – 3 matches) & Awards Ceremony	Jostens Center Top 4 Teams from Semi-Final
6:00pm	Championship concludes	

All times are approximate.

BEST Inc. has decided to produce and market unique products for two emerging industries. To compete in the world market, our production facilities must incorporate the most advanced robotic control systems available today. BEST Inc. has decided to build four initial factories and contract with suppliers to develop the robotic control systems. Suppliers are asked to propose and demonstrate strategic processes that will result in a production facility yielding the highest quality products given the constraints of the factory. BEST Inc. is looking for suppliers with good track records in quality improvement methodologies such as Total Quality Management, Kaizen, Zero Defects, Six Sigma, and Poka Yoke with an ability to incorporate these approaches into their overall production strategy.

As a key supplier of robotic control systems, your team has been selected to compete in trial production runs in all four factories in order to determine which system and strategies will be implemented. You will have six weeks to develop your factory strategies and design a working prototype robotic control system. Factory constraints require that the systems be limited to 24 inches on a side, have a total weight no greater than 24 pounds and meet all construction requirements of BEST Inc. Trial production runs will begin in October and your team's results will be compared against other suppliers in a head-to-head competition at that time. As part of your development, it will be imperative that you provide complete technical documentation for evaluation by BEST Inc. management; you are strongly encouraged to provide a marketing plan and exhibit materials as well. In addition, we will be conducting interviews of your design team to learn the key advantages of your proposal. We look forward to your proposal and participation in the trials. Good luck!

## **Game Objectives**

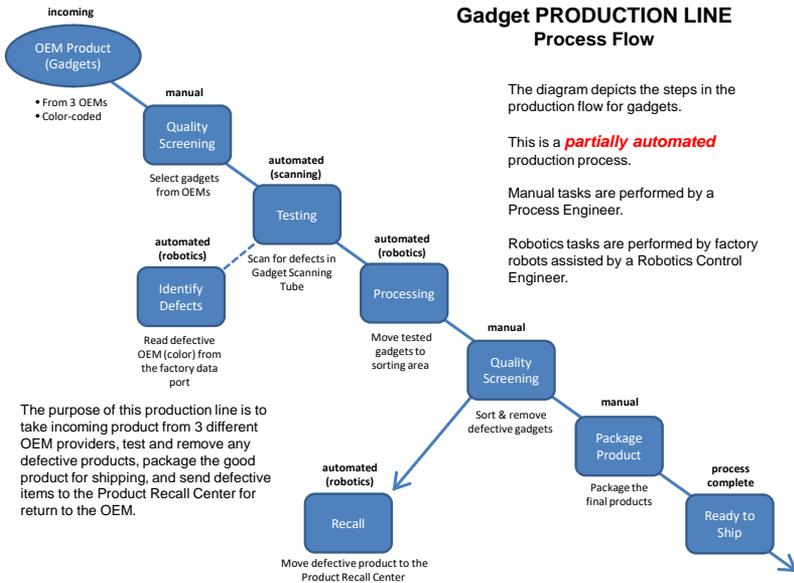
Teams are tasked with performing product manufacturing operations on two independent production lines. The object is to successfully process and package as much “good” product as possible while striving for Six Sigma quality levels on each production line. Some products may be identified as “defective” and will be “recalled”. These defective products should be removed from the production floor and returned to the manufacturer.

<b>Production Line</b>	<b>Type of Production</b>	<b>Product</b>
Gadget Line	Partially Automated	Gadgets
Gizmo Line	Fully Automated	Gizmos

The gadget production line is a partially automated line used to produce high quality gadgets for the “Over 65” recreational industry. It is intended for large scale production, processing a high volume of products in a short time-frame. Gadget production consists of test and inspection of an incoming Original Equipment Manufacturer (OEM) product (gadget) to ensure that it meets the strict production quality standards of BEST Inc., followed by packaging of the product for shipping to the customer. There are three gadget OEMs providing product to BEST Inc.; a particular product can be tracked to an OEM through its designated color.

It has been determined through past experience that some gadget OEMs will deliver defective products. Automated test methods are employed through a special gadget scanning tube (GST) to identify OEM products that are defective. If an OEM provides defective products, a product recall is initiated and these defective products must be removed from the production floor and returned to the product recall center; further use of product from the identified OEM should be eliminated for the remainder of the production shift. Factory

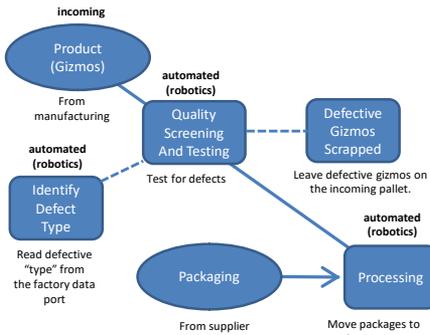
robots may determine which products are defective by interfacing with the Factory Data Port.



The Gizmo Production Line is a fully automated line used to produce high quality gizmos for the pre-adolescent hunting industry. BEST Inc. uses a single gizmo manufacturer and therefore the quality screening of these parts is of significant concern. Factory robots are used to accomplish defect screening as quickly and accurately as possible. Because of the advanced technology used in these products, only a small number of gizmos are produced during a single production shift.

Gizmos are manufactured using the most advanced nano-technology in order to yield the best possible product. However, process variation has the potential to cause latent defects, which manifest themselves in the form of a change in the magnetic properties of the gizmo. Only BEST robots

have the potential to detect this unique fault which may be indicated by either full magnetism or no magnetism. Factory robots will be equipped with specialized instrumentation for detecting and distinguishing the magnetic properties of gizmos. Gizmos with defects of this type are not repairable and, unlike gadgets, will not be returned to the manufacturer; they will simply be scrapped.



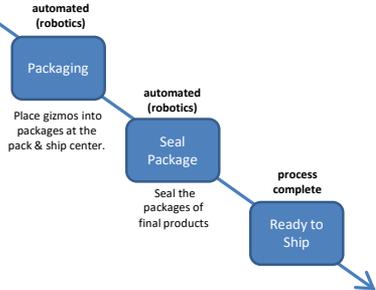
The purpose of this production line is to take incoming product from manufacturing, test and remove any defective products, place "good" product into packages and seal the final packages for shipping. Defective product is scrapped.

### Gizmo PRODUCTION LINE Process Flow

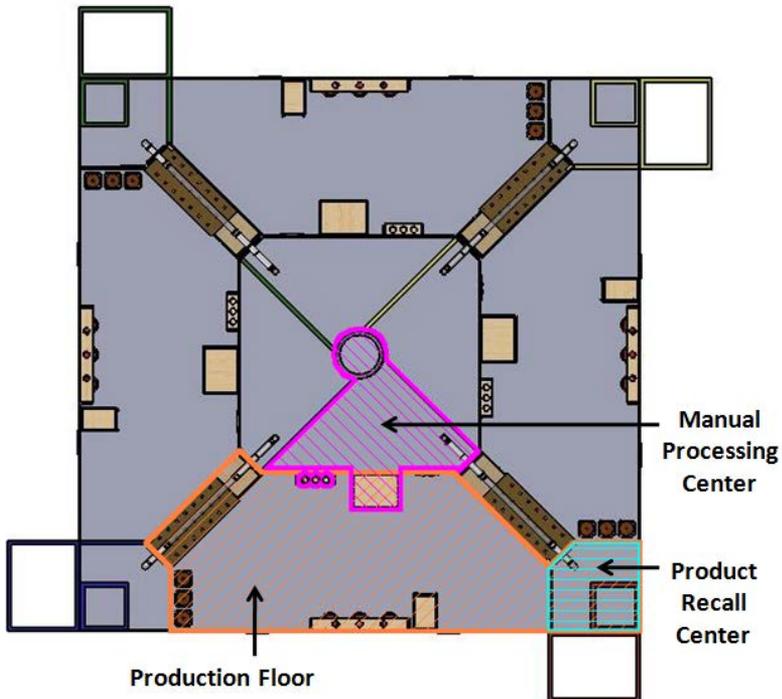
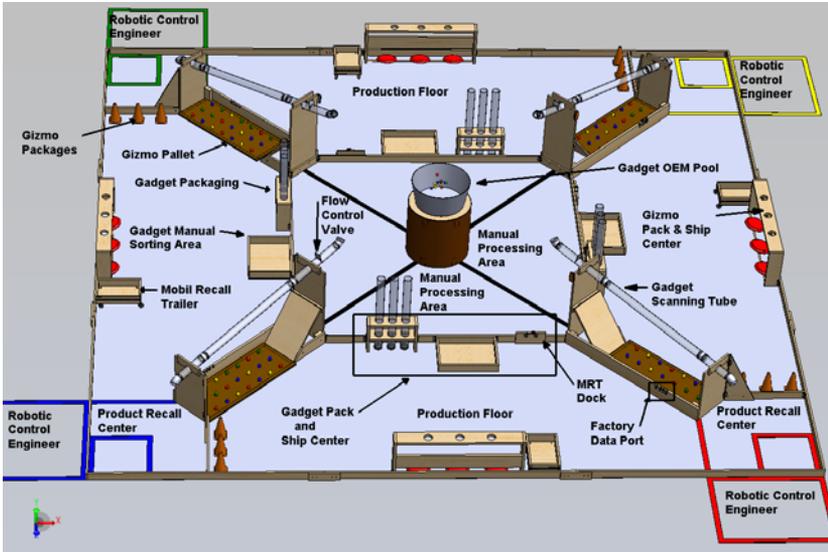
The diagram depicts the steps in the production flow for gizmos.

This is a **fully automated** production process.

All tasks are performed by factory robots assisted by a Robotics Control Engineer.



# Game Field Layout



## Game Scoring Summary

Item / Location at end of shift	Pts. Each
<b>Collected Gadgets:</b> Non-defective gadgets <u>inside</u> the <i>Gadget Sorting Area</i> .	2 pts
<b>Packaged Gadgets:</b> Non-defective gadgets separated by OEM (color).	3 pts
<b>Packaged Gizmos:</b> Non-defective gizmo (egg) <u>inside</u> a placed gizmo package.	10 pts
<b>Sealed Gizmos:</b> Non-defective gizmo <u>inside</u> a properly sealed (i.e., <u>covered</u> with a flying disc) gizmo package at the <i>Gizmo Pack and Ship Center</i> .	20 pts

<b>Bonus Points</b>	
<b>Placed Gizmo Packages:</b> Successfully placed Gizmo package (cone).	50 pts
<b>Dual Production Bonus</b> For successfully scoring both Gadget and Gizmo points in a single shift.	$10 \times \sigma_{\text{gadget}}$ $\times \sigma_{\text{gizmo}}$

## Game Scoring Summary, cond.

<b>Defective (RECALL) Products:</b> Defective products (gadgets or gizmos) regardless of their location inside the <i>Production Floor, Sorting Area, or in Packaging.</i>	0 pts
Any Factory Waste.	0 pts

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

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

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

# The Teams

<b>Team#</b>	<b>School</b>
122	Ambassadors for Christ Academy
18	Anna High School
15	Birdville CTAL
23	Caddo Mills High School
181	Central High School
129	Central Magnet School
184	Conway High School
217	Decatur-Austin Robotics Coalition (DARC)
121	Dickson Area Robotics Team (DART)
12	Ereckson Middle School
124	Kansas City Christian School
10	Kittson Central High School
62	Lausanne Collegiate School
2	Liberal Arts & Science Academy
130	Merrol Hyde Magnet School
237	Metro Homeschool
47	Oak Mountain High School
206	OKC Homeschool
17	REACH Homeschool
16	United Engineering Technology Magnet
8	Westlake High School
25	Wetumpka High School

Congratulations to all of the teams for making it to the World Championship!

## #122 Ambassadors for Christ Academy

Hub: Kansas

Team: Ambassadors for Christ Academy

Robot: Alzheimer



Students: Ben Ottaviano, Andrew Ottaviano, Karrie Butler, Harrison Adkins, Daniel Golaway, Jacob McCrary

Sponsors: Art Cunningham

We have been in BEST for 10 years, and have benefited greatly from our involvement. We have managed to win first place in the field competition at our hubs 8 times (2 at NWA BEST, 6 at Kansas BEST), and in regional competition 3 times (2 at Texas BEST, once at Frontier Trails BEST). Although our teams are typically small (6 to 10 each year) we have had a significant number go on to engineering, scientific, or technical majors in college, many of whom had no thought of doing so before they got on the robotics teams. We owe a lot to the dedicated "black shirts" at Kansas BEST who volunteer many, many hours of their time to make their hub so well organized, so technically excellent, and such fun. The leadership of Bob Umscheid and Larry Frutiger deserves special mention, but the entire staff there deserves much praise. Their example and the presence of so many engineering company sponsors from the Wichita area have encouraged our students greatly. The excellence there has made the 4 hour drive from Arkansas to Wichita State University 3 times per year well worth it. We also want to thank John Martini and the volunteers at the Frontier Trails Regional for making attendance there a continuation of the outstanding experiences in Kansas. Thank you, thank you, thank you.

## #18 Anna High School

Hub: Lion's Pride

Team: Anna Gadget  
Manufacturing



Gadgets geared for you!

Robot: Inspector Gadget

Students: Dustin Encizo, Hanna Hollis, Ryan Hull, Robert Miller, Dominique Rodriguez, Dustin Strickland, Hannah Woodard, Adriene Butcher, Austin Griffin, Rachel Hollis, Kristina Lob, Kendra Parry, Sydney Rowell, Logan Strickland, Britta Colombo, Caleb Neff, Nicole Hull, Mattie McGown, Dustin Powell, Storm Rubio, Dustin Williams

Sponsors Debra Arvin

Anna High School Robotics has faced many challenges to reach this day. When we embarked on this journey back in September, we never would have dreamed it would all come together as beautifully as it has. Everything you see, we earned and we earned through hard work and sheer determination. Our Robotics team has had far reaching affect on so many students, not only in our building, but in the district. We have learned that different people with different challenges can still contribute to our team. This being so evident in how Paul Skiff, an autistic elementary student, affected everyone on our team by jumping in and participating with us. He inspired us to look beyond labels. Our staff, student body, local business leaders and community have rallied behind us and helped us raise almost \$30,000 knowing there was no chance we could come without their help. Students that did not know what they wanted to do when they graduated now are interested in pursuing degrees in science, engineering and technology. Suddenly being smart and creative have become a cool thing to our student body. People ask us in the hall how robotics is going! Robotics has impacted every student, parent, teacher and mentor involved in our program this year and many others outside the program as well. We are so grateful and feel so honored to represent Anna High School and Texas BEST at this competition.

## #15 Birdville CTAL

Hub: Cowtown  
Team: BCTAL Robotics  
Robot: Wiggles



Students: Jacob Wennersten, Justin Bucholtz, Matthew Walton, Mikayla Bucholtz, Ashley Jodray, Miranda Mcaffee, Yoshi Mohmand

Sponsors: Steve Bucholtz

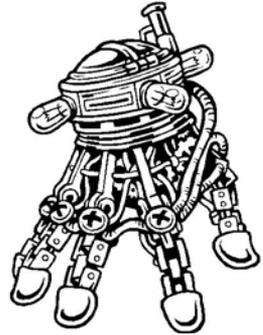
BCTAL Robotics is based out of the Birdville Center of Technology and Advanced Learning, located in North Richland Hills Texas. The BCTAL team is composed of students from Haltom High School, Richland High School, and local Homeschoolers. Our team was formed to allow for the continued participation of students in the B.E.S.T. robotics program. Our sponsor is the former sponsor of Haltom Robotics, and brings 14 years of experience to the team. Our philosophy for success is to out-work our competition, and play the game our way. During the competition, our team will stand out. We are the team with the Pink shirts, bow ties and pocket protectors. We work hard but know how to have a great time. Our Team slogan for this year is "Real Engineers Wear Pink". Participating in the B.E.S.T. World Championships has been a great reward for the time and effort put in by the team. We are looking forward to the competition and interaction with the other teams from around the country and around the world. Good Luck to all the Competitors lets all make the B.E.S.T. of this opportunity.

### #23 Caddo Mills High School

Hub: Collin County

Team: Caddo Mills Engineering  
& Robotics Association  
(CMERA)

Robot: Mars Rover



Students: Bradley Lutrick, Kaila Haney, Sandy Gibson, Tyler McDaniel, Ryan Davis, Aaron Stone, Chavarri Isai, Khryss Henderson, Tamra Barnett, Vincent Honea, Ashleigh Pierce, Mckarns Jaron, Nick Haney, Taylor Westmoreland, William Leeson

Sponsors: Gary Sorensen

Before this year, our school did not recognize our team as an actual organization. Within one season CMERA has written a school board approved constitution, recruited sponsors, and gained the notice and respect from the teachers and community of Caddo Mills. Never before has our town produced a champion robotics team and we are confident that by the end of this year, that will no longer be true.

## #181 Central High School

Hub: Philadelphia  
Team: Robotlancers  
Robot: KaizenPro11



Students: Carlton Taylor, Eric Lam, Jazmin Scott, John Capone, Kamal Gatewood, Jessica Mussie, Shakarr Hawkins, Amy Luong, Malik Blassingale, Mary Conrad, Anthony Garibaldi, Jordan Ramos, My Duyen Ho, Alexandra Thompkins-Johns, Alexis Bloom, Kyle Fragassi, Kevin Mai

Sponsors: Daniel Ueda

The Central High School Robotlancers, Team 181 from Philadelphia, have been involved with BEST since 2004. The team is also involved with FIRST and MATE robotics for multiple seasons. The team is excited to represent Philadelphia at BEST Nationals this year. We work hard, play safe, and cheer harder. Good luck to all the teams in Florida!

## #129 Central Magnet School

Hub: Music City  
Team: Central Robotics  
Robot: The Cats Meow



Students: Josh Walker, Nathan Ghattas, Sydney Cox, Savannah Welch, Lauren Grizzard, Stephen Sensel, George Michael Huttick, Katie Lou McCusker, Jack Bosse, Jamie Hobbs, Sage Badgley, Salim Sbenaty, Lauren Walker, Kellum Johnson, Jonas Cooper, Hannah Hall, Elizabeth Penn, Rohit Srivastava, Logan Altmyer, Rachel Pedigo, Ryan Cornelison, Nathaniel Nielsen, Hannah Blaylock, Lane Grizzard, Noah Sanchez, Andrew Heim, Berat Arik, Ryan Tumbleson, Yasmeen Murtaza, Adam LaPorte, Jackson Hedrick, David Yue, Austin Tipton, Hannah Slayton, Lin Ni, Ben Palmer, Kelsey Henderson, Kushal Shah, Paul Robertson, Summer Johnston, Hannah Poole, Nathan Seider, Spencer Watson, Hannah Guthrie, Kennon Cliche, Ryan Cripps, Adam Raymer, Lena Farris, Sayoni Ghosh, Pranay Manda, Cruz Jean, Peyton Lee, Melody Jih, Austin Jordan, Jessica Chen, Angus Stewart, Bronwyn Mullen, Brandon Brown

Sponsors: Marc Guthrie

With the opening of the new Central Magnet School for the 2010-2011 school year, the tradition of excellence in the area of engineering and robotics within Rutherford County, Tennessee has continued. Central Magnet brought the best of McFadden School of Excellence and Discovery School programs together to form the new team. This year, the team consists of 65 members that range from grades 6-11. In its inaugural year, the Central Robotics program has

performed well in all areas of the robotics competition. This year's accomplishments include: Local Competition at David Lipscomb University

- 1st place Robot Game Award
- 1st place BEST Award
- 1st place Engineering Notebook
- 1st place Oral Presentation
- 1st Founder's Award for Creative Design Regional Competition – 61 teams competed at Auburn University
- 2nd place Robot game Award at South's BEST at Auburn University
- 4th place BEST Award
- 1st place Engineering Notebook
- 3rd place Booth Design and Construction
- IGUS Top Gun for highest points scored in any round
- 3rd place Engineering award for creative robot design
- 3rd place CAD design notebook award
- Qualified for the BEST World Championships in both the BEST Award and Robot Game.

This is the second appearance at the Championships for several of these students and they are looking forward to the challenge of competing against the top BEST teams from across the United States.

## #184 Conway High School

Hub: NorthArk  
Team: Conway Robotics  
Robot: BRAD



Students: Bryan Barker, Phillip Foust, Paul Coryell, Joe Peirano, Rachel Coryell

Sponsors: Bob Gibson

Conway High School is located in the Southwestern part of Missouri. It is a small, public school with a total enrollment of approximately 300 students. It seems that the most important thing at Conway, and for most schools in this area is The Athletics Program. A Conway graduate has never played on a professional sports team. But our alumni include teachers, engineers, doctors, nurses and many others whose professions require an educational foundation that will enable them to recognize and solve problems. BEST Robotics provides an affordable and exciting problem solving activity for all students who want to participate. No one is cut from the Robotics Team because they can't run or jump as well as someone else. Every student who wants to participate can find someplace in the BEST program to put their talents to good use. We will be forever indebted to BEST Robotics and all the volunteers who spend their time and energy helping kids prepare for life in a world where ROBOTS RULE!

## #217 Decatur-Austin Robotic Coalition

Hub: Tennessee Valley

Team: DARC

Robot: The Kraken



Students: Miracle Osborne, Lindsay Boonarkat, Alex Johnson, Alex Standridge, Donald Murrow, Jonathan Kirsch, Bryant Moore, Malyse Mudryk, Dwight Miller, Carrie Hill, Morgan Hampton, Sarah Grace Mitchell, Bradley Blunier, Brandon Marshall, Zach Blunier, Michael Krauz, Steven Han, Patrick Stewart, Andrew Parmer, Daniel Moore, Josh Smith, Phillip Betts, Taylor Ayers, Savannah Wheat, Savina Adamsky, Michael McKelvy, Michael Higdon, Ryan Moriarity, Trey Keown, Corvia Stevens, Christian Carnahan, Aubrae Taylor, Sean Goodman, John Fleischauer

Sponsors: Susan Haddock

During the academic year 2008-2009, the robotics teams of Austin and Decatur High Schools combined to form DARC (Decatur Austin Robotics Coalition). Both high school teams had competed in BEST Robotics separately for 6 years. DARC is an extracurricular activity and is not included during the students' academic day. The team is organized as an engineering company with CEO, engineering design team, quality assurance team, marketing, and creative design group. Each group within the company has a lead who reports to the CEO, who, in turn, reports to the Board of Directors. Engineering Mentors and school administrators serve as a Board of Directors for the DARC company. The students involved in DARC have learned to work with power tools that many had never seen before the robotics season

began. They have also had to work within the limitations of time and resources. Team work has been vital as students from both local high schools have cooperated and compromised to accommodate schedules and home-town rivalries. Team mentors have successfully taught the engineering design process and the importance of communication. Robotics has expanded to include students from automotive technology, computer technology, metal shop, and art. The team encourages creativity in design and the relevance of the incorporation of math, science, computer, and vocational curriculums. BEST sparks interest in engineering and technology. The knowledge gained through participation in the BEST robotics program is unlike anything the students receive in the classroom. The "cradle to grave" concept of these programs promotes teamwork, time-management, budgetary skills, creativity, and the value of hard work. Students perform better in the classroom because of the math and science connections they have made in the hands-on creation of the robot. In the 10 years of robotics education in the Decatur City Schools, over 60 former robotics team members are majoring in or have graduated in engineering or science and technology fields at 4 year colleges/ universities. Countless others have received 2-year technical degrees in drafting and graphic design.

## #121 Dickson Area Robotics Team

Hub: Music City

Team: DART

Robot: Squeaky



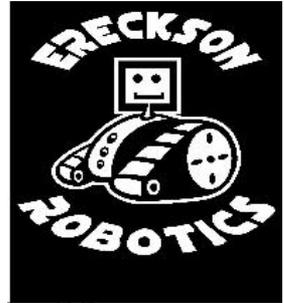
Students: Leighann Jack, Spencer Rich, Jamie Lyle, Bridgett Eleazer, David Jack, Darin Owen, Carina Anderson, Matthew Hasley, Aaron Sobota, Justin Hasley, Joshua Buess

Sponsors: Lori Jack

The Dickson Area Robotics Team was started in the fall of 2008 in Dickson County, TN for the purpose of competing in the BEST Robotics Competition. DART enjoys the team work and the fact that there are different aspects to this competition beyond the actual building of a robot. Everyone has a talent that can be strengthened during this competition: from photography, computer skills, and art to fund raising and communication skills. These skills learned as individuals and as a team will assist them in their futures no matter what path they take.

## #12 Ereckson Middle School

Hub            Collin County  
Team:        Ereckson Robotics  
Robot:       Duckie III



Students:    Lauren Abiog, Abigail Accipiter, Erika Aldrich, Matt Barwig,  
                 Tim Basu Roy,  
                 Keerat Baweja, Jessica Bell, Lucy Boys, Andrew Chen, Gigi  
                 Cumming,  
                 Krishant Dania, Akanksha Devasigamani, Carter Dobbs, Robin  
                 Ewoldsen,  
                 Jack Fazackarley, Allen Foster, Jessica Grover, Nisha Gupta,  
                 Graham Houpt,  
                 Garrett Kelly, Alex Labaziewicz, Jayant Madugula, Tyla  
                 Makhoul,  
                 Soumya Mandava, Evan Mattock, Kedar Mehta, Matt Miller,  
                 Ray Mishra,  
                 Darren Morgan, Rohit Nair, Reid Poffenbarger, Keshav  
                 Prathivadi,  
                 Raj Raval, Evan Smith, Matt Tice, Keaton Tommaney,  
                 Meagan Westphal

Sponsors:   Graham Gadd

My philosophy of education and Robotics is “ Reach for the moon, even if you miss you will land among the stars” I push my students every day past their comfort zone, however I have learned that if you push students harder towards their potential they will strive higher and work harder to reach their goals and beyond. I suppose I love robotics so much because it is the opportunity I never had when I was a kid. BEST has created a unique opportunity for Middle School and High School children to get a taste of what it is like working together in a teaming environment and accomplishing a task to meet a deadline. From the onset of

the school's opening, Ereckson has participated in the BEST robotics competition and every year since; have steadily grown to become one of the main reasons students within the community want to attend the school. Robotics at Ereckson provides a way for students to grow their unique talents and skills in the technical sense. It has opened eyes and doors to kids across our community and the country that otherwise might not have had the opportunity to gain the experience BEST provides. Some of the students, who have participated in my BEST robotics program, have followed the path of engineering, science, and technology. I have had several female students attend the Society for Women Engineers (SWE) summer camps at Texas A&M and they have expressed how BEST had helped them see that there is a path for women in engineering. On February 22, 2011, Ereckson Middle School hosted a silent auction and spaghetti dinner to raise money for the Ereckson Robotics team to travel to the BEST World Championships in Orlando. The planning for this event started out as a dance, then a dance with silent auction, and then we held a separate dance and separate silent auction. The auction was more like an extravaganza. We had people eating dinner, bidding on auction items, visiting our robotics room, watching robots drive, and talking to representatives from universities. This was really a community event to showcase the hard work that the students have put into robotics. But the highlight of the evening, to me and what really made me proud to be the sponsor of this team, was to see several alumni from previous years that had participated in the BEST competition that came to visit. To hear that they were pursuing education in science and engineering made me realize the powerful impact that BEST robotics has played on my students and the opportunities it has provided. I have been blessed with a supportive administration that values hard work and places an emphasis on exploration and hands on learning. Thank you BEST for opening the doors to the world of engineering to these students and allowing Ereckson Middle School to be a part of this amazing program. Graham Gadd Ereckson Middle School Robotics

**#124 Kansas City Christian School**

Hub Kansas

Team: KCCS SMURF Robotic Team

Robot: Janke Bot

Students: Nicholas Beach, Hudson Blakely, Scott Bokach, Jack Hammons, Max Munoz, Grant Unruh, Evan Walsh, Luke Walsh

Sponsors: Mary Alley, Patricia Boksha

Description not available at press time.



## #10 Kittson Central High School

Hub: Bison  
Team: Kittson Central BEST Robotics  
Robot: Kitt



Students: Anna Christenson, Brita Christenson, Markas Dahl, McKenzie Davis, Denise Dziengel, Nick Gatheridge, Blake Hultgren, Logan Johnson, Sydney Klein, Dean Lipinski, Jacey Mitziga, J.P. Mortenson, Paige Mortenson, Briana Nupdal, Dylan Olson, Stephani Pastir, Jordan Rynning, Ericka Swanson, Shannon Swanson, Braeden Weimer, Brandon Weimer

Sponsors: Kim Jones

Kittson Central Robotics Kittson Central B.E.S.T. Robotics is a thriving enterprise located in a small town in far northwestern Minnesota. The fun, competitive, and challenging atmosphere created by our mentors has attracted 21 student members, or 31% of the 65 students in grades 10 through 12. Throughout the season, our team becomes very close-knit, spending many hours after school, in the evening, and on weekends mastering all of the aspects of the competition and learning to effectively work together to achieve our goals. Thanks to our excellent teamwork, our team has experienced much success. We have participated in B.E.S.T. Robotics for four years, and have advanced to the regional competition three times. In the 2010 season, our team placed first in the B.E.S.T. Award at the local competition at NDSU in Fargo, North Dakota, then second in the robot competition and fourth in the B.E.S.T. Award at the regional competition in Fort Smith, Arkansas. B.E.S.T. Robotics has also been inspirational to our students. Numerous former team members are pursuing careers in math and science, five of them focusing specifically on engineering. Our team feels that the educational benefits, development of teamwork skills, and the exciting atmosphere of the competition make B.E.S.T. Robotics an excellent preparation for our future lives.

## #62 Lausanne Collegiate School

Hub: Mississippi

Team: Lynx Robotics

Robot: Lynxinator III



Students: Amanda Dominguez, Amelia Grayson, Ben Woods, Bogdan Kasich, Carter Blalack, David You, eric zimmerman, Erin Anderson, Filip Talac, George Eason, Jack Morrison, Jacob Buring, Josh McMillan, Laura Vang, Leah Eisenberg, Leslie Pace, Maria Xie, Mitchell Allen, Sunil Gollamudi, Tiffany Li

Sponsors: Lee Loden

In only its third year of existence, Lausanne Robotics has grown from 7 robot participants with no attempt at the BEST award to nearly 20 participants competing for both awards. The future looks bright for Lausanne Robotics as its younger participants get older and show leadership from their previous experience in the program.

## #2 Liberal Arts and Science Academy

Hub: Capitol



Team: LASA

Robot: Phil the Phactory  
Worker

Students: Maria Alvisi, Leo Breston, Casey Chorens, Harris Davidson, Xavier Denis, Sean Doyle, J. Casey Edgerton, Mr. Friedman, Issac Griswold-Steiner, Carlos Gross-Jones, James Lentz, Calli Meyer, Daniel Montes, Richard William Piersall, Cailynn Ponciroli, Rebekah Pruett, Arami Rosalis, Chris Wang

Sponsors: Tony Bertucci

LASA Robotics has been an active participant in BEST Robotics since 1995. The only reason the team continues to participate is because of the educational and experiential value this competition brings to the students that participate. Many competitions can teach facts, or inspire teamwork, or require research, or develop manufacturing skills, or promote sportsmanship. Some can accomplish a few. BEST Robotics does it all. Our students develop all these skills with regards to the competition, but more importantly they become ingrained in their daily lives. This influences all aspects of whatever they endeavor. It guides them in their selection of college studies and in career choices. BEST Robotics simply helps to provide an education atmosphere that transcends the environment of the individual student's situations. Whether home schooled, private schooled or public schooled all participants have the same opportunity and benefit from the environment that cannot be produced in any traditional classroom situation. It is for this reason, regardless of the competition outcome that BEST is a tremendous value to BEST and why LASA Robotics will continue to participate.

## #130 Merrol Hyde Magnet School

Hub: Music City  
Team: Merrol Hyde Robotics Team  
Robot: The Mystery Box



## **ROBOTICS TEAM**

Students: Josh Anderson, Penney Arwood, Paige Barnes, Raphael Battad, Nathan Bowen, Zane Breeding, Alex Brewer, Jack Brewer, Marshall Brewer, James Brimm, Josh Brimm, William Butterworth, Cole Ferrell, Jessica Ferrell, Noah Gillispie, Lauren Heinrich, Alan Hencey, Tierra Hernandez, Charlie Hume, Sean-Michael Johnson, Paul Kelton, Nathan Lamberth, Jade Liwag, Ranel Liwag, David Marsh, Hayden Marsh, Kathleen Marsh, Landry Norman, Garrett Potter, Chris Swinea, Bryce Taylor, Christie Thiessen, George Thomas, Chase Tiefermann

Sponsors: Mike Marsh

The Merrol Hyde Robotics Team was founded in 2008 with the goal to provide students the opportunity to receive free hands on experience with engineering in a safe environment. In the three short years that the robotics team has been competing they have reached over fifty students encompassing six different schools in their community. This is the second year that the Merrol Hyde Robotics Team has advanced to the Auburn's BEST Regional Competition. This year they won first place in the robotics competition and are proud to be representing Sumner County, Tennessee, at the National BEST Competition. They are led by teacher sponsor Mike Marsh.

## #237 Metro Homeschool

Hub: River Valley  
Team: Metro Homeschool  
Robotics



Robot:

Students: Matt Astourian, Joseph Bergthold, Melissa Bergthold, Daniel Catton,  
Cameron Chartier, Philip Clevenger, Nathan Glasgow,  
Victoria Hamm,  
Caitlyn Hetzel, Chandler Hetzel, Hunter Hughes, Jessica Jolly,  
Joseph Keller,  
Joey McGee, Brian Mehl, Tony Mehl, Matthew Mohler, Macy Rios,  
Madeline Rios, Sal Rios, Sam Rios, Shea Ross, Collin Smith,  
Hunter Smith,  
Shea Stacy, Trevor Stacy, Isabella Sterling, Mariah Sterling,  
Jeremiah Trapp,  
Brandt Vircks, Brooke Vircks, Michael Ward, Alex Wilcoxon,  
Sam Wilcoxon,  
David Williamson, Ramon Williamson, Zachary Williamson,  
Avery Young,  
Bryant Young, Damon Young

Sponsors: Lisa Stacy

GOD IS GOOD! And He has been at work mightily in our team this past year. For BEST 2009, we had 25 students and met in our lead mentors' garage, kitchen and living room. We had talked of the need to find a larger place to meet, and after making only one inquiry, we were given the opportunity to use a 3400 square foot workspace rent-free. We couldn't imagine what we would do with so much space - but God knew our need even before we did. For BEST 2010,

our team grew from 25 to 39. That number of students plus mentors would have been physically impossible to accommodate in our previous meeting space. The other unknown to the team was that shortly after Kickoff, our lead mentor would become very ill. Meeting at her home would not have been an option. With this mentor unable to fill her usual role, it was up to others to "step up", and step up they did! A lot was learned about teamwork by students and mentors alike. This year the students have learned a lot about math, engineering, physics, computer programming, Computer Aided Design, project management, leadership, writing, marketing, as well as planning and building techniques. They have also learned valuable life skills such as brainstorming, time management, communication, cooperation and safety procedures. On top of that, new friendships have been formed and existing ones have been strengthened. Throughout this past year we have seen the Lord's provision for our team over and over - anything from materials to furniture to cash to just the right mix of student interests and mentor expertise. We give Him all the glory! "Commit to the Lord all things, and your plans will succeed." Proverbs 16:3

## #47 Oak Mountain High School

Hub: Blazer

Team: Oak Mountain High-Tech Solutions

Robot: Woggles



Students: David Allain, Stephen Bailey, Daniel Bowman, Drew Carmn, Jonathan Carman, Phillip Clark, Justin Clemons, Bayleigh Cook, Charles Costas, Freddy Deleon, Hunter Dodson, Joseph Fisher, Madison Fisher, Cassidy Foster, Nathan Gossman, Matthew Gray, Stuart Hagan, Zachary Harris, Caleb Higdon, Jay Holton, Caitlyn Johnston, J.T Langford, Evan Mumpower, Rohan Nair, Matthew Parent, Nicole Parent, Victoria Paul, Chase Ramer, Robbie Rushton, Zack Schaper, Cas Schley, Quint Schultz, Hannah Slay, Nathanael Snow, Austin Snyder, Ashley Strange, T.J Tindal, Josh Tyson

Sponsors: Nancy Tyson

Coming into this competition, I had no clue what I was getting myself into. It was very confusing at first but soon grew clear as I worked on the notebook with my fellow teammates. I began to understand what Six Sigma is and how it applies to your work. Six Sigma is defined as the quality of your work in the amount of time you are given. Our team used Six Sigma to our advantage. They had created a robot to be able to pick up a device in any position. With our

robotic arm in great quality, we used our practice field to work on timing and driving, allowing anyone to try. The team then decided upon the best five drivers and we headed off to our first competition. Walking into the University of Alabama at Birmingham (UAB), we were anxious to see how everyone preformed under pressure. The bell rang and we were off for our ten-hour day. Our start was strong and our score was high, unfortunately, it didn't stay for long. As our score and place started to drop, our spirit grew weaker. I don't know about everyone else, but I thought this was the end for us. I was completely wrong; the notebook had placed us in the Wild Card match and pushed us into third place. We were headed to Auburn University in six weeks. In the six weeks we had, things had changed. The team added a second motor to the claw, making it turn one hundred and eighty degrees. Our magnetic pieces at the end of the claw became stronger, enabling it to pick up any magnetic object it needed to. Not only did we fix the arm, we fixed our carrier. At UAB, our carrier wasn't working properly and the team got to work. It was created to attach and detach from the robot, being able to hold over thirty gadgets. The notebook, booth, and the robot were ready and we began our two-hour drive. As we entered Auburn, our spirits were high. The team had corrected any malfunctions to the robot and perfected the timing. People in the stands cheered loudly as our team stayed in the top ten. We kept Six Sigma through every round, even when the robot fell sideways. Our drivers didn't let that affect them as they danced to the music. The night was coming to an end and we finished in eighth place. The awards ceremony had begun and we already had six awards in our hands. Nerves were on edge as we waited to hear who had won. "In second place," there was a pause, "from the Blazer's B.E.S.T.," again, another pause making the nerves spike higher. "Oak Mountain High School!" We screamed as we received our award and heard we were headed for the ESPN Center at Walt Disney World in Orlando Florida for the National competition. Looking back on it now, I'm proud to say that I contributed to our winnings

and couldn't be more proud of the team. It was not always easy, and there were many times people wanted to give up, but we pushed through and will see this to the end. The designs to the robot and the booth have changed slightly, but our classic Cat in the Hat look continues to remain the recognized symbol of the 2010 Oak Mountain High-Tech Solutions Team.

## #206 OKC Homeschool

Hub: Oklahoma  
Team: OKC Homeschool  
Robot: Siegfried



Students: Kermit Alexander, Livy Bicknell, Jennifer Boyes, Kevin Boyes, Scotland Boyes, Tricia Boyes, Christopher Brubaker, Katie Brubaker, Karalyn Finnell, Matthew Fowler, Nathanael Fronko, Jonathan Gelnar, Roberto Hernandez, Kyle Hill, Coley Jameson, Andrew Johnson, Kevin Kopack, Jordan Kraft, Stephen Kraft, Catherine Landrum, Geoffrey Landrum, Kendall McWilliams, Sophie Nutt, Jayce Palmer, Jason Port, Alexander Roberts, Catherine Roberts, Emily Roberts, Ben Russell, Andrew Seldenrust

Sponsors: Jeff Finnell

BEST Robotics has been an amazing educational program for all of the students that have participated on the OKC Homeschool team. Many students have gone on to major in Mechanical and Electrical Engineering at some of the leading Universities in the state of Oklahoma. By presenting the students with a real-world game, they learn how to build something technologically advanced with a set time limit and only a box full of materials to complete the task. The BEST competition has taught the students of OKC Homeschool leadership, how to apply math and science in everyday life, and most importantly how to work with others as a team to accomplish a goal. It is a remarkable program and the

students of OKC Homeschool will always be grateful for BEST Robotics Inc. introducing them to the Engineering, Science, and Technology fields.

## #17 REACH Homeschool

Hub: Bison  
Team: REACH Robotics  
Robot: Leviathan



Students: Bailey Carlson, Caleb Ingebretson, Jesse Ingebretson, Emily Jensen, Nik Kukert, David Mueller, Mikayla Perrault, Christian Roise, Charlie Shorma, Kara Syvrud, David Ugelstad, Thomas Ugelstad, Dustin Walter, Naomi Walter, Caleb Wood

Sponsors: Jeff Kukert

Team # 17 Testimonial REACH Homeschool For many high school students just the words science and math will cause a drawn out groan. This is often because we cannot see the “point.” No matter how many times a book or teacher tells us what you can do with the Pythagorean Theorem or the equation for mechanical advantage on a wheel, we often look at it as just another fact to memorize for a test. BEST Robotics has solved so much of our apathy about these subjects. BEST does not just play off our competitive edge, but it shows that math, science, and the logic behind them help in organizing your team and in addressing non-engineering problems. When we have seen these subjects help us to do better, we don’t forget. BEST also shows the application of schooling in a wide variety of business situations, and has helped some of our senior team members choose which college courses they are going to be taking. BEST has given a jump start to our whole team’s education. It has shown how what we learn in school is used in the real world, and has even helped give a passion for what some of us young women and men want to do in the future.

## #16 United Engineering Technology Magnet

Hub: San Antonio

Team: ULTIMATE

Robot: EGGXTERMINATOR



Students: Reymundo Aguilar, Roxanna Aguilar, Estefania Barajas, Nicolas Botello,  
Jeremy Cantu, Carol Carrera, Priscilla Chapa, Esteban Elizondo,  
Alejandro Galindo, Oscar Garcia, David Gonzalez, Eduardo Gonzalez,  
Nathan Idrogo, Nathaniel Idrogo, Juan Jose Inclan, Carly Liao, Melissa Lomeli, Ivan Lopez, Jorge Lucio, Luis Macias, Raul Martinez,  
Mitchell McCrea, Armando Montante, Alexandra Perez, Mark Perez,  
Ariana Portela, Ricardo Rodarte, Vanessa Romero, Adan Soliz, David Stellema

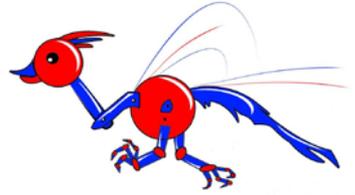
Sponsors: Laura Rodriguez

The ULTIMATE Robotics Team is composed of 56 students that have worked diligently to not just build a robot, they are building their futures and would like to thank the BEST organization for their continued support and foresight in helping to make this country a better place. In its 9 year history ULTIMATE has 112 alumni members at the university level that are pursuing a STEM career and 4 students working on an engineering masters degree. In addition it has 13 students who have earned an engineering bachelors degree, 5 math teachers, and 6 students with a Bachelors degree in Business Administration. ULTIMATE would like to

thank all of the BEST volunteers, sponsors, and mentors, and would like to congratulate all the teams that worked so hard to qualify to the BEST Championship. May you accomplish your goal make new friends and memories and have a safe return trip.

## #8 Westlake High School

Hub: Capitol  
Team: Chap Robotics  
Robot: Pico



Students: Bryce Abell, Grant Agatston, Isaiah Apfel, Claude Barker, Jack Beadle,  
Hayley Bishop, Sean Brocklehurst, Daniel Cabezas, Alex Cho, Jonny Dahm,  
Justin Dorland, Jaxon Fender, Nick Fisher, Nick Frawley, Nick Frost,  
Gray Gillespie, Joshua Hance, Jessee Haney, Garrison Hefter, Michelle Huddleston,  
Walker Jezek, Kendall Jordan, Nick Jordan, Chris Kassabian, Robert Kuykendall,  
Drew Lieberman, Robert Ly, Saifali Maredia, Iain McCown, Connor McKay,  
David Miller, Achi Misra, Tehseen Mohammed, Zanyl Momin, Lauren Niu,  
Brett Patterson, William Payne, Aaron Peterson, Jeff Pflueger,  
Keren Rempe, Evan Reyes, Sean Riley, Pierce Robson, Ricardo Rodriguez,  
Vania Shapiro, Jack Teets, Austin Thoma, Shelby Turner, Henna Usmani,  
David Weiser, Milo Wimmer, Grant Wiseman, Garrett Witowski,  
Matthew Zhan, Chris Zhen

Sponsors: Norman Morgan

Westlake High School Robotics team hails from Westlake High School in Austin, Texas. We are proud to represent Capitol BEST Hub and Texas BEST at The BEST World

Championships. We are an Exemplary rated 5A public high school with an enrollment of approximately 2450 students in 9th - 12th grade. This is our fourth year as a curriculum and contest program competing in robotics contests such as BEST. Our team consists of students enrolled in our engineering classes as well as students who are not enrolled in the classes. This year we will compete in four different robotics contests at the high school level. We have worked to develop programs at the elementary and middle school levels over the past few years. We strive to offer an educational program that is project based and provides a more practical approach to studying science, technology, engineering and math at the high school level. We are proud to have the following mentors with their respective companies supporting our team: Scott McMahan and Rebecca Phillips, Texas Instruments; Michael Watson, Tim Ousley and Joe Hershberger, National Instruments; Linda McMahan, Pixels and Verbs, LLC; Bob Witowski, Dona Jordan, Tim Jordan and Norman Morgan, Eanes ISD and Westlake High School; Joyce Witowski, Freescale; and Miguel DeLeon.

## #25 Wetumpka High School

Hub: War Eagle  
Team: Wetumpka High School  
Robotics, Inc.  
Robot: Siggie We-Tu



Students: Max Adam, Christy Baggett, Jared Baggett, Evan Brand, Dalton Cape, Daniel Cape, Ashtyn Clark, Mark Clayton, Andrew Cribb, Kaison Darden, Chris Duhamel, Katie Dulak, Ryan Ebbinga, Josh Estes, Brenden Foster, Kelly Glenn, Christian Golson, Jennifer Harrison, Steven Hayden, Tabitha Hines, Hailey Holbert, Jon Holbert, Demetrius Hooks, Victoria Hughes, Demetri Jones, Hunter Kirby, Kendall Knight, Tanner Knight, Jesse Kuykendall, Whitney Lee, Thomas Lockamy, Wade Mattox, Desiree McKethern, Kayle McWhinnie, Megan Moody, Jonathan Mummy, Victoria Mundy, Jonathan Oliver, Tulsi Patel, Jared Payton, Sarah Pershing, Marie Reuter, Autumn Reynolds, Rodney Riggs, Matthew Robinson, Eddie Rodriguez, John Ryall, Jacob Saylor, Kate Saylor, Jonathon Segars, Aaron Simonton, Clay Simonton, Chelsea Smith, Zachary Smith, Christin Springs, Colin Sweeney, Caitlin Sweeny, Amber Vance, Quentin Vercher, Julian Vilardi, Lily Vilardi, Chaz Vining, Alex Webb, Robert Wilcox, Chris Williams

Sponsors: Virginia Vilardi

The Wetumpka High School Robotics team is a group of dedicated, energetic, and enthusiastic students who work together to achieve excellence. Together we strive for perfection in all aspects of our team; including construction of the robot controlled by our engineering division and product promotion controlled by our business division. The 2010-2011 season has been a bit of a rebuilding year for Wetumpka High School Robotics, Inc. We had a large number of seniors last year which left us with a young untried team this year. The majority of our team is made up of juniors and sophomores. The year started off slow, but we eventually pulled together and we were able to succeed at War Eagle BEST and South's BEST. However at South's BEST we did not have the level of success needed to be competitive at a national level competition. So our engineering team sat down and brainstormed new ideas to fix the problems we had encountered. We are coming into the national competition with a completely different robot than the one that was used in our first two competitions and we believe that it has the potential to take us all the way to the top.

# The Awards

## ***Best Award Category***

### ***BEST Trophy***

Accomplishes the greatest school interest in engineering, science and technology.

### ***BEST 2<sup>nd</sup>/3<sup>rd</sup>***

BEST Trophy runner-ups.

## ***Competition Award Category***

### ***Most Robust Design*** *(1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> places)*

For the machine requiring the least maintenance during the contest.

### ***Most Elegant Design*** *(1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> places)*

For best of show design and execution.

### ***Most Photogenic Design*** *(1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> places)*

For the most eye-pleasing, functioning machine.

### ***Founders Award for Creative Design*** *(1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> places)*

Demonstrates the best use of the engineering process to include brainstorming approaches, consideration of offensive and defensive strategies, etc.

# The Awards

## ***Team Award Category***

### ***Sportsmanship Award***

The team that exhibits the greatest level of sportsmanship throughout the day.

### ***T-Shirt Award***

*(1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> places)*

For the most original game-specific team t-shirt design.

### ***MathWorks Best Programming Skills Award***

Awarded to the team that shows the most interesting use of BRAIN programming.

### ***SolidWorks CAD Design Award***

*(1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> places)*

Awarded to the team that shows the highest mastery and most creative use of CAD software.

### ***Best Team Video Award***

*(1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> places)*

Best video submitted by a team based on innovation & creativity, best use of the game theme, and best production.

# The Awards

## ***Competition Award Category***

*1st/2nd/3rd/4th Place Awards*

Top 4 teams in head-to-head competition.

*igus Top Gun Award*

Awarded to the team that scores the most points in a single match.

## **Special thanks to....**

MathWorks for their incredible partnership with BEST Robotics!

Robotics Education and Competition Foundation for again inviting us to host our World Championship in conjunction with the VEX World Championship at this fabulous venue.

Our World Championship organizing committee, Garry Ackerman, Janne Ackerman, George Blanks, Mary Lou Ewald, Eric Heiselt, Sid Stubbs and Greg Young.

All of the many BEST volunteers who have spent many hours to make this event happen.

All of the judges and referees for their time and dedication to the program.

All of our wonderful sponsors without which a national championship would not happen.

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**Boosting Engineering, Science & Technology™**

**Thank you for coming. See you again this Fall.**

**Please thank all of our sponsors.**

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# Notes